LEARNING SERVICES

Multimedia Telephony (MMTel) 11A
Training Programs

Catalog of Course Descriptions

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Catalog of Course Descriptions

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Introduction

Ericsson has developed a comprehensive Training Programs service to satisfy the competence needs of our customers, from exploring new business opportunities to expertise required for operating a network. The Training Programs service is delineated into packages that have been developed to offer clearly defined, yet flexible training to target system and technology areas. Each package is divided into flows, to target specific functional areas within your organization for optimal benefits.

Training Scoping Analysis is done to decide the customer training solution including training content, time plan, budget and pricing.

Customization of existing training and development of new training

Service delivery is supported using various delivery methods including:

Icon	Delivery Method
	Instructor Led Training (ILT)
	Virtual Classroom Training (VCT)
	eLearning (WBL)
	Workshop (WS)
	Short Article (SA)
	Structured Knowledge Transfer (SKT)
	mLearning
	Job duty analysis (JDA)
	Competence GAP Analysis (CGA)

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IMS in a Nutshell

LZU1087775 R2B

Description

This web based training takes you through the basics of IP Multimedia Subsystem, IMS.

Please, note that this introduction to IMS is not a replacement for the IMS Overview instructor led training course.

Learning objectives

On completion of this course the participants will be able to:

1 Explain the purpose and benefits of IMS

2 Describe the IMS architecture briefly

3 List the Ericsson IMS offerings

Target audience

The target audience for this course is:

Fundamentals

Prerequisites

None

Duration and class size

The length of the course is 1 hour.

Learning situation

Web Based Learning, WBL

IMS from a Business Perspective

LZU1082077 R1B

Description

For many, IMS is the future. It will provide revenue enhancing services and open up new channels in a convergent environment. For some more, IMS represents a standardized base on which to build for future.
How will money be generated with IMS? Are their alternatives and what's the best way forward?
IMS from business perspective aims to provide a business overview to give you answers you need to make your decisions about one of the most important technological innovations in the telecom industry.
By understanding the market needs and taking own business goals in mind, it will be possible to find the best way forward. Ericsson's global presence allows us to provide business perspective based on global understanding. As one of the leaders in this field, Ericsson has technical and market knowledge to provide the best.

Learning objectives

On completion of this course the participants will be able to:

1 Understand the market evolution behind the move towards IMS
1.1 List the main business and technology drivers
1.2 Give examples of Converging solutions
1.3 Provide an overview of the IMS Technology and innovative IMS services
1.4 Explain operator and end-user benefits of IMS based multimedia services

2 List common enablers in IMS networks
2.1 List operator & end-user benefits of IMS based multimedia services
2.2 Present an overview of types of services available
2.3 Give examples of services using IMS-unique properties

3 Explain the roles in an economic eco-system
3.1 Describe IMS business ecosystem
3.2 Define the various B2B relationships in the eco-system
3.3 Discuss IMS support for development and evolution of new services

4 Describe best practices for service launch for maximizing IMS service uptake
4.1 Build services packages for different segments
4.2 Discuss pricing schemes
4.3 Suggest suitable promotions for each segment

5 List key elements influencing the profitability of the IMS networks
5.1 Describe different IMS Business case scenarios
5.2 List some IMS success stories

Target audience

The target audience for this course is:

Business Developers
This audience has responsibility of defining, recommending or implementing the operator strategy specifically within the multimedia domain.

Prerequisites

Successful completion of the following courses:

Telecom Operator 2.0; Business Challenges & Opportunities LZU 108 6935 or similar.
The participants should be familiar with basic telecommunications business and the evolution towards multimedia services.

Duration and class size

The length of the course is 1 day and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Business & Technological drivers	1
	IMS Services	1
	IMS Eco System	1
	Successful launch of IMS services	1
	Building IMS Business Case & Wrap-up	2

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IMS 11A Overview

LZU1088283 R1A

Description

Do you want to know how operators and end users can benefit from IMS and what the different Ericsson IMS solutions are; then this is a course for you.
The course provides an overview of the IP Multimedia Subsystem (IMS) and the Ericsson solutions for IMS based on the system products IMS Core and MMTel. End user benefits and what IMS services an operator can offer are explained. The features, nodes & signalling aspects are described for the IMS offerings related to IMS Core and MMTel.

Learning objectives

On completion of this course the participants will be able to:

1 Explain why there is a need for IMS
1.1 Describe the IMS system in overview – the services and capabilities IMS provides.
1.2 List which standardization bodies define IMS and IMS related services
1.3 Explain what is meant by the IMS eco system
1.4 Present operator and end-user benefits of IMS.

2 Outline the Ericsson IMS Offerings
2.1 Explain the IMS offerings in the areas of Voice, Video, Presence, Messaging and Business communication in overview

3 Describe the architecture of the Ericsson System Products
3.1 List the main features of IMS Core and MMTel
3.2 Name and explain the functional nodes in IMS Core and MMTel
3.3 Explain how MMTel interworks with Circuit Switched, LTE and other VoIP networks
3.4 Identify the signaling and media protocols used in the system products and describe where they are used
3.5 Recognize the platforms used for the System Products

4 Acknowledge ‘typical’ IMS end-to-end session set-ups
4.1 Express a basic understanding of SIP
4.2 Recognize the SIP & Diameter signalling sequence for Registration.
4.3 Interpret the SIP signalling sequence for an IMS to IMS session.
4.4 Recognize the SIP signalling sequence for an IMS to PSTN session
4.5 Interpret the SIP signalling sequence for an MMTel to LTE session

Target audience

The target audience for this course is:

Fundamentals

Prerequisites

Successful completion of the following courses:

Students should have a good general knowledge of telecommunications.

Duration and class size

The length of the course is 1 day and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	• Introduction to IMS	1
	• Ericsson IMS Solutions	2
	• Ericsson IMS System Products	2
	• IMS end-to-end session set-up	1

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IMS Signalling

LZU1087193 R3A

Description

This course provides a detailed introduction to signalling in IMS by presenting the protocols involved and different traffic cases from the IMS/MMTel system (optionally PTT).
The following protocols are described with reference to the Ericsson IMS solutions and to the relevant IETF and 3GPP specifications:
• SIP protocol and the most important IMS related extensions to SIP;
• SDP (Session Description Protocol);
• Diameter protocol and IMS related Diameter applications;
• H248/MeGaCo.
In addition, other related protocols, such as DNS & RTP (optionally MSCML & TBCP),will be described.
Actual signalling traces are used where possible to show the practical aspects of signalling in an IMS network.

Learning objectives

On completion of this course the participants will be able to:

1 Describe the architecture of IMS; the functions of the main logical nodes in the IMS System; the main IMS specifications and protocols.
1.1 Describe the roles of IETF, 3GPP, TISPAN & OMA in IMS.
1.2 Describe the main 3GPP specifications and IETF RFCs relating to IMS.
1.3 Describe the concepts related to mobile and fixed access to IMS.
1.4 Describe the main protocols, signalling flows and node functions for typical IMS Sessions, including Registration, IMS/MMTel to IMS/MMTel Sessions; IMS/MMTel to GSTN sessions and Push To Talk sessions.

2 Understand and describe the structure, specifications and usage of Session Initiation Protocol (SIP).
2.1 Describe what SIP is and the reasons why SIP is required in IMS.
2.2 List and describe the main RFCs related to SIP and SDP.
2.3 Explain the basic functions and capabilities of SIP and SDP.
2.4 Describe the function of SIP Components, SIP Proxies and SIP User Agents (UAC, UAS).
2.5 Explain stateful and stateless SIP Proxies.
2.6 Describe the specifications, functions and usage of all the SIP Methods and the more common SIP Responses.
2.7 Explain SIP Transactions and Dialogs.

2.8 Explain Telephone numbers, SIP-URIs, Tel-URLs for addressing end-users.
2.9 Explain the routing and addressing principles of SIP messages and the function of the SIP routing header fields (Request URI, Via, Route, Record-Route, Contact and others).
2.10 Describe the function and uses of the more common SIP header fields used in IMS and their related RFCs.
2.11 Describe the Registration process, including Authentication.
2.12 Describe SIP to SIP and SIP to ISUP Session establishment.
2.13 Describe SIP/ISUP interworking including specifications, and the function and use of Number Normalization, ENUM and External Network Selection (Breakout – BGCF).
2.14 Explain SIP forking.
2.15 Analyze detailed SIP IMS signalling flows and Message content for Registration, Session Establishment and other call scenarios.

3 Understand and describe the structure, specifications and usage of Session Description Protocol (SDP) in IMS.
3.1 Explain the function of SDP and the offer / answer model for SDP in IMS.
3.2 Describe the structure of SDP and the function of the SDP fields with reference to the associated RFCs.
3.3 Describe the use of SDP in SIP and MeGaCo signalling sequences.
3.4 Analyze detailed SDP messages from traces for a range of scenarios.

4 Describe the use of RTP/RTCP in IMS
4.1 List the rfc standards associated with RTP & RTCP.
4.2 Describe the function and content of the RTP header fields, including payload types for speech, video and DTMF (rfc2833).
4.3 Describe RTCP functions and messages.

5 Describe the function of DNS in IMS.
5.1 Describe when DNS is used in IMS signalling flows.
5.2 Describe the location of SIP servers using DNS.
5.3 Describe the purpose and structure of NAPTR, SRV and A-Record queries.
5.4 Describe the function and purpose of the ENUM function.

6 Understand and describe the structure, specifications and usage of the Diameter Protocol in IMS
6.1 Describe the base functions and capabilities of Diameter and the associated RFCs.
6.2 Describe the routing principles of Diameter in IMS.
6.3 Describe the structure of Commands.
6.4 Describe the structure, types and format of AVPs.
6.5 Describe the main Diameter base protocol messages and AVPs.
6.6 Describe Vendor specific Commands & AVPs
6.7 Describe the services provided by the Cx/Dx, Zx, Sh/Dh, Rx, e2, Mr and Rf interfaces in IMS.
6.8 Describe the main IMS Diameter messages and AVPs associated with the Cx/Dx, Zx, Sh/Dh, Rx, e2, Mr and Rf interfaces in IMS.
6.9 Analyze detailed Diameter signalling flows and Message content for Registration (Cx/Dx and Sh/Dh), Session Establishment and Charging (Rf).

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7 Understand and describe the structure, specifications and usage of H248 (MeGaCo)
7.1 Describe the main function and usage of H248 in IMS and the main RFCs.
7.2 Describe the H248 Context Model.
7.3 Describe the H248 Commands, Descriptors and Parameters and their use in IMS.
7.4 Describe Packages and Profiles.
7.5 Describe typical H248 signalling sequences in IMS and their relationship with SIP and ISUP signalling.
7.6 Analyze detailed H248 signalling traces between MGC & MGW during call establishment and clearing.

8 Describe the IMS architecture and signalling flows for typical PTT sessions (Optional)
8.1 Describe the PTT services and the mobile IMS architecture.
8.2 Describe the signalling sequences for a typical PTT session.
8.3 Analyze detailed Signalling Trace Analysis for a range of SIP & PTT session scenarios.

Target audience

The target audience for this course is:

System Technicians, Service Technicians, System Engineers, Service Engineers.

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU 108 8283 or equivalent (LZU108 7721, LZU 108 7192, or 1088143)

In addition the students should have a good basic understanding of general datacom and telecoms networks and good knowledge of IP networking and the TCP/IP protocol family. The prerequisites are essential in order to ensure that all the course objectives can be met.

Duration and class size

The length of the course is 3 days and the maximum number of participants is 16.

Learning situation

This course is based on theoretical instructor-led lessons and theoretical exercises based on WireShark traces.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	IMS Revision & Standards	1.5
	SIP Theory	3
	Registration trace exercise	1.5
2	SIP Theory part 2 and SDP	1.5
	Diameter Theory	1.5
	Exercises: Analysis of SIP Session establishment traces: SIP Message Routing; SIP to SIP Session inc. Charging	3
3	Megaco Theory	1
	SIP to GSTN Breakout Theory	1
	Analysis of SIP Traces continued: SIP to GSTN Breakout	2
	Analysis of SIP Traces continued: SIP to GSTN Breakout	1
	Summary & Close	1

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Voice over LTE using MMTel

LZU1087966 R1B

Description

Do you want to know how enriched voice services will be provided over LTE using the 3GPP standard MMTel? Then this seminar is something for you.
The seminar provides an overview of the MMTel and LTE/EPC interworking. It describes how the MMTel services are transported using EPC and LTE to a mobile client. The QoS mechanism, media transport and Signaling for basic traffic cases will be described.
The participant's knowledge is one of the main ingredients in a seminar. The participants promote their own and listen to the other's views. The following topics will be discussed during the seminar.
What benefits will MMTel provide when used as the voice engine for LTE?
Challenges with future inter domain (2G/3G-LTE) hand- over and roaming scenarios.
QoS challenges in the future Multimedia networks.

Learning objectives

On completion of this course the participants will be able to:

1 Explain why MMTel is a choice for providing Voice services over LTE

2 Understand how MMTel is supporting Fixed Mobile Convergence (FMC)

3 Describe the services provided by MMTel

4 Explain the network features for coexistence with 3GPP CS Telephony

5 Explain how QoS is assured in the EPC for the MMTel Services

6 List the nodes and their functions in the EPC and MMTel network architecture

7 Describe a basic call set-up scenario for MMTel over LTE

Target audience

The target audience for this course is:

System Engineers, Service Planning Engineers, Network Design Engineers, Network Deployment Engineers, Solution Architect.

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU 108 8283
LTE/SAE System Overview LZU 108 7020

Students should have a good general knowledge of telecommunications.

Duration and class size

The length of the course is 1 day and the maximum number of participants is 16.

Learning situation

This seminar is run as an Instructor Led Training or Workshop with facilitated discussions in a class room environment.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction and MMTel Services	2
	Network Features and Architecture	2
	QoS and Session Set Up	1.5
	Seminar summary and open discussions	0.5

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MMTel 11A Provisioning

LZU 108 8406 R1A

Description

Are you implementing Multimedia Telephony (MMTel) in your network? Are you facing the challenges of understanding how to add new subscribers and services to the network?

This training will help you to gain a thorough understanding of the processes of provisioning subscribers and services in MMTel 11A. Services and subscribers will be provisioned using the CAI3G interface via Ericsson Multi Activation (EMA). Self Administration of services will also be described.

Learning objectives

On completion of this course the participants will be able to:

1 Perform provisioning of MMTel 11A subscribers and services via the EMA CAI3G interface.
1.1 Use an xml editor and xml templates to create xml bodies that are sent to EMA in CAI3G commands transported on the SOAP protocol to provision subscribers and services.
1.2 Follow the appropriate User Guides to add/modify subscribers and add/modify services for a subscriber.
1.3 Explain how the provisioning process are changed and what scripts to use when using HSS in FE Configuration

2 Use self-administration via a web portal to add/modify services for a subscriber

3 Verify provisioned subscribers and services
3.1 Use the EMA Processing Log to check the provisioning processes.
3.2 Verify the provisioned data in the MMTel 11A nodes that should be provisioned (HSS, SLF, DNS/ENUM and MTAS).
3.3 Verify that it is possible to establish calls to the newly provisioned subscribers

Target audience

The target audience for this course is:

System Engineer, Service Engineer

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU 108 8283

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This training is based on theoretical and practical instructor-led sessions given in both classroom and in a technical environment using equipment and tools, which can be accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Perform provisioning of subscribers and services using CAI3G	6
2	Perform provisioning of subscribers and services using CAI3G, continued	2
	Perform self administration of subscribers and services	2
	Verify the provisioned users and services	2

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SBG3.1 Operation and Configuration for IMS

LZU1087968 R1B

Description

Without SBG the IMS network is vulnerable to both internal and external attacks. This course will help you to understand the importance of SBG in IMS network from a security point of view and its support for other features and functions. It will also cover operational aspects and configuration so that you can operate and configure the Ericsson SBG 3.1 with FD1 in your network.

Learning objectives

On completion of this course the participants will be able to:

1 Describe SBG Features and Functions
1.1 List SBG Interfaces and Protocols
1.2 List and Describe SBG Features and Functions
1.3 Describe the mapping of SBG functions to standard
1.4 Describe the position of SBG in various IMS solutions.

2 Describe SBG System Architecture
2.1 Describe the logical architecture of SBG
2.2 Describe the Hardware and Software implementation of SBG

3 Perform Surveillance activities (basic operation and maintenance) of SBG
3.1 Login and navigate the SBG element manager and the SBG CPI
3.2 Monitor the SBG Status and Interfaces
3.3 Monitor SBG Alarms and Events
3.4 Initiate and collect SBG logs
3.5 Perform SBG Backup
3.6 Initiate and collect SBG statistics

4 Describe network use cases with SBG
4.1 Describe signaling flow via SBG
4.2 Describe media flow via SBG

5 Describe the Installation process of SBG
5.1 Describe the SBG Installation process
5.2 Describe possible options for SBG installation
5.3 Describe the IS network configuration for SBG
5.4 Describe the Netconf service and how it is used to perform configuration of the SBG.

6 Configure and verify the SBG Interworking interfaces
6.1 Configure and verify SBG interface towards access or foreign network
6.2 Configure and verify SBG interface towards core network
6.3 Configure and verify SBG e2 interface (Geographical Location)
6.4 Configure and verify SBG Rq interface (Admission Control)
6.5 Describe the configuration of the (optional) SBG Rx Interface (PCRF)
6.6 Describe and configure the CLF interface and describe typical signalling flows for calls using the CLF service, such as Emergency Calls.
6.7 Configure and verify SBG Rf interface (Charging)
6.8 Configure and verify SBG interface towards DNS
6.9 Configure and verify SBG signaling and media routing
6.10 Configure and verify SBG function specific parameters.

7 Describe and Configure SBG Features
7.1 Describe the handling of NAPTR failures as defined in RFC 3263 default procedure.
7.2 Describe and configure Hosted NAT traversal.
7.3 Describe and configure the User agent whitelist.
7.4 Describe how to display contact bindings for a specific user.
7.5 Describe; write; load and implement simple SMMSL rules and check they function correctly.
7.6 Describe the (optional) PCRF function

8 Describe and configure the SBG TISPAN P-CSCF functionality
8.1 Describe the new role which allows an A-SBG to act as a P-CSCF towards a core network.
8.2 Describe and configure the new SIP Mw-reference point.
8.3 Describe and configure the P-Charging-Vector generated for the P-CSCF.
8.4 Describe and configure the SBG P-CSCF handling of Via headers compared with the SBG in an A-ALG role.
8.5 Describe and configure the handling of Number portability parameters in the Req-URI.
8.6 Describe and configure the handling of Path headers in REGISTER requests.
8.7 Describe the handling of the P-Associated-Identity header.
8.8 Describe the default hard-coded topology hiding for P-CSCF role.
8.9 Describe and configure an E-CSCF as outgoing proxy for emergency calls using UDP and/or TCP as transport protocol.
8.10 Describe and configure enhanced geographical redundancy for E-CSCFs.
8.11 Describe the additional impacts on A-ALG due to the inclusion of TISPAN P-CSCF.

9 Perform root cause analysis of faults in SBG
9.1 Analyze and solve SBG alarms
9.2 Analyze and solve end to end signaling faults

10 Set up and analyze performance measurements for SBG

11 Describe how to configure a secure and redundant SBG
11.1 Describe the fallback option for Geographical redundancy of SBG

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Target audience

The target audience for this course is:

The target audience for this course is:
System Engineers, Service Engineers.
This audience is responsible for operation and configuration of the SBG.

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU 108 8283
IMS Signaling LZU 108 7193
IS 2.0 Overview LZU 108 7085
IS 2.0 Operation and Configuration LZU 108 7086

Duration and class size

The length of the course is 3 days and the maximum number of participants is 8.

Learning situation

The course is based on the theoretical and practical instructor-led lessons given in a classroom environment with remote access to the SBG.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Features and Functions	2
	Architecture	1
	Surveillance Activities	1.5
	SBG Network use cases	1.5
2	SBG Installation	1
	SBG Configuration	3
	P-CSCF Configuration	2
3	Alarms and Events analysis	2
	SBG measurement analysis	1
	SBG Fault Finding	2
	SBG Node Hardening	1

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IMS 11A PSTN Gateway Operation and Configuration

LZU1088282 R1A

Description

Do you need competence in how to operate and configure the IS PSTN GW? This course covers just that. It will provide the participants with the knowledge to perform Surveillance, Operation and Configuration activities on the PSTN GW when used in an IMS context.
It consists of theory and practical exercises on how to operate and configure the PSTN GW on Ericsson Integrated Site (IS). This includes configuration of signaling interfaces towards IP and TDM networks, number analysis and routing.
The PSTN GW consists of the MGC 6.1 and MGW 2.0 nodes which are interconnected via H.248.

Learning objectives

On completion of this course the participants will be able to:

1 Describe IMS 11A PSTN Gateway with its Features and Functions
1.1 Understand the position of the PSTN GW within the IMS 11A based solutions
1.2 Name the IS PSTN GW Interfaces and Protocols
1.3 List and Describe the MGC Features and Functions
1.4 Explain the terminology used in the PSTN GW

2 Describe PSTN GW System Architecture
2.1 Present the logical architecture of PSTN GW
2.2 Describe the Hardware and Software implementation
2.3 Explain the High Availability feature of the MGC 6.1

3 Handle Surveillance activities on the IS PSTN GW
3.1 Use the PSTN GW element manager together with the node documentation
3.2 Monitor the PSTN GW Status and Interfaces
3.3 Interpret PSTN GW Alarms and Events
3.4 Create and fetch the PSTN GW logs
3.5 Perform PSTN GW Backup
3.6 Initiate and collect PSTN GW statistics

4 Explain network use cases with PSTN GW
4.1 Illustrate the call flows for the break out and in scenarios via PSTN GW

5 Configure and verify PSTN GW Interworking interfaces
5.1 Configure the PSTN GW H.248 interface
5.2 Configure the PSTN GW interface (signaling and media) towards IMS core network
5.3 Configure the PSTN GW interface (signaling and media) towards PSTN network

5.4 Define PSTN GW number and routing analysis
5.5 Create the PSTN GW DNS and Charging interfaces
5.6 Establish an end-to-end call using the configured interfaces and data

6 Perform root cause analysis of faults in PSTN GW
6.1 Analyze and solve PSTN GW alarms
6.2 Trace and solve end to end signaling fault

7 Understand how to configure a secure and redundant PSTN GW

Target audience

The target audience for this course is:

System Engineers and Service Engineers with responsiblity for operation and configuration of the PSTN GW.

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU 108 8283
IMS Signaling LZU 108 7193
IS 2.0 Overview LZU 108 7085
IS 2.0 Operation and Configuration LZU 108 7086
The prerequisites are essential in order to ensure that all the course objectives can be met.

Duration and class size

The length of the course is 4 days and the maximum number of participants is 8.

Learning situation

The course is based on the theoretical and practical instructor-led lessons given in a classroom environment.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	PSTN GW Introduction and Architecture	3
	PSTN GW Surveillance activities and Practical Exercises	2
	PSTN GW Network Use cases and Practical Exercises	1
2	PSTN GW Initial Node Configuration and Practical Exercises	4
	PSTN GW Configuration (Adding of E1) and Practical Exercises	2
3	TDM Side configuration (SS7/ISUP and TDM transport) and Practical Exercises	2
	SIGTRAN Configuration (SS7/ISUP and IP transport) and Practical Exercises	2
	Number Analysis and Call Routing and Practical Exercises	2
4	Root Cause Analysis of faults	3
	PSTN GW Performance Management	1
	PSTN GW Node Hardening	1
	Summary	1

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IPWorks 7.0 Operation and Maintenance for IMS

LZU1087974 R1B

Description

Do you need to know how to configure IPWorks, do basic maintenance tasks, and learn some tips and tricks? IPWorks is an advanced product with several user interfaces, a layered architecture, and a combination of disk-based and memory-based databases. This course provides practical knowledge on the operation and maintenance of IPWorks. The course emphasizes the knowledge of configuring the DNS and ENUM (with Number Portability) services. The students are introduced to fault, node and performance management of the system. Furthermore, the course covers some security aspects of IPWorks. With the help of the manual provided in this course, and the guidance of the instructor, the attendees will be able to learn the most efficient ways of performing operation and maintenance procedures.

Learning objectives

On completion of this course the participants will be able to:

1 Understand the purpose of IPWorks and the services it provides

2 Explain the architecture of IPWorks

3 Recount IPWorks redundancy options

4 Describe IPWorks deployment scenarios

5 Work with IPWorks interfaces

6 Configure various parts of the system
6.1 Configure DNS server
6.2 Operate ENUM server

7 Execute fault management
7.1 Inspect alarms and work with the SNMP agents
7.2 Configure and view logs

8 Practice maintenance tasks
8.1 System backup and restore
8.2 Configure and view statistics reports

9 Handle User management

Target audience

The target audience for this course is:

Service Deployment Engineer, Network Deployment Engineer, System Engineer, Service Engineer, System Administrator.

Prerequisites

Successful completion of the following courses:

IMS 5.0 Overview LZU 108 7721
Fundamental knowledge of IP protocol suite and Linux OS.

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in technical environment using equipment and tools.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Introduction	1
	Architecture	1
	Deployment scenarios	1
	User interfaces	1
	Configuration Management	2
2	Configuration Management	2
	Fault management	1
	Backup and restore	1
	Performance Management	1
	User Management	1

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CSCF 11A HSS/SLF 11A Operation and Configuration

LZU1088281 R1A

Description

This course will provide the participants with the knowledge to perform Surveillance, Operation and Configuration activities on the IMS Core nodes: CSCF, HSS & SLF.

Learning objectives

On completion of this course the participants will be able to:

1 Describe CSCF, HSS, SLF node functions and interworking
1.1 Describe CSCF, HSS, SLF node functions
1.2 Explain nodes interworking, interfaces and protocols
1.3 Describe CSCF, HSS, SLF nodes architecture
1.4 Explain how CSCFs, HSS, SLF support basic session establishment procedures
1.5 Describe the difference between HSS Classic Deployment and HSS-FE Deployment.

2 Perform surveillance tasks on CSCF, HSS, SLF
2.1 Describe User Access
2.2 Navigate the Element Manager
2.3 Use the CPI Description documents to identify the function of CSCF, HSS, SLF parameters and to perform basic configuration checks of the CSCF, HSS, SLF nodes and interfaces
2.4 Perform system backups
2.5 Perform software checks
2.6 Perform CSCF, HSS, SLF nodes status checks
2.7 Schedule maintenance tasks
2.8 Explain the alarms connected to CSCF, HSS, SLF, view alarm lists, perform alarm searches and fetch relevant logs

3 Explain how to configure CSCF, HSS, SLF in a secure and redundant way
3.1 Explain HSS Redundancy Solutions
3.2 Explain SLF High Availability
3.3 Explain how node hardening is achieved for CSCF, HSS, SLF
3.4 Explain parameters in CSCF, HSS, SLF that are important for security
3.5 Explain the authentication methods available in CSCF/HSS

4 Configure and verify the CSCF, HSS, SLF components and interworking interfaces
4.1 Configure and verify the Cx/Dx interfaces between CSCF and HSS/SLF
4.2 Configure parameters for Digest and NBA authentication methods
4.3 Configure and verify the Rf/Ro interfaces between CSCF and a Charging Mediator

4.4 Configure and verify the Sh/Dh interface between AS and HSS/SLF
4.5 Configure and verify the interface between HSS-FE and CUDB
4.6 Configure and verify the interface between CSCF and DNS/ENUM
4.7 Configure and verify the CSCF SIP interfaces
4.8 Configure and verify Number Normalization tables in CSCF
4.9 Configure and verify the BGCF (External Network Selection)
4.10 Configure and verify Policy Control Parameters on CSCF and HSS
4.11 Configure and verify Service Profiles containing Triggers in HSS
4.12 Configure and verify Individual Service Profiles and Triggers in HSS
4.13 Configure Charging Profiles in CSCF and HSS
4.14 Configure and verify the Emergency Call Handling in E-CSCF
4.15 Configure and verify SLF Parameters

5 Perform root cause analysis of faults in the CSCF, HSS, SLF
5.1 Resolve CSCF, HSS, SLF related alarms
5.2 Relate IMS end-to-end session faults to faulty parameter settings in CSCF, HSS, SLF
5.3 Use session traces in order to localize and solve CSCF, HSS, SLF faults
5.4 Find and solve faults in HSS, SLF related to subscriber provisioning

6 Handle Performance management for CSCF, HSS, SLF
6.1 Explain how to monitor the performance of the CSCF, HSS, SLF
6.2 Configure and verify CSCF, HSS, SLF measurements

Target audience

The target audience for this course is:

System Engineers, Service Engineers.

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU1088283
IMS Signaling LZU1087193
TSP 6 Operation and Maintenance LZU1087341
The prerequisites are essential in order to ensure that all the course objectives can be met.

Duration and class size

The length of the course is 5 days and the maximum number of participants is 6.

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Learning situation

This course is based on theoretical and practical instructor-led lessons given in both classroom and in a technical environment using equipment and tools, which are accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	CSCF, HSS, SLF node functions and interworking	2
	Configuration parameters and surveillance tasks	4
2	Configuration parameters and surveillance tasks	6
3	Security and redundancy	1
	Configuration and verification of interworking interfaces and parameters	5
4	Configuration and verification of interworking interfaces and parameters	6
5	Configuration and verification of interworking interfaces and parameters	2
	Performing root cause analysis of faults	3
	Performance Management	1

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MTAS 11A Operation and Configuration

LZU1088280 R1A

Description

This course will provide the participants with a thorough understanding of MMTel 11A solution architecture, basic traffic scenarios and signalling flows as well as the knowledge to perform Surveillance, Operation and Configuration activities on the Multimedia Telephony Application Server MTAS 11A.

Learning objectives

On completion of this course the participants will be able to:

1 Describe the MMTel 11A Solution, MTAS node functions and interworking between MTAS and the other IMS Nodes
1.1 Explain the MMTel 11A Solution Architecture
1.2 Describe the MTAS node functions
1.3 Describe the MTAS node architecture
1.4 Explain the subscriber data handling concept in MTAS and the role of HSS
1.5 Explain the MTAS node interworking, interfaces and protocols
1.6 Describe signaling flows in MMTel network for basic traffic scenarios: Registration, SIP-to-SIP session, SIP-to-PSTN session
1.7 Describe MTAS provisioning concept

2 Perform surveillance tasks on MTAS
2.1 Describe User Access
2.2 Navigate the Element Manager
2.3 Use the CLI Description documents to identify the function of MTAS parameters and to perform basic configuration checks of the MTAS node and interfaces
2.4 Perform system backups
2.5 Perform software checks
2.6 Perform server status checks
2.7 Schedule maintenance tasks
2.8 Explain the alarms connected to MTAS, view alarm lists, perform alarm searches and fetch relevant logs

3 Configure and verify the MTAS components and interworking interfaces
3.1 Configure and verify the Sh/Dh interface between MTAS and HSS/SLF
3.2 Configure and verify the Rf/Ro interfaces between MTAS and a Charging Mediator
3.3 Configure and verify the Mp interface between MTAS and MRFP
3.4 Configure and verify the Number Normalization tables in MTAS

3.5 Configure XDMS subsystem

4 Configure supplementary services on the MTAS node, explain the signaling sequences and analyze Wireshark traces
4.1 Configure Communication Diversion service
4.2 Configure Multi-party Conference service
4.3 Configure Communication Barring service
4.4 Configure Identity presentation / Identity restriction service
4.5 Configure Communication Hold service
4.6 Configure Communication Waiting service
4.7 Configure Carrier Select service
4.8 Configure Supplementary Service Codes service
4.9 Configure Other services

5 Describe and perform user self-provisioning
5.1 Describe user self-provisioning alternatives
5.2 Use of the Web GUI for basic self-provisioning

6 Handle Performance management for MTAS
6.1 Explain how to monitor the performance of the MTAS
6.2 Configure and verify MTAS measurements

7 Perform root cause analysis of faults in the MTAS
7.1 Resolve MTAS related alarms
7.2 Relate IMS end-to-end session faults to faulty parameter settings in MTAS
7.3 Use session traces in order to localize and solve MTAS faults
7.4 Find and solve faults in MTAS related to subscriber provisioning

Target audience

The target audience for this course is:

System Engineers, Service Engineers.

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU1088283
IMS Signaling LZU1087193
TSP 6 Operation and Maintenance LZU1087341
The following course is recommended but not a mandatory pre-requisite:
MMTel Provisioning LZU1087702
The prerequisites are essential in order to ensure that all the course objectives can be met.

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Duration and class size

The length of the course is 4 days and the maximum number of participants is 6.

Learning situation

This course is based on theoretical and practical instructor-led sessions given in both classroom and in a technical environment using an MMTel System, which can be accessed remotely.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	MTAS node functions and interworking	2
	MTAS configuration parameters	2
	MTAS surveillance tasks	2
2	MTAS surveillance tasks	2
	Configuration and verification of MTAS interworking interfaces and functions	4
3	Configuration and verification of MTAS Supplementary Services parameters via O&M GUI and user self-provisioning; Signaling traces analysis	6
4	Configuration and verification of MTAS Supplementary Services parameters via O&M GUI and user self-provisioning; Signaling traces analysis	2
	Performing root cause analysis of faults	3
	Performance Management	1

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IMS Operation and Maintenance Advanced

LZU1087209 R1C

Description

This course provides the participants with competence needed to perform advanced operation and maintenance tasks on the complete IMS network.

The course is mainly practical and includes tasks like resolving alarms as well as locating and solving end-to-end session establishment faults which requires an undestanding of complex signaling traces.

Most of the course time is dedicated to the fault finding activity in the fully configured IMS lab with a detailed analysis and discussions. Special attention is paid to the node interworking and signaling protocols. The course covers several network nodes like CSCF, HSS, SLF, IP Works, SBG, PSTN Gateway, Application Server(s).

Learning objectives

On completion of this course the participants will be able to:

1 Analyze signaling traces in the IMS network.
1.1 Explain common signaling traces.
1.2 Explain service specific signaling traces.

2 Use protocol traces to locate, analyze and solve faults.
2.1 Configure and use Wireshark to capture and display relevant data in traces.
2.2 Perform Wireshark traces in order to locate, analyze and solve end-to-end session faults in the IMS network.

3 Solve alarms related to the IMS network nodes.
3.1 Locate the root cause of the alarms and solve them using IMS Customer Product Information (CPI) library.

Target audience

The target audience for this course is:

System Engineers, Service Engineers

Prerequisites

Successful completion of the following courses:

IMS 11A Overview LZU1088283
IMS Signaling LZU1087193

Students are required to have at least 6 months IMS Core practical experience. These prerequisites are essential in order to ensure that all the course objectives can be met.

The following courses are recommended:
TSP 6 Operation and Maintenance LZU1087341
CSCF 11A HSS/SLF 11A Operation & Configuration LZU1088281
IMS 11A PSTN Gateway Operation and Configuration LZU1088282
SBG 3.1 Operation and Configuration for IMS LZU1087968
IPWorks 7.0 Operation and Configuration for IMS LZU1087974
MTAS 11A Operation and Configuration LZU1087967

Duration and class size

The length of the course is 3 days and the maximum number of participants is 6.

Learning situation

This course is based on theoretical and practical instructor-led sessions given in both classroom and in a technical environment using an MMTel System, which can be accessed remotely.

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Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated Time (hours)
1	Examination of different signaling traces	3
	Locate and solve end-to-end session faults and alarms CSCF, HSS, SLF, IP Works, SBG, PSTN Gw, AS(s)	3
	Analysis and Discussions	
2	Locate and solve end-to-end session faults and alarms CSCF, HSS, SLF, IP Works, SBG, PSTN Gw, AS(s)	6
	Analysis and Discussions	
3	Locate and solve end-to-end session faults and alarms CSCF, HSS, SLF, IP Works, SBG, PSTN Gw, AS(s)	6
	Analysis and Discussions	

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