

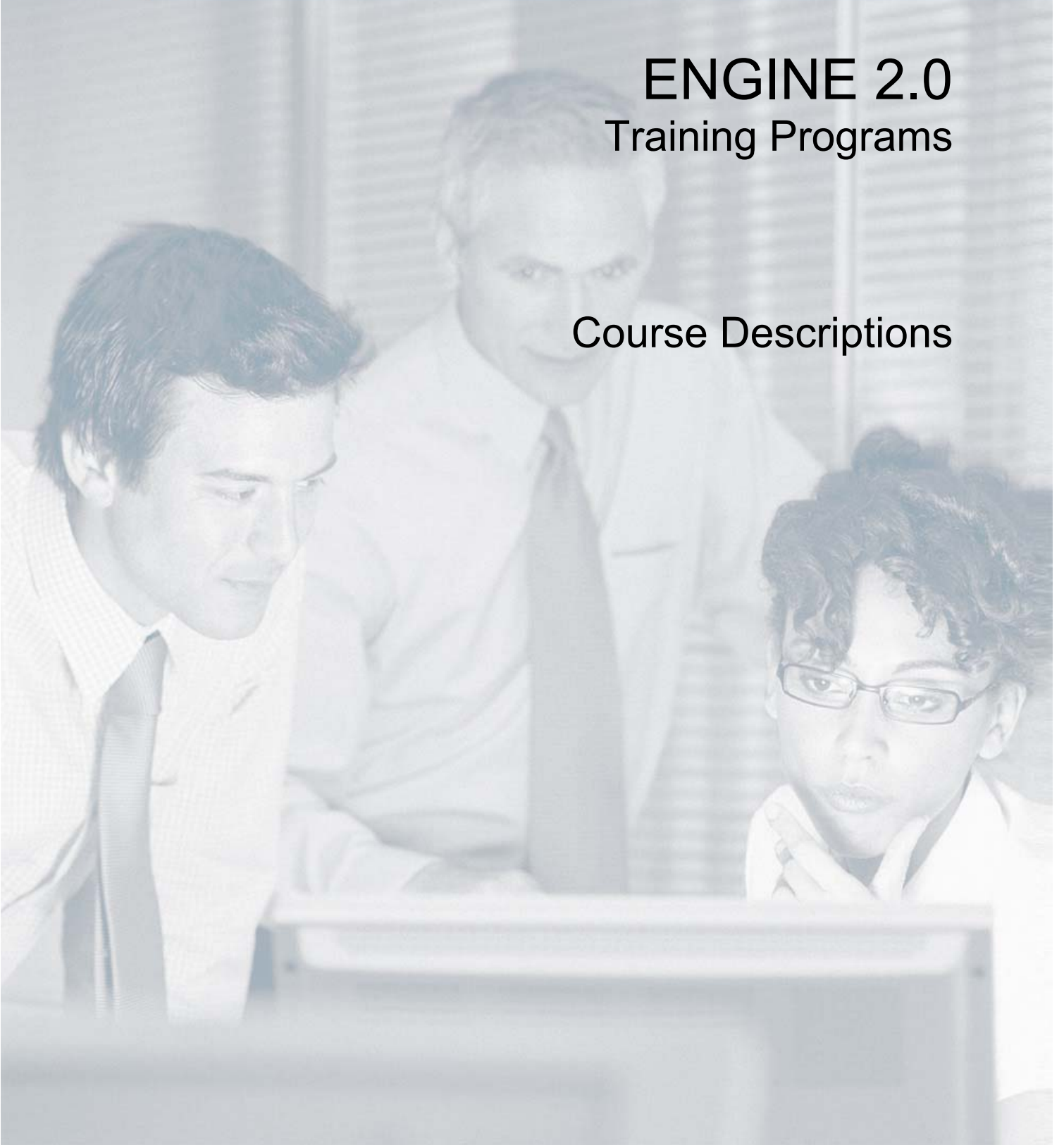


Global Services

ENGINE 2.0

Training Programs

Course Descriptions





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Access Networks, An Overview (WBL)

LZU 108 5944 R1A

Description

This course provides a comprehensive introduction to the basic concepts and technologies in both fixed and mobile access networks.

Learning objectives

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

- 1 Understand fixed network connections: access networks
 - 1.1 Outline basic concepts, bandwidth and technologies in access networks
 - 1.2 Describe access based on telephone networks (analogue and digital)
 - 1.3 Outline other access network technologies, such as, cable TV, fiber optics and microwave

- 2 Understand the basic concepts of mobile access
 - 2.1 Outline different mobile access (GSM, GPRS and UMTS)
 - 2.2 Explain GSM architecture and outline a basic traffic case
 - 2.3 Explain GPRS architecture and outline a basic traffic case
 - 2.4 Explain UMTS architecture and outline a basic traffic case
 - 2.5 Define mobile IP for IPv4 and IPv6

Target audience

The target audience for this course is anybody wishing to gain a basic understanding of modern access network technologies.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites

There are no prerequisites for this course.

Duration

The length of the course is 2 hours 30 mins.



Learning situation

The course is a web based learning product.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• Fixed Network Connections: Access Networks	1 hour
1	<ul style="list-style-type: none">• Connecting While Travelling: Mobile Access	1 hour 30 min



APG 40 Introduction

LZU 1085869 R1A

Description

This course introduces students to the APG 40 nodes within the INGO project. The students will get an overview of the possibilities of the APG 40. The course consists of the following main parts: Introduction to different I/O systems, the APG 40 build-up (HW and SW) and the user interface.

It is an instructor-led theoretical learning product with, if possible, a demonstration on the system. This course does not go into the details of configuration parameters in APG 40.

Learning objectives

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

- 1 Introduction of the APG 40
- 1.1 Have knowledge about different I/O systems: IOG20, APG3x and APG40 and in which systems they can be used.
- 2 Performance
- 2.1 Be familiar with the performance of the APG40 in comparison to IOG20 and APG3x.
- 3 Hardware
- 3.1 Have knowledge about the APG40 Hardware (LBB, RAID, and IPN).
- 4 Software
- 4.1 Have knowledge about the APG40 Software (LBB, APM, ACS, OCS, MSC (APIO), FOS, and STS).
- 5 Alarm System and APG system handling.
- 5.1 Describe the Alarm system within APG40 (PRC, USA, and SSU).
- 5.2 Have knowledge about function changes (hard- and software).
- 5.3 Have knowledge about the backup- and restore procedure for the APG40 (not APZ dumping).
- 6 Connection to the APG 40.
- 6.1 Have knowledge about the Local Craft Terminal (LCT).
- 6.2 Be able to describe how a user may access the AXE system via APG: pcANYWHERE, Telnet, WinFiol, AP-mode, CP-mode.
- 7 Summary

Target Audience

The Target Audience for this course is Marketing and Sales personnel.

Prerequisites

Students should have participated following course:

Understanding the New Telecom LZU 107 106

Duration and class size

The length of the course is ½ day and the maximum number of participants is 16.

Learning situation

The course is theory only seminar. The instructor may give, if possible, a demonstration on the system.



APG 40 FOS Operation

LZU 108 2021

Description

FOS (Flexible Output System) is responsible for the formatting of the charging information into the Toll Ticketing (TT) and to distribute the formatted data to Operations Systems such as Billing Centers or other post Processing Systems.

The LZU 108 2021 APG40 FOS, OPERATION course explain how to perform:

The description of the General Operation of FOS in APG40
The verification of the transference of billing data from AXE to APG40
Backup of billing data
Verify the FOS parameter configuration
Handle FOS alarm.

Learning objectives

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

- 1 Operate and maintain FOS on the Adjunct Processor
- 2 Use different tools on the Adjunct Processor and FOS
- 3 Recognize and solve the most frequent error situation in FOS
- 4 Identify and use the correct OPI to solve the alarms
- 5 Configure the Flexible Formatter

Target Audience

The Target Audience is staff working with FOS on the Adjunct Processor platform in fixed and mobile telecommunications networks. Also Ericsson employees involved in Field Support and Maintenance work can belong to the target audience.

Prerequisites

Administering Microsoft Windows NT 4.0

APG 40 Operation & Maintenance (LZU 108 5870)

Duration and class size

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

Learning situation

The recommended learning method for this courses is Task-Oriented, based on cases that are as close to real situation of the customer's staff as possible.



APG 40 Operation & Maintenance

LZU 1085870 R2A

Description

This course will introduce students to operational as well as maintenance issues on the APG40 platform. After attending the course the students will be able to work practically with common APG40 handling tasks.

Learning objectives

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

- 6 Describe the APG40 Hardware and Software on an overview level
- 6.1 Know the characteristics of all hardware boards and connections
- 6.2 Understand how the APG40 is built up
- 7 Be able to use different interfaces to connect to the APG40 platform
- 7.1 Connect to the APG40 using Telnet, WinFiol or pcANYWHERE
- 8 Describe the Alarm System on an overview level
- 8.1 Understand how the AEH, ALH, and PRC co-operates to raise alarms
- 9 Use the GOH to send data
- 9.1 Use the CDH, AFP and DBO for transfer of data to remote systems
- 10 Collect statistics using STS
- 10.1 Configure the STS on AP to request counter data from the CP
- 11 Have a basic understanding of the concept AD-devices
- 11.1 Be able to use AD-devices for command input and for routing of printouts
- 12 Load the CP from the APG40
- 12.1 Use CPT to perform an initial load of the AXE-CP
- 13 Perform backup and restore of the APG40 platform
- 13.1 Use burbackup and burrestore commands according to OPIs
- 14 Upgrade the APG40 system
- 14.1 Use Hard Function Change and Soft Function Change to install new software and/or update parameters

Target audience

The target audience for this course are personnel working with Network Maintenance, Network Operation, Network Development and System Administration.

Prerequisites

The participants should be familiar with Windows NT and have AXE knowledge equal to the following course: *LZU 108775 AXE Survey*

Duration and class size

The length of the course is 4 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 a technical environment using equipment and tools, which are accessed remotely.



APG 40 Installation & Configuration

LZU 108 5871 R2A

Description

This course will prepare participants for installation and configurational tasks on the APG40. After the course the students will be able to install and put an APG40 into operation

Learning objectives

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

- 15 Start up and Test the APG40
- 15.1 Follow the Test Instruction, Start up and Test of APG40 to install and configure the APG40 for operation
- 15.2 Change the site parameters
- 16 Understand the domain concept and know how a MUD can be set up and used
- 16.1 Use the User manager for domains to Add trusts between domains
- 17 Add user accounts to the system
- 17.1 Add users with different access rights to the APG40 and to the CP
- 18 Know about the different restore procedures
- 18.1 Understand when to use single node restore, cluster restore or Disaster Recovery and how a Node Change can be performed
- 19 Migrate to APG40 from IOG20
- 19.1 Undefine the IOG20 and move all operations to APG40
- 20 Configure the Antivirus for APG40
- 20.1 Shedule Virus scans and update the virus definitions

Target audience

The target audience for this course are personnel working with Network Maintenance, Network Operation, Network Development and System Administration.

Prerequisites

The participants should be familiar with Windows NT and have AXE knowledge equal to the following course: *LZU 108775 AXE Survey*

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 a technical environment using equipment and tools, which are accessed remotely.



APG40 Recovery Procedures

LZU 108 6326 R1A

Description

This course will introduce students to different recovery procedures on the APG40. These procedures will be described and practically performed on APG40 hardware.

After attending this course the students will know how to make a proper backup of the APG40 System and be able to restore the system using the recovery procedures described.

Learning objectives

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

1. Perform a Health Check of an APG40 System
 - 1.1. Use an audit script to check the status of a fault suspected APG40
2. Decide which Recovery Procedure to use
 - 2.1. Select between the existing OPI's for restoring a system
3. Create a Trouble Report
 - 3.1. Use the correct TR tools and documents at the right time
4. Make a proper backup of the APG40 System
 - 4.1. Understand how and what and when to backup an APG40
5. Perform Restore on the APG40 system
 - 5.1. Perform both single node and cluster node restore
6. Perform the AP, System Disaster Recovery OPI to restore an APG40 System
 - 6.1. Restore a single or both system disks on the APG40 from a LCT
7. Do a Quorum Restore on the APG40 System
 - 7.1. Restore the cluster quorum
8. Initiate a data disk restore on the APG40 System
 - 8.1. Repair failed disks and get them up in an optimal state



Target audience

The target audience for this course is staff working both for Ericsson and for External Companies with maintenance and support of APG40 Systems

Prerequisites

Successful completion of the following courses or equivalent knowledge:

- LZU1085870, APG40 Operation and Maintenance

Duration and class size

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

Learning situation

This course is run only as instructor-led training (ILT).

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate. (This paragraph is mandatory).

Day	Topics in the course	Estimated time
1	<ul style="list-style-type: none">• Health Check• Decide what action to take• Trouble Report• Burbackup procedure	1 day
2	<ul style="list-style-type: none">• Burrestore procedure• Quorum Restore• Data Disk Restore• Node Change• Other recovery methods	1 day
3	<ul style="list-style-type: none">• AP, System Disaster Recovery	1 day



APZ 212 30/33 Delta

LZU 108 1446

Description

This course describes the differences between the APZ 212 20 and the APZ 212 30/33, both in hardware and in functionality.

Learning Objectives

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

- 1 Describe the hardware structure of APZ 212 30/33
- 2 Describe the new functions of APZ 212 30/33
- 3 Name and explain the new commands

Target Audience

The course is intended for all staff working with installing, replacement or trouble shooting on APZ 212 30/33.

Prerequisites

The participant should be familiar with handling of older APZ 212 versions.

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This learning product is recommended for:

Instructor-led lessons

Other forms of education could be used.



ATM

LZU 102 320

This course takes a close look at the purpose and principle of the Asynchronous Transfer Mode (ATM). From cell format over circuits and connections to ATM network traffic and ATM internetworking, the course explores the evolution and trends of ATM networking. It contrasts alternative technologies including IP and Frame Relay and discusses multi-service traffic types and quality of service (QoS).

Learning Objectives

After completing this course, the participant will be able to understand and describe in detail the following technologies:

- 1 Basic ATM Concepts
- 2 Standardization
- 3 The Physical Layer
- 4 The ATM Layer, particularly SDH
- 5 ATM Adaptation Layers
- 6 Signalling and Addressing
- 7 UNI Signalling
- 8 PNNI Routing And Signalling
- 9 B-ICI
- 10 Network Management
- 11 ILMI and Address Registration
- 12 Traffic Control
- 13 Resource Allocation
- 14 Network Performance
- 15 ATM Switch Architecture
- 16 Voice Over ATM
- 17 Trends In ATM Networks

Target Audience

Anyone who is interested in learning about ATM

Prerequisites

Anybody intending to participate in this course should ideally have a general understanding of data communications and telecommunications

Duration and class size

The length of the course is 1 day and the maximum number of participants is 12.



Learning situation

This product is an instructor-led course.

Theoretical lessons/exercises and practical study cases



AXD 301/305 Installation and Maintenance

LZU 102 326

Description

This course will give the students a general understanding of the AXD 301/305 hardware structure, hands-on experience in installing AXD 301/305 switching hardware and basic hardware maintenance.

Learning Objectives

After completing this course, the student will be able to:

- 1 Install the AXD 301/305 switching system
- 2 Perform basic troubleshooting of the AXD 301/305 switching system

Target Audience

This course is intended for engineers and technicians who will install AXD 301/305 hardware. This course is also a prerequisite for the AXD 301/305 System Configuration (LZU 102 327) and AXD 301/305 Signalling and Routing (LZU 102 328) courses.

Prerequisites

ATM (LZU 102 320)

AXD 301 Overview (LZU 102 179) or equivalent knowledge.

Duration and class size

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

Learning situation

Theoretical lessons/exercises and practical study cases.



AXD 301/305 System Configuration

LZU 102 327

Description

On this course students are taught how to configure and manage the AXD 301/305 ATM switch.

Learning Objectives

After completion of this course, students will be able to:
Perform basic configuration and maintenance of the AXD 301 switch.

This will include the configuration of permanent connections, configuration of IP communication, performance management, charging output, software maintenance and network synchronization

Target Audience

This course forms part of the certification program at E² *plus* level. It is suited to anyone who is maintaining an AXD 301 switch in a network environment.

Prerequisites

AXD 301 Overview Course (LZU 102 179)

AXD 301/305 Installation & Maintenance Course (LZU 102 326)

Duration and class size

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

Learning situation

This product is an instructor-led course.

Theoretical lessons/exercises and practical study cases.



AXD 301/305 - Signalling and Routing

LZU 102 328

Description

On this course students are taught how to configure and manage the signalling systems used on the AXD 301/305 ATM switch.

Learning Objectives

After completion of this course, students will be able to:

- 1 Understand the signalling systems used on the AXD 301 switch
- 2 Perform configuration and setup of the interfaces

Target Audience

This course is suited to anyone who is maintaining an AXD 301 switch in an advanced network environment.

Prerequisites

None

Duration and class size

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

Learning situation

This product is an instructor-led course.

Theoretical lessons/exercises and practical study cases.



AXE Enabler 1.0 Delta

LZU 108 5933

Description

This course provide the participants with the knowledge about the functionality in AXE Enabler 1.0. The differences between Local 7.2/TL4.2/TG5.2 and AXE Enabler 1.0 modern/classic will be the main issues to describe but even the differences from earlier product lines will be mentioned.

Learning objectives

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

1. Describe the node types supported by the AXE Enabler 1.0.
2. Describe the main differences between L7.2/TL4.2/TrG 5.2 and AXE Enabler 1.0 Classic and Modern.
3. Describe the main hardware changes in HWM1.5 platform and the support of large switches.
4. Understand the main functions and features in APZs supporting Enabler 1.0.
5. Describe the IPN network solution.
6. Understand the handling of AS Parameters Using DBS Commands
7. Understand the Remote connection of Internet Access Server
8. Understand how comprehensive network signalling is realised via inclusion of ET155. SS7, PRA and V5.x signalling using signalling terminals on RPG3
9. Understand the Engine Access Ramp functions.
10. Describe the AXE Enabler 1.0 functions in an EIN 2.0 network and migration support towards EIN2.0.
11. Describe the ported products to AXE Enabler 1.0 GAS

Target audience

The target audience for this course for personnel working with Operation, Maintenance and support of local and translocal applications

The course can be given to Ericsson personnel and external customers



Prerequisites

The participants should be familiar with:

Local 7.2/ Translocal 4.2 application (or equivalent)

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 instructor-led lessons and practical exercises in the classroom and in a training exchange environment using the AXE Enabler 1.0 SW.



AXE for the 21st Century (MBL)

LZU 108 107/C

Description

AXE for the 21st Century constitutes a dynamic update to the existing AXE Survey course. This enhanced product offers a general, and yet comprehensive, view of the AXE system. AXE platforms such as switching, signalling, control system and operation & maintenance are examined. The applications that run on these platforms such as Business Communications, Intelligent Networks, Mobile Communications, PSTN/ISDN Networks and the Internet are described. A description of the AXE hardware, BYB 501, is also included. Designed primarily for those with a basic grounding in telecommunications who require a broad knowledge of the AXE system, the course provides an essential and invaluable contribution to the user's understanding of AXE.

Objectives

On completion of this course the students will have a broad knowledge of:

- 1 Trends in modern communications and how AXE has developed in response to them
- 2 Major characteristics and functional structure of AXE
- 3 Main platforms within AXE, such as switching and signalling
- 4 Applications that run on the AXE platform, such as Business Communications, Mobile Communications, Intelligent Networks, PSTN/ISDN and the Internet
- 5 Centralized and local operation, maintenance and management features of the AXE system including the TMOS and XMATE products
- 6 Major AXE product lines
- 7 Advanced AXE Hardware (BYB 501)

Target Audience

The target group for this product is:

Management staff of Network Operators and Service Providers

Technical staff of Network Operators and Service Providers

New recruits within Ericsson, both technical and non-technical

Experienced Ericsson staff that want to refresh or broaden their knowledge

Prerequisite

A good knowledge of Telecoms concepts

Duration

The length of the course is approximately 22 hours.



Learning situation

Multimedia-Based Learning (MBL)

Minimum Configuration

Intel 486 processor (66 MHz)
8 MB RAM
CD-ROM
256 color display
Windows 3.1

Recommended configuration

Pentium processor
16MB RAM
CD-ROM-4X
Sound card & speakers
Windows 95



AXE Survey

LZU 108 775

Description

This course gives the participants an overview of the functions and services provided by AXE.

Learning Objectives

At the end of this course the participant will be able to:

- 1 Describe the trends in current telecommunications;
- 8 Describe the main characteristics of AXE
- 9 Describe the structure of AXE
- 10 Describe the Control system in AXE
- 11 Describe the APT 1.5
- 12 Describe how the different HW versions cooperate with each other
- 13 Describe the major product lines in AXE
- 14 Illustrate traffic handling in AXE
- 15 Describe how Operation and Maintenance is performed in AXE
- 16 Describe briefly the procedures involved in marketing and design of AXE
- 17 Explain the Internet related application using the AXE

Target Audience

The course is intended for all staff associated in any way with AXE. Marketing people can use this material to get a general knowledge about AXE. People working with operation, maintenance and testing can use the material in this course, to understand the basic AXE concepts.

Prerequisites

The participants should have equivalent knowledge to the course

"Telecom ABC", LZU 107 12 or

"Understanding the New Telecom", LZU 107 106.

Duration and class size

The length of the course is 5 days and the maximum number of participants is 16.

Learning situation

This product is an instructor-led course with theoretical lessons/exercises and practical study cases.



AXE O & M Platform (BYB 501)

LZU 108 1471

Description

On completion of this course the participants will have a general knowledge of the basic Operation & Maintenance activities and an understanding of the most frequent types of work in an AXE Exchange. The course will also be used as a platform for more advanced training for Operation & Maintenance staff.

Learning Objectives

On completion of this course the participants will gain the skills and knowledge of:

- 1 Basic O&M activities in AXE
- 2 Exchange Handling Basics
- 3 Communication with the system
- 4 Hardware Orientation
- 5 Connection to Group Switch
- 6 Size Alteration
- 7 Configuration of IOG and hardware structure
- 8 Command and File Handling
- 9 System Backup Handling

Target Audience

The course is intended for people that will work with Operation and/or Maintenance and who need a general knowledge of basic operation functions in AXE Exchanges. Personnel intending to become System Technicians, should take this course followed by AXE Operation Handling, (LZU 108 1472) or AXE Hardware Maintenance, (LZU 108 1473)

Prerequisites

Successful completion of the following courses:

AXE Survey, (LZU 108 775)

Telecom Platform & AXE Survey, (LZU 108 1435)

Duration and class size

The length of the course is 10 days and the maximum number of participants is 8.

Learning situation

Instructor-led with simulated AXE exercises



AXE Operation Handling (BYB 501)

LZU 108 1472

Description

This course provides the participants with a deeper understanding and a more detailed knowledge of the operation activities in AXE exchanges.

Learning Objectives

On completion of this course the participants will gain skills and knowledge in:

- 1 Route Analysis
- 2 Branching
- 3 End of selection
- 4 Access barring
- 5 Cabling
- 6 DCS Applications
- 7 Traffic Measurement
- 8 Service Assessment
- 9 Charging Statistics
- 10 Test of trunk lines and Subscriber lines
- 11 Traffic Measurement
- 12 Charging Output

Target Audience

The course is intended for AXE Operation personnel who will continue to study data transcript, service assessment, network management or operation of AXE networks

Prerequisites

Successful completion of the following courses:

AXE O&M Platform, (LZU 108 1471)

AXE Survey, (LZU 108 775) or Telecom Platform & AXE Survey, (LZU 108 1435)

Duration and class size

The length of the course is 5 days and the maximum number of participants is 8.



Learning situation

Instructor-led with theoretical and practical exercise. The practical parts (approximately 50%) will be performed in a training exchange with realistic exercises



AXE Hardware Maintenance (BYB 501)

LZU 108 1473

Description

The Hardware Maintenance course focuses more on advanced training for Maintenance personnel. This course provides the participants with a deeper understanding of the maintenance activities in an AXE exchange.

Learning Objectives

On completion of this course the participants will gain knowledge and skill of:

- 1 Maintenance Routines
- 2 Trunk Supervision
- 3 Group Switch Maintenance
- 4 APZ Maintenance
- 5 SS No. 7 Maintenance
- 6 Subscriber Line Supervision Alarm
- 7 Subscriber Switch Hardware Alarms
- 8 Network Synchronization

Target Audience

The course is intended for AXE Maintenance personnel

Prerequisites

Successful completion of the following courses:

AXE O&M Platform, (LZU 108 1471)

AXE Survey, (LZU 108 775) or Telecom Platform & AXE Survey, (LZU 108 1435)

Duration and class size

The length of the course is 10 days and the maximum number of participants is 8.

Learning situation

Instructor-led with theoretical and practical parts. The practical parts (approximately 50%) will be performed in a training exchange with realistic exercises.



AXE 810 Delta

LZU 108 5411

Description

The course is a survey course describing the main differences, on a high level, between the older systems BYB 202 and HWM 1.3/1.4 and the new AXE 810. The course is aimed at both Ericsson internal staff as well as existing customers planning for updates and/or expansions using the new AXE 810 hardware and system software.

Learning Objectives

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

- 1 Describe the benefits of AXE 810
- 2 Describe the main improvements on a high level between BYB 202, HWM 1.3 and the new AXE 810

Target Audience

There are two main groups within the target audience:

Ericsson staffs:

Anyone within Ericsson, which needs a survey over the contents of AXE 810 on a high level. A typical staff category could be marketing staff

Customer's:

Customers who have AXE switches and are planning for network expansions or upgrades. New customers, not having AXE knowledge, should not attend the course, as a prerequisite is some basic AXE knowledge

Prerequisites

Successful completion of:

AXE Survey, or corresponding experience of AXE

Duration and class size

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

Learning situation

Theoretical lessons/exercises and practical study cases



AXE810 Configuration Delta

LZU 108 5412 R3A

Description

The focus of this course is how to configure the new hardware in AXE810 (BYB 501 1.5). It gives a theoretical survey of the main differences, on a high level, between BYB 501 1.4 and the new hardware.

Learning objectives

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

- 21 Describe the new AXE810 on a basic level
 - 21.1 Understand the market and the drivers behind AXE810.
 - 21.2 Account for differences in metrics such as floor space, power consumption and capacity.
 - 21.3 Introduction to the new hardware parts.
- 22 Describe changes and improvements on APZ level
 - 22.1 Explain the main changes within APZ 212 33/33C/40.
 - 22.2 Find and use new OPIs and commands.
- 23 Describe changes and improvements on APT level
 - 23.1 Account for the main changes in APT.
 - 23.2 Definitions in GEM.
 - 23.3 Connection of reused GDMs.
- 24 Describe new functionalities introduced with AXE810
 - 24.1 Account for the main changes in Operation and Maintenance.
 - 24.2 ISP, In-Service Performance.
 - 24.3 NNRP, explain how extensions to existing BYB 501 1.4 nodes can be made.
- 25 Be able to configure the AXE810 hardware
 - 25.1 Give examples of node layouts and explain capacity for a number of model exchanges based upon mobile and fixed lines applications.
 - 25.2 Explain configuration of hardware.
 - 25.3 Know how to use the new OPIs/CODs/PODs.

Target audience

The target audience for this course are all technical personnel working with earlier AXE hardware releases BYB 501 1.4. Examples are personnel working with Field Maintenance, Network Surveillance and Network Operation and Configuration.



Prerequisites

The participants should be familiar with operation and configuration of AXE BYB 501 1.4.

Successful completion of any of the following courses will achieve this:

LZU 108 6131, AXE Hardware Maintenance.

LZU 108 6145, AXE Operation and Configuration

For GSM: LZU 108 5024/2, GSM AXE Operation,

For WCDMA: LZU 108 5024/2, WCDMA AXE Operation,

Duration and class size

The length of the course is three days and the maximum number of participants is eight.

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.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate. *(This paragraph is mandatory).*

Day	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• Introduction• APZ• APT• Functionalities	7 h
2-3	<ul style="list-style-type: none">• Configuration• Exercises, configuration of AXE810	14 h



Core Networks, An Overview (WBL)

LZU 108 5945 R1A

Description

This course provides a comprehensive introduction to the technologies in the core networks, core network architecture and network operation and maintenance.

Learning objectives

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

- 1 Describe the technologies in the core network
 - 1.1 Explain how a physical network is built
 - 1.2 Outline different types of multiplexing (FDM, TDM and WDM)
 - 1.3 Describe transmission technologies such as SDH and SONET
 - 1.4 Describe optical ring architecture and the basics of ATM and MPLS

- 2 Define core network architectures
 - 2.1 Understand traffic trends and outline multiservice backbone requirements
 - 2.2 Explain resource allocation and quality of service
 - 2.3 Understand performance optimization
 - 2.4 Define IPsec and VPN technology

- 3 Understand network operation and maintenance
 - 3.1 Outline steps in network operation
 - 3.2 Understand network traffic and outline some network traffic situations
 - 3.3 Explain monitoring using SNMP and PING
 - 3.4 Define steps and routines for error handling

Target audience

The target audience for this course is anybody wishing to gain a basic understanding of the technologies used in core networks, core network architecture and network operation and maintenance.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites



There are no prerequisites for this course.

Duration

The length of the course is 3 hours.

Learning situation

The course is a web based learning product.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">Technologies in the Core Network	1 hour 15 min
1	<ul style="list-style-type: none">Core Network Architectures	1 hour
1	<ul style="list-style-type: none">Network Operation and Maintenance	45 min



Datacom Networking

LZU 102 371

Description

Expert communication knowledge requires a solid foundation in data communications. From standards, physical media and network devices to transmission technologies, protocols, implementation and management this course guides novices effortlessly through modern data communication terminology and technologies and gives a comprehensive overview of underlying networking concepts.

Learning Objectives

General interest in communications technologies and computer literacy is recommended. Having successfully completed this course, students will be able to describe:

- 1 Network Standards
- 2 Physical Media
- 3 LAN and WAN concepts
- 4 Transmission Technologies
- 5 Internet Protocol Suite
- 6 Internetworking

Target Audience

Datacom Networking has been designed for seeking to acquire, refresh or improve knowledge of data technologies. The course is the entry point to all of Ericsson's datacom classes. This course prepares students for any advanced technology courses and basic product training.

Prerequisites

General interest in communications technologies and computer literacy is recommended.

Duration and class size

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

Learning situation

Theoretical lessons/exercises and practical study cases.



ENGINE Access Ramp Introduction

LZU 108 129

Description

The purpose of this one-day course is to provide both customers and Ericsson employees with an overview of the ENGINE Access Ramp product including the services it provides, its components and its role in the future.

The course is theory only with an option for a practical demonstration of the hardware in a network environment depending on equipment availability.

Learning Objectives

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

- 1 Outline the role of ENGINE Access Ramp in the ENGINE concept.
- 2 List the services offered by ENGINE Access Ramp.
- 3 Describe the components of ENGINE Access Ramp.
- 4 Understand what DSL is.
- 5 Describe possible network configurations and product packages.
- 6 Identify how management is carried out in the access network.

Target Audience

The course is intended for both Ericsson personnel and external customer working with implementation, installation, testing, sales and marketing, network integration and support tasks on ENGINE Access Ramp or anyone requiring an overview on the ENGINE Access Ramp 1.3 product.

Prerequisites

Basic Telecoms knowledge and Datacoms knowledge to the level of:

Introduction to Datacom, LZU 107 107

Or equivalent knowledge.

Duration and class size

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

Learning situation

Instructor-led theoretical lessons.



ENGINE Access Ramp O & M for AXE Application

LZU 108 5057

Description

This course is a modular learning product on how to perform Operation & Maintenance activities on an ENGINE Access Ramp for AXE application. At the end of the course the student will be able to perform O&M activities on an AXE connected ENGINE Access Ramp.

Learning Objectives

- 1 After the course the student will be able to understand and explain:
- 2 The general system structure of the ENGINE Access Ramp for AXE, its units and their basic functions
- 3 The HW building practice.
- 4 The different signalling interfaces used and how V5 is used in ENGINE Access Ramp
- 5 The difference between the ENGINE Access Ramp for AXE application and the ENGINE Access Ramp for V5.2 interface.
- 6 The connection of the bearer networks PSTN, ISDN-BA, their characteristics and the services they carry.
- 7 Verify control signalling on the CSP and the signalling on the V5.1 and TAU channels
- 8 Check the states of the signalling links, EMRPS, DIPs, devices and Plug-in Units
- 9 Verify the complete configuration of an existing MACCG / EMG
- 10 Define a new AU PSTN in an existing Network Node, connect subscribers and take those into service
- 11 Define a new AU ISDN in an existing Network Node, connect subscribers and take those into service
- 12 Test the subscriber lines
- 13 Check for alarms and take correct actions
- 14 The connection of the bearer networks ISDN-PRAA and external V5.1 and V5.2SL, to the ENGINE Access Ramp.
- 15 The HW units of the TAU and their main uses
- 16 The different buses and cabling of the TAU and their uses.
- 17 The main software blocks used by TAU, including the blocks for the different TAU applications.
- 18 How to define a TAU, including the subrack group it controls and the corresponding cabling.
- 19 How to perform a function change of an AU or TAU load module from opto disk to the AU/TAU.
- 20 Carry out a function change of load module for a plug-in unit, from the IOG20 to the plug-in unit (AU or TAU).
- 21 If time permits, the students can also define a new ENGINE Access Ramp EMG, in data, as an extra exercise.

Target Audience

Operation and maintenance staff working with ENGINE Access Ramp for AXE application.

Prerequisites

The students should have experience of Operation and Maintenance activities on an AXE Local Exchange.

Duration and class size

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



Learning situation

Theoretical lessons/exercises and practical study cases



ENGINE Core Introduction

LZU 108 1476

DESCRIPTION

This one-day course will support Ericsson employees and customers with knowledge of how multimedia services are handled within different ENGINE Core Network solutions.

The course gives an introduction to the ENGINE concept, where the different Core solutions are described. The different core solutions are:

- ENGINE Bridgehead Network (EBN)
- ENGINE Integral Network (EIN)
- ENGINE Multimedia Network (EMM)
- IP Telephony (IPT)
- ONG (Open Network Gateway)

The management solution (MN-OSS R5) will also be briefly described.

In order to describe the ENGINE Core concept, the different signaling interfaces and voice packing methods used to transport voice over ATM, are outlined. The possibility of using IP in the connectivity network to transport voice will also be discussed.

LEARNING OBJECTIVES

At the end of this course, the students will be able to explain:

1. Why an operator would choose ENGINE.
2. How IP and ATM are used in the connectivity network for ENGINE.
3. How ATM is used to transport voice in the connectivity network.
4. The basic concepts and terms of the ENGINE Core network solutions: ENGINE Bridgehead Network, ENGINE Integral Network and ENGINE Multimedia Network, IP Telephony and Open Network Gateway (ONG).
5. The basics of the management system MN-OSS 5.0



TARGET AUDIENCE

The target audience for this learning product is Ericsson Internal and Customer personnel wishing to be introduced to the ENGINE concept and the various core network solutions within this concept.

PREREQUISITES

Successful completion of the course requires the following courses

- ATM, LZU 102 320 (or equivalent knowledge)
- AXE 10 Survey, LZU 108 775 (or equivalent knowledge)

DURATION AND CLASS SIZE

The duration for this learning product is one day. Class size is 16 students.

LEARNING SITUATION

The course is instructor-led with theoretical lessons and demonstrations of the hardware if possible.



ENGINE Integral Network Integration & Verification

LZU 108 5860 R1A

Description

This course will provide the participant with the competence needed to Integration and Verification of an ENGINE Integral Network 1.0/2.0 (EIN 1.0/2.0).

The course consists of theory and case based exercises on how to integrate and verify an EIN 1.0/2.0 on the AXE and AXD 301 platforms.

This course replaces the courses ENGINE Integral Network Configuration & Verification, LZU 108 5654 R2A and ENGINE Integral Network Operation & Maintenance, LZU 108 5655 R2A.

Learning objectives

After successfully completing the course the student will:

- Understand the HW and SW implementation in EIN 1.0/2.0.
- Establish CP communication between the Call Control Function (CCF, AXE) and the Mediation Logic (ML) and know how this is supervised.
- Understand how to configure a fully redundant Integral Network.
- Configure the interconnect link (IC) between the CCF and the ML and know how it is supervised.
- Configure the MGW control interfaces between the ML and the MGWs using “H.248” and know how they are supervised.
- Configure the Bearer Independent Call Control (BICC) interface between Telephony Servers (TeS) belonging to different domains and know how it's supervised.
- Configure at least two of the ETSI-ISUP, ANSI-ISUP, V5.2, ETSI- PRA, EAR and RSS accesses and know how they are supervised.
- Verify the configuration by making test calls using the different accesses configured.
- Make call-path tracings in CCF, ML and MGWs

Target audience

The course is intended for people working with integration and operation on the EIN.



Prerequisites

Students should have participated following courses:

- AXE O&M Platform, LZU 108 1471(or equivalent knowledge).
- AXE Operation Handling, LZU 108 1472 (or equivalent knowledge).
- AXE Hardware Maintenance, LZU 108 1473 (or equivalent knowledge).
- AXD 301 System Configuration, LZU 102 327 (or equivalent knowledge).
- AXD 301 Signalling and Routing, LZU 102 328 (or equivalent knowledge).
- ENGINE Core Introduction, LZU 108 1476 R4A

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 instructor-led with case based practical exercises, based on the configuration available in the training network



ENGINE Integral Network Fault Finding

LZU 108 5932

DESCRIPTION

The purpose of this three-day course is to provide both customers and Ericsson employees with the competence needed find faults in an ENGINE Integral Network.

The course consists of theory and then task oriented exercises where the participants should find faults in the network according to the guidelines presented in the theory part. The faultfinding methods will help participants to locate the faults, which will lead to a more specified Trouble Reports.

LEARNING OBJECTIVES

After successfully completing the course the student will:

1. Use faultfinding methods for the EIN to locate and solve faults.
2. Recognize frequently appearing faults
3. Check network synchronization
4. Trace calls

TARGET AUDIENCE

The course is intended for people working with support and operations tasks on the EIN.

The course can be given to Ericsson personnel and external customers.



PREREQUISITES

Students should have participated following courses:

For internal personnel:

- AXE Configuration & Verification, LZU 108 1410 (or equivalent knowledge).
- AXD 301 System Configuration, LZU 102 327 (or equivalent knowledge).
- AXD 301 Signaling and Routing, LZU 102 328 (or equivalent knowledge).
- ENGINE Core Introduction, LZU 108 1476 R4A.
- ENGINE Integral Network Configuration & Verification, LZU 108 5654 R1B or R2B

For customers:

- AXE O&M Platform, LZU 108 1471(or equivalent knowledge).
- AXE Operation Handling, LZU 108 1472(or equivalent knowledge).
- AXE Hardware Maintenance, LZU 108 1473(or equivalent knowledge).
- AXD 301 System Configuration, LZU 102 327 (or equivalent knowledge).
- AXD 301 Signaling and Routing, LZU 102 328(or equivalent knowledge).
- ENGINE Core Introduction, LZU 108 1476 R4A
- ENGINE Integral Network Operation & Maintenance, LZU 108 5655 R2A

DURATION AND CLASS SIZE

The duration for this learning product is 3 days. Maximum class size is 8 students.

LEARNING SITUATION

The course is instructor-led using task oriented practical exercises, based on the configuration available in the training network.



ENGINE Integral Network 1.0 Dimensioning

LZU 108 5653

Description

The course emphasizes on a calculation model for dimensioning of an Engine Integral Network (EIN 1.0). The focus is especially on the Call Handling Capacity (CHC) and on board configuration in the associated Multi-Service Gateways (MSG's) as well as on the Mediation Logic (ML). Furthermore it includes calculation of the call handling capacity in the Telephony Server (TeS). The course includes also general EIN 1.0 aspects needed to understand the included dimensioning procedures.

The course contains presentations, exercises and cases in order to train the participants to handle the structuring, calculation and dimensioning of an EIN 1.0 network.

The main Target Audience for this training is marketing and solution personnel with switching background. The recommended number of participants per course is 12-20.

Learning Objectives

After completing the course the participants will have an overall knowledge

- 1 Of traffic theory needed for the calculation and dimensioning applicable to EIN 1.0 for different network environments
- 2 In calculation and dimensioning of an EIN 1.0 network in order to achieve a first development step towards an efficient EIN 1.0 network

Target Audience

The Target Audience for this training is marketing and solution personnel with switching background.

Prerequisites

Participants of the ENGINE Integral Network Dimensioning course shall have knowledge of the basic Traffic calculations and general experiences from Tele- and Data communications. They should also be aware of the conditions for operators working with today's multi-services communication networks.

Duration and class size

The duration for this learning product is 2 days. Maximum class size is 20 students.

Learning Situation

The course is instructor led with theoretical lessons, exercises and dimensioning cases.



ENGINE Signaling in the Core Network

LZU 108 897/5

Description

The course Signaling in the Core Network (LZU 108 897) is designed to give the participant an overview of signaling technologies used to manage and control voice calls in the ENGINE Integral Network EIN 1.0.

Learning Objectives

After completing the course the students will be able to:

- 1 Explain the structure of the Signaling System No. 7.
- 2 Explain the different functions of Signaling System No. 7 in the ENGINE Integral Network EIN 1.0.
- 3 Explain H.248 and BICC signaling on a high level.
- 4 Explain the signaling between AXE and AXD 301 Mediation Logic (ML) in ENGINE on a high level.

Target Audience

The course is intended for both customers and internal personnel within Ericsson. This course is intended for:

Core Network Engineer

Core Network Specialist.

ATM Transport Network Specialist

First, second and third line Support Engineers (Ericsson internal)

Core Network Integration Engineers (Ericsson internal)

Prerequisites

The student should have successfully completed:

ENGINE Core Introduction LZU 108 1476

ENGINE Integral Network Configuration & Verification LZU 108 5654

Duration and class size

The duration for this learning product is 3 days. Maximum class size is 16 students.



Learning Situation

Instructor-led training including theoretical lessons and theoretical exercises.



Introduction to IP Networks (MBL)

LZU 108 5690 R1A

Description

This course provides a comprehensive introduction to the underlying principles of data communications. This course contains information on; how a PC communicates with other devices and networks, modern LAN and WAN technologies and concepts, the TCP/IP protocol suite, mobile network technologies, network architecture and applications and the management of data networks.

This course also serves to introduce topics that will be covered in more detail in further Ericsson courses.

Learning objectives

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

- 1 Explain the basics of networking
 - 1.1 Outline the input and output devices of a PC and how they are connected
 - 1.2 Describe the communication parameters necessary to understand connections
 - 1.3 Describe physical and logical network topologies
- 2 Describe how to connect a PC to a datacom network
 - 2.1 Identify and describe communication devices in a LAN (Hub, Switch and Router)
 - 2.2 Understand the different types of cables (UTP, STP and Fiber Optical)
 - 2.3 Explain how to connect computers to a LAN
 - 2.4 Explain the difference between Internet and Intranet
 - 2.5 Outline how to implement a Structured Cabling System (independent cabling system)
- 3 Describe Local Area Networks (LAN) and the Ethernet Standard
 - 3.1 Define the building blocks in a LAN
 - 3.2 Outline the different types of Ethernet standard
 - 3.3 Explain data transmission in an Ethernet LAN – Ethernet frame
 - 3.4 Understand Ethernet basics (CSMA/CD)
 - 3.5 Outline the difference between a Hub and a Switch
 - 3.6 Describe how to connect communication devices and design a LAN
- 4 Describe Wireless Local Area Networks (WLAN)
 - 4.1 Describe two basic types of Wireless LAN (Ad Hoc and Infrastructure mode)
 - 4.2 Outline the IEEE 802.11 standard and its applications
 - 4.3 Outline the HIPERLAN/2 standard and its applications and compare to IEEE 802.11
 - 4.4 Outline the properties of Home RF
 - 4.5 Understand Bluetooth drivers and communication models
- 5 Describe the basic concepts of IP networking
 - 5.1 Define virtual address and explain how to communicate between networks
 - 5.2 Outline the difference between IPv4 and IPv6 addressing
 - 5.3 Outline how to configure the hosts in LAN (IP address, subnet mask, default gateway)
 - 5.4 Understand Internet domains and how the Domain Name System works
 - 5.5 Describe how to leave the local network using a Router
- 6 Describe the basic concepts of IP internetworking
 - 6.1 Describe the Internet (transit, regional and ISP networks)
 - 6.2 Understand routing domains and usage of two routing protocols (RIP and OSPF)
 - 6.3 Discover networks using two useful utilities PING and Traceroute



- 7 Describe how to use the network and describe IP network applications
- 7.1 Explain how Internet applications are addressed in a data packet
- 7.2 Understand application models (Client/Server and Peer-to-Peer)
- 7.3 Describe how a Web browser works and how Web pages are constructed using HTML
- 7.4 Explain Web architecture and connecting to a Web server
- 7.5 Explain how to send and receive Internet E-mail and outline the protocols used
- 7.6 Understand IP telephony architecture
- 8 Explain the TCP/IP data communications architecture
- 8.1 Describe TCP/IP layered approach to networking
- 8.2 List the layers in the TCP/IP protocol stack
- 8.3 List the Internet organizations (ISOC, IETF and ICANN)
- 8.4 Explain IP addressing and routing and some important fields in an IP packet
- 8.5 Outline how the Transmission Control Protocol (TCP) works
- 9 Understand fixed network connections: access networks
- 9.1 Outline basic concepts, bandwidth and technologies in access networks
- 9.2 Describe access based on telephone networks (analogue and digital)
- 9.3 Outline other access network technologies, such as, cable TV, fiber optics and microwave
- 10 Understand the basic concepts of mobile access
- 10.1 Outline different mobile access (GSM, GPRS and UMTS)
- 10.2 Explain GSM architecture and outline a basic traffic case
- 10.3 Explain GPRS architecture and outline a basic traffic case
- 10.4 Explain UMTS architecture and outline a basic traffic case
- 10.5 Define mobile IP for IPv4 and IPv6
- 11 Describe the technologies in the core network
- 11.1 Explain how a physical network is built
- 11.2 Outline different types of multiplexing (FDM, TDM and WDM)
- 11.3 Describe transmission technologies such as SDH and SONET
- 11.4 Describe optical ring architecture and the basics of ATM and MPLS
- 12 Define core network architectures
- 12.1 Understand traffic trends and outline multiservice backbone requirements
- 12.2 Explain resource allocation and quality of service
- 12.3 Understand performance optimization
- 12.4 Define IPsec and VPN technology
- 13 Understand network operation and maintenance
- 13.1 Outline steps in network operation
- 13.2 Understand network traffic and outline some network traffic situations
- 13.3 Explain monitoring using SNMP and PING
- 13.4 Define steps and routines for error handling

Target Audience

The Target Audience for this course is anybody wishing to gain a basic understanding of modern datacom networking technologies.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites

There are no prerequisites for this course.



Duration

The length of the course is 16 hours.

Learning situation

The course is a CDROM based learning product.

Each chapter contains a number of chapter topics as well as a self-test (used to test knowledge discussed later in the chapter), exercises, quiz and a summary section.

Also included in the course is a final end of course exam.



IP Networking

LZU 102 397

Description

This course gives a detailed understanding of TCP/IP protocol suite describing IP addressing principles and the purpose and operation of different protocols such as IP, TCP, UDP, ICMP, ARP. It also takes a closer look at of bridging, LAN switching (VLAN, 802.1Q) and routing (RIP, OSPF) technologies. Participants will gain an understanding of the advantages and disadvantages of LAN switches and routers and will learn where to use them, in a networking environment. Throughout the course, hands-on labs are used to pinpoint important aspects of theory sessions.

Learning Objectives

On completion of this course, students will be able to describe:

- 1 Protocols in the TCP/IP stack
- 2 IP address - how they are constructed and how they work
- 3 Address resolution
- 4 Different IP versions
- 5 Remote command execution in networking
- 6 Remote file transfers
- 7 Mail and other network services
- 8 Describe bridging, switching and routing.
- 9 Understand the advantages and disadvantages of bridging, switching and routing and when each should be used
- 10 Understand the Routing Information Protocol
- 11 Understand the Open Shortest Path First (OSPF)

Target Audience

As part of the certification program, this course is designed for those who want to be certified as a Datacom Engineer at the E² and E^{2 plus} level.

Prerequisites

Participants should have completed the course Datacom Networking.

Duration and class size

The duration for this learning product is 5 days. Maximum class size is 16 students.

Learning situation

Theoretical lessons/exercises and practical study cases



IP Networking and Internetworking (WBL)

LZU 108 5942 R1A

Description

This course provides an introduction to the principles of IP networking and internetworking.

Learning objectives

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

- 4 Describe the basic concepts of IP networking
 - 4.1 Define virtual address and explain how to communicate between networks
 - 4.2 Outline the difference between IPv4 and IPv6 addressing
 - 4.3 Outline how to configure the hosts in LAN (IP address, subnet mask, default gateway)
 - 4.4 Understand Internet domains and how the Domain Name System works
 - 4.5 Describe how to leave the local network using a Router

- 5 Describe the basic concepts of IP internetworking
 - 5.1 Describe the Internet (transit, regional and ISP networks)
 - 5.2 Understand routing domains and usage of two routing protocols (RIP and OSPF)
 - 5.3 Discover networks using two useful utilities PING and Traceroute

Target audience

The target audience for this course is anybody wishing to gain a basic understanding of modern datacom networking technologies.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites

There are no prerequisites for this course.

Duration

The length of the course is 3 hours.



Learning situation

The course is a web based learning product.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• IP Networking	2 hours
1	<ul style="list-style-type: none">• IP Internetworking	1 hour



IP Network Applications (WBL)

LZU 108 5943 R1A

Description

This course provides an introduction to IP network applications and TCP/IP data communications.

Learning objectives

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

- 6 Describe how to use the network and describe IP network applications
 - 6.1 Explain how Internet applications are addressed in a data packet
 - 6.2 Understand application models (Client/Server and Peer-to-Peer)
 - 6.3 Describe how a Web browser works and how Web pages are constructed using HTML
 - 6.4 Explain Web architecture and connecting to a Web server
 - 6.5 Explain how to send and receive Internet E-mail and outline the protocols used
 - 6.6 Understand IP telephony architecture

- 7 Explain the TCP/IP data communications architecture
 - 7.1 Describe TCP/IP layered approach to networking
 - 7.2 List the layers in the TCP/IP protocol stack
 - 7.3 List the Internet organizations (ISOC, IETF and ICANN)
 - 7.4 Explain IP addressing and routing and some important fields in an IP packet
 - 7.5 Outline how the Transmission Control Protocol (TCP) works

Target audience

The target audience for this course is anybody wishing to gain an understanding of IP network applications and TCP/IP data communications.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites

There are no prerequisites for this course.

Duration

The length of the course is 3 hours.

Learning situation

The course is a web based learning product.



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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• Using the network - IP Network Applications	2 hours
1	<ul style="list-style-type: none">• The TCP/IP Data Communications Architecture	1 hour



IP over ATM

LZU 102 321

Description

This course gives participants a detailed understanding of different techniques currently deployed or developed for carrying LAN or IP traffic over an ATM network.

Learning objectives

On completion of this course the participants will be able to describe the following technologies in detail:

1. Multiprotocol Encapsulation over AAL5
2. LAN Emulation
3. Classical IP and ARP over ATM
4. MARS
5. SCSP
6. NHRP
7. MPLS
8. MPOA
9. Native API
10. FR/SMDs over ATM
11. Proprietary solutions

Target audience

The target audience for this course is anyone with the need of a datacom education.

Perequisites

Successful completion of the following courses TCP/IP and ATM



Duration and class size

The length of the course is 2 days and the maximum number of participants is 16.

Learning situation

Instructor-led lessons



Local 7 to Local 7.2 Delta course

LZU 108 5501

On completion of this course the students will have knowledge about the functionality in Local 7.2 GAS. The differences between Local 7 and Local 7.2 will be described.

Learning Objectives

1. On completion of this course the students will be able to:
2. Describe the main differences between L7/TL4 and L7.2/TL4.2;
3. Understand the main functions and features in APZ 212 30;
4. Understand how the V5.2 multilink is implemented in AXE;
5. Understand the how the Engine Access Ramp (AXE Access 910) functions;
6. Describe how an IAS connection is implemented;
7. Understand the Dynamic Trunking 2 and Telephony Server applications.

Target Audience

Personnel working with Operation, Maintenance and support of local and translocal applications

Prerequisites

The participants should have equivalent knowledge to:

Local 7/ Translocal 4 application

Duration and class size

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

Learning situation

Instructor-led lessons and practical study cases.



MN-OSS Operation, ToATM

LZU 108 6099

Description

This five-day course will provide the students with the competence needed to use the Telephony over ATM support functions of the MN-OSS release 5.0.1.

The course consists of theory and case based practical exercises and will deal with all the mandatory applications used for handling AXE/AXD based network elements. The cases presented will describe the capabilities of MN-OSS and the student will learn efficient management of network elements.

Learning objectives

At the end of this course, the students will be able to:

- 1 Describe the functionality of the mandatory MN-OSS applications used in the Telephony over ATM support package
 - 1.1 Understand the basic terminology of MN-OSS
 - 1.2 Describe the design and structure regarding the different applications
 - 1.3 Describe how and when the applications are used
- 2 Describe the structure and contents of the User Documentation
 - 2.1 Use the User Documentation in practical work
- 3 Use Element Management Tools to communicate and configure AXE/AXD network elements
 - 3.1 Describe the AXE traffic cases and how they are handled by MN-OSS
 - 3.2 Use different tools for communication with external systems on the command level, i.e. to connect and send MML commands
 - 3.3 Set up time activation of command files/scripts
 - 3.4 Initiate the sending of command files/scripts
 - 3.5 Use Command Log Search to search in the Command Log
 - 3.6 Set up subscriptions of Spontaneous Reports
- 4 Transfer files between MN-OSS & AXE network elements
 - 4.1 Describe how file transfers may be initiated from different external systems
 - 4.2 Set up and perform a file transfer between MN-OSS and external systems
 - 4.3 Transfer files between Transfer File Store and the UNIX file system
 - 4.4 Describe the organization of the file store and be able to use file management functions on the file store/exchange file store
 - 4.5 Set up a file subscription to other external systems
 - 4.6 Describe how to set up post-processing of files
- 5 Describe and use OPS both as a development tool and part of an expert system
 - 5.1 Run Command Files using OPS
 - 5.2 Edit existing Command Files
 - 5.3 Create and debug Command Files
 - 5.4 Set up properties for the user interface in OPS
 - 5.5 Use the special functions in OPS for editing and debugging
- 6 Describe and use the Command File Language (CFL) used to develop Command Files in OPS
 - 6.1 Describe how CFL is used in the Command File language
 - 6.2 Understand the purpose of using CFL
 - 6.3 Use the graphical tools in CFL, i.e menu windows, forms, input windows etc.



- 7 Handle alarms and configure the way they are presented
 - 7.1 Using the graphical alarm presentation tool and the alarm lists, i.e. to interpret the different object symbols and alarm symbols and take appropriate action
 - 7.2 Set up and use all available alarm presentation possibilities
 - 7.3 Retrieve and analyze alarms from the log

- 8 Gather and present statistical information from the AXD based network elements, and to set thresholds to generate pro-active alarms
 - 8.1 Set up a measurement job in an AXD
 - 8.2 Retrieve measurement data from the Performance Monitor Database and to present it in tables and graphs
 - 8.3 Transfer the measurement data into an external spreadsheet program

- 9 Give a general description of ACT and its purpose
 - 9.1 Understand the role & basics of ACT
 - 9.2 Have a general knowledge of how and when the application is used

- 10 Perform the most common configuration, software management and user management tasks for multiple AXD network elements
 - 10.1 Understand the role and basics of ACT and its applications
 - 10.2 Initiate backup and restoration operations
 - 10.3 Undertake patch operations
 - 10.4 Manage the AMS user configuration
 - 10.5 Work with bulk configuration
 - 10.6 Achieve cloning configuration
 - 10.7 Understand the command line interface of ACT



Target audience

The course is intended for ToATM system operators, who need to know the exchange management concept and how to operate the system on the Windows 2000 platform.

Prerequisites

11 The student should have completed the following training:

- AXE 10 Survey – LZU 108 775 or equivalent knowledge
- Telecom ABC – LZU 107 12 or equivalent knowledge
- Knowledge and experience of Windows 2000 based computer systems

Duration and class size

The length of the course is 5 days and the maximum number of participants is 8.

Learning situation

The course includes theoretical lectures as well as task oriented exercises using the MN-OSS 5.0.1 release.

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	Short description of the topics in the course	Estimated time
1	• MN-OSS Introduction	1 h
	• User documentation, AMS, ALEX & TPS	2 h
	• Element Management Tools, File Handling	3 h
2	• Operations Procedure Support	6 h
3	• Ericsson Fault Manager	6 h
4	• Performance Monitor	6 h
5	• AXD Configuration Tool	6 h



MN-OSS Operation, AXD

LZU 108 5957 R1A

Description

This three-day course will provide the students with the competence needed to use the AXD management functions of the MN-OSS AXD support package.

The course consists of theory and case based practical exercises and will deal with the PMR, NSM and ACT applications used for handling an AXD 301 based network. The cases presented will describe the capabilities of the applications and the student will learn efficient management of network elements.

Learning objectives

At the end of this course, the students will be able to:

- 1 Describe the functionality of the AXD management functions in the MN-OSS system release 5.0.1
 - 1.1 Understand the basic terminology of MN-OSS
 - 1.2 Describe the design and structure regarding the mandatory applications in MN-OSS
 - 1.3 Describe how and when the applications are used, and how they interact
- 2 Gather and present statistical information from the AXD based network elements, and to set thresholds to generate pro-active alarms
 - 2.1 Set up a measurement job in an AXD
 - 2.2 Retrieve measurement data from the Performance Monitor Database and to present it in tables and graphs
 - 2.3 Transfer the measurement data into an external spreadsheet program
- 3 Handle alarms and configure the way they are presented
 - 3.1 Using the graphical alarm presentation tool and the alarm lists, i.e. to interpret the different object symbols and alarm symbols and take appropriate action
 - 3.2 Set up and use all available alarm presentation possibilities
- 4 Set up automatic action on received events
 - 4.1 Perform actions when receiving events or alarm information from the system or the network
- 5 Give a general description of ACT and its purpose
 - 5.1 Understand the role & basics of ACT
 - 5.2 Have a general knowledge of how and when the application is used
- 6 Perform the most common configuration, software management and user management tasks for multiple AXD network elements
 - 6.1 Understand the role and basics of ACT and its applications
 - 6.2 Initiate backup and restoration operations
 - 6.3 Undertake patch operations
 - 6.4 Manage the AMS user configuration
 - 6.5 Work with bulk configuration
 - 6.6 Achieve cloning configuration
 - 6.7 Understand the command line interface of ACT



Target audience

The course is intended for AXD 301 system operators, who need to know the management concept and how to operate the system using the mandatory applications.

Prerequisites

The student should have completed the following training:

- Telecom ABC – LZU 107 12 (or equivalent knowledge)
- ATM, LZU 102 320 (or equivalent knowledge)
- Knowledge and experience of Windows 2000 based computer systems

Duration and class size

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

Learning situation

The course includes theoretical lectures as well as task oriented exercises using the AXD management functions in the MN-OSS R5.0.1 AXD support package.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• MN-OSS Introduction	1 h
	<ul style="list-style-type: none">• User documentation, AMS & TPS	1 h
	<ul style="list-style-type: none">• Performance Monitor - PMR	4 h
2	<ul style="list-style-type: none">• Network Surveillance Multiservice - NSM	6 h
3	<ul style="list-style-type: none">• AXD Configuration Tool	6 h



MN-OSS System Administration

LZU 108 5948

Description

This course will give the student knowledge about administration of the MN-OSS R5 system. After the course the students will be able to handle the standard maintenance of an up-and-running system.

The focus in the course is on the MN-OSS UNIX platform and the student will gain thorough knowledge about how to handle processes, errors and authority in the MN-OSS system. The course also covers fault management and network element connections.

The course consists of modules with mostly practical sessions (task-oriented) but there will also be theoretical parts. The theoretical parts explain about the structure of the MN-OSS system and the network environment. In the practical sessions the students will be presented with the tasks required to administer and maintain an MN-OSS system. The students solve the tasks on a training system, using the on-line documentation. The tasks are always concluded by an instructor lead discussion.

It should be noted that this is not an OSS operations course, and neither does it give any information on how to operate or administer different telephony exchanges. Administration of applications and features for the R5 system are covered to some extent in the course.

Learning objectives

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

1. Describe the overall structure of an OSS system.
 - 1.1. Describe the directory structure
 - 1.2. Describe how the Sybase database server is used by OSS and list the different OSS databases in the system
 - 1.3. Describe how the OSS is located in the different types of networks
 - 1.4. Use the online documentation to find out how to perform system administrator tasks
2. Handle Authority Administration in the OSS system
 - 2.1. Add new users to the OSS system
 - 2.2. Describe the structure of the Administrative Model
 - 2.3. Use TSS Authority Administration GUI and CLI to administer users, targets and activities
 - 2.4. Use TSS Password Administration CLI
3. Manage processes in the OSS system
 - 3.1. Check and administer the processes in the OpenMaster framework
 - 3.2. Use the TBS interfaces for process and error management
 - 3.3. Describe the TBS specific processes and configuration files
 - 3.4. Describe how CORBA is used in the OSS system
 - 3.5. Use the CLI and GUI for CORBA process management
 - 3.6. Handle the Sybase database server processes
4. Use and describe the main components in the fault management system
 - 4.1. Describe the flow of alarms from network elements to the alarm viewer applications
 - 4.2. Configure the alarm viewer applications (ISM Monitor, ISM Alarm)
5. Set up connections to network elements
 - 5.1. List the different types of network elements that can be managed from the OSS
 - 5.2. List the different protocols used in network element connections
 - 5.3. Establish connection to an AXE/IOG type network element
 - 5.4. Establish a connection to an AXD type network element
6. Perform standard maintenance in the OSS system
 - 6.1. Perform platform maintenance
 - 6.2. Handle the scripts scheduled in the crontab
 - 6.3. Handle backup of file systems
 - 6.4. Handle backup of databases
 - 6.5. Know to location of all vital log files



Target audience

The target audience for this course is MN-OSS administrators-to-be who need to know the MN-OSS system concept and how to perform standard maintenance in the system.

Prerequisites

The participants should be familiar with MN-OSS application systems handling

Suitable courses:

MN-OSS Operation, AXE LZU 108 5658

MN-OSS Operation, AXD LZU 108 5957

Successful completion of the following external courses or equivalent knowledge:

Sybase: Fast track to Adaptive Server Enterprise

Sun: Solaris System Administration I and II

The participants should also be familiar with Veritas Volume Management.

Duration and class size

The length of the course is 5 days and the maximum number of participants is 8.

Learning situation

The course is based on task-oriented sessions in a classroom equipped with an LCD-projector and a training environment where each group of two students use one MN-OSS set-up (SUN server, 2000 server, 2000 client) with the possibility to connect to either a real or simulated AXE10 and an AXD301.

Time schedule

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

Day 1	Estimated time
• System administration introduction	2 h
• User administration	4 h
Day 2	Estimated time
• Application configuration	4 h
• Network element administration	2 h
Day 3	Estimated time
• Network element administration	4 h
• Understanding processes	2 h
Day 4	Estimated time
• Understanding processes	4 h
• Regular maintenance	2 h
Day 5	Estimated time
• Backup and restore	6 h



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Networking and Ethernet Standards (WBL)

LZU 108 5941 R1A

Description

This course provides a basic introduction to modern LAN and WAN technologies and concepts.

Learning objectives

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

- 7 Describe Local Area Networks (LAN) and the Ethernet Standard
- 7.6 Define the building blocks in a LAN
- 7.7 Outline the different types of Ethernet standard
- 7.8 Explain data transmission in an Ethernet LAN – Ethernet frame
- 7.9 Understand Ethernet basics (CSMA/CD)
- 7.10 Outline the difference between a Hub and a Switch
- 7.11 Describe how to connect communication devices and design a LAN

- 8 Describe Wireless Local Area Networks (WLAN)
- 8.1 Describe two basic types of Wireless LAN (Ad Hoc and Infrastructure mode)
- 8.2 Outline the IEEE 802.11 standard and its applications
- 8.3 Outline the HIPERLAN/2 standard and its applications and compare to IEEE 802.11
- 8.4 Outline the properties of Home RF
- 8.5 Understand Bluetooth drivers and communication models

Target audience

The target audience for this course is anybody wishing to gain a basic understanding of modern datacom networking technologies.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites

There are no prerequisites for this course.

Duration

The length of the course is 2.5 hours.



Learning situation

The course is a web based learning product.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• Local Area Networks and the Ethernet Standard	1 hour 15 mins
1	<ul style="list-style-type: none">• Wireless Local Area Networks, WLAN	1 hour 15 mins



Networking Basics, An Overview (WBL)

LZU 108 5940 R1A

Description

This course provides information on basic networking principles and describes how a PC communicates with other devices and networks.

Learning objectives

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

- 8 Explain the basics of networking
- 8.6 Outline the input and output devices of a PC and how they are connected
- 8.7 Describe the communication parameters necessary to understand connections
- 8.8 Describe physical and logical network topologies

- 9 Describe how to connect a PC to a datacom network
- 8.9 Identify and describe communication devices in a LAN (Hub, Switch and Router)
- 8.10 Understand the different types of cables (UTP,STP and Fiber Optical)
- 8.11 Explain how to connect computers to a LAN
- 8.12 Explain the difference between Internet and Intranet
- 8.13 Outline how to implement a Structured Cabling System (independent cabling system)

Target audience

The target audience for this course is anybody wishing to gain a basic understanding of modern datacom networking technologies.

The course focuses on modern standard technologies and does not contain any Ericsson specific product material.

Prerequisites

There are no prerequisites for this course.

Duration

The length of the course is 2 hours.



Learning situation

The course is a web based learning product.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• Networking Basics	1 hour
1	<ul style="list-style-type: none">• Your PC and the Datacom Network	1 hour



Telecoms 2000: An Overview (MBL)

LZU 108 989/C

Description

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

- Describe the concepts and terminology associated with telecommunications
- Describe how calls are handled in the PSTN
- Explain how data is transferred between computers in various networks
- Describe how a cellular mobile telephone is built, and how it works
- Describe evolution of demand for ISDN and broadband services, and the technologies used to provide them
- Outline the criteria and strategies used in planning and managing networks
- Describe the various regulatory bodies and their associated standards

Learning Objectives

- 1 Telecommunications overview
- 2 Mobile Communications
- 3 ISDN and Broadband Communications
- 4 Telecommunications (Management and Planning)
- 5 The Public Switched Telephone Network (PSTN)
- 6 Data Communications
- 7 Telecommunications Standards "

Target Audience

Technical staff that have little of no telecommunications expertise

Telecommunications marketing and sales staff

Management and non-technical personnel who are starting work in a technical environment

Prerequisites

There are no prerequisites for this course

Duration

The length of the course is 1 day.

Learning situation

Theoretical lessons/exercises and practical study cases



Telecoms 2000 Fundamentals (MBL)

LZU 108 993

Description

Do you need a grounding in the basic concepts of telecommunications? Do you understand the difference between circuit and packet switching? Do you need an overview of how SS No.7 operates? Do you want a quick induction course in the basic concepts behind transmission, signalling and switching for your new technical or management recruits?

The course consists of five modules - each one lasting approximately one hour - and uses advanced multimedia learning techniques, including animated graphics and sound.

Course Objectives

Telecoms 2000: Fundamentals consists of five training modules, each approximately one hour long:

- 1 Basic Concepts
- 2 Transmission
- 3 Signalling
- 4 Switching
- 5 Case Studies

Target Audience

This course is intended for:

Technical staff that have little or no telecommunication expertise

Telecommunications sales and marketing staff

Management and non-technical personnel who are starting work a technical environment

Prerequisites

None

Duration

The length of the course is 5 hours.



Learning situation

This is CD-ROM based training that is installed on the local machine or network

Hardware Requirements:

IBM-compatible PC (80486 processor) or higher with at least 8MB of RAM, 16MB recommended

VGA graphics adaptor (minimum 256 colours, 32,000 colours recommended)

High speed CD-ROM drive

Mouse

High-capacity hard disk or network drive

Windows 3.1

Sound Card (e.g. Soundblaster) and speakers or headphones (optional)



Telecommunication ABC

LZU 107 12

Description

The course consists of general descriptions of telecommunications networks, transmission media, the AXE exchange, mobile telephony, ISDN, the SDH transport network and data communication, including the Internet and ATM. Ericsson's organization and products are treated briefly.

Learning objectives

After completed training the trainees will be able to:

- 1 Describe the organization of Ericsson and state the most important products made by the company
- 2 Describe Ericsson's role in the world of telecommunications
- 3 Describe the main architecture of the telecommunications network
- 4 State the most important transmission media
- 5 Describe how analogue signals are converted and sent through the network
- 6 Describe the main parts of an AXE exchange
- 7 Describe the main parts of a mobile telephone network
- 8 Describe the fundamentals of ATM, Internet and ISDN.

Target audience

Staff who have a background other than technical and need some technical orientation in telecommunications and Ericsson products.

Prerequisites

None

Duration and class size

The length of the course is 3 days and the maximum number of participants is 20.

Learning situation

Lessons, demonstrations and short exercises.



Understanding the new Telecom

LZU 107106

Description

This course covers the area of the wide conception Telecom, including both traditional Telecom and Datacom. This replaces the earlier Telecom Platform course and can be used for:

- speeding up introduction of newly recruited staff
- re-educating existing staff
- being the first course in various competence programmes

Learning objectives

- 9 On completion of this course the participants will be able to: have a good view of the history, present situation and trends in "telecom" and datacom
- 10 understand the end-user's needs of services and what requirements this leads to for different networks
- 11 understand Ericsson's and our customers' business situation with possibilities and limitations
- 12 understand the convergence trends (e.g. "telecom"/datacom, fixed/mobile, narrowband/broadband), and how these affect both new and existing networks
- 13 understand the differences and similarities between "telecom" and datacom solutions
- 14 understand typical network models, and their various layers and functions
- 15 in general terms understand basic and advanced transfer and access technologies in "telecom" and datacom
- 16 understand network management and standardization

Target audience

- The primary target audience is staff at PN and UAB. Due to the convergence trends, staff from other parts of BN and BR shall equally be considered as primary target audience
- Ericsson's customers are secondary target audience

Perequisites

None.

Duration and class size

The length of the course is 5 days.



Learning situation

Theoretical lessons/exercises and practical study cases.



UNIX Fundamentals

LZU 108 170

Description

This course provides an overview of the fundamentals of the UNIX operating system. The course provides an introduction to the structure and operation of UNIX using the wide range of fundamental commands and utility programs. Tutorials on the 3 shells (Bourne, Korn and C) are given, allowing to the students to experiment with useful shell scripts. Students are encouraged to use the fundamental commands and utility programs throughout the duration of the course.

Learning Objectives

After completing the course, the student should be able to:

- 1 Describe the history of UNIX
- 2 Describe and UNIX operating system
- 3 Describe the UNIX file system
- 4 Use fundamental UNIX commands
- 5 Overview of the vi editor
- 6 Work within a shell environment
- 7 Use network utility programs
- 8 Write basic shell scripts
- 9 Use the on-line documentation
- 10 Set up file permissions
- 11 Describe the role of the System Administrator

Target Audience

Technical staff that need to become familiar with UNIX and shell scripting.

Prerequisites

Students attending this course do not need to have prior UNIX skills. However, prior knowledge of UNIX would be an advantage.

Duration and class size

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

Learning situation

Instructor-led training in a classroom equipped with whiteboard, flipchart and overhead projector. All students will have access to a UNIX workstation.



Using the FMX tool

LZU 108 5148 R1A

Description

The name of the course is "Using the FMX Tool", and it is based upon the release of FM 4.x with FMX. The student will gain knowledge about the purpose of FMX regarding the contents, functionality and the connection to other applications in the management system.

The course will discuss the use of FMX as a tool to develop and maintain an expert system for intelligent alarm handling, that is, to embody and apply expertise knowledge in rules which are put into FMX modules. The main focus will be on how to create, develop and administrate FMX modules and rules.

In a safe training environment the students are guided through structured exercises, where mistakes are turned into a learning situation instead of network problems. The course can also be delivered On-Site.

Learning objectives

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

- 9 Describe what FMX is
- 9.1 Describe where and how FMX is used in the management system and understand the purpose of FMX
- 9.2 Describe the general flow of an alarm record when FMX is used
- 9.3 Describe the concepts of module, event discriminator and rule
- 10 Use the FMX user interfaces and tasks
- 10.1 Create and maintain FMX modules
- 10.2 Create rules in the FMX Rule editor
- 10.3 Test FMX modules and their contents
- 10.4 Work according to a workflow
- 12 Use tools for rule design
- 10.5 Use and configure the different building blocks in the Rule Editor
- 10.6 Design and create own FMX alarms
- 10.7 Describe the concept of object and attributes used in FMX
- 13 Use more advanced features and rule implementation
- 10.8 Create more advanced FMX rules and modules
- 10.9 Use advanced scripts to execute actions and retrieve results between FMX and a network element
- 10.10 Use FMX for interaction with the UNIX environment

Target audience

The target audience for this course is intended for future FMX developers, who need to know the FMX concept and how to develop and maintain FMX modules. However, anyone who will come in contact with FMX can also benefit from this course. FMX administrators and FM users in a system with FMX installed and running.

Prerequisites

The student should have:

- Attended Telecom ABC LZU 107 12



- Completed OSS Operation course or equivalent knowledge in the Fault Management area
- Experience in object oriented programming

Duration and class size

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

Learning situation

This learning product is delivered by an instructor. The instructor works with the student to implement knowledge. The role of the instructor is to assist and guide the personnel to solve their own problems, using existing methods, tools, and routines.

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	Short description of the topics in the course	Estimated time
1	<ul style="list-style-type: none">• What is FMX?	1 h
	<ul style="list-style-type: none">• Working with FMX	3 h
	<ul style="list-style-type: none">• Tools for Rule Design	2 h
2	<ul style="list-style-type: none">• FMX Rule Design	6 h
3	<ul style="list-style-type: none">• FMX Rule Design	6 h
4	<ul style="list-style-type: none">• Features and Rule Implementation	6 h



VPN and IP Security

LZU 102 323

Description

The course gives participants detailed understanding of how to implement VPN and security in IP based networks.

Learning Objectives

- 8 After completing this course participants will be able to:
- 9 Describe VPN and IP networks
- 10 Understand network tunneling
- 11 Understand encryption mechanisms
- 12 Describe firewalls and proxies

Target Audience

Anyone who wants to be certified as an E² and E² *plus* certification

Prerequisites

Participants should have successfully completed the E² courses Datacom II and TCP/IP

Duration and class size

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

Learning situation

The course includes theoretical lectures.



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