



Ericsson Content Delivery System (ECDS) 3.0 Learning Solutions

Catalog of Learning Program Descriptions



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Introduction

Ericsson has developed comprehensive Learning Solutions to satisfy the customers' need for expertise. Customers require fast access to a range of expertise varying from the skills and knowledge required to operate a network to the expertise required to develop new end-user services.

These Learning Solutions consist of a Competence Gap Analysis which identifies the customer's competence needs, and flexible, practical learning programs consisting of either Structured Knowledge Transfer (SKT) or Task Oriented Learning (TOL). These programs are facilitated by experts who ensure that the required performance is achieved. Tests are administered prior to the training and afterwards to verify this.

Service delivery is supported using various delivery methods including:

Icon	Delivery Method
	Task Oriented Learning (TOL)
	Seminar (SEM)
	Workshop (WS)
	Virtual Classroom Training (VCT)
	Web Based Learning (WBL)
	Short Article (SA)
	Streaming Video (SV)
	CD-ROM (CD)
	Structured Knowledge Transfer (SKT)
Delivery Enablers	
	Remote Training Lab (RTL)
	Web Portal (WP)
Ericsson Education E-Learning	
	EEOnline @ http://learning.ericsson.net/eeonline/

Ericsson Content Delivery System (ECDS) 3.0 System Administrator



Description

The Ericsson Content Delivery System (ECDS) 3.0 System Administrator learning program guides the participants through operation of the ECDS system. This learning program provides the participants with the knowledge and skills required to administrate and maintain the ECDS node.

This is a flexible learning program which is aligned with your business and operational requirements. It is not a standard off-the-shelf course; the learning program should be customised, prior to delivery, to suit the specific requirements of the group or individuals to which it is directed.

Learning objectives

On completion of this learning program the participants will be able to successfully perform each duty, task and step listed in the checklist for the ECDS 3.0 System Administrator. As standard, the following duties and tasks are addressed:

- 1 Ensure the NIN server is running
 - 1.1 Check NIN configuration files
 - 1.2 Check NIN log files
 - 1.3 Check NIN startup/shutdown script
 - 1.4 Check on mail for Cron job status
 - 1.5 Check on Unix system log
 - 1.6 Check on NIN process
 - 1.7 Check on NIN session port
 - 1.8 Trace on NIN log files
 - 1.9 Check on NIN routing table2
 - 1.10 Check on CDR FTP status
 - 1.11 Perform house keeping on NIN logs
 - 1.12 Perform backup on NIN configuration files

- 2 Ensure the EMTV server is running
 - 2.1 Check EMTV server configuration files
 - 2.2 Check EMTV server log files
 - 2.3 Check EMTV server startup/shutdown script
 - 2.4 Check on mail for Cron job status
 - 2.5 Check on Unix system log
 - 2.6 Check on EMTV server process
 - 2.7 Check on EMTV server session port



- 2.8 Trace on EMTV server log files
- 2.9 Check on EMTV server routing table
- 2.10 Perform house keeping on EMTV server logs
- 2.11 Perform backup on EMTV server configuration files

- 3 Ensure the Helix Universal Mobile Server is running
 - 3.1 Check HUMS configuration files
 - 3.2 Check HUMS log files
 - 3.3 Check HUMS startup/shutdown script
 - 3.4 Check on Unix system log
 - 3.5 Check on HUMS process
 - 3.6 Check on HUMS session port
 - 3.7 Trace on HUMS log files
 - 3.8 Check on HUMS routing table
 - 3.9 Check HUMS GUI
 - 3.10 Check on content mount point
 - 3.11 Perform house keeping on HUMS logs
 - 3.12 Perform backup on HUMS configuration files

- 4 Ensure the Helix Universal Mobile Proxy is running
 - 4.1 Check HUMP configuration files
 - 4.2 Check HUMP log files
 - 4.3 Check HUMP startup/shutdown script
 - 4.4 Check on Unix system log
 - 4.5 Check on HUMP process
 - 4.6 Check on HUMP session port
 - 4.7 Trace on HUMP log files
 - 4.8 Check on HUMP routing table
 - 4.9 Check HUMP GUI
 - 4.10 Check on content mount point
 - 4.11 Perform house keeping on HUMP logs
 - 4.12 Perform backup on HUMP configuration files

- 5 Ensure the Sun Java System Directory Server is running
 - 5.1 Check directory server configuration files
 - 5.2 Check directory server log files
 - 5.3 Check directory server startup/shutdown script
 - 5.4 Check on Unix system Log
 - 5.5 Check on directory server process
 - 5.6 Check on directory server session port
 - 5.7 Trace on directory server log files
 - 5.8 Check on directory server routing table
 - 5.9 Check directory server GUI
 - 5.10 Perform house keeping on directory server logs
 - 5.11 Perform backup on directory server configuration files
 - 5.12 Check on CIDB (Content Information Database) using directory server console
 - 5.13 Check on SUBDB (Subscriber Database) using directory server console

- 6 Ensure the Sun Java System Web Server is running



- 6.1 Check web server configuration files
- 6.2 Check web server log files
- 6.3 Check web server startup/shutdown script
- 6.4 Check on Unix system log
- 6.5 Check on web server process
- 6.6 Check on web server session port
- 6.7 Trace on web server log files
- 6.8 Check on web server routing table
- 6.9 Check web server GUI
- 6.10 Check on content mount point
- 6.11 Perform house keeping on web server logs
- 6.12 Perform backup on web server configuration files
- 6.13 Check on CIDB (Content Information Database) using web Interface
- 6.14 Check on SUBDB (Subscriber Database) using web interface

- 7 Ensure the Network File System server is running
 - 7.1 Check NFS configuration files
 - 7.2 Check on NFS startup/shutdown script
 - 7.3 Check on Unix system log
 - 7.4 Check on NFS process
 - 7.5 Check on NFS routing table
 - 7.6 Check on all NFS mount points

- 8 Ensure the Nexcaster 2 Live Engine is running
 - 8.1 Check Nexcaster configuration for both multicast and unicast
 - 8.2 Check on Nexcaster routing table point
 - 8.3 Check on UDP/RTP traffic for both multicast and unicast
 - 8.4 Check on SDP file

- 9 Ensure the Popwire Compression Engine is running
 - 9.1 Check PCE configuration files
 - 9.2 Check PCE log files
 - 9.3 Check PCE startup/shutdown script
 - 9.4 Check on Unix system log
 - 9.5 Check on PCE process
 - 9.6 Trace on PCE log files
 - 9.7 Check on PCE routing table
 - 9.8 Check on content compression status
 - 9.9 Perform house keeping on PCE logs
 - 9.10 Perform backup on PCE configuration files

- 10 Ensure the F5 Network BigIP Load Balancer is running
 - 10.1 Check BigIP configuration files
 - 10.2 Check BigIP log files
 - 10.3 Check the status of all virtual servers
 - 10.4 Perform backup on BigIP configuration files

- 11 Ensure the Veritas Cluster Server is running
 - 11.1 Check VCS configuration files



- 11.2 Check VCS log files
 - 11.3 Check VCS startup/shutdown script
 - 11.4 Check on Unix system log
 - 11.5 Check on VCS process
 - 11.6 Trace on VCS log files
 - 11.7 Check VCS GUI
 - 11.8 Perform house keeping on VCS logs
 - 11.9 Perform backup on VCS configuration files
 - 11.10 Check faults on VCS resources
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- 12 Trace traffic flow between mobile terminal and NIN
 - 12.1 Trace on Radius accounting
 - 12.2 Trace on streaming session (RTSP/RTP) on NIN
 - 12.3 Trace on NIN log files
 - 12.4 Trace on NIN CDR
 - 12.5 Trace on streaming session (RTSP/RTP) NIN and HUMS/HUMP
 - 12.6 Trace on HUMS/HUMP log files

Target audience

The target audience for this learning program is: System Administrators.

Prerequisites

Successful completion of the following courses:

IP Networking LZU 102 397

Unix Fundamentals LZU BB1 08170

GSM Network Fundamentals (FAB 102 1465)

Service Layer Overview Technical (LZU 108 6610)

and, optionally,

Service Layer Overview - Business LZU 108 6609.

The participants should be familiar with Mobile Internet and have a general understanding of telecommunication and datacom

Duration and class size

The length of the service is 2-4 days and the maximum number of participants is 4 (Structured Knowledge Transfer - SKT) or 8 (Task Oriented Learning - TOL).

**Learning situation**

The learning program can be run as either of the following:

Task Oriented Learning (TOL)

This is a task-oriented learning program based on tasks in the work process given in a technical environment using equipment and tools.

OR

Structured Knowledge Transfer (SKT)

This is an on-the-job mentoring program based on an Ericsson mentor's presentations and demonstrations and a participant's performance of hands-on duties, tasks and skills. The SKT takes place at the customer site using the customer's network. The mentor leads each student through tasks that are defined for that employee's job function.

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 learning program	Estimated time
1	Ensure the NIN server is running	1.5
1	Ensure EMTV server is running	1
1	Ensure Helix Universal Mobile Server is running	1
1	Ensure Helix Universal Mobile Proxy is running	1
2	Ensure Sun Java System Directory Server is running	1
2	Ensure Sun Java System Web Server is running	1
2	Ensure Network File System is running	1
2	Ensure Nexcaster 2 Live Engine is running	0.5
2	Ensure Popwire Compression Engine is running	1
3	Ensure F5 Network BigIP Load Balancer is running	1
3	Ensure the storage array (Sun StorEdge 3300 disk array) is running	0.25
3	Ensure Veritas Cluster Server is running	1
3	Trace traffic flow between mobile terminal and NIN	1

Ericsson Content Delivery System (ECDS) 3.0 System Engineer



Description

The Ericsson Content Delivery System (ECDS) 3.0 System Engineer learning program guides the participants through operation of the ECDS system and is designed to give them a good understanding of the issues involved in operating and maintaining the system.

This is a flexible learning program which is aligned with your business and operational requirements. It is not a standard off-the-shelf course; the learning program should be customised, prior to delivery, to suit the specific requirements of the group or individuals to which it is directed.

Learning objectives

On completion of this learning program the participants will be able to successfully perform each duty, task and step listed in the checklist for the ECDS 3.0 System Engineer. As standard, the following duties and tasks are addressed:

- 1 Ensure the NIN server is running
 - 1.1 Check NIN configuration files
 - 1.2 Check NIN log files
 - 1.3 Check NIN startup/shutdown script
 - 1.4 Check on mail for Cron job status
 - 1.5 Check on Unix system log
 - 1.6 Check on NIN process
 - 1.7 Check on NIN session port
 - 1.8 Trace on NIN log files
 - 1.9 Check on NIN routing table
 - 1.10 Check on CDR FTP status
 - 1.11 Perform house keeping on NIN logs
 - 1.12 Perform backup on NIN configuration files

- 2 Ensure the EMTV server is running
 - 2.1 Check EMTV server configuration files
 - 2.2 Check EMTV server log files
 - 2.3 Check EMTV server startup/shutdown script
 - 2.4 Check on mail for Cron job status
 - 2.5 Check on Unix system log
 - 2.6 Check on EMTV server process
 - 2.7 Check on EMTV server session port
 - 2.8 Trace on EMTV server log files
 - 2.9 Check on EMTV server routing table
 - 2.10 Perform house keeping on EMTV server logs



- 2.11 Perform backup on EMTV server configuration files

- 3 Ensure the Helix Universal Mobile Server is running
 - 3.1 Check HUMS configuration files
 - 3.2 Check HUMS log files
 - 3.3 Check HUMS startup/shutdown script
 - 3.4 Check on Unix system log
 - 3.5 Check on HUMS process
 - 3.6 Check on HUMS session port
 - 3.7 Trace on HUMS log files
 - 3.8 Check on HUMS routing table
 - 3.9 Check HUMS GUI
 - 3.10 Check on content mount point
 - 3.11 Perform house keeping on HUMS logs
 - 3.12 Perform backup on HUMS configuration files

- 4 Ensure the Helix Universal Mobile Proxy is running
 - 4.1 Check HUMP configuration files
 - 4.2 Check HUMP log files
 - 4.3 Check HUMP startup/shutdown script
 - 4.4 Check on Unix system log
 - 4.5 Check on HUMP process
 - 4.6 Check on HUMP session port
 - 4.7 Trace on HUMP log files
 - 4.8 Check on HUMP routing table
 - 4.9 Check HUMP GUI
 - 4.10 Check on content mount point
 - 4.11 Perform house keeping on HUMP logs
 - 4.12 Perform backup on HUMP configuration files

- 5 Ensure the Network File System server is running
 - 5.1 Check NFS configuration files
 - 5.2 Check on NFS startup/shutdown script
 - 5.3 Check on Unix system log
 - 5.4 Check on NFS process
 - 5.5 Check on NFS routing table
 - 5.6 Check on all NFS mount points

- 6 Ensure the F5 Network BigIP Load Balancer is running
 - 6.1 Check BigIP configuration files
 - 6.2 Check BigIP log files
 - 6.3 Check the status of all virtual servers
 - 6.4 Perform backup on BigIP configuration files

- 7 Ensure the storage array (Sun StorEdge 3300 Disk Array) is running
 - 7.1 Check the status of disk array

- 8 Ensure the Veritas Cluster Server is running
 - 8.1 Check VCS configuration files



- 8.2 Check VCS log files
- 8.3 Check VCS startup/shutdown script
- 8.4 Check on Unix system log
- 8.5 Check on VCS process
- 8.6 Trace on VCS log files
- 8.7 Check VCS GUI
- 8.8 Perform house keeping on VCS logs
- 8.9 Perform backup on VCS configuration files
- 8.10 Check faults on VCS resources

Target audience

The target audience for this learning program is: System Engineers.

Prerequisites

Successful completion of the following courses:

IP Networking LZU 102 397

Unix Fundamentals LZU BB1 08170

GSM Network Fundamentals (FAB 102 1465)

Service Layer Overview Technical (LZU 108 6610)

and, optionally,

Service Layer Overview - Business LZU 108 6609.

The participants should be familiar with Mobile Internet and have a general understanding of telecommunication and datacom

Duration and class size

The length of the service is 2-3 days and the maximum number of participants is 4 (Structured Knowledge Transfer - SKT) or 8 (Task Oriented Learning - TOL).

Learning situation

The learning program can be run as either of the following:

Task Oriented Learning (TOL)

This is a task-oriented learning program based on tasks in the work process given in a technical environment using equipment and tools.

OR

Structured Knowledge Transfer (SKT)

This is an on-the-job mentoring program based on an Ericsson mentor's presentations and



demonstrations and a participant's performance of hands-on duties, tasks and skills. The SKT takes place at the customer site using the customer's network. The mentor leads each student through tasks that are defined for that employee's job function.

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 learning program	Estimated time
1	Ensure the NIN server is running	1.5
1	Ensure EMTV server is running	1.5
1	Ensure Helix Universal Mobile Server is running	1
1	Ensure Helix Universal Mobile Proxy is running	1
2	Ensure Network File System is running	1
2	Ensure F5 Network BigIP Load Balancer is running	1.5
2	Ensure the storage array (Sun StorEdge 3300 disk array) is running	1.5
2	Ensure Veritas Cluster Server is running	1.5

Ericsson Content Delivery System (ECDS) 3.0 Service Engineer



LZP 101 005 R1A

Description

The Ericsson Content Delivery System (ECDS) 3.0 Service Engineer learning program guides the participants through operation of the ECDS system. Participants will gain experience in administering and performing regular maintenance tasks on the system.


This is a flexible learning program which is aligned with your business and operational requirements. It is not a standard off-the-shelf course; the learning program should be customised, prior to delivery, to suit the specific requirements of the group or individuals to which it is directed.

Learning objectives

On completion of this learning program the participants will be able to successfully perform each duty, task and step listed in the checklist for the ECDS 3.0 Service Engineer. As standard, the following duties and tasks are addressed:

- 1 Ensure the NIN server is running
 - 1.1 Check NIN configuration files
 - 1.2 Check NIN log files
 - 1.3 Check NIN startup/shutdown script
 - 1.4 Check on mail for Cron job status
 - 1.5 Check on Unix system log
 - 1.6 Check on NIN process
 - 1.7 Check on NIN session port
 - 1.8 Trace on NIN log files
 - 1.9 Check on NIN routing table
 - 1.10 Check on CDR FTP status
 - 1.11 Perform house keeping on NIN logs
 - 1.12 Perform backup on NIN configuration files

- 2 Ensure the EMTV server is running
 - 2.1 Check EMTV server configuration files
 - 2.2 Check EMTV server log files
 - 2.3 Check EMTV server startup/shutdown script
 - 2.4 Check on mail for Cron job status
 - 2.5 Check on Unix system log
 - 2.6 Check on EMTV server process
 - 2.7 Check on EMTV server session port
 - 2.8 Trace on EMTV server log files
 - 2.9 Check on EMTV server routing table
 - 2.10 Perform house keeping on EMTV server logs

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- 2.11 Perform backup on EMTV server configuration files

 - 3 Ensure the Helix Universal Mobile Server is running
 - 3.1 Check HUMS configuration files
 - 3.2 Check HUMS log files
 - 3.3 Check HUMS startup/shutdown script
 - 3.4 Check on Unix system log
 - 3.5 Check on HUMS process
 - 3.6 Check on HUMS session port
 - 3.7 Trace on HUMS log files
 - 3.8 Check on HUMS routing table
 - 3.9 Check HUMS GUI
 - 3.10 Check on content mount point
 - 3.11 Perform house keeping on HUMS logs
 - 3.12 Perform backup on HUMS configuration files

 - 4 Ensure the Helix Universal Mobile Proxy is running
 - 4.1 Check HUMP configuration files
 - 4.2 Check HUMP log files
 - 4.3 Check HUMP startup/shutdown script
 - 4.4 Check on Unix system log
 - 4.5 Check on HUMP process
 - 4.6 Check on HUMP session port
 - 4.7 Trace on HUMP log files
 - 4.8 Check on HUMP routing table
 - 4.9 Check HUMP GUI
 - 4.10 Check on content mount point
 - 4.11 Perform house keeping on HUMP logs
 - 4.12 Perform backup on HUMP configuration files

 - 5 Ensure the Nexcaster 2 Live Engine is running
 - 5.1 Check Nexcaster configuration for both multicast and unicast
 - 5.2 Check on Nexcaster routing table point
 - 5.3 Check on UDP/RTP traffic for both multicast and unicast
 - 5.4 Check on SDP file

 - 6 Ensure the Popwire Compression Engine is running
 - 6.1 Check PCE configuration files
 - 6.2 Check PCE log files
 - 6.3 Check PCE startup/shutdown script
 - 6.4 Check on Unix system log
 - 6.5 Check on PCE process
 - 6.6 Trace on PCE log files
 - 6.7 Check on PCE routing table
 - 6.8 Check on content compression status
 - 6.9 Perform house keeping on PCE logs
 - 6.10 Perform backup on PCE configuration files

Target audience

The target audience for this learning program is: Service Engineers.

Prerequisites

Successful completion of the following courses:

IP Networking LZU 102 397

Unix Fundamentals LZU BB1 08170

GSM Network Fundamentals (FAB 102 1465)

Service Layer Overview Technical (LZU 108 6610)

and, optionally,

Service Layer Overview - Business LZU 108 6609.

The participants should be familiar with Mobile Internet and have a general understanding of telecommunication and datacom

Duration and class size

The length of the service is 1-2 days and the maximum number of participants is 4 (Structured Knowledge Transfer - SKT) or 8 (Task Oriented Learning - TOL).

Learning situation

The learning program can be run as either of the following:

- Task Oriented Learning (TOL)
This is a task-oriented learning program based on tasks in the work process given in a technical environment using equipment and tools.

OR

- Structured Knowledge Transfer (SKT)
This is an on-the-job mentoring program based on an Ericsson mentor's presentations and demonstrations and a participant's performance of hands-on duties, tasks and skills. The SKT takes place at the customer site using the customer's network. The mentor leads each student through tasks that are defined for that employee's job function.

**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 learning program	Estimated time
1	Ensure the NIN server is running	1.5
1	Ensure EMTV server is running	1.5
1	Ensure Helix Universal Mobile Server is running	1
2	Ensure Helix Universal Mobile Proxy is running	1
2	Ensure Nexcaster 2 Live Engine is running	1
2	Ensure Popwire Compression Engine is running	1
2	Trace traffic flow between mobile terminal and NIN	1

GPRS System Survey



LZU 108 876 R4A

Description

This course procures a basic introduction to the GPRS technology, the air interfaces for GSM (including EDGE) and WCDMA. The course includes traffic cases and Ericsson products within this field are presented. The focus is on general principles rather than specific technical details.

Learning objectives

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

- 1 Explain the purpose of implementing packet switching in the existing GSM/WCDMA systems
 - 1.1 Explain the differences between Circuit switching and Packet switching principles
 - 1.2 Describe some of the GPRS Applications
 - 1.3 List GPRS terminal features
 - 1.4 Describe the general GSM/GPRS/WCDMA network Architecture
 - 1.5 Illustrate how a terminal (Laptop or Smart Phone) uses the GPRS system to access other networks such as corporate LAN or the internet
 - 1.6 List and explain GPRS system architecture

- 2 Explain on overview level the air interface in GPRS covering the GSM, including EDGE and/or WCDMA Systems
 - 2.1 Explain GPRS Radio resource management including:
 - Dedicated or on-demand PDCHs
 - UL/DL resource allocation
 - Multi slot allocation
 - Radio resource management for UL/DL packet transfer
 - 2.2 Understand GPRS throughput announcement, Coding schemes, Number of timeslots allocated, Protocol headers added to payload and Cell changing in GPRS
 - 2.3 Describe the User plane bearers for WCDMA Systems

- 3 Describe the traffic cases in GSM/WCDMA Networks for:
 - Location Update
 - Combined LA/RA update
 - Cell update
 - Paging
 - PDP context Activation

- 4 Describe the functions and hardware for the WPP based SGSN for both GSM and WCDMA Systems as well as GGSN based on J20
 - CGSN 4.0

- SGSN 5.5 (G)
- SGSN 5.5 (W)
- SGSN 6.0
- GGSN J20 R2

- 5 List the Software and Hardware required for GPRS in GSM / WCDMA
- 6 Understand the protocol stacks associated with GSM Systems and WCDMA Systems

Target audience

The target audience for this course is: Field Technician, System Technician, System Engineer, Service Engineer, Network Design Engineer, Network Deployment Engineer, Service Design Engineer, Service Deployment Engineer.

This audience includes personnel in charge of the operation or engineering of Ericsson GSM SGSN and/or WCDMA SGSN nodes.

Prerequisites

The participants should have successfully completed the following courses:

Ericsson WCDMA System overview (2 days ILT or VCT) LZU108 5418 or
GSM System Survey (4 days ILT) LZU 108 852

Duration and class size

Duration and class size depend on the course being delivered in either version:

1. Instructor Led Training (ILT) Version:

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

2. Virtual Classroom Training (VCT) Version:

The length of the course is 2 days and no more than 16 students participating in the VCT Sessions are recommended. Ericsson does not recommend Centra Sessions longer than 3 hours a day.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment, or given in a virtual classroom over the net by an instructor.

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"> • GSM/WCDMA Network Overview for GPRS 	2 h



- GSM Air Interface for GPRS, including EDGE 2 h
- WCDMA Air Interface 2 h
- 2 • Transport and Traffic Management 2 h
- SGSN and GGSN Hardware 2 h
- BSS Architecture for GPRS 1 h
- RAN Architecture for GPRS 1 h

GSM System Survey



LZU 108 852 R6A

Description

Are you lost when discussing GSM network basic concepts? If you are starting working in different areas of GSM system and need a general concept this is the course you were looking for. It will provide you with knowledge about Ericsson's GSM based systems and GSM 800/900/1800/1900. It will focus on GSM terminology, wireless concepts, functions of network nodes, and the Ericsson implementation of those network nodes. Completing this training you will have all the initial knowledge you need to proceed in competence development in other areas.

Learning objectives

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

- 1 Understand how mobile systems have evolved over the time and tell the history of GSM development
 - 1.1 List benefits of having a standard;
 - 1.2 Describe the GSM geographical network structure and node functions;
 - 1.3 Understand the GSM frequency bands;
 - 1.4 List subscriber services provided in the GSM network.
- 2 List Ericsson's GSM System divisions and components and perceive how Ericsson has been involved in GSM since its inception and took an active part in the GSM specification process.
 - 2.1 List network components and describe their functions;
 - 2.2 Briefly describe optional additional network entities functions.
- 3 Know basic concepts of wireless communications and its importance to provide a good knowledge of how GSM Systems works
 - 3.1 Understand Time Division Multiple Access technique (TDMA);
 - 3.2 List the transmission problems and their solutions;
 - 3.3 Understand how Adaptive Multi-Rate (AMR) can increase capacity.
- 4 List and identify GSM System mandatory concepts of air interface, their functions and required specifications.
 - 4.1 Understand the concepts of physical channel and a logical channel;
 - 4.2 List one important piece of information sent on each of 3 different logical channels;
 - 4.3 Briefly explain the idea of mapping.
- 5 Differentiate the platforms that provide the networks nodes and functionalities that are basis to provide Circuit and Packet switching, including AXE and CPP platform principles, list the main components and outlines the main features.
 - 5.1 Understand the function of APT and APZ;
 - 5.2 Differentiate functions that can be implemented using AXE platform modularity;
 - 5.3 Explain how the group switch switches calls;
 - 5.4 Discriminate the AXE 810 hardware structure;



- 5.5 Discriminate the CPP Hardware Platform.
- 6 Explain how Ericsson implements the functions and nodes of the GSM switching system.
 - 6.1 Name 3 nodes in the Switching System;
 - 6.2 List which 2 nodes are contracted for the security procedure in the GSM system;
 - 6.3 Briefly explain the purpose of Authentication, Ciphering and Equipment Check;
 - 6.4 Know Ericsson Mobile Softswitch Solution.
- 7 List and identify Radio Access Network system nodes, its functions and required specifications
 - 7.1 Outline the main functions of a BSC, TRC and RBS;
 - 7.2 List the Ericsson's RBS 2000 configurations;
 - 7.3 Explain the RBS architecture and functional blocks.
- 8 Recognize different mobile stations types, including their components, functions, features and required specifications
 - 8.1 Outline the information stored on the SIM-card;
 - 8.2 Explain the advantage of having a separation between mobile equipment (ME) and subscription (SIM-card);
 - 8.3 List the product categories of Mobile Stations (MS).
- 9 Understand the GSM traffic cases to consolidate all the GSM Network concepts using basic traffic cases examples.
 - 9.1 Explain the purpose of GSM ID-number (MSISDN, IMSI, TMSI, MSRN and LAI);
 - 9.2 Understand the handover, locating and location updating concepts;
 - 9.3 Briefly describe how a traffic case works.
- 10 Explain the basic concepts and difficulties of planning a cellular network based on text examples and explanations.
 - 10.1 Describe 3 stages in the cell planning process;
 - 10.2 Explain the terms Grade of Service (GOS) and 'Erlang';
 - 10.3 Name 2 types of Interference;
 - 10.4 Describe briefly the feature 'Re-Use of Frequencies within a Cell';
 - 10.5 Understand what is meant by the term 'Hierarchical Cell Structure';
 - 10.6 Describe briefly the feature 'BCCH in Overlaid Sub cell'.
- 11 Recognize Ericsson's Operation and Support System – OSS as an important tool for operation and maintenance in GSM network describing its features and functions
 - 11.1 Explain the functions of the Operations and Support System;
 - 11.2 Describe the architecture of the Operations and Support System;
 - 11.3 Outline the implementation of the Multi Mediation;
 - 11.4 Understand the implementation of the Ericsson Multi Activation.
- 12 List the most common and main subscriber services, explaining their functions, features, and specifications.
 - 12.1 List the different types of services available in the network;
 - 12.2 Identify one of each of the following service types in the network: teleservices, bearer services and supplementary services;
 - 12.3 Identify one of the Ericsson innovative services in the network;



- 12.4 Briefly describe the mobile intelligent network services available with Ericsson GSM systems ;
- 12.5 Understand the need and advantages of the CAMEL system.
- 13 Understand charging and accounting concepts, their functions, features and required specifications, drawing attention to the fact that the charging concept is changing due to the introduction of new technologies such as GPRS, UMTS.
 - 13.1 Understand the charging concepts;
 - 13.2 List three call components;
 - 13.3 Explain the future of billing.
- 14 Discriminate how data calls are initiated in the GSM network and cite examples of how a data call is handled in a GSM network through a traffic case analysis.
 - 14.1 Explain the data transmission services which GSM offers;
 - 14.2 Describe a GSM data traffic case;
 - 14.3 List the data transmission services which GPRS offers;
 - 14.4 List the things that can lead to improved GPRS end-user performance;
 - 14.5 Describe a GPRS data traffic case.
- 15 Have an overview of the possible future functionality of GSM-based systems.
 - 15.1 Describe the evolution of GSM to WCDMA systems;
 - 15.2 List the technologies that will bridge these two systems including HSCSD, EDGE , GPRS , WCDMA and HSPA;
 - 15.3 Explain the 3G system and feature Adaptive Traffic Control.

Target audience

The target audience for this course is: Service Planning Engineers, Service Design Engineers, Network Design Engineers, Network Deployment Engineers, Service Deployment Engineers, System Technicians, Service Technicians, System Engineers, Service Engineers, Field Technicians, System Administrators, Application Developers, Business Developers, Customer Care Administrators.

Prerequisites

The participants should be familiar with telecommunication basics.

Duration and class size

The length of the course is 4 days 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.

1	Course Introduction & pre-course test	1,0 h
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	Introduction to Mobile Telecommunications and GSM	1,5 h
	Overview of Ericsson's GSM Systems	0,5 h
	Introduction to AXE and CPP	1,5 h
	Switching System	1,5 h
2	Radio Access Network	1,5 h
	Mobile Station	0,5 h
	Wireless Concepts	2,0 h
	Channel Concepts	2,0 h
3	Traffic Cases	2,5 h
	Cell Planning	1,5 h
	Operation and Maintenance tools	1,0 h
	Mobile IN and Subscriber Services	1,0 h
4	Charging and accounting	0,5 h
	Data Services	2,0 h
	The future of GSM	2,0 h
	Optional Components (Appendix A-B)	1,0 h
	Post-course Test	0,5 h

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LZU 102 397 R3A

Description

This course will give the students an insight and understanding of the TCP / IP protocol stack from the physical layer to the application layer. The students will learn the operation of different protocols and applications within the TCP / IP suite such as ARP, BOOTP, DHCP, DNS, NIS, NTP, NFS, HTTP, FTP, SMTP, Telnet, FTP, TFTP. Students will learn about IP addresses, both classful and classless (CIDR) and how subnetting / aggregation operates. Students will learn about different network devices and will get a detailed understanding of Bridging, LAN Switching, Routing and Routing protocols. The hands-on exercises and analysers are used to facilitate the understanding of theory sessions.

Learning objectives

On completion of each module the participants will be able to:

- 1 List and explain IP Networking Protocols
 - 1.1 List the functions of the different bodies involved in IP standards / RFCs
 - 1.2 Analyze the OSI reference model and how it relates to the TCP / IP stack
 - 1.3 Explain Ethernet as Physical and Data Link Layer: MAC Address, CSMA/CD principles, Fast Ethernet, Gigabit Ethernet and speed negotiation
 - 1.4 Explain the operation of Hubs, Bridges, Switches and Routers
 - 1.5 Explain Wireless LANs
 - 1.6 Explain IP Protocol
 - 1.7 Explain IPv4 packet structure, protocol header and features
 - 1.8 Explain VLSM, CIDR, Subnetting, aggregation, NAT and NAPT
 - 1.9 Explain how to use ICPM utilities and traceroute command
 - 1.10 Perform exercises configuring IPv4 addresses, and check connectivity
 - 1.11 Demonstrate IPv6 packet structure, protocol header, features

- 2 List and explain IP Transport and Application Protocols
 - 2.1 Explain TCP, UDP and SCTP protocol structures, headers and functionality
 - 2.2 List and explain the operation of different protocols / applications such as ARP, BOOTP, DHCP, DNS, NIS, NTP, NFS, HTTP, FTP, SMTP, Telnet, FTP, TFTP

- 3 Explain and work with IP Routing
 - 3.1 Explain and perform exercises of VLANs
 - 3.2 Explain the purpose of Spanning Tree Protocol (STP)
 - 3.3 Explain the operation of Static and Dynamic routing protocols
 - 3.4 Perform Static routing exercises
 - 3.5 Explain Interior and Exterior Gateway Protocols
 - 3.6 List the differences between Vector Distance and Link State protocols.
 - 3.7 Explain and perform exercises of RIP routing protocol
 - 3.8 Explain and perform exercises of OSPF routing protocol
 - 3.9 Explain and perform exercises of BGP routing protocol

Target audience

The target audience for this course are personnel who are involved in IP networking or those who require more knowledge on IP addressing, application and routing protocols

Prerequisites

There are no pre-requisites

Duration and class size

The length of the course is 5 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 or simulation 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.

Day	Short description of the topics in the course	Estimated time
1	• List the functions of the different Standard Bodies involved in IP / RFCs	0.5
	• Analyze the OSI Reference Model and how it relates to the TCP / IP stack	1
	• Explain Ethernet, Fast Ethernet, and Gigabit Ethernet	1
	• Explain the operation of Hubs, Bridges, Switches, Routers, Collision Domains and Broadcast Domains	1
	• Explain Wireless LANs	1.5
	• Explain IP Protocol	1.0
2	• Explain IPv4 (packet format, addressing and features)	1.0
	• Explain VLSM, CIDR, Subnetting, aggregation, NAT and NAPT	1.5
	• Explain ICMP protocol and traceroute	0.5
	• Perform exercises configuring IPv4 addresses, and check connectivity	2.5



	• Demonstrate IPv6 (packet format, addressing and features)	0.5
3	• Explain TCP, UDP and SCTP protocol structures, headers and functionality	2
	• List and explain the operation of different applications (ARP, BOOTP, DHCP, DNS, NIS, NTP, NFS, HTTP, FTP, SMTP, Telnet, FTP, TFTP)	3.0
	• List the purpose and operation of VLANs	1
4	• Explain and perform exercises of Spanning Tree Protocol (STP)	2.0
	• Explain the operation of Static and Dynamic routing protocols	1
	• Explain Autonomous System	
	• Explain Interior and Exterior Gateway Protocols	
	• List the differences between Vector Distance and Link State protocols.	
	• Perform Static routing exercises	1.0
	• Explain and perform exercises of RIP routing protocol	2
5	• Explain and perform exercises of OSPF routing protocol	3
	• Explain and perform exercises of BGP routing protocol	3

Service Layer Overview Business



LZU 108 6609 R2A

Description

This course provides an overview of the Service Layer from a business perspective.

The focus is to describe the Service Layer business seen from an operator point of view. The course is generic and does not contain any product information.

The instructor led element of the course examines the telecoms marketplace, how the Service Layer business is structured, who the key players in the Service Layer are and what their needs are. It discusses business models, business roles and revenue flow. The issues related to charging, pricing and common functions are also outlined.

The workshop part of the course explores more fully the problems faced by operators and service providers. Through case studies and success stories, participants learn about the solutions and tools that have been applied in response to these problems, and the components of successful service delivery launches.

Learning objectives

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

- 1 List the main business and technology drivers behind the move to end-user services in the telecoms industry
 - 1.1 Describe how the market evolution affects operators, and what they expect from the service layer.
 - 1.2 Define the broad types of end-user services (P2P vs. P2E, push vs. pull, etc.) and list example services of each type in mobile and fixed networks
 - 1.3 Briefly state the role of the Service Layer and Service Network in providing end-user services
 - 1.4 List the main business challenges for an operator in providing a service layer solution
- 2 Describe the business challenge of understanding consumers
 - 2.1 Recognize the importance of identifying and segmenting end-users
 - 2.2 Briefly describe the example segmentation model TakeFive
 - 2.3 State how business end-users differentiate from consumers
 - 2.4 Describe the general classification and characteristics of mobile terminals and how this impacts end-user services
 - 2.5 Briefly describe the common mobile execution platforms and terminal features
- 3 Explain how to launch and encourage the uptake of services
 - 3.1 Describe how and why the service environment is changing
 - 3.2 Give examples of service categories and new innovative services within each category (verified with real life example services)
 - 3.3 Briefly describe what are the drivers for end-user service uptake

- 3.4 Understand how to maximize service uptake through e.g. different branding-, packaging-, and pricing options
- 3.5 Describe the service life cycle
- 3.6 Describe the main steps at service launch
- 3.7 Discuss service evolution and likely future applications

- 4 Describe the business challenge of the supply chain for mobile content and services
 - 4.1 Identify the different stakeholder roles in the Service Layer and their key needs and challenges
 - 4.2 Describe the operator needs and possible roles
 - 4.3 Describe various operator business models in the Service Layer including Mobile Virtual Network Operators (MVNOs) and hosting services
 - 4.4 Describe the revenue flow between stakeholders
 - 4.5 Briefly describe the process for application development and the business issues related to that

- 5 Describe the business challenge of integrating the Service Layer with the rest of the mobile business
 - 5.1 List the major benefits of taking a horizontal service layer approach
 - 5.2 Describe the main operator actions needed in order to implement a future-proof service network
 - 5.3 List the main functionality required from a service delivery platform
 - 5.4 Describe how the provision of common functions can help to build future-proof Service Layer solutions
 - 5.5 Understand how the evolution to IMS and All-IP will affect the service layer

Target audience

Anyone working in the telecom industry and who needs a better understanding of how...

- increased competition,
 - new services,
 - end-user segmentation,
 - technology evolution, and
 - flexible business models
- ...will impact the future telecom business.

The target audience for this course is: C-level (executive) Management, Business Management, Product Development Management, Product Marketing Management, Sales Management, Business Strategy Management, Supplier & Partner Management, Enterprise Management, Customer Management, Operations Management, Infrastructure Development Management, Product Management and Project Management.

Prerequisites

There are no prerequisites for this course.

This course is a prerequisite for other Service Layer training, such as product and application development training.

Duration and class size

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

Learning situation

The course is a combination of theoretical instructor-led lessons given in a classroom environment and exercises based on interactive training sessions in a classroom environment. These sessions are interleaved during the two days.

Course Material

The course material for each participant will include copies of teaching material and the book *Mobile Media and Applications – From Concept to Cash; Successful Service Creation and Launch* by Christoffer Andersson et al.

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
1	[1] Business and technology drivers	2 hours
	[2] Consumers and terminals	3 hours
	[3] Service launch and uptake	2 hours
2	Service launch and uptake – continued	2 hours
	[4] Business models and supply chain	3 hours
	[5] Integrating the business	2 hours

Service Layer Overview - Technical



LZU 108 6610 R1A

Description


This course provides an overview of the design and implementation of Service Layer solutions using standard technologies, architectural frameworks and a variety of application enablers.

The technical aspects of Service Layer solutions are discussed during the course. Examples are used throughout the course to illustrate the use of the Service Layer concepts, technologies and applications. Students are expected to complete short group exercises whereby the various technologies, standards and products are selected and put together in a simple (conceptual) end-to-end solution.

Learning objectives

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

- 1 Provide an overview of a customer service network using the Service Layer architecture, technologies and professional service.
 - 1.1 Outline the service network architecture
 - 1.2 Identify the nodes/enablers in the service network
 - 1.3 Describe the function of each node/enabler in the service network
- 2 Identify the use of standard technologies, protocols and terminal technologies to create an end-to-end solution
 - 2.1 Briefly describe the common mobile execution platforms and development languages (SIM AT, J2ME, BREW, FlashLite)
 - 2.2 Provide a brief explanation of other terminal issues such as UaProf, security, SyncML and OTA
- 3 Briefly explain the purpose of the main standards and protocols driving the development of the Service Layer
 - 3.1 Describe the importance of standards in the Service Layer
 - 3.2 Describe the important standardization bodies and list their key Service Layer standards/protocols, including ITU, 3GPP, IETF, Parlay, W3C, OASIS, OMA
 - 3.3 Briefly describe some important standards and concepts, such as VHE and DRM
 - 3.4 Provide a short definition of the main protocols (and stacks) used in service networks, including Internet protocols (IP, TCP, UDP, HTTP, FTP, SOAP), mail-related protocols (SMTP, POP, IMAP, SMIL, MIME), streaming protocols (SIP, RTSP, RTP, STCP, SDP, H323), telecom protocols (SMPP, MAP, PAP, WAP), and others (LDAP, CAI-3G, RADIUS, DIAMETER, WV)
 - 3.5 Select suitable protocols for a simple service solution.
- 4 List the key aspects of the Service Layer architecture and define the role of the Service Network Framework as part of this architecture

- 
- 4.1 List the competing factors that commonly influence the design of a Service Layer solution
 - 4.2 Define the Service Network Framework and explain its purpose and objectives
 - 4.3 Identify the standards and protocols incorporated into the Service Network Framework
 - 4.4 Briefly describe example situations where the Service Network Framework can be applied
 - 4.5 Identify the common Service Network Framework functions and protocols

 - 5 Provide an overview of common and specific service enablers
 - 5.1 List the common enablers used in the Service Layer for messaging, video telephony, location-based services and push-to-talk
 - 5.2 Provide a brief overview of each enabler in terms of purpose, function, interfaces and traffic, including:
 - WAP Gateway
 - Short Message Service (SMS)
 - Multimedia Messaging Service (MMS)
 - Unified Messaging
 - Instant Messaging
 - Video Streaming
 - Location-based Services/Positioning
 - Push To Talk
 - Video Telephony
 - 5.3 Identify the sample products that implement the functions of the enablers listed above
 - 5.4 Select relevant enablers to implement an example end-user service

 - 6 List the main operator technical issues associated with functions such as device management, authorization/Single Sign On (SSO), provisioning and Operation and Maintenance (O&M)
 - 6.1 Provide a brief overview of the product platforms used to implement common functions, including the Service Delivery Platform (SDP) products:
 - Authorization/Single Sign On (SSO)
 - Common Provisioning
 - Common Operation and Maintenance
 - Charging Integration
 - Application Integration
 - Common Deployment
 - Device Management
 - IP Multimedia System (IMS)
 - 6.2 Describe the implementation of an example horizontal service network
 - 6.3 Describe the common functions that need to be implemented to solve typical business and technical problems in a simplified service network
 - 6.4 Identify the products that can be used in such a network

Target audience

The target audience for this course is: Service Planning Engineers, Service Design Engineers, Network Design Engineers, Network Deployment Engineers, Service Deployment Engineers, System Technicians, Service Technicians, System Engineers, Service



Engineers, System Administrators, Application Developers, Business Management, Customer Care.

This learning product is intended for anyone requiring an introduction to the technical aspects of the Service Layer and the Service Layer solutions.

Prerequisites

The participants should be familiar with mobile telecommunications and Internet technologies.

This course is a prerequisite for other Service Layer training, such as product and application development training.

Duration and class size

The length of the course is 2 days 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
1	• Provide an overview of a customer service network using the Service Layer architecture, technologies and professional services	2
	• Identify the use of standard technologies, protocols and terminal technologies to create an end-to-end solution	2
	• Briefly explain the purpose of the main standards and protocols driving the development of the Service Layer	2
2	• Provide an overview of common and specific service enablers	2
	• List the main operator technical issues associated with functions such as device management, authorization/Single Sign On (SSO), provisioning and Operation and Maintenance (O&M)	



UNIX Fundamentals



LZUBB 108 170 R1A

Description

This course provides an overview of the fundamentals of the UNIX operating system. It 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 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

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

- 16 Describe the history of UNIX
- 17 Describe the UNIX operating system
- 18 Describe the UNIX file system
- 19 Use fundamental UNIX commands
- 20 Give an overview of the vi editor
- 21 Work within a shell environment
- 22 Use network utility programs
- 23 Write basic shell scripts
- 24 Use the on-line documentation
- 25 Set up file permissions
- 26 Describe the role of the System Administrator
- 27 Describe the role of a UNIX System Administrator

Target audience

The target audience for this course is primarily personnel working with UNIX administration and needing to become familiar with UNIX and shell scripting.

Prerequisites

Successful completion of the following courses:

- UNIX Basics (LZU 108 5134)

Duration and class size

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



Learning situation

This course includes theoretical and practical instructor-led lessons given in both a classroom and a technical environment using equipment and tools.