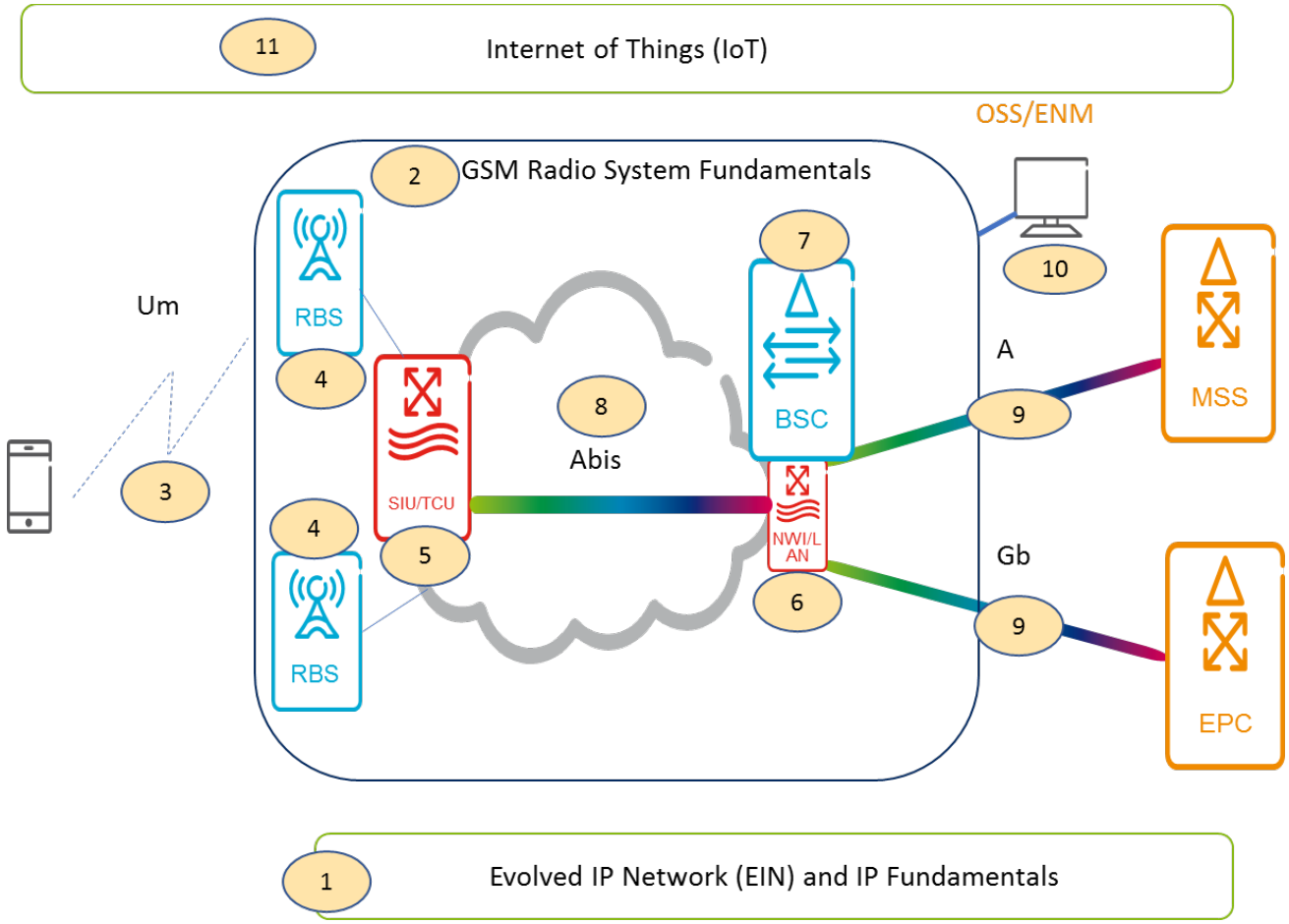
GSM RAN G17
Training Programs

Catalog of Course Descriptions



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Catalog of Course Descriptions

Introduction

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

The delivery of the Learning Products is realized by various Services:

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

01 – EIN & IP Fundamentals

Please, see separate course portfolio for "**Evolved IP Network Solution**" that covers both the Mobile Backhaul (MBH) and Mobile Packet Backbone Network (MPBN).

The following trainings provide the IP fundamentals.

IP Networking	LZU102397
Voice and Video over IP	LZU1087718
IP Quality of Service and MPLS	LZU1087716
IP Security	LZU1087717

02 – GSM Fundamentals

It is a benefit to have the WCDMA and LTE Fundamentals as well.

GSM System Survey

LZU108852 R16A

Description

Are you lost when discussing GSM network basic concepts? If you are starting to work in different areas of GSM system and need a general overview, this is the course you are 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 Know how mobile systems have evolved over the time and tell the history of GSM development.
1.1 Recognize benefits of having a standard
1.2 Describe the GSM geographical network structure and node functions
1.3 Know 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 Describe optional additional network entities functions
2.3 Briefly present Protocols used in the GSM Access and Core Networks

3 Know basic concepts of wireless communications and its importance to provide a good knowledge of how GSM Systems works.
3.1 Explain Time Division Multiple Access technique (TDMA)
3.2 List the transmission problems and their solutions
3.3 Recognize how Adaptive Multi-Rate (AMR) can increase capacity
3.4 Explain the feature VAMOS.

4 List and identify GSM System mandatory concepts of air interface, their functions and required specifications.
4.1 Know 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

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4.3 Briefly explain the idea of mapping
4.4 Show the time slot power saving feature

5 Differentiate the platforms that provide the network nodes and functionalities that are basis to provide Circuit and Packet switching, including AXE and CPP platform principles, list the main components and outline the main features.
5.1 Know 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
5.6 Show CPP Interconnection Structure
5.7 Clarify functions that can be implemented using CPP platform

6 Explain how Ericsson implements the functions and nodes of the GSM switching system.
6.1 Name the nodes in the Switching System
6.2 Know Ericsson's Mobile Softswitch Solution
6.3 List which nodes that are contracted for the security procedure in the GSM system
6.4 Briefly explain the purpose of Authentication, Ciphering and Equipment Check

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 Explain the new BSC Evo Controller
7.3 Describe the Abis over IP and Abis Optimization solution
7.4 Briefly Explain A-Interface over IP
7.5 Explain the feature Iur-g
7.6 List the Ericsson's RBS 2000 and 6000 configurations
7.7 Explain Multistandard RBS Mixed Mode (GSM)
7.8 Explain the RBS architecture and functional blocks
7.9 List the RBS 6000 Configurations

8 Clarify the GSM traffic cases to consolidate all the GSM Network concepts using basic traffic cases examples.
8.1 Explain the purpose of GSM ID-number (MSISDN, IMSI, TMSI, MSRN and LAI)
8.2 Know the handover, locating and location updating concepts
8.3 Briefly describe how a traffic case works

9 Explain the basic concepts and difficulties of planning a cellular network, based on examples and explanations.
9.1 List the stages in the cell planning process
9.2 Explain the terms Grade of Service (GOS) and 'Erlang'
9.3 Name 2 types of Interference
9.4 Describe briefly the feature 'Re-Use of Frequencies within a Cell'
9.5 Know what is meant by the term 'Hierarchical Cell Structure'
9.6 Describe briefly the feature 'BCCH in Overlaid Sub cell'

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10 Recognize Ericsson's Operation and Support System – OSS as an important tool for operation and maintenance in GSM network describing its features and functions.
10.1 Explain the functions of the Operations and Support System
10.2 Describe the architecture of the Operations and Support System
10.3 Outline the implementation of the Multi Mediation
10.4 Appreciate the implementation of the Ericsson Multi Activation

11 List the most common and main subscriber services, explaining their functions, features, and specifications.
11.1 Define the different types of services available in the network
11.2 Indicate one of each of the following service types in the network: teleservices, bearer services and supplementary services
11.3 Identify one of the Ericsson innovative services in the network.
11.4 Briefly describe the mobile intelligent network services available with Ericsson GSM systems
11.5 Know the need and advantages of the CAMEL system

12 Identify charging and accounting concepts.
12.1 Identify their functions, features and required specifications
12.2 Explain the fact that the charging concept is changing due to the introduction of new technologies such as GPRS, UMTS
12.3 List three call components
12.4 Explain the future of billing

13 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.
13.1 Explain the data transmission services which GSM offers
13.2 Describe a GSM data traffic case
13.3 List the data transmission services which GPRS offers
13.4 List the things that can lead to improved GPRS end-user performance
13.5 Describe a GPRS data traffic case
13.6 Analyze PS DL Power Control
13.7 Explain the EDGE and EDGE Evolution.

14 Have an overview of the possible future functionality of GSM-based systems
14.1 Describe the evolution of GSM to WCDMA systems
14.2 List the technologies that will bridge these two systems including HSCSD, EDGE, GPRS, WCDMA and HSPA and LTE
14.3 Explain the 3G system and feature Adaptive Traffic Control
14.4 Clarify the Fast Return to LTE after Call Release and LTE to GSM NACC
14.5 Explain IoT in GSM.

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Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, System Engineer, Service Engineer, Field Technician, System Administrator, Application Developer, Business Developer, Customer Care Administrator

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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction & pre-course test	0.5
	Introduction to Mobile Telecommunications and GSM	1.0
	Overview of Ericsson's GSM Systems	1.5
	Wireless Concepts	2.0
	Channel Concepts	1.0
2	Channel Concepts Continuation	1.5
	Introduction to AXE and CPP	1.5
	Switching System	1.5
	Radio Access Network	1.5
3	Traffic Cases	2.5
	Cell Planning	1.5
	Operation and Maintenance tools	1.0
	Mobile IN and Subscriber Services	1.0
4	Charging and accounting	1.0
	Data Services	2.0
	The future of GSM	2.0
	Post-course Test	1.0

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Ericsson Radio System Overview

LZU1089991 R3A

Description

Do you need to understand how Ericsson Radio System is a solution to the changing radio access needs towards the 5G? What are new products that have been introduced in Ericsson Radio System which will coexist with the existing products in Ericsson's radio access networks?
The "Ericsson Radio System Overview" course provides the participants with a comprehensive overview of Ericsson's new packaging of the radio access network products in Ericsson Radio System.

Learning objectives

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

1 Discuss the evolution of the radio access network
1.1 Identify a typical existing site and its challenges to meet the future demands
1.2 List the requirements for the future networks with roadmap
1.3 Explain the multi-standard, multi-band and multi-layer solutions with Ericsson Radio System
1.4 Discuss how a typical Ericsson Radio System based site could look like

2 List the features of the baseband products
2.1 Identify and list the primary features of new Basebands
2.2 List the existing Digital Units and explain their primary features
2.3 Explain with use cases different baseband deployment configurations

3 Describe the different Fronthaul products suited for macro and small cell deployments
3.1 Describe what Fronthaul is
3.2 Explain the characteristics and products under DWDM and CWDM
3.3 List and understand the specifications of Fronthaul 6392

4 Identify different Radio Products and their primary features
4.1 List the characteristics of the latest radio units including the 5G/NR radios that are available in Ericsson Radio System
4.2 Describe the characteristics and the usage of the new Remote Radio Units (RRUs)
4.3 Explain the characteristics and advantages of the Antenna Integrated Radio (AIR) products
4.4 List the benefits of the new installation options and features Introduced

5 Describe the wide range of Backhaul products for Outdoor and Indoor Scenarios

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5.1 List the various Aggregation Units offered in Ericsson Radio System, and explain their usage
5.2 List the characteristics of the new products in Router 6000 Series
5.3 Match the new products in the Mini Link Portfolio to the Indoor and Outdoor usage

6 List the new enclosure and power options available under Ericsson Radio System Hardware
6.1 Describe the different Enclosure options and its Outdoor/indoor functionality
6.2 Identify Power System Solutions for Macro, Main remote and Hybrid configurations
6.3 Explain small cell implementation with the various Indoor Power Products
6.4 Discuss the Installation options and Configuration for the Power Products

7 Expand the products under Small cell portfolio and describe their features and benefits
7.1 List the characteristics of New Micro RBS, Pico RBS, Radio Dot System (RDS) and their configuration options
7.2 List the characteristics and usage of the various Wi-Fi Access Points (AP) products

8 List and discuss the available Energy solution options under the Ericsson Radio System portfolio
8.1 Describe the various energy saving solutions implemented for a site deployment
8.2 Explain how Ericsson radio system products helps in reducing Total Cost of Ownership (TCO) and power consumption for the operator
8.3 Explain, with examples, how one can build energy-optimized networks

Target audience

The target audience for this course is:

System Technician, Field Technician, Network Deployment Engineer, Integration Engineer, Solution Architect

Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020 (ILT)
Or
LTE/SAE Overview, LZU1087318 (WBL)

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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction to the course and Ericsson Radio System	2.0
	Baseband and Front haul	2.5
	Radio Products and AIR	1.5
2	Backhaul	2.0
	Enclosure and Power	1.5
	Small cell and Applications	2.0
	End of course procedures	0.5

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OSS-RC Overview

LZU1089803 R3A

Description

Today operators manage extremely large networks varying from Wireline, GSM core to 3G, LTE and IMS networks. This could mean that up to 30,000 cells may need to be configured, troubleshooted and monitored. Do you know how operators manage their network elements?

Ericsson's Operation Support System for Radio & Core (OSS-RC) is developed to manage, configure, monitor, troubleshoot and upgrade all the various networks available i.e: wireline Core, 2G, 3G, LTE and IMS.

Participants attending the OSS Overview course will be given a basic introduction to the OSS-RC R16 system. They will learn how OSS-RC R16 is used for centralized Operation and Maintenance of mobile networks, the nodes specific to each network as well as service layer equipment. Participants are introduced to the Sub-Network Management Platform and learn how its components and applications provide comprehensive configuration, management and optimization applications. They also will identify the benefits associated with these applications.

This course is indicated for those who works with OSS and needs a high level overview of the product. Even those who do not work directly with OSS-RC will find this course beneficial as it will give a high level overview of how it fits in with other products like network elements and network management systems in a telecoms network.

Learning objectives

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

1 Explain why network management is necessary, and outline the role of OSS-RC as a network management system
1.1 Describe the overall functionality offered by OSS-RC
1.2 Identify the OSS-RC components
1.3 Show the OSS Explorer (OEX) and the Active Library Explorer (ALEX)
1.4 Provide how to add NE's to be managed by OSS through the use of ARNE
1.5 Explain the purpose and functionality of the Common Integration Framework (CIF)
1.6 Describe in brief the client server architecture
1.7 Compare the two high availability solutions for OSS-RC

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2 Outline the functionality of the common components
2.1 List the Fault management (FM) Applications
2.2 Examine the AXE management tools in OSS-RC
2.3 Illustrate the Software Management Organizer application
2.4 Introduce the Network Element Scripting support
2.5 Investigate the Performance Management setup in OSS-RC including Performance Management Initiation, Event Based Applications and Radio Network Optimization

3 Discuss the various tools within the OSS for management of the Core network
3.1 Understand the configuration managers for the Core network; EPC-CM, MMCM, GCM, IMS-CM and the Common Explorer
3.2 Review the optional Core Network Management applications such as NAM, IMM, MFI and CNSM

4 List the various tools within the OSS for management of the GSM network
4.1 Identify the following GSM RAN configuration applications; GSN-CM, GSN-CM Import/Export, Base Station configuration management and Performance Management Traffic Recording
4.2 List the IP support applications for the GSM, WCDMA and LTE RAN
4.3 Show the support for Wireline that is included in OSS-RC

5 Identify the various tools within the OSS for management of the WCDMA/LTE network
5.1 Describe the functionality of the Common Explorer in OSS-RC
5.2 Identify and describe the various configuration applications in the Common Explorer
5.3 Report the functionality of all the diagnostic tools in the Common Explorer

6 Recognize the various tools within the OSS for management of the IMS network
6.1 Examine the use of IMS Configuration Manager to manage IMS nodes

Target audience

The target audience for this course is:

Network Design Engineer, Network Deployment Engineer, Service Technician, System Engineer, System Administrator

Prerequisites

As this is an overview that is aimed at people working in both technical and non technical roles there are no course prerequisites. The only prerequisite is that students are familiar with a telecoms network or any technology.

Duration and class size

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

Learning situation

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

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	OSS-RC Introduction and Platform	1.0
	OSS-RC Common Components	1.0
	Core Network Management	1.0
	GSM and Wireline Network Management	0.5
	WCDMA/LTE Network Management	1.5
	IMS Network Management	1.0

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RBS 6000 Overview

LZU1087503 R5A

Description

The new RBS 6000 product family is the compact multi standard base stations used in GSM, WCDMA and LTE networks. The focus of this course is to cover all RBS models used by Ericsson in the current market. We will explain the RBS 6000 units, block diagram, technical specifications and optional units. Installation, operation and maintenance procedures will be briefly described.

Learning objectives

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

1 Recognize and identify the main components of Radio Access Network, RBS Site Solutions and RBS 6000 basic functions

1.1 Give a high level overview on the GSM, WCDMA and LTE Network nodes
1.2 Introduce the RBS 6000 family
1.3 Discuss the migration and substitution scenarios
1.4 Describe the indoor and outdoor site support portfolio
1.5 Describe Distribution Frame (DF), Antenna near parts such as Tower Mounted Amplifier (TMA) and Remote Electrical Tilt Unit (RETU)

2 Describe on an overview level the RBS 6000 Platform and understand how Radio Access for various radio technologies is implemented in the RBS 6000

2.1 Understand the RBS 6000 Full Freedom, Hybrid Concept and the Unit migration
2.2 Describe the single, multi standard and mixed mode in RBS 6000
2.3 Describe on block level the Digital Unit and Radio Unit for GSM, WCDMA and LTE
2.4 Understand how CDMA is now added into RBS 6000
2.5 Understand the Transport Units such as the Site Integration Unit (SIU), Transport Connectivity Unit (TCU) and Indoor Pico Gateway (IPG 6440)

3 Detail the RBS 6000 portfolio for compact macro, full-size macro, main-remote and micro/Pico RBS

3.1 Describe the full size macro base station RBS 6102
3.2 Describe the compact outdoor macro base station RBS 6101
3.3 Describe the full size macro base station RBS 6201
3.4 Describe the compact indoor macro base station RBS 6202
3.5 Describe the compact main-remote base station RBS 6601 with Remote Radio Units (RRU) and Antenna Integrated Radio (AIR)

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3.6 Describe the compact main-remote base station RBS 6301 and 6302
3.7 Describe the micro RBS 6501 and Pico RBS 6401
3.8 Understand the site power for all RBS 6000

4 Outline the main Operation and Maintenance tools for RBS 6000
4.1 Understand HyperTerminal used as Command Line Interface, (COLI)
4.2 Understand Node Command Line Interface, (NCLI)
4.3 Understand the web browser Element Manager, (EM)
4.4 Understand the Operation and Maintenance Terminal, (OMT)

Target audience

The target audience for this course is:

System Engineer

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
Ericsson WCDMA System Overview, LZU1085418
LTE/SAE - System Overview, LZU1087020
Or
GSM Radio Network Overview (WBL), LZU1086235
WCDMA RAN Overview (WBL), LZU1085202
LTE/SAE in Nutshell (WBL), LZU1087417
RBS 6000 in a Nutshell (WBL), LZU1087504

Duration and class size

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

Learning situation

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

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0.5
	Radio Access Network, RBS Site Solutions and RBS 6000 basic functions	1
	RBS 6000 Platform	1
	RBS 6102/6101	0.5
	RBS 6201/6202	0.5
	RBS 6601/6301	0.5
	RRUW / RRUS 01	0.25
	RRUS 11 / RRUS 61	0.25
	RRUS 02 / RRUS 12	0.25
	mRRUS 12 / AIR 11&21	0.25
	RBS 6301/6501/6401	0.5
	Site Power	0.5

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GSM BSS RBS 2000 Basics

LZU1088833 R2A

Description

This course covers the GSM Radio Access Network principles and presents all RBS models used by Ericsson in the current market. If you are looking for this information and also the RBS internal units, block diagrams, technical specifications and optional units then this course is for you. Installation, operation and maintenance procedures will be briefly described. The RAN is continuously changing, and to keep up to date, this course also presents concepts about the Site Integration Unit (SIU), used to implement the Abis over IP feature. So, this is a one-day course that could be used as introduction to any other RAN course.

Learning objectives

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

1 Recognize and identify the main components of GSM Radio Access Network and RBS basic functions
1.1 Identify the GSM/RAN Network
1.2 Name the GSM Radio Access Network Interfaces
1.3 Explain the LAPD configuration
1.4 Explain the Enhanced power control in downlink PS call
1.5 List the benefit of Enhanced Flexible Timeslot Assignment
1.6 Explain the BSC HWAC support And the Fast Return to LTE after Call Release feature
1.7 Briefly verify the Site Integration Unit-02 and its features
1.8 Define the GSM Air Interface structure
1.9 Outline the RBS main functions
1.10 List some auxiliary equipment used

2 List and explain each model of the RBS currently used in Ericsson Networks
2.1 List the RBS 2000 family members
2.2 Identify the similarities and differences between the RBSs
2.3 Define the Technical Specification of each RBS
2.4 Explain the Support for Dual TX RRUS
2.5 Determine the speech/data Traffic Flow through the RBS, from the incoming PCM(s) to the antenna outlet and vice versa

3 Identify radio site installation and RBS Site Solutions. The information is complemented with the Installation Manual and Product Description for each RBS

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3.1 Briefly explain the radio site installation
3.2 Briefly describe the RBS Site Solutions: Antenna, TMA, Site Transmission and Power Backup System for different RBSs
3.3 Verify the Power Supply, external cables and antenna connections for the RBS 2206, RBS 2106, RBS 2111, RBS 2308 and RBS 2409.
3.4 List the main characteristics of the integrated and high capacity RBS 6000 Overview

4 To operate any RBS 2000 series, the operator uses graphical software called OMT. This chapter consists of an overview of the OMT software
4.1 Provide the student with an overview of the OMT software
4.2 Outline the main Operation and Maintenance procedures that should be executed

Target audience

The target audience for this course is:

Service Technician, System Technician, Service Engineer and System Engineer.

This course is intended for personnel who need an overview of the RBS 2000. Typical participants would be managers or anyone desiring an overall understanding of the RBS 2000 family, without doing any hands-on RBS operation and maintenance tasks.

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 108 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863

Duration and class size

The length of the course is 1 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0.4
	System and RBS Overview	2.0
	RBS 2000 Family	2.5
	RBS 2000 Installation	0.5
	Operation and Maintenance	0.6

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IP in GSM Radio Access Network

LZU1087035 R9A

Description

This course describes an overview related to IP in GSM Radio Access Network. During this course the students will learn concepts related to RBS IP structure, BSC IP structure, Transport Network, Security, Quality of Service, Syncrhonization and O&M in GSM RAN network over IP.

Learning objectives

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

1 Provide concepts of RBS IP Infrastructure
1.1 Describe an overview for Abis over IP
1.2 Explain the hardware for IP in GSM RAN from BTS side
1.3 Details the main features for GSM RAN over IP

2 Explain concepts, techniques and configuration information related to the BSC IP Infrastructure
2.1 List the IP terminating network elements in BSC
2.2 Describe the Virtual Router Redundancy (VRRP) protocol
2.3 Verify the different concepts for the BSC LAN Switch and new BSC NWI-E
2.4 Identify the BSC IP addressing requisites
2.5 Determine the different IP Applications
2.6 Show the IP Services configuration

3 Verify IP RAN scenarios for the transmission including Ethernet concepts
3.1 Identify the native IP over L2/L3 transport sharing using dual RAN routers scenario
3.2 Describe the migration and legacy support scenarios
3.3 Explain E1/T1 circuit emulation (CESoPSN)
3.4 Verify the connection with the mobile backhaul using Mini-Link and OMS1410

4 Identify Security scenarios over IP
4.1 Verify what are the security challenges
4.2 Determine a secure transport using IPsec VPNs
4.3 List the equipment used for Security
4.4 Verify the physical and logical connectivity of the BSC/RNC site
4.5 Determine the physical and logical connectivity of the RBS site

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5 Detail the Quality of Service characteristics.
5.1 Briefly explain QoS concept
5.2 Determine QoS Applied in IP RAN Solution
5.3 Identify different traffic types to be protected
5.4 List overload handling parameters and the concepts
5.5 Verify how the SIU 02 / TCU 02 transmits the IP packets
5.6 Indicate a recommended QoS Solution
5.7 Verify the different equipments and how they act when performing traffic priorization

6 Describe the main Synchronization concepts over IP.
6.1 Identify the basic concepts about synchronization
6.2 Determine Synchronization using NTP and PTP
6.3 Verify which are the possibilities to synchronize the RBS's
6.4 List the equipments capacities
6.5 Verify GPS site solution

7 Describe Operation and Maintenance concepts for an IP network
7.1 List the O&M issues for the SIU 02 / TCU 02
7.2 Describe ROMT/IP
7.3 Describe OSS-RC tools used for Operation and Maintenance

Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, System Engineer, Service Engineer, Field Technician, Application Developer

Prerequisites

Successful completion of the following courses:

IP Networking, LZU102397
GSM System Survey, LZU108852

Duration and class size

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

Learning situation

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

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	Pre- test	0.5
	RAN Overview and Evolution	2.5
	BSC IP Infrastructure (IIS)	2.5
2	VLAN and Subnets concepts	1.5
	IP RAN Transport Networks	2.0
	Security Architecture	2.5
3	QoS in IP RAN Solution	1.0
	Synchronization Architecture	2.0
	Operation and Maintenance	2.0
	Post test	0.5
	Course Evaluation	0.5

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03 – GSM Radio Interface

GSM Fundamentals are prerequisite courses.

GSM RAN Cell Planning Principles

LZU1089385 R1A

Description

This course enables the participants to understand most aspects of cell planning including frequency planning and will be able to decide on the best suitable plan for his/her network.This course helps in understanding various advanced capacity enhancement techniques and be able to utilize the spectrum more efficiently. The participants will also be able to make a nominal cell plan and get an understanding of various Radio Network Features including the improvements that have been introduced in the latest BSS version.

Learning objectives

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

1 List the Cell Planning process
1.1 Clarify the major steps in cell planning: Traffic and Coverage Analysis, Nominal Cell Plan, Surveys, System Design, Implementation, and System Tuning

2 Explain the basic function of the radio network in a GSM System
2.1 Identify the GSM system nodes
2.2 Determine the function of the three major systems - Switching System, Base Station System, and Operation
2.3 Analyze the mapping and channel concept

3 Understand the content of the Ericsson RF Guidelines
3.1 Calculate link budgets and perform a system/power balance
3.2 Derive design criteria for macro cell coverage predictions
3.3 Explain how design criteria relates to coverage prediction

4 Explain general concepts related to traffic
4.1 Define the term “traffic”
4.2 Document and describe the term “Grade of Service” (GoS)
4.3 Use Erlang’s B-table to dimension the number of channels needed in the system
4.4 Discuss about channel utilization

5 Clarify dimensioning of logical channels
5.1 Perform a dimensioning of the SDCCH channels
5.2 Dimension the LA size based on paging capacity

6 Print the concepts of frequency planning
6.1 Discuss different frequency planning strategies

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6.2 Establish the concepts MRP and FLP
6.3 Explain Automatic FLP
6.4 Show the usage of BSIC

7 Discuss some central aspects of antennas
7.1 Interpret concepts such as gain, beam width, down tilt and null fill-in
7.2 Differentiate between space- and polarization diversity
7.3 Locate the meaning of intermodulation

8 Explain the function and usage of some antenna near products
8.1 Recognize scenarios where a repeater solution may be advantageous and discuss possible repeater configurations
8.2 Illustrate the function and the usage of TMAs and power splitters

9 Discuss the content of a site survey
9.1 Give in own words why a radio network survey is done and what factors to consider during a survey
9.2 Debate three types of radio measurements: path loss parameters, time dispersion and interfering transmitters

10 Demonstrate use of some tools provided by Ericsson
10.1 List the main functions of NWS tool
10.2 Clarify how the RNO in OSS can be used as implementation help and performance monitoring
10.3 Express the use of CNA is OSS for the purpose of viewing, reconfiguring, and implementing cells
10.4 Explore the Ericsson's TEMS product portfolio for optimization, network design and quality assurance
10.5 Look at some functions of TEMS Investigation

11 Explain how to handle an increased capacity demand in a network
11.1 List the different ways of increasing the capacity in a radio network
11.2 Describe how to plan MAIO/HSN values in an FLP (1/1 and 1/3) network
11.3 Discuss different scenarios where MRP or FLP might be advantageous

12 Indicate the basic functionality of some radio network features related to planning

Target audience

The target audience for this course is:

Service Design Engineer, Network Design Engineer

Prerequisites

Successful completion of the following course:

GSM System Survey, LZU 108 852

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Duration and class size

The length of the course is 5 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 (hours)
1	Cell Planning Introduction	0.5
	System description	2.0
	Radio Frequency Guidelines	3.5
2	Traffic	1.0
	Dimensioning of logical channels	2.0
	Frequency planning	2.0
	VAMOS Description	1.0
3	Antennas and antenna near products	3.0
	Design case	3.0
4	Design case	2.0
	Site survey	1.0
	Tools	1.0
	Network Expansion	2.0
5	Radio Network Features	6.0

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GSM RAN Radio Network Features

LZU 108 9386 R3A

Description

Do you want to have a full and detailed understanding of the Ericsson GERAN features and functionalities? What is the difference between GSM, GPRS and EDGE technologies and how does the Ericsson GSM RAN handle these? What are the main parameters that influence them? Where can you find detailed information on the Ericsson Radio Access Network functionalities?

After attending the “GSM RAN Radio Network Features” course, the students will have a comprehensive knowledge on GSM Radio Netowrk features. Students will learn the important Ericsson parameters used to control Idle Mode, Radio Connection Supervision, Capacity Management, Combined Cell, Handover, GSM to UMTS and to LTE Reselection, Fast Return, frequency Hopping,A-bis over IP and many other features and functions. During the course the students will also be guided through the Ericsson Customer Product Information (CPI) so that they can further study each area after the course.

Learning objectives

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

1 Explain the logical architecture of GSM and introduce Radio Functionality
1.1 Detail the logical architecture of the Ericsson GERAN
1.2 List network components and describe their functions
1.3 Explain Time Division Multiple Access technique (TDMA)
1.4 Use the Ericsson Customer Product Library to locate functionality descriptions

2 Understand the Idle Mode behavior of the GSM network
2.1 Identify the Idle Mode Service Types
2.2 Describe the Idle Mode Tasks
2.3 Evaluate Cell Selection and Reselection
2.4 Identify paging procedures and acknowledge registration
2.5 Explain the Scrambling of System Information
2.6 Describe how idle mode mobility is performed between GSM and LTE
2.7 Explain the GPRS/EGPRS Idle Mode Behavior and GPRS States
2.8 Explain the GPRS/EGPRS Cell Selection and Reselection
2.9 Discriminate PS and CS Paging

3 Understand the Channel Allocation process

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3.1 Present the combinations of Control Channels
3.2 Know the concepts of physical channel and a logical channel
3.3 Describe the channels used in the Call Establishment procedure
3.4 List general Channel Allocation algorithm
3.5 Understand the GPRS/EGPRS Channel Administration

4 Describe the Ericsson GSM RAN Power Control Functionality
4.1 List different power control strategies
4.2 Explain the Carrier Interference Ratio
4.3 Explain the GPRS/EGPRS Dynamic (MS) Power Control
4.4 List Gamma and Alpha values
4.5 Describe the PS Power Control
4.6 Present the Micro Sleep TX feature
4.7 Explain the Mixed Mode Radio GSM

5 Describe the Ericsson GSM RAN Mobility Functionality
5.1 List the different types of Handovers for a GSM subscriber
5.2 Identify IHO Timers and parameters
5.3 Explain the Automatic Neighbor Relations in the GSM RAN
5.4 Describe the Automatic Handover Optimization
5.5 Explain Fast Return to LTE after Call Release
5.6 Explain Fast Return to TD-SCDMA after Call Release
5.7 Explain Fast Return to WCDMA after Call Release
5.8 Define Cell Load Sharing Procedures
5.9 Check main differences between “normal” handover and CLS
5.10 Define the Combined Cell and the impact of this feature

6 Describe the Multi Band Cell and Hierarchical Cell Structure
6.1 Determine the advantage for the Multi Band Cell feature
6.2 List how this feature can improve the traffic capacity and optimize neighbor list
6.3 Present the Multi Band Cell Configurations
6.4 Understand general HCS algorithm
6.5 Explain the prioritized list for HCS
6.6 List the usage of the feature and parameters
6.7 Present de Quality based Timeslot Allocation feature

7 Understand Voice Efficiency revolution for GSM with VAMOS
7.1 Explain Traffic Capacity Increase with VAMOS
7.2 Analyze Functioning and benefits of VAMOS
7.3 Explain VAMOS in Uplink & Download
7.4 Explain MS Capabilities for VAMOS
7.5 Analyze Network impact
7.6 Explain Channel Allocation with VAMOS

8 Introduction to A-bis Optimization
8.1 Define Hardware Requirements
8.2 Analyze Bandwidth Savings with A-bis Optimization
8.3 Understand New Concepts in A-bis Optimization
8.4 Understand A-bis optimization Compatibility with other features

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8.5 Describe A-bis over IP concept
8.6 Analyze Hardware requirements for A-bis over IP

Target audience

The target audience for this course is:

Service Design Engineer, Network Design Engineer

Prerequisites

Successful completion of the following courses:

GSM RAN Cell Planning Principles, LZU 108 9385
GSM System Survey, LZU 108 852

Duration and class size

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

Learning situation

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

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction and Logical Architecture	2.0
	Idle mode behavior Functionality	2.0
	Channel Allocation	2.0
2	Power Control Functionality	1.0
	Mobility Functionality	2.5
	Multi Band Cell and Hierarchical Cell Structure	2.5
3	Multi Band Cell and Hierarchical Cell Structure cont.	2.0
	VAMOS feature for GSM	2.0
	A-bis introduction and Optimization	2.0

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GSM RAN G17 2017 Delta

LZU1082547 R1A

Description

How has the Ericsson GSM RAN improved with the G17? What new features and hardware have been introduced? How have the existing features been enhanced? What are the new parameters and counters to support these new features. Are there any changes on the existing parameters and counter? What new hardware is available in the G17 RAN? This training describes the main GSM RAN G17 features. During this course the participants will receive information related to the G17 updates including features description, commands, parameters and counters.

Learning objectives

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

1 Describe GSM RAN G17 updates
1.1 Describe GSM market
1.2 Explain all new and enhanced features
1.3 Define G17 nodes and compatibility
1.4 Detail both BSC and BTS System Improvements
1.5 Describe the main changes for GSM G17 Hardware
1.6 Understand the concepts for Baseband products
1.7 Explain Baseband features related to GSM
1.8 Detail BSC and BTS corrections, new parameters
1.9 Inform the CPI information and changes related to GSM G17

Target audience

The target audience for this course is:

Network Design Engineer, Service Planning Engineer, Service Design Engineer, Network Deployment Engineer, System Technician, System Engineer, Field Technician

Prerequisites

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Successful completion of the following courses:

The participants should be familiar with the operation of the Ericsson GSM Radio and Transport Networks in the previous GSM RAN versions, preferably G16B.

Duration and class size

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

Learning situation

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

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	GSM G17 Market	0.5
	GSM G17 New and Optional Features	1.0
	GSM G17 Hardware	1.5
	GSM G17 Baseband Products and Features	2.0
	GSM G17 BSC 8200 and 8230 / BTS	0.5
	GSM G17 CPI Information	0.5

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GSM RAN Radio Network Tuning

LZU 108 9387 R2A

Description

If you need to understand the methods and tools used to perform the tuning of a GSM Radio Network, this is the course for you. The purpose of the course is to provide RF engineers with both theoretical and practical competence of parameter settings and tuning activities. After attending this course the participants will be able to handle various tuning activities for GSM radio networks.

Learning objectives

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

1 Define the general tuning processes and performance indicators in a GSM network
1.1 List different views of quality and which parts generally are considered
1.2 Detail some key performance Indicators for accessibility, retainability and service integrity
1.3 Define quality in a GSM/GPRS network

2 Plan and dimension a GSM radio network
2.1 Understand the design criteria for cell coverage predictions
2.2 Explain how design criteria relates to coverage predictions
2.3 Show the link budget function
2.4 Explain how to make coverage measurements

3 Tune radio networks
3.1 Analyze the MS in Idle Mode and Active mode
3.2 Explain PAGING radio parameters
3.3 Perform change of cell borders, hysteresis and offsets
3.4 Describe the thresholds for HCS, ICHO, CLS and other features
3.5 Analyze paging performance and perform parameter adjustments related to paging capacity
3.6 List the feature Multiple CCCH
3.7 Show the parameters related to GSM to UMTS handover
3.8 Perform tuning of Multi-band cell parameters
3.9 Define of BTS/MS power control and other quality related features

4 Interpret statistics and some key performance indicators
4.1 Explain some of the counters that can be retrieved from STS
4.2 Calculate some user formulas for the key performance indicators
4.3 Analyze and evaluate a number of key performance indicators

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5 Briefly explain the GPRS/EGPRS network
5.1 Explain basic concepts and characteristics of the GPRS network
5.2 Show features and enhancements of GPRS/EGPRS

6 GPRS/EGPRS Tuning & Optimization
6.1 Perform GPRS/EGPRS STS and field measurements
6.2 Define level one and level two performance indicators related to GPRS/EGPRS
6.3 Analyze performance indicators related to GPRS/EGPRS
6.4 Perform changes of GPRS related parameters
6.5 Clarify the EDGE Evaluation – Dual Carrier

7 Discuss how to use some of the Ericsson tools used for tuning and optimization
7.1 Explain how and when to use PMR (MTR, CTR, CER)
7.2 Describe the RNO tool (MRR, FAS, FOX, NCS, NOX, TET, SYROX)
7.3 Interpret the Event Based Applications for GSM (EBA)
7.4 Demonstrate use of the tools in the TEMS portfolio

Target audience

The target audience for this course is:

Network Design Engineer, System Engineer, Service Engineer

Prerequisites

Successful completion of the following courses:

GSM RAN Cell Planning Principles, LZU 108 9385
GSM RAN Radio Network Features, LZU 108 9386

Duration and class size

The length of the course is 5 days and 0 hours and the maximum number of participants is 16.

Learning situation

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

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0.5
	Managing the Quality of a Radio Network	2.0
	Coverage	2.5
	Radio Network Features	1.0
2	Radio Network Features – Up to OL/UL feature	5.0
	Tuning case	1.0
3	Radio Network Features – Up to the end of this chapter	4.0
	Tuning case II	1.0
	Tuning case III	1.0
4	BSC STS User Formulas and Counters	3.0
	Tuning Case IV	1.0
	Tuning Case V	1.0
	GPRS/EGPRS Introduction	1.0
5	GPRS/EGPRS tuning & optimization	3.0
	OSS tools	2.0
	Case VI TEMS Investigation	0.5
	Case VII TEMS Investigation	0.5

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04 – RBS / Radio Node Field Maintenance

GSM Fundamentals are prerequisite courses. There are more courses that are site focussed! See also the trainings in the separate **"RBS 6000 & Baseband"** product portfolio.

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Baseband Radio Node - Field Maintenance

LZU1082513 R1A

Description

Are you ready for your Radio Node based on Baseband products?

The "Multistandard Radio Node Field Maintenance" course introduces the Field Maitenance personnel to the Baseband based radio node and its operation and maintenance interfaces available at the site. It also covers hardware maintenance prodedures and concepts for a Baseband based site. Participants will log into the Baseband board and look at alarms, lock/unlock radio unit, collect logs and make configuration backups.

Learning objectives

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

1 Explain on overview level the RAN site concept for RBS
1.1 Explain the basic GSM, WCDMA and LTE Radio Access Network
1.2 Explain briefly the Ericsson Radio System
1.3 Outline the different radio site components, including the Baseband products, and the radio products

2 Use the Customer Product Information (CPI)
2.1 Explain the CPI library structure of the node
2.2 Find information in the CPI Library with use of regular expression
2.3 List the important documents in the CPI for maintaining a Baseband Radio Node
2.4 Locate correct OPI to solve alarms
2.5 Know what different Tool Kits exist and how to order them

3 Perform maintenance procedures on the node
3.1 Explain the Baseband radio node hardware architecture
3.2 Identify the Baseband radio node connection interfaces
3.3 Explain the maintenance procedures
3.4 Explain how to handle faulty units
3.5 Connect to a Baseband radio node
3.6 Learn how to install and use the EMCLI
3.7 Learn some basic commands used in EMCLI that are relevant for a Field Maintenance personnel
3.8 Learn how to install and use the EMGUI
3.9 Learn the basic principle of the Managed Object Model (MOM)

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3.10 Be able to read and explain the alarms
3.11 Interpret LEDs on the Baseband and Radio units
3.12 Extract the logs from the Baseband Radio Node

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852 or/and
Ericsson WCDMA System Overview, LZU1085418 or/and
LTE/SAE System Overview, LZU1087020 or/and
Ericsson Radio System Overview, LZU1089991

Duration and class size

The length of the course is 1 day 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM, WCDMA and LTE RAN Systems	2.0
	Customer Product Information and Tool Kits	0.5
	Practical exercises	3.0

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GSM RBS 6101 Field Maintenance

LZU1087894 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6101 standard node with RUG 11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6101 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

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

1 Explain on overview level the GSM RAN Site Concept for RBS
1.1 Explain the basic GSM Radio Access Network
1.2 Outline the RBS 6000 portfolio and Support System
1.3 Understand RBS 6000 Building Block and Hybrid configuration
1.4 Identify the Distribution Frame (DF) and the Site Support Unit
1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)

2 Perform maintenance and configuration tasks on the RBS 6101 nodes
2.1 Explain RBS 6101 Main features
2.2 Explain the RBS 6101 Hardware architecture
2.3 Identify the RBS 6101 Connection interfaces
2.4 Explain DUG Hardware architecture
2.5 Identify the DUG connection Interfaces
2.6 Explain the Battery Backup System 6101
2.7 Understand the RBS 6101 Maintenance procedures
2.8 Explain RBS 6101 Handling faulty equipment

3 Use the Customer Product Information (CPI) and Tool Kits
3.1 Explain the CPI Library structure of the node
3.2 Find information in the CPI Library with use of regular expression
3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI
3.5 Know the different tool kits exist and how to order the Tool Kits

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4 Use the Operation Maintenance Terminal (OMT)

4.1 Identify the OMT Kit and what it consists
4.2 Understand Remote OMT (R-OMT) over IP
4.3 Understand the Managed Object (MO) for G12 Model
4.4 Install and start the Operation & Maintenance Terminal, OMT
4.5 Access and use the different Views; System, Cabinet, Radio and Object
4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
4.7 Access the property help feature from each window

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6101 Maintenance	3
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6102 Field Maintenance

LZU1087643 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6102 standard node with RUG 11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6102 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

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

1 Explain on overview level the GSM RAN Site Concept for RBS
1.1 Explain the basic GSM Radio Access Network
1.2 Outline the RBS 6000 portfolio
1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
1.4 Understand RBS 6000 Building Block and Hybrid configuration
1.5 Identify the Antenna System Controller, ASC
1.6 Identify and locate the Remote Electrical Tilt Unit, RETU

2 Perform maintenance and configuration tasks on the RBS 6102 nodes
2.1 Explain RBS 6102 Main features
2.2 Explain the RBS 6102 Hardware architecture
2.3 Identify the RBS 6102 Connection interfaces
2.4 Explain DUW Hardware architecture
2.5 Identify the DUW connection Interfaces
2.6 Explain the Battery Backup System 6102
2.7 Understand the RBS 6102 Maintenance procedures
2.8 Explain RBS 6102 Handling faulty equipment

3 Use the Customer Product Information (CPI) and Tool Kits
3.1 Explain the CPI Library structure of the node
3.2 Find information in the CPI Library with use of regular expression
3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI

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3.5 Know that different tool kits exists and how to order the Tool Kits

4 Use the Operation Maintenance Terminal (OMT)

4.1 Install and start the Operation Maintenance Terminal.
4.2 Understand Remote OMT (R-OMT) over IP
4.3 Understand the Managed Object (MO) for G12 Model
4.4 Install and start the Operation & Maintenance Terminal, OMT
4.5 Access and use the different Views; System, Cabinet, Radio and Object
4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6102 Maintenance	3.0
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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Multi standard RBS 6120 Field Maintenance

LZU1089828 R1A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6120 with the following radio units RUG 11, RUW 01/02, RUL 01, RUS 01/02 and optional radios RRUL 11/62/81, RRUS 01/02/11/12/31/61, mRRUS 12 and AIR 11/21 which are available in the Appendix. The participants will perform hardware fault localization, hardware replacement and configuration tasks on a RBS 6120. On completion of this course the participants will also be familiar with the features of the operation and maintenance tools such as Element Manager (EM), COmmand Line Interface (COLI), Node Command line Interface (NCLI) and Operation and Maintenance Terminal (OMT).

Learning objectives

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

1 Explain on overview level the GSM, WCDMA and LTE RAN Site Concept for RBS

1.1 Explain the basic G/W/L Radio Access Network
1.2 Outline the RBS 6000 portfolio and Support System
1.3 Explain the basic heterogeneous network
1.4 Advantages and benefits of heterogeneous network
1.5 Understand the concepts of Small Cell Sites
1.6 Understand the all new all-in-one outdoor enclosure system 6100
1.7 Detail the multi standard RBS 6120 product and the concept 5-3-1
1.8 Outline the flexibility of the multi flexibility outdoor radio base station as in TMR, PBC and BBS

2 Perform maintenance tasks on the RBS 6120 nodes

2.1 Explain RBS 6120 Main features and optional equipment
2.2 Explain the RBS 6120 Hardware architecture
2.3 Identify the RBS 6120 Connection interfaces
2.4 Understand the DUG/W/L/S hardware architecture
2.5 Understand the RUG/W/L/S hardware architecture
2.6 Understand the RBS 6120 Maintenance procedures
2.7 Explain RBS 6120 Handling Faulty Equipment

3 Use the Customer Product Information (CPI) and Tool Kits

3.1 Explain the CPI Library structure of the node
3.2 Find information in the CPI Library with use of regular expression

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3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI
3.5 Know the different tool kits exist and how to order the Tool Kits

4 Connect to a node using COLI and also using NCLI
4.1 Understand basic commands using COLI and using NCLI
4.2 Have a basic understanding of the functionality and technology used in COLI and NCLI
4.3 Understand the basic principles behind the Managed Object Model (MOM)
4.4 Understand the file system in a CPP based node
4.5 Investigate the purpose and the location of the various types of logs

5 Use the Element Manager EM)
5.1 Download and start the Element Manager
5.2 Access and use the different “Views”; Containment, Equipment, IP, Licensing, Radio Network and the Software
5.3 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
5.4 Access the property help feature from each window
5.5 Create a Customized View (User Defined) in Element Manager
5.6 Handling License Key Files, LKF
5.7 Explain how to format the node
5.8 Explain how to load the basic package software

6 Use the Operation Maintenance Terminal (OMT)
6.1 Identify the OMT Kit and what it consists
6.2 Understand Remote OMT (R-OMT) over IP
6.3 Understand the Managed Object (MO) for G12 Model
6.4 Install and start the Operation & Maintenance Terminal, OMT
6.5 Access and use the different Views; System, Cabinet, Radio and Object
6.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
6.7 Access the property help feature from each window

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM Systems Survey, LZU108852
Ericsson WCDMA System Overview, LZU1085418

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LTE/SAE System Overview, LZU1087020 or LTE/SAE - System Overview (WBL), LZU1087318
RBS 6000 Overview, LZU1087503 or RBS 6000 in a Nutshell, LZU1087504
CPP Node Features and Functions, LZU1086116
WCDMA W14 Air Interface (optional), LZU1089176
LTE L14 Air Interface (optional), LZU1089186

Duration and class size

The length of the course is 2 day 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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course introduction	0.5
	GSM/WCDMA/LTE RAN Systems and Site Introduction	1.0
	RBS 6120 components	2.0
	Multi standard RBS 6120 Maintenance	2.5
2	Customer Product Information (CPI) and Tool Kits	1.0
	Command Line Interface/Node Command Line Interface	1.5
	Element Manager	2.0
	OMT	1.5

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GSM RBS 6201 Field Maintenance

LZU1087646 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6201 standard node with RUG11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6201 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

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

1 Explain on overview level the GSM RAN Site Concept for RBS

1.1 Explain the basic GSM Radio Access Network
1.2 Outline the RBS 6000 portfolio and Support System
1.3 Understand RBS 6000 Building Block and Hybrid configuration
1.4 Identify the Distribution Frame (DF) and the Site Support Unit
1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)

2 Perform maintenance and configuration tasks on the RBS 6201 nodes

2.1 Explain RBS 6201 Main features
2.2 Explain the RBS 6201 Hardware architecture
2.3 Identify the RBS 6201 Connection interfaces
2.4 Explain DUG Hardware architecture
2.5 Identify the DUG connection Interfaces
2.6 Explain the Battery Backup System 6201
2.7 Understand the RBS 6201 Maintenance procedures
2.8 Explain RBS 6201 Handling faulty equipment

3 Use the Customer Product Information (CPI) and Tool Kits

3.1 Explain the CPI Library structure of the node
3.2 Find information in the Library with use of regular expression
3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI
3.5 Know the different tool kits exist and how to order the Tool Kits

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4 Use the Operation Maintenance Terminal (OMT)

4.1 Identify the OMT Kit and what it consists
4.2 Understand Remote OMT (R-OMT) over IP
4.3 Understand the Managed Object (MO) for G12 Model
4.4 Install and start the Operation & Maintenance Terminal, OMT
4.5 Access and use the different Views; System, Cabinet, Radio and Object
4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log
4.7 Access the property help feature from each window

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6201 Maintenance	3
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6202 Field Maintenance

LZU1088284 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6202 standard node with RUG11 or RUS 01/02 type (optional radio units for hybrid configuration such as RRUS 01, RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6202 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

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

1 Explain on overview level the GSM RAN Site Concept for RBS

1.1 Explain the basic GSM Radio Access Network
1.2 Outline the RBS 6000 portfolio and Support System
1.3 Understand RBS 6000 Building Block and Hybrid configuration
1.4 Identify the Distribution Frame (DF) and the Site Support Units
1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)

2 Perform maintenance and configuration tasks on the RBS 6202 nodes

2.1 Explain RBS 6202 Main features
2.2 Explain the RBS 6202 Hardware architecture
2.3 Identify the RBS 6202 Connection interfaces
2.4 Explain DUG Hardware architecture
2.5 Identify the DUG connection Interfaces
2.6 Explain the Battery Backup System 6202
2.7 Understand the RBS 6202 Maintenance procedures
2.8 Explain RBS 6202 Handling faulty equipment

3 Use the Customer Product Information (CPI) and Tool Kits

3.1 Explain the CPI Library structure of the node
3.2 Find information in the CPI Library with use of regular expression
3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI

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3.5 Know the different tool kits exist and how to order the Tool Kits

4 Use the Operation Maintenance Terminal (OMT)

4.1 Identify the OMT Kit and what it consists
4.2 Understand Remote OMT (R-OMT) over IP
4.3 Understand the Managed Object (MO) for G12 Model
4.4 Install and start the Operation & Maintenance Terminal, OMT
4.5 Access and use the different Views; System, Cabinet, Radio and Object
4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM Systems Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6202 Maintenance	3
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM RBS 6301 Field Maintenance

LZU1087891 R3A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6301 standard node with RRUS 01 (optional radio units for hybrid configuration such as RRUS 02, RRUS 12 and AIR are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6301 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

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

1 Explain on overview level the GSM RAN Site Concept for RBS
1.1 Explain the basic GSM Radio Access Network
1.2 Outline the RBS 6000 portfolio
1.3 Identify the RBS 6000 Support System, Radio Modules and Digital Units
1.4 Understand RBS 6000 Building Block and Hybrid configuration
1.5 Identify the Antenna System Controller, ASC
1.6 Identify and locate the Remote Electrical Tilt Unit, RETU

2 Perform maintenance and configuration tasks on the RBS 6301 nodes
2.1 Explain RBS 6301 Main features
2.2 Explain the RBS 6301 Hardware architecture
2.3 Identify the RBS 6301 Connection interfaces
2.4 Explain DUG Hardware architecture
2.5 Identify the DUG connection Interfaces
2.6 Explain the Antenna Integrated Radio Unit
2.7 Understand the RBS 6301 Maintenance procedures
2.8 Explain RBS 6301 Handling faulty equipment

3 Use the Customer Product Information (CPI)
3.1 Explain the CPI Library structure of the node
3.2 Find information in the CPI Library with use of regular expression
3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI

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3.5 Know that different tool kits exists and how to order the tool kits

4 Use the Operation Maintenance Terminal (OMT)

4.1 Identify the OMT Kit and what it consists
4.2 Understand Remote OMT (R-OMT) over IP
4.3 Understand the Managed Object (MO) for G12 Model
4.4 Install and start the Operation & Maintenance Terminal, OMT
4.5 Access and use the different Views; System, Cabinet, Radio and Object
4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6301 Maintenance	3,5
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1

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GSM RBS 6601 Field Maintenance

LZU1087674 R4A

Description

This course is a task-based course covering hardware replacement and maintenance of the RBS 6601 standard node with RRUS 01 type (optional radio units for hybrid configuration such as RRUS 02, RRUS 12, AIR 11 and AIR 21 are available in the Appendix). The participants will perform hardware fault localisation, hardware replacement and configuration tasks on a RBS 6601 type on BSS level of software release base on 1 type of radio unit. On completion of this course the participants will also be familiar with the features of the Operation and Maintenance Tool, OMT.

Learning objectives

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

1 Explain on overview level the GSM RAN Site Concept for RBS

1.1 Explain the basic GSM Radio Access Network
1.2 Outline the RBS 6000 portfolio and Support System
1.3 Understand RBS 6000 Building Block and Hybrid configuration
1.4 Identify the Distribution Frame (DF) and the Site Support Unit
1.5 Identify the Antenna System Controller, (ASC) and the Remote Electrical Tilt Unit, (RETU)

2 Perform maintenance and configuration tasks on the RBS 6601 nodes

2.1 Explain RBS 6601 Main features
2.2 Explain the RBS 6601 Hardware architecture
2.3 Identify the RBS 6601 Connection interfaces
2.4 Explain DUG Hardware architecture
2.5 Identify the DUG connection Interfaces
2.6 Explain the Battery Backup System 6601
2.7 Understand the RBS 6601 Maintenance procedures
2.8 Explain RBS 6601 Handling faulty equipment

3 Use the Customer Product Information (CPI) and Tool Kits

3.1 Explain the CPI Library structure of the node
3.2 Find information in the CPI Library with use of regular expression
3.3 Find operational instructions (OPI) and maintain the node according to the OPI
3.4 Find additional information on an alarm and solve the problem with the help of the CPI
3.5 Know that different tool kits exists and how to order the tool kits

4 Use the Operation Maintenance Terminal (OMT)

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4.1 Install and start the Operation Maintenance Terminal.
4.2 Understand Remote OMT (R-OMT) over IP
4.3 Understand the Managed Object (MO) for G12 Model
4.4 Install and start the Operation & Maintenance Terminal, OMT
4.5 Access and use the different Views; System, Cabinet, Radio and Object
4.6 Find the alarm list and comment on the Alarms and Events on the Alarm and Event Log.
4.7 Access the property help feature from each window.

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	GSM RAN Systems and Site Introduction	0.5
	GSM RBS 6601 Maintenance	3.0
	Customer Product Information and Tool Kits	0.5
	Operation and Maintenance Terminal	1.5

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GSM BSS RBS 2111 Maintenance

LZU1088837 R2A

Description

If you need to perform hardware fault localization and replacement in RBS 2111, then this course is for you. The main focus of this task-based course are maintenance procedures including the usage of the necessary documentation to handle each process. It is also included information regarding the RBS 2111 Second Generation. Ericsson's IP RAN solution is also presented focused on the newst version of the Site Integration Unit, the SIU-02. The RBS 6000 family is also presented in included in this scenario.

Learning objectives

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

1 By the end of this chapter the students will be able to describe the functionalities, capabilities and structure of each part of the RBS 2111 as well as new features in the Base Station System (BSS)
1.1 Recognize and identify GSM/GPRS/WCDMA/LTE Basic System and components using student material and instructor explanation Identify the GSM/BSS network
1.2 Identify the GSM/GPRS/BSS network
1.3 List the Modulations methods used by Ericsson RBS family
1.4 Name the BSS interfaces
1.5 Explain the LAPD configurations
1.6 Explain VAMOS feature
1.7 Explain the Enhanced power control in downlink PS call
1.8 List the benefit of Enhanced flexible timeslot assignment
1.9 Explain the BSC HWAC support
1.10 Explain the GPRS BSS interface (Gb Interface)
1.11 Explain the main LAPD configurations supported by RBS 2111
1.12 Indicate the Abis Optimization feature
1.13 Describe the Abis over IP feature
1.14 Identify the main characteristics of the RBS 2111
1.15 Detail the units, including connections, indicators (LEDs) and buttons
1.16 Determine the RBS 2111 Second Generation
1.17 Briefly verify the RBS 6000 family

2 Determine the installation steps and technical structure of the RBS 2111 and RBS 2111 Second Generation
2.1 Determine the radio site installation process
2.2 Describe technical structural information of RBS 2111

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2.3 Perform installation of the RRU-N from the RBS 2111 Second Generation

3 Provide configuration information of the RBS 2111 for RF connections and optional equipments
3.1 Determine the RBS radio configurations
3.2 Perform the PCM settings in the MU
3.3 Set the RRU-N address
3.4 Describe the TG-Sync configuration and connections
3.5 Identify how to replace flash card from RBS 2111 Second Generation
3.6 Indicate how to define transmission interface from RBS 2111 Second Generation

4 Examine the maintenance process and perform the correct maintenance procedures based in the CPI for RBS 2111
4.1 Perform fault localization on RBS equipment with effective results
4.2 Perform simple repair procedures and replace faulty hardware units successfully
4.3 Monitor the fault status of the RBS using the OMT
4.4 Work according to the RBS maintenance process
4.5 Perform preventive maintenance on the RBS
4.6 Monitor internal and external alarms using the OMT
4.7 Perform tests on the RBS and antenna system

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey	LZU 108 852
GPRS System Survey	LZU 108 876
OSS-RC Overview	LZU 108 6863
GSM BSS RBS 2000 Basics	LZU 108 8833

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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction and Pre Test	0.3
	GSM/GPRS/WCDMA/LTE System Overview	0.45
	GSM/GPRS BSS Interfaces	0.45
	RBS Functional Overview	1.3
	RBS Functional Overview Exercise	0.3
	Site Equipment Technical Data	1.0
	RBS Configuration	1.0
2	RBS Configuration Exercises	1.3
	Maintenance Procedures	1.0
	Maintenance Procedures Exercises	3.0
	Course post test and evaluation	0.3

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GSM BSS RBS 2409 Implementation and Maintenance

LZU1088838 R1A

Description

If you need to perform hardware fault localization and replacement in the new RBS 2409, then this course is for you. The main focus of this Implementation and Maintenance course is maintenance procedures including the usage of the necessary documentation to handle each process.

Learning objectives

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

1 Describe the functionalities, capabilities and structure of each part of the RBS 2409
1.1 Review the GSM/BSS structure
1.2 Explain the RBS 2409 product
1.3 Detail the optional products
1.4 Identify the radio configuration
1.5 Explain the Enhanced power control in downlink PS call
1.6 List the benefit of Enhanced flexible timeslot assignment
1.7 Explain the BSC HWAC support
1.8 Identify the technical specification
1.9 Detail the interfaces (RBS and PSU-AC-41)
1.10 Identify the Antenna System
1.11 Identify the Power System
1.12 Briefly explain the RBS 6000

2 Describe the radio site and RBS 2409 installation information and the OMT software
2.1 Briefly explain the preconditions for installing
2.2 Identify the installation Procedure
2.3 Set the IDB Parameters
2.4 Detail the reconfiguration for RBS, EBB-11 and External Antenna

3 Perform the maintenance procedures properly and analyze Faults based in the CPI for RBS 2409
3.1 Identify the Fault Mapping
3.2 Describe the Logical RUs
3.3 Monitor the fault status of the RBS using the OMT
3.4 Perform fault localization on RBS equipment with effective results
3.5 Perform simple hardware replace procedure in a properly way (including BSU, EBB-11 and PSU-AC-41)

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3.6 Identify the optical indicators
3.7 Identify troubleshooting for RBS 2409

4 Verify the STN functions, commands and parameters
4.1 Describe STN equipment
4.2 Identify Abis Transport
4.3 Identify the STN Synchronization
4.4 Describe the Physical interfaces
4.5 List the commands used in STN
4.6 Describe some parameters used in STN
4.7 Describe Alarm Handling

Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 108 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863
GSM BSS RBS 2000 Basics, LZU 108 8833

Duration and class size

The length of the course is 1 day 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Product Overview	1.0
	Installation and Configuration	0.5
	Operation and Maintenance	1.0
	Site Transport Node (STN) Concepts	1.5
	Exercises	2.0

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GSM BSS RBS 2X06 Maintenance

LZU1088834 R1A

Description

If you need to perform hardware fault localization, replacement, expansion and reconfiguration in RBS 2106 and RBS 2206, then this course is for you. The main focus of this task-based course is maintenance procedures including the usage of the necessary documentation to handle each process introduced by a high level theory about GSM RAN as well as IP RAN and the RBS 6000.

Learning objectives

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

1 Recognize and identify GSM/GPRS/WCDMA/LTE Basic System and components using student material and instructor explanation
1.1 Identify the GSM/GPRS/BSS network
1.2 List the Modulations methods used by Ericsson RBS family.
1.3 Explain the EDGE system and EDGE Evolution.
1.4 Name the BSS interfaces
1.5 Explain the LAPD configurations
1.6 Explain VAMOS feature.
1.7 Explain the enhanced Packet Switch Downlink Power Control improvement
1.8 Explain the Enhanced Flexible Time Slot Assignment feature
1.9 Explain the Fast return to LTE after call realease feature
1.10 Explain the support for Dual TX RRUS
1.11 Explain the GPRS BSS interface (Gb Interface)
1.12 Understand the Abis optimization concept
1.13 Understand the concept of Abis over IP configuration supported by RBS 2X06 and implemented by the Site Integration Unit (SIU)
1.14 State the Cascade and TG Sync configurations
1.15 List some technical characteristics of the RBS 6000

2 Discriminate the functionalities, capabilities and structure of each part of the RBS 2X06, exploring student book and available RBS hardware
2.1 Identify the different RBS cabinets and the main characteristics
2.2 List the functions of the RBS 2X06 sub-racks
2.3 Recognize boards and modules, including connections, indicators (LEDs) and buttons
2.4 Identify the optional RUs
2.5 Describe the BSC Hardware Activation Code support

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2.6 Detail the Climate System and Power System of each RBS

3 Perform radio site installation, connections and external Battery Backups, using the information with the Installation Manual and Product Description for each RBS
3.1 Briefly explain the radio site installation
3.2 List some BBS 2000i, and PBC 6500 for indoor RBSs
3.3 Identify the BBU 9500 for outdoor RBSs
3.4 List some technical structural information of RBS
3.5 Recognize the Power System of each RBS
3.6 Review information about the Connection Field, Antenna Connection and EPC Bus
3.7 Analyze the BBS 2000, data of the RBSs

4 Configure or reconfigure a RBS 2x06 for RF connections, activate the TG Sync feature, use some optional equipments, and execute basic connections in the DXU, CDU, CXU, ASU and HCU using user guide and appropriate procedure
4.1 List basic RBS antenna configurations for different CDUs
4.2 Determine when and how to implement ASU and HCU
4.3 Identify the Dual Band Configuration in the RBS 2X06
4.4 Implement TG-Sync configuration

5 Measure Distance To Fault (DTF) and Standing Wave Ratio (SWR), used to verify the antenna system installation and also feeder measure, based on instructions in the Installation Manual of each RBS operating Anritsu Site Master
5.1 Configure the ANRITSU Site Master properly
5.2 Understand and perform the DTF Test
5.3 Understand the SWR test and its importance, and perform it
5.4 Perform preventive maintenance on the antenna system

6 Operate RBS 2000 series, using a graphical software OMT following instructions to perform the mains functions of this software in “off line” and “online” state
6.1 Identify and navigate on the OMT application
6.2 Configure and install correct Installation Data Base, IDB, using the OMT
6.3 Use the functions available in the OMT
6.4 Perform VSWR, temperature, voltage and current measurements

7 Examine the maintenance process and perform the correct maintenance procedures based in the Maintenance Manual
7.1 Perform fault localization on RBS equipment with effective results
7.2 Perform simple repair procedures and replace faulty hardware units successfully
7.3 Monitor the fault status of the RBS using the OMT
7.4 Work according to the RBS maintenance process
7.5 Perform preventive maintenance on the RBS
7.6 Monitor internal and external alarms using the OMT
7.7 Fill in a Repair Delivery Note, Blue Tag, and a trouble report
7.8 Handle replaced units in a proper manner

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Target audience

The target audience for this course is:

Field Technician

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 108 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863
GSM BSS RBS 2000 Basics, LZU 108 8833

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

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Curse Introduction	0.15
	GSM/GPRS/WCDMA/LTE System Overview	1.0
	GSM/GPRS BSS Interfaces	1.0
	RBS Functional Overview	2.0
	RBS 2000 Library	0.15
	Exercises	1.3
2	Site Equipment Technical Data	1.0
	RBS Configurations	2.3
	Antenna System Test	0.3
	OMT Introduction	1.0
	Exercises	1.0
3	Maintenance Procedures	2.0
	OMT and RBS Maintenance Exercises	4.0

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GSM BSS RBS 2X16 Maintenance

LZU1088836 R1A

Description

If you need to perform hardware fault localization and replacement in RBS 2116 and RBS 2216, this course is for you. The main focus of this task-based course are maintenance procedures including the usage of necessary documentation to handle each process introduced by a high level theory about GSM RAN as well as IP RAN and the RBS 6000.

Learning objectives

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

1 Recognize and identify GSM/GPRS/WCDMA/LTE Basic System and components using student material and instructor explanation Identify the GSM/BSS network
1.1 Identify the GSM/GPRS/BSS network
1.2 List the Modulations methods used by Ericsson RBS family
1.3 Name the BSS interfaces
1.4 Explain the LAPD configurations
1.5 Explain VAMOS feature
1.6 Explain the Enhanced power control in downlink PS call
1.7 List the benefit of Enhanced flexible timeslot assignement
1.8 Explain the GPRS BSS interface (Gb Interface)
1.9 Understand the concept of Abis over IP configuration supported by RBS 2X16
1.10 Understand the Abis optimization concept
1.11 State the Cascade and TG Sync configurations
1.12 Identify and describe the Site Integration Unit – SIU-02
1.13 Verify briefly technical characteristics of the RBS 6000

2 Discriminate the functionalities, capabilities and structure of each part of the RBS 2x16, exploring student book and available RBS hardware
2.1 Identify the different RBSs cabinet and the main characteristics
2.2 List the functions of the RBS 2X16 sub racks
2.3 Recognize boards and modules, including connections, indicators (LEDs) and buttons
2.4 Identify the optional RUs
2.5 Detail the Climate System and Power System of each RBS
2.6 Identify the BBS 2X16 data
2.7 Explain the BSC HWAC support

3 Review the radio site and RBS 2X16 installation information

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3.1 Briefly Explain the Radio Site Installation
3.2 List some technical structural information of RBS
3.3 Describe the Power System of the RBS 2X16
3.4 Review the Antenna System and Internal Alarm connections
3.5 Implement GPS Synchronization configuration

4 Understand the main antenna configurations
4.1 Understand the Site Cell Configuration concepts
4.2 Check the DRU basic Topologies
4.3 Describe the main RBS Antenna Configurations, including Transmission and Reception paths
4.4 Explain the TG-Sync configuration and how to install the ESB cable

5 Measure Distance To Fault (DTF) and Standing Wave Ratio (SWR), used to verify the antenna system installation and also feeder measure, based on instructions in the Installation Manual of each RBS operating Anritsu Site Master
5.1 Briefly describe and configure the ANRITSU Site Master
5.2 Understand and perform the DTF and SWR Tests
5.3 Perform preventive maintenance on the antenna system

6 Operate RBS 2000 series, using the graphical software OMT following instructions to perform the mains functions of this software in “off line” and “online” state
6.1 Give an overview of the OMT application
6.2 Configure and install correct Installation Data Base, IDB, using the OMT
6.3 Use the functions available in the OMT

7 Examine the maintenance process and perform the correct maintenance procedures based in the Maintenance Manual
7.1 Perform fault localization on RBS equipment with effective results
7.2 Perform simple repair procedures and replace faulty hardware units successfully
7.3 Monitor the fault status of the RBS using the OMT
7.4 Work according to the RBS maintenance process
7.5 Perform preventive maintenance on the RBS
7.6 Monitor internal and external alarms using the OMT
7.7 Fill in a Repair Delivery Note, Blue Tag, and a trouble report
7.8 Handle replaced units in a proper manner

Target audience

The target audience for this course is:

Field Technicians

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Prerequisites

Successful completion of the following courses:

GSM System Survey	LZU 108 852
GPRS System Survey	LZU 108 876
OSS-RC Overview	LZU 108 6863
GSM BSS RBS 2000 Basics	LZU 108 8833

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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.15
	GSM/GPRS/WCDMA/LTE System Overview	1.5
	GSM/GPRS BSS Interfaces	1.2
	RBS 2000 Library	0.15
	RBS 2X16 Hardware Description	3.0
2	Site Equipment Technical Data	1.0
	RBS Configurations	1.0
	Antenna System Test	0.5
	OMT Introduction	1.0
	RBS Maintenance	2.5

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GSM BSS RBS 2X06/2X16 Troubleshooting

LZU1089249 R1A

Description

Developed for Network Operation Center and Field Service Engineers and Technicians, this course is in order to improve the issue's investigation and deliver Root Cause Response properly. The focus of this course are the RBS 2X06 and RBS 2X16 models and, what can be done from the NOC and at the site in order to avoid unnecessary site visits.
Through the course the participants will be in contact with MMI and O&M tasks, for example, fault handling, check IDB, OMT monitors and RBS log reading.

Learning objectives

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

1 Recognize the Ericsson RBS Hardware and general functions
1.1 Identify the GSM Radio Access Network
1.2 Briefly describe both RBS 2X06 and RBS2X16 Hardware details and variations
1.3 Explain the dTRU, DRY and antenna system connections
1.4 Describe the DXU indicators
1.5 Verify site conditions

2 Explain the Managed Object concept
2.1 Explain the Managed Object Model used by the RBS
2.2 Describe the MO Global States
2.3 Detail the Fault Handling based on MOM, Fault Basics, Fault Classes and Fault maps
2.4 Explain how to retrieve Fault Information
2.5 Explain how BSC responds to Fault Reports in the Fault Handling
2.6 Describe Antenna Supervision and the relation and comparison between the methods
2.7 Explain the overview, benefits and drawbacks of VSWR and ASM
2.8 Detail the BSC RF Output Power Supervision related to Antenna Supervision
2.9 Explain how TX resources are mapped on Antennas and Radio Units

3 Describe the Abis Interface and Synchronization
3.1 Briefly describe the Abis interface and practical aspects
3.2 Describe the relation between the Abis and the Signaling layers
3.3 Explain the Abis Signalling addressing on Abis interface
3.4 Explain the Synchronization general aspects

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3.5 Detail the Frame and Frequency synchronization
3.6 Briefly explain the synchronization process for both BTS and MS
3.7 List some typical synchronization issues
3.8 Describe the structure of the RBS RAM logs
3.9 Explain the usage of and the contents of some useful OMT monitors

Target audience

The target audience for this course is:

System Technician, System Engineer, Service Technician, Service Engineer, Field Technician, Support Engineer and Network Operation Engineer

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 107 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863
GSM BSS RBS 2000 Basic, LZU 108 8833
GSM BSS RBS 2x06 Maintenance, LZU 108 8834
GSM BSS RBS 2x16 Maintenance, LZU 108 8836
GSM BSS Troubleshooting, LZU 108 8843
GSM BSS Integration for Field Maintenance, LZU 108 8842
Site Integration Unit Operation and Configuration, LZU 108 7280
IP in GSM Radio Access Network, LZU 108 7035

Duration and class size

The length of the course is 1 day 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.25
	Pre Test	0.25
	Recognize the Ericsson RBS Hardware and general functions	2.0
	Explain the Managed Object Model used by the RBS, Installation Database and Operation & Maintenance Terminal	1.5
	Describe the Abis interface and Synchronization	1.5
	Post Test	0.25
	Course Evaluation	0.25

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05 – RAN Transmission (RAN-T) : SIU/ TCU

The RAN Transmission (RAN T) is Multi-Standard (MS) and is applicable for GSM, WCDMA, LTE and Wifi.

SIU 02 / TCU 02 T15 Field Maintenance

LZU1089962 R1A

Description

The objective os this course is to describe the field maintenance procedures for SIU 02 / TCU 02. The students will be able to learn both hardwares types and characteristics, Managed Object Model, main commands and maintenance tasks.

Learning objectives

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

1 Explain SIU 02 / TCU 02 functions, hardware, features.
1.1 Explain the main SIU 02 / TCU 02 functions.
1.2 Describe the SIU 02 / TCU 02 hardware details.
1.3 Show installation examples for SIU 02 / TCU 02.
1.4 Describe the main features for SIU 02 / TCU 02.

2 Explain SIU 02 / TCU 02 managed object model.
2.1 Describe the managed object (MO) concept, structure and relations.
2.2 Identify an example of the Managed Information Base (MIB).

3 Show SIU 02 / TCU 02 main CLI commands.
3.1 Explain the SIU 02 / TCU 02 local connection.
3.2 Explain the SIU 02 / TCU 02 command line.
3.3 Show the main CLI commands.

4 Perform SIU 02 / TCU 02 maintenance procedures.
4.1 Extract XML files from SIU 02 / TCU 02.
4.2 Reset the SIU 02 / TCU 02 to Factory Settings.
4.3 Run XML files in SIU 02 / TCU 02.
4.4 Describe how to check the O&M IP.
4.5 Perform the Data Collection Guideline in SIU 02 / TCU 02.

Target audience

The target audience for this course is:

Field Technician

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Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU107852
Ericsson WCDMA System Overview, LZU1085418
LTE/SAE System Overview, LZU1087020
IP Networking, LZU102397
IP in GSM Radio Access Network, LZU1087035
IP in WCDMA Radio Access Network, LZU1087379
GSM BSS RBS 2000 Basics, LZU1088833
RBS 6000 Overview, LZU1087503

Duration and class size

The length of the course is 1 day 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.

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	Time (hours)
1	Course Introduction and Pre-test (if necessary)	0.25
	SIU 02 / TCU 02 Functions, Hardware, Features.	1.0
	SIU 02 /TCU 02 Managed Object Model	0.5
	SIU 02 / TCU 02 CLI Main Commands	2.0
	SIU 02 / TCU 02 Maintenance Procedures	2.0
	Course Evaluation and Test (if necessary)	0.25

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SIU 02 / TCU 02 T15 Operation and Configuration

LZU1089961 R1A

Description

This training describes the operation and configuration procedures for SIU 02 / TCU 02.
The participants will verify the SIU 02 / TCU 02 functions, hardwares, features, managed object model and the configuration procedures using the command line interface (CLI).

Learning objectives

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

1 Explain SIU 02 / TCU 02 Introduction, Hardware and Features.
1.1 Explain the main SIU 02 / TCU 02 functions.
1.2 Describe the SIU 02 / TCU 02 hardware details.
1.3 Show installation examples for SIU 02 / TCU 02.
1.4 Describe the main features for SIU 02 / TCU 02.

2 Describe SIU 02 / TCU 02 Managed Object Model.
2.1 Describe the managed object (MO) concept, structure and relations.
2.2 Identify an example of the Managed Information Base (MIB).

3 List the main SIU 02 / TCU 02 CLI Commands.
3.1 Explain the SIU 02 / TCU 02 local connection and command line.
3.2 Show the main CLI commands.

4 Configure the main SIU 02 / TCU 02 Features.
4.1 Configure O&M Access.
4.2 Configure the Synchronization.
4.3 Configure the Abis over IP using Ethernet and E1/T1.
4.4 Configure the RBS WCDMA and LTE over Ethernet.
4.5 Configure the ACL, BFD, BVI and Bridging.

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician

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Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU107852
Ericsson WCDMA System Overview, LZU1085418
LTE/SAE System Overview, LZU1087020
IP Networking, LZU102397
IP in GSM Radio Access Network, LZU1087035
IP in WCDMA Radio Access Network, LZU1087379
GSM BSS RBS 2000 Basics, LZU1088833
RBS 6000 Overview, LZU1087503
SIU 02 / TCU 02 T15 Field Maintenance, LZU1089962

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

Time schedule

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

Day	Topics in the course	Time (hours)
1	Course Introduction and Pre-Test (If necessary)	0.5
	SIU 02 / TCU 02 Introduction, Hardware and Features	5.5
2	SIU 02 / TCU 02 Managed Object Model	1.5
	SIU 02 / TCU 02 Local Connection and Main Commands	4.5
3	SIU 02 / TCU 02 Features Configuration	5.5
	Course Evaluation and Test (if necessary)	0.5

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Baseband T605 Operation and Configuration

LZU1082380 R1A

Description

What does the Baseband T605 do? In which scenarios can it be deployed? How does one work with the Baseband T605?
The training product "Baseband T605 Operation and Configuration" answers your curiosities regarding the new site transmission node Baseband T605. During the training, the students will learn about the hardware characteristics, features, Managed Object Model, the operation and maintenance tools related to the Baseband T605. Configuration procedure, the configuration areas and basic operational tasks are also performed during the training.

Learning objectives

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

1 Describe Baseband T605
1.1 Explain the main functions of the Baseband T605
1.2 Identify Baseband T605 hardware
1.3 Show the main features of the Baseband T605

2 Describe Baseband T605 Managed Object Model
2.1 Explain Managed Object concept.
2.2 Identify Managed Object structure
2.3 Show the Managed Object relations

3 List Baseband T605 operation and configuration tools
3.1 Describe Ericsson Command Line Interface (ECLI)
3.2 Describe Element Manager Command Line Interface (EMCLI)
3.3 Indicate the main commands for EMCLI and ECLI

4 Configure and operate Baseband T605
4.1 Recognize Baseband T605 Configuration
4.2 Configure Baseband T605 using EMCLI and ECLI
4.3 Explain Baseband T605 scripts structure

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician

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Prerequisites

Successful completion of the following courses:

Ericsson Radio System Overview, LZU1089991

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

Time schedule

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

Day	Topics in the course	Time (hours)
1	Course Introduction and Pre-Test (If is necessary)	0.5
	Baseband T605 Overview	3.0
	Baseband T605 Managed Object Model	2.5
2	Baseband T605 Operation and Configuration Tools	6.0
3	Baseband T605 Configuration	5.5
	Post Test (If is necessary) and Course Evaluation	0.5

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06 – NWI/ LAN Switch

The BSC Fundamentals and applicable SIU/TCU courses are prerequisite courses for the NWI and LAN Switch courses.

GSM RAN G15 BSC IP Infrastructure Operation and Configuration

LZU1089964 R1A

Description

This course describes the BSC IP infrastructure and cover operational and configuration procedures. Both forms of BSC IP infrastructure are addressed; the Network Interface - Ethernet (NWI-E) GEM-board which is based on the Summit X450A, from Extreme Networks. This course also includes hands-on activities with common Extreme IP switch configuration and handling tasks.

Learning objectives

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

1 Identify all aspects of the BSC IP Infrastructure
1.1 Describe the BSC IP Infrastructure
1.2 Describe the IP Hosts and IP-Based Applications used within the BSC IP Infrastructure
1.3 Describe the BSC NWI-E GEM- Board
1.4 Identify the site integration for the BSC IP Infrastructure
1.5 List the characteristics of all connections used in the IP Switch Solution

2 Identify IP switch hardware and software, interface connections and perform basic Summit switch handling tasks
2.1 List the characteristics of the Extreme the Summit X450a
2.2 Understand the software structure and Operating System for the BSC NWI-E 450A
2.3 Connect to the BSC NWI-E 450A using Telnet or HyperTerminal
2.4 Execute common IP Switch commands for configuration and administration
2.5 Recognize the BSC NWI-E 450A trap massages on an overview level

3 Perform Switch configuration and administration tasks
3.1 Understand BSC NWI-E configuration at a high level
3.2 Display BSC NWI-E settings within the BSC (Extreme Switch)
3.3 Perform BSC NWI-E configuration (Extreme Switch)
3.4 Execute BSC NWI-E configuration backup and restore

4 Configure BSC IP Applications using MML CLI commands
4.1 Understand the set up and support of IP Applications within the BSC
4.2 Describe IP Applications, IPS, R-PMO, GMLOG, OEN, A-Interface over IP, SS7, Gb over IP, Packet Abis over IP

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4.3 Configure and confirm IP Service Applications

5 Identify BSC IP Addressing
5.1 Discuss the network connections for BSC IP Connectivity
5.2 Describe the VLAN structure used for BSC IP Connectivity
5.3 Describe IP addressing for the BSC IP Connectivity

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician, System Administrator

Prerequisites

Successful completion of the following courses:

IP Networking, LZU102397
GSM RAN G15 EVO 8200/BSC Operation and Configuration, LZU1089965

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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	BSC IP Infrastructure Introduction	3.0
1	Summit Switch Introduction	2.0
1-2	BSC NWI-E Configuration	3.0
2	BSC IP Application Setup	2.0
2	BSC IP Addressing	2.0

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07 – APG, APZ, BSC Fundamentals & Troubleshooting

Both SIU/TCU/Baseband T and NWI/LAN Switch courses are prerequisite courses.

Besides the courses here, the following courses might also be relevant for a BSC engineer. Please ask Ericsson for their course descriptions.

AXE Operation	LZU1088620
APG43L Operation and Maintenance	LZU1089484
APG 40 Operation and Maintenance (Windows 2003)	LZU1086567
APG43 Delta	LZU1086867
APG43L Delta	LZU1089225
APZ 212 60F Operation and Maintenance	LZU1089746
APZ 212 60C Operation and Maintenance	LZU1088261
APG43L Recovery Procedures	LZU1089485
APG40 Recovery Procedures (Windows 2003 C/4)	LZU1086726
AXE810 Maintenance	LZU1086750
AXE Maintenance Extended	LZU1088619
AXE Emergency Handling	LZU108094
APZ 212 55 Operation and Maintenance	LZU1086847

GSM RAN EVO-C 8200 BSC to EVO-C 8230 BSC Delta

LZU1082555 R1A

Description

The EVO Controller 8230 BSC is introduced to meet the future demands of RAN networks, and is an evolution of the EVO-C 8200 BSC. This delta course introduces the participants to the difference between existing hardware of EVO BSC 8200 and the new EVO Controller BSC 8230. During the training, the participants will also go through the configuration procedures of EVO-Controller 8230.
The course covers Ethernet and IP concepts in the EVO-Controller BSC, as well as the commands that are used for configuring the functionality in the BSC. IP transport configurations for Abis-, A- and Gb- interfaces are covered.

Learning objectives

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

1 Explain the GSM RAN System
1.1 Describe the evolution of EVO Controller.
1.2 Describe new features of G17.
1.3 State the differences between EVO BSC 8200 and new hardware of EVO-C BSC 8230.
1.4 Describe the GSM RAN System Architecture and its Nodes.
1.5 Describe the role of the Abis, A and Gb interfaces.
1.6 Describe the EVO Controller products
1.7 Explain the features of the SMX.
1.8 Explain about EVO Controller hardware and its connectivity
1.9 Describe the RBS 6000 and Baseband products available in the GSM RAN.

2 Configure Abis, A and Gb Interface on a BSC EVO-C 8230
2.1 Describe the signal flow on Abis, A and Gb over IP/Ethernet.
2.2 Explain how IP connectivity is implemented on EVO-C BSC 8200 and 8230.
2.3 Explain how to configure the A Control Plane over IP/Ethernet.
2.4 Explain how to configure A User Plane over IP/Ethernet.
2.5 Explain how to configure Abis Interface over IP/Ethernet.
2.6 Explain how to configure the Gb Interface over IP/Ethernet.
2.7 Explain the function of protocol stacks and concepts of SCTP and BSSAP.
2.8 Explain Dynamic Iu and Iur Signaling.
2.9 Explain how to configure Abis interface over TDM.

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Target audience

The target audience for this course is:

System Engineer and Service Engineer

Prerequisites

Successful completion of the following courses:

GSM RAN EVO Controller 8200 BSC Operation and Configuration - LZU1082342

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.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	GSM RAN System Description	4.0
	Abis, A and Gb over IP Configuration - Theory	2.0
2	Abis, A and Gb over IP Configuration – Theory	1.0
	Abis, A and Gb over IP Configuration – Practical	4.0
	Course Review and Conclusion	1.0

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GSM RAN EVO-C 8230 BSC Operation and Configuration

LZU1082548 R1A

Description

The EVO Controller 8230 BSC is introduced to meet the future demands of RAN networks, and is an evolution of the EVO-C 8200 BSC.
The "GSM RAN EVO-C 8230 Operation and Configuration" training introduces the participants to the new controller and cover operational and configuration procedures that are done on a BSC. Students will not only understand what need to be configured towards the A-, Gb-, Abis and the radio interface, but will also configure them on a EVO-C 8230 BSC. In the process, they will also understand the internal connections in the BSC, and the chararteristics of APZ216 60F and APG43/3.

Learning objectives

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

1 Describe the Ericsson's GSM/GPRS/EGPRS System Architecture, GSM identities and description of all units that compose the system
1.1 Identify the network nodes, connectivity between the nodes, interfaces in GSM,
1.2 Describe the roles of BTS, BSC, TRC, MSC-S, MGW, HLR, VLR, EIR
1.3 Describe OSS-RC and ENM concepts
1.4 Identify the GSM Identities like IMSI, TMSI, LAI, CGI, MSISDN, MSRN and IMEI
1.5 Follow the evolution of telecoms networks
1.6 Discuss the ENM characteristics, related to scalability, upgradability, availability and usability

2 Describe the Air Interface, Channel concept, Frequency allocation and Burst & Frame formation
2.1 Describe the physical and logical Channel, covering Traffic and control channel mapping over bursts and frame, using pictures and table available in student material
2.2 Identify GPRS Air interface, modulation scheme
2.3 Describe the Mobile originated and Mobile terminated call set up
2.4 Explain the Measurement procedure in different modes used by GSM terminal equipment.
2.5 Describe the system information and its types, and parameters in system information type
2.6 List the basic traffic cases in BSC

3 Configure the BSS Subsystem using Winfiol providing the student with knowledge of the BSC hardware as well as the different magazines available
3.1 Describe the BSC EVO Controller 8230 with APZ 212 60F and APG 43/3
3.2 Identify EPB, SMXB and EVO-ET Boards

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3.3 Integrate the Hardware and Interfaces of the EVO Controller using MML commands and parameters
3.4 Verify the CTH concept

4 Explain the role of IP in GSM RAN
4.1 Identify all aspects of the BSC IP Infrastructure
4.2 Describe the IP Hosts and IP based applications used within the BSC IP Infrastructure
4.3 List the characteristics of all connections used in the IP Solution
4.4 Identify BSC IP addressing, Network connection and VLAN structure for BSC IP connectivity
4.5 Distinguish the Packet Abis over IP, Packet Abis over TDM and A over IP Interfaces Introduction features and its concepts
4.6 Determine the IP architecture in RAN, and know how IP is implemented in BSC EVO Controller 8230
4.7 Distinguish the Packet Abis over IP and Packet Abis over TDM interfaces feature
4.8 Describe SIGTRAN on CP and A over IP interfaces feature
4.9 Identify SMXB Configuration
4.10 Verify the Abis Local Connectivity feature

5 Explain RAN Architecture, Ericsson Radio System building blocks and Baseband modules. Identify the network nodes, connectivity between the nodes, interfaces in GSM
5.1 Describe the interfaces in Radio Access Network Architecture.
5.2 List the Building blocks in Ericsson Radio system
5.3 Describe the capabilities of Baseband 5216/5212 and Baseband 62, Baseband R503, Baseband T503 and Baseband T605.
5.4 Explain the hardware and software architecture of Baseband.
5.5 Compare the Hardware differences between Baseband 5216, DUS 41, and DUL 20.
5.6 Explain the different possible options of O&M with Baseband 5216/5212.
5.7 Describe the integration and baseband script flow

6 Describe the Ericsson's Baseband Model, using diagram in blocks of identities and description of all units.
6.1 Identify the Baseband Radio Node in RAN Network
6.2 Describe the role of BTS logical model
6.3 Describe Benefits of Baseband Radio Nodes.
6.4 Describe the Capacity with respect to GSM technology, Configuration Management
6.5 Describe the GSM Branch MOM Relation to Abis O&M BTS Logical Model G31

Target audience

The target audience for this course is:

System Engineer, Service Engineer

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Prerequisites

Successful completion of the following courses:

AXE Operation & Configuration, LZU 108 6145
IP Networking, LZU 102 397

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 and tools, which are accessed remotely.

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Ericsson GSM/GPRS System Description	1.0
	Ericsson's Nodes used in GSM	0.5
	Identities used in GSM	0.5
	Air interface, Channel Concept and System Information	3.0
	Measurement Procedure	0.5
	MO & MT call set up	0.5
2	EVO 8230 Hardware Description	2.0
	BSS Configuration Theory	2.0
	BSS Configuration Exercises	2.0
3	IP plan in BSC 8230	1.0
	A over IP Theory	2.5
	A over IP Practical	2.5

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4	Packet Abis over IP Theory	2.5
	Packet Abis over IP Practical	2.5
	SIGTRAN on CP Theory and Practical	1.0
5	(RBS 2000), RBS 6000 and Baseband Theory	1.0
	(RBS 2000) RBS 6000 and Baseband Practical	3.0
	Cell Configuration	1.0
	Course Review and Conclusion	1.0

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GSM RAN EVO-Controller 8200 BSC Operation and Configuration

LZU 1082342 R2A

Description

The BSC EVO Controller 8200 was introduced to meet the future demands of RAN network. Some key characteristics of the EVO-C 8200 address the capacity and flexibility demands. This course introduces the participants to the Controller and cover operational as well as configuration procedures.
Upon completion of this trainning, the students will be able to perform configuration of several boards, including EPB, SXCB, CMXB, EVO ET, NWI-E and be familiar with APZ 212 60F and APG 43/3 characteristics. The students will also be able to perform integration of any RBS from the 6000 family, verify the different BSC applications, configure the necessary cell parameters and RBS internal connections. The course is an excelent introduction to the Abis over IP feature and A over IP feature, including the functions of the Site Integration Unit (SIU). IP based RAN is a reality for majority of the operators, who are driven by capacity demands at the site.
In addition, the participants will receive good knowledge regarding operational tools, like MTR (Mobile Traffic Recording), CER (Cell Event Recording). The training also covers several new and enhanced features like EDGE Evolution 16/32 QAM and others used in Ericsson's GSM RAN.

Learning objectives

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

1 Identify the GSM/GPRS/EGPRS system, including the identities used and the network elements and functionalities that compose the system
1.1 List the Network Elements in Ericsson GSM System
1.2 List the basic traffic cases in BSC
1.3 List the new and enhanced features for the GSM Radio Access Network

2 Present the channels in the GSM/GPRS/EGPRS System explaining their purpose using pictures and table available in student material
2.1 Explain the purpose of the logical channels used on the Air Interface for GSM and GPRS network

3 Configure the RAN using WinFIOL providing the student with knowledge of the BSC Hardware as well as the different magazines available
3.1 Describe the BSC EVO Controller 8200 with APZ 212 60C/F and APG 43/3
3.2 Identify the connections between EGEM2 magazines

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3.3 Integrate the Hardware and Interfaces of the EVO Controller using MML commands and parameters
3.4 Identify EPB, SCXB, CMXB and EVO-ET Boards
3.5 Verify the CTH concept

4 Distinguish between Packet Abis over IP and A over IP Interfaces Introduction features and explain their concepts
4.1 Draw the IP architecture in RAN
4.2 List the Site Functions
4.3 Explain the Packet Abis over IP and Packet Abis over TDM interfaces features
4.4 Describe SIGTRAN on CP and A over IP interfaces feature
4.5 Identify NWI-E Configuration
4.6 Describe Packet ABIS over IP Configuration
4.7 Describe A over IP Configuration

5 Describe the RAN interfaces used in GSM, the RBS 6000 family and configure the internal connections of the RBSs
5.1 Verify the A, and Abis Interfaces
5.2 Differentiate the different RBSs from the 6000 family
5.3 Configure the RBS 6000 equipment in the BSC using MML commands
5.4 Identify Basic RBS Mixed Mode Architecture
5.5 Describe MCPA Multi Carrier Power Amplifier
5.6 Identify Configuration of MO MCTR

6 Describe the Baseband family
6.1 Identify the Baseband Architecture
6.2 Differentiate the different Baseband equipment
6.3 List the Baseband site functions
6.4 Describe the full Abis over IP interface using Baseband equipment
6.5 Configure the Baseband equipment in the BSC using MML commands

7 Configure the Radio Network and define Cell Data knowing the main parameters and procedure to execute them
7.1 Explain the purpose of basic BSC Cell parameters and the effects they have on the GSM Radio Access Network
7.2 Configure the basic radio network in the BSC using MML commands and parameters

8 Execute performance measurement and supervision features that are available in RAN using appropriate command and WinFiol
8.1 Define supervision and recording processes in the BSC
8.2 Define Supervision of Logical Channels

9 Operate and supervise the BSC using the pre-defined routines and supervision and identify how to maintain the BTS using the main maintenance procedures described in the documentation
9.1 Handle practical fault-finding on BSC Hardware using On-line documentation
9.2 Recognize the RBS Alarm Information displayed in the BSC
9.3 Execute BTS Maintenance based on node diagnosis of fault conditions using the online documentation and maintenance procedures

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Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Service Engineer

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU108852 R16A
GSM RAN Radio Network Features, LZU 1089386 R3A
AXE Operation, LZU108620 R3A
APG43L Operation and Maintenance, LZU 1089484(optional)
APG43L Delta, LZU 1089225(optional)

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 and tools, which are accessed remotely.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	GSM/GPRS/EDGE Network Description	1.5
	Channel Concept GSM/GPRS/EDGE	3.0
	New and enhanced features	1.5
2	EVO 8200 Hardware Description	1.0
	SIGTRAN on CP, A over IP and Packet Abis over IP Concepts	3.0
	RAN Configuration Exercises	2.0
3	RBS 6000 theory	0.5
	Continue RAN Configuration Exercises	1.5
	Baseband theory	1.0
	Continue RAN Configuration Exercise	2.0
	Radio Network, theory	1.0
4	Continue the Radio Network, theory	2.0
	Radio Network Exercises	4.0
5	Performance Measurement & Supervision	1.0
	RAN Operation (HW Maintenance)	1.0
	BSC and BTS Maintenance	1.0
	RBS Alarm Indications in the BSC	1.0
	Testing and Fault-finding of RBS equipment in the BSC	1.0
	BST Maintenance Exercises	1.0

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GSM BSS BSC EVO Controller 8100 Operation and Configuration

LZU1088845 R1A

Description

The BSC EVO Controller 8100 is introduced to meet the future demand on RAN networks and some key characteristics will be capacity and flexibility demands. This course introduces the participants to the new controller and cover operational as well as configuration procedures.
Upon realization of this trainning the students will be able to perform configuration of several boards (such as TRHB and GARP2) and determine the APZ 212 60C and APG 43/2 characteristics. The students will also be able to perform integration of any RBS from the 2000 and 6000 families (G12 MO Model), verify the different BSC applications, configure the necessary cell parameters and RBS internal connections. This course brings an excelent introduction of the Abis over IP feature, showing all functions of the Site Integration Unit (SIU). IP RAN will be a must in majority of the operators driven by capacity demands on site.
In addition, the participants will receive good knowledge regarding many tools, like MTR (Mobile Traffic Recording), CER (Cell Event Recording) and FAS (Frequency Allocation Support). This trainning brings several new and enhanced features like EDGE Evolution 16/32 QAM and others used in Ericsson's GSM BSS.

Learning objectives

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

1 Identify the GSM/GPRS/EGPRS system using diagram in blocks of the identities and descriptive of all the units that compose the system
1.1 List the Network Nodes of an Ericsson GSM System, including the RBS 6000 family
1.2 Explain the purpose of GSM-ID numbers (MSISDN, IMSI, LAI, CGI, IMEI, MSRN)
2 Indicate the channels in the GSM/GPRS/EGPRS System explaining their purpose using pictures and table available in student material
2.1 Explain the purpose of the logical channels used on the Air Interface for GSM and GPRS network
2.2 Discuss the EGPRS Coding Schemes and the EGPRS interface to RBS equipment based on network topology and interface description and definition
2.3 Clarify the measurement procedure used by GSM terminal equipment
2.4 Describe the purpose of System Information in GSM
2.5 List the basic traffic cases in BSC

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3 Configure the BSS Subsystem using Winfiol providing the student with knowledge of the BSC, TRC and BSC/TRC hardware as well as the different magazines available
3.1 Describe the BSC EVO Controller 8100 with APZ 212 60C and APG 43/2
3.2 Identify the connections between EGEM2 magazines
3.3 Integrate the Hardware and Interfaces of the EVO Controller using MML commands and parameters

4 Distinguish the Packet Abis over IP and A over IP Interfaces Introduction features and its concepts
4.1 Determine the IP architecture in RAN
4.2 List the Site Functions
4.3 Distinguish the Packet Abis over IP and A over IP interfaces feature
4.4 Verify the Abis Local Connectivity feature
4.5 Fast Return to LTE after Call Release
4.6 LTE To GSM NACC
4.7 PS DL Power Control
4.8 Identify the RBS 6000 within the IPRAN scenarios

5 Describe the RAN interfaces used in GSM, differentiate the RBS 2000 and 6000 family members and configure the internal connections of the RBSs
5.1 Verify the A, A-ter and Abis Interfaces
5.2 Differentiate the different RBSs from the 2000 family
5.3 Configure the RBS 2000 equipment in the BSC using MML commands
5.4 Differentiate the different RBSs from the 6000 family
5.5 Basic RBS Mixed Mode Architecture
5.6 MCPA_Multi Carrier Power Amplifier
5.7 Configuration of MO MCTR
5.8 Configure the RBS 6000 equipment in the BSC using MML commands

6 Configure the Radio Network and define Cell Data knowing the main parameters and procedure to execute them
6.1 Explain the purpose of basic BSC Cell parameters and the effects they have on the GSM Radio Access Network
6.2 Configure the basic radio network in the BSC using MML commands and parameters

7 Execute performance measurement and supervision features that are available in BSS using appropriate command and WinFiol
7.1 Define supervision and recording processes in the BSC

8 Operate and supervise the BSC using the pre-defined routines and supervision command and tools analysis of the OSS
8.1 Handle practical fault-finding on BSC hardware using On-line documentation

9 Identify how to maintain BSC/TRC and BTS using the main maintenance procedures described in the documentation
9.1 Recognize the RBS Alarm Information displayed in the BSC
9.2 Execute BTS maintenance based on node diagnosis of fault conditions using the on-line documentation and maintenance procedures

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Target audience

The target audience for this course is:

System Engineers and Service Engineers

Prerequisites

Successful completion of the following courses:

GSM AXE Operation	LZU 108 5024/2
APZ 212 60C Operation and Maintenance	LZU 108 8261

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 theoretical and practical instructor-led lessons given in both classroom and a technical environment using equipment and tools, which can be accessed remotely

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	GSM/GPRS/EDGE Network Description	1.0
	Channel Concept GSM/GPRS/EDGE	3.0
	Measurement Procedure	1.0
	System Information	1.0
2	BSS Configuration theory	2.0
	BSS Configuration Exercises	2.0
	Packet Abis over IP feature and related concepts	2.0
3	Continue BSS Configuration Exercises	4.0
	Radio Network, theory	2.0
4	Continue the Radio Network, theory	2.0
	Radio Network Exercises	4.0
5	Performance Measurement & Supervision	1.0
	BSS Operation (HW Maintenance)	1.0
	BSC /TRC and BTS Maintenance	1.0
	RBS Alarm Indications in the BSC	0.5
	Testing and Fault-finding of RBS equipment in the BSC	0.5
	BST Maintenance Exercises	1.0
	New Features	1.0

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GSM BSS HD-BSC Operation and Configuration

LZU1088844 R1A

Description

Upon realization of this course the students will be able to perform configuration of any boards from a High Density Base Station Controller (such as TRHB and GARP2) and determine the APZ 212 55 and APG 43/2 characteristics. The students will also be able to perform integration of any RBS from the 2000 and 6000 families (G12 MO Model), verify the different BSC applications, configure the necessary cell parameters and RBS internal connections. This course brings an excelent introduction of the Abis over IP feature, showing all functions of the Site Integration Unit (SIU). In addition, the participants will receive good knowledge regarding of many tools, like MTR (Mobile Traffic Recording), CER (Cell Event Recording) and FAS (Frequency Allocation Support). This trainning brings several new and enhanced features like EDGE Evolution 16/32 QAM and others used in Ericsson's GSM BSS.

Learning objectives

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

10 Identify the GSM/GPRS/EGPRS system using diagram in blocks of the identities and descriptive of all the units that compose the system
10.1 List the Network Nodes of an Ericsson GSM System, including the RBS 6000 family
10.2 Understand the purpose of GSM-ID numbers (MSISDN, IMSI, LAI, CGI, IMEI, MSRN)

11 Indicate the channels in the GSM/GPRS/EGPRS System explaining their purpose using pictures and table available in student material
11.1 Explain the purpose of the logical channels used on the Air Interface for GSM and GPRS network
11.2 Discuss the EGPRS Coding Schemes and the EGPRS interface to RBS equipment based on network topology and interface description and definition
11.3 Clarify the measurement procedure used by GSM terminal equipment
11.4 Describe the purpose of System Information in GSM
11.5 List the basic traffic cases in BSC

12 Configure the BSS Subsystem using Winfiol providing the student with knowledge of the BSC, TRC and BSC/TRC hardware as well as the different magazines available
12.1 Describe the High Density BSC with APZ 212 55 and APG 43/2
12.2 Identify the connections between eGEM magazines
12.3 Integrate the Hardware and Interfaces of the HD BSC using MML commands and

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parameters

13 Distinguish the Packet Abis over IP feature and its concepts
13.1 Determine the IP architecture in RAN
13.2 List the SIU functions
13.3 Distinguish the Packet Abis over TDM feature
13.4 Verify the Abis Local Connectivity feature
13.5 Identify the RBS 6000 within the IPRAN scenarios

14 Describe the RAN interfaces used in GSM, differentiate the RBS 2000 and 6000 family members and configure the internal connections of the RBSs
14.1 Verify the A, A-ter and Abis Interfaces
14.2 Differentiate the different RBSs from the 2000 family
14.3 Configure the RBS 2000 equipment in the BSC using MML commands
14.4 Differentiate the different RBSs from the 6000 family
14.5 Basic RBS Mixed Mode Architecture
14.6 MCPA_Multi Carrier Power Amplifier
14.7 Configuration of MO MCTR
14.8 Configure the RBS 6000 equipment in the BSC using MML commands
14.9 Explain the purpose of basic BSC Cell parameters and the effects they have on the GSM Radio Access Network

15 Configure the Radio Network and define Cell Data knowing the main parameters and procedures to execute them
15.1 Configure the basic radio network in the BSC using MML commands and parameters

16 Execute performance measurement and supervision features that are available in BSS using appropriate command and Winfiol
16.1 Define supervision and recording processes in the BSC

17 Operate and supervise the BSC using the pre-defined routines and supervision command and tools analysis of the OSS
17.1 Handle practical fault-finding on BSC hardware using On-line documentation

18 Identify how to maintain BSC/TRC and BTS using the main maintenance procedures described in the documentation
18.1 Recognize the RBS Alarm Information displayed in the BSC
18.2 Execute BTS maintenance based on node diagnosis of fault conditions using the on-line documentation and maintenance procedures

Target audience

The target audience for this course is:

System Engineers and Service Engineers

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Prerequisites

Successful completion of the following course:

GSM AXE Operation	LZU 108 5024/2

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 theoretical and practical instructor-led lessons given in both classroom and a technical environment using equipment and tools, which can be accessed remotely.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	GSM/GPRS/EDGE Network Description	1.0
	Channel Concept GSM/GPRS/EDGE	3.0
	Measurement Procedure	1.0
	System Information	1.0
2	BSS Configuration theory	2.0
	BSS Configuration Exercices	3.0
	Features Packet Abis over IP and Packet Abis over TDM related concepts	2.0
3	Continue BSS Configuration Exercices	4.0
	Radio Network, theory	2.0
4	Continue the Radio Network, theory	2.0
	Radio Network Exercises	4.0
5	Performance Measurement & Supervision	1.0
	BSS Operation (HW Maintenance)	1.0
	BSC/TRC and BTS Maintenance	1.0
	RBS Alarm Indications in the BSC	0.5
	Testing and fault-finding of RBS equipment in the HD-BSC	0.5
	BTS Maintenance Exercises	1.0

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GSM BSS Troubleshooting

LZU1088843 R2A

Description

If you need knowledge about advanced techniques of GSM RBS 2000 and RBS 6000 Troubleshooting, then this course is for you. The main focus of this task-based course is working with advanced techniques of fault repair and maintenance procedures including the usage of the necessary documentation to handle each process and understanding RBS related commands. The course includes remote fault analysis using commands in the BSC and the OMT software in the RBS for local analysis. The course also includes some RBS 6000 concepts and characteristics.

Learning objectives

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

19 Review the RBS Hardware, including RU functions, indicators, buttons and connectors
19.1 List the main Hardware of macro, micro, pico and main-remote RBS including the RBS 6000
19.2 Recognize the generic indicators (LEDs) and buttons of the main parts of the RBS
19.3 Identify the Buses of the RBS
19.4 Verify a RF performance troubleshooting workflow
19.5 List Ericsson's IP interfaces including the Site Integration Unit (SIU) and the RBS 6000
19.6 Describe the Transport Connectivity Unit (TCU)

20 Discriminate the Managed Objects hierarchy, functionalities and structure, and them relation with the RBS hardware and the OMT software functions
20.1 Describe the MO concept
20.2 Indicate the functions of each MO and them relation with the RBS Hardware
20.3 Perform a fault analysis using the OMT software and the appropriated Manual

21 Examine the main processes performed from the BSC to identify faults in the PCM Link
21.1 Identify and describe the CPI documentation used during the RBS Fault Analysis
21.2 Locate the components of the RAN interfaces: SNT, DIP and Devices
21.3 List the relation between Devices in the DIP (RBLT) and the Time Slots over the Air Interface (RXOTS)
21.4 Describe the functions of the main SNT, DIP and device commands
21.5 Analyze the main supervision parameter related to the DTQUP command

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22 Analyze the main processes performed from the BSC to identify faults in the RBS Hardware
22.1 Identify the main components of the RBS Managed Objects
22.2 Detail the command RXASP and RXMFP
22.3 Describe the functions of the commands RXMSP, RXCDP, RXTCP, RXESI, RXESE, RXBLI, RXBLE, RXTEI, RXELP and RXCAP
22.4 Monitor the External Alarms in the RBS using the ALLIP command

23 Explore the main processes performed from the BSC to analyze the CELL resources and perform a Call Tracing
23.1 Briefly explain the Cell functions and limitations and Logical Channels types
23.2 Identify the Cell parameters related to the Hardware Status
23.3 Detail the command RLCRP
23.4 Clarify the functions of the commands RLSTP, RLSTC, RLCFP, RLCPP, RLDEP and RLSLP
23.5 Verify some troubleshooting tips

Target audience

The target audience for this course is:

Field Technician, System Technician, Service Technician, Network Design Engineer, Network Deployment Engineer, Service Engineer, System Engineer

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 108 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863
GSM BSS RBS 2000 Basics, LZU 108 8833
RBS 6000 Overview, LZU 108 7503
GSM RBS 6102 Field Maintenance, LZU 108 7643 or
GSM RBS 6201 Field Maintenance, LZU 108 7646
GSM BSS Integration for Field Maintenance, LZU 108 8842

Duration and class size

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

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Learning situation

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

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	0.5
	RBS Hardware	1.0
	RBS Hardware - Exercises	0.5
	MO and OMT Description	1.0
	MO and Fault Analyses – Exercises	1.0
	OMT - Exercises	2.0
2	Digital Path Troubleshooting	1.0
	DIP and Device - Exercises	1.0
	DIP and Device Investigation - Exercises	1.5
	MO Troubleshooting	1.0
	MO Commands Review - Exercises	1.5
3	Cell Analyses	1.5
	Cell Concept - Exercises	1.75
	Cell Analyses - Exercises	2.25
	Course Evaluation	0.5

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08 – Abis E2E Configuration

SIU/TCU, NWI/LAN Switch and BSC Fundamentals are prerequisite courses.

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Baseband Radio Node - Operation and Configuration

LZU1082512 R1A

Description

Are you ready to introduce the most powerful baseband into your Radio Access Network? What are the features and functionalities of the new Baseband Radio Node? How will the configuration of transport and radio network managed objects look under the Ericsson Common Information Model? Which are the tools (user interfaces) that could be used to configure a Baseband ? How would one handle the Configuration, Performance, Security and Fault management operations in a Baseband Radio Node?

"Baseband Radio Node Operation and Configuration" provides the answers to all the questions above. The course includes theoretical sessions where what need to be configured are described and investigated, followed by practical exercises in which the configurations are made.

The course introduces the Baseband unit [also known as (or associated with) “Baseband RadioNode / MSRBS-V2 / COM / RCS / ECIM / G2 / Dus_gen2], and its features and characteristics. After the course, participants will be familiar with integration procedure, the managed objects that need to be configured according to the Ericsson Common Infromation Model. The Mul-, S1- ,X2, Iub- and Abis- interfaces (with and without IpSec) including basic radio network configuration for LTE/WCDMA/GSM are defined during the training. The students also get hands-on experience (in the areas of Fault/ Software/ Configuration/ Performance/Security Managements) on a Baseband Radio Node unit deployed in a LTE /eNodeB, WCDMA/NodeB and GSM/BTS (17 software) environment.

Learning objectives

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

1 Explain RAN Architecture, Ericsson Radio System building blocks and Baseband modules.
1.1 Describe the interfaces in Radio Access Network Architecture.
1.2 List the Building blocks in Ericsson Radio system
1.3 Describe the capabilities of Baseband 5216/5212, Baseband R503, Baseband T605 and the new versions 6620/6630/ 6303/6502/C608 and P614.
1.4 Explain the hardware and software architecture of Baseband.
1.5 Compare the Hardware differences between Baseband, DUS 41 and DUL 20.
1.6 Explain the different possible options of O&M with the Baseband.
2 Describe the Transport Network functionalities and introduce ECIM MOM.

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2.1 Describe the Mu, S1, X2, Iub and Abis protocol and recognize the Managed objects related to Transport network.
2.2 List the transmission capabilities for Baseband Radio Node and Baseband Radio TNode
2.3 Relate the IP and Ethernet functionalities of Baseband to the RAN Transport Network
2.4 Introduce and Explain in the brief the Ericsson Common Information Model (ECIM)
2.5 Compare the Managed objects related to transport network in baseband with CPP nodes.
2.6 List out the different synchronization options that are supported by the Baseband.
2.7 Explain what IP Security (IPsec) is and how it is supported in RAN
2.8 Recognize Managed Objects related to IPsec implementation and some key attributes that define the working of IPsec

3 Explain the Radio Network in Baseband Radio Node
3.1 Explain the concept of cell and its relation to sector and antenna system in RBS.
3.2 Introduce the new radio products in Ericsson radio system
3.3 Recognize the Managed Objects related to radio network configuration
3.4 Relate the Managed Objects and figure out the changes according to Ericsson Common Information Model (ECIM)
3.5 Edit and implement the files for on-site usage that would create the Radio network (Cells, Cell relations) as applicable in an eNodeB, NodeB or BTS.

4 Describe the Integration, Operation and Management aspects of Baseband and implement them using the O&M tools.
4.1 Explain the possible External Management interfaces and login option to the Baseband
4.2 Describe in brief the Integration process for Baseband eNodeB and NodeB or BTS.
4.3 Explain the configuration files that are used in the integration of a Baseband Radio Node
4.4 Compare the different Configuration Options available for Baseband
4.5 Demonstrate with exercises the Configuration Management, Performance Management and Fault Management in the Baseband
4.6 Explain the Security Management process in the Baseband
4.7 Describe the process to collect the ESI/DCG logs and perform basic troubleshooting

Target audience

The target audience for this course is:

Service Planning Engineer, Network Deployment Engineer, Network Design Engineer

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Prerequisites

Successful completion of the following courses:

LTE/SAE System Overview, LZU1087020
LTE L16 Configuration, LZU1082168-Optional
or
WCDMA System Overview, LZU1085418
WCDMA EVO-C 8200 Configuration, LZU1088931-Optional
or
GSM System Survey, LZU108852

Ericsson Radio System Overview, LZU1089991 – Recommended

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

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course introduction and introduction of RAN, The Ericsson Radio System overview with O&M tools	2.0
	ECIM MOM and Transport Network Configuration theory	4.0
2	Transport Network practical	3.0
	Configuration of the radio network – theory and practical	3.0
3	Integration Process and configuration options	2.0
	Configuration Management, Performance Management, Security Management and Fault Management - Practical	3.0
	Summary and end-of-course procedures	1.0

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GSM BSS Integration for Field Maintenance

LZU1088842 R2A

Description

The purpose of this course is to provide both theoretical and practical competence of parameter settings used to integrate the RBS and BSC. You will learn about the definition of a new cell in a BSC and the meaning of the cell parameters. You will also learn about hardware definition, MOs, the meaning of its parameters as well as how to find faults regarding cells and MOs. In the last chapter, you will see step by step the whole integration process. The participants will also be introducted to the RBS 6000 family concepts and characteristics.

Learning objectives

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

1 Determine where the RAN Integration process – as part of the entire Cell Planning Process – comes in and the general steps to be taken for integration.
1.1 Discuss the Cell Planning Process
1.2 Determine the Network Implementation Process
1.3 Apply the RAN Integration Test

2 Discriminate the GSM RAN system and unit interworking identifying the individual components in the RAN system, both in the BSC and RBS, using student material and instructor explanation.
2.1 List the GSM Switching System components
2.2 List GSM Radio Access Network (RAN) components
2.3 Identify the two parts of the Operation Support System – Radio and Core (OSS-RC)
2.4 Explain the BSC and TRC functional units

3 Recognize the various interfaces and protocols for those interfaces, studying the GSM topology and differentiating each other.
3.1 Identify and Explain the A, Ater and Abis interfaces
3.2 Understand the Abis optimization concept
3.3 Identify the characteristics of Abis over IP configuration
3.4 Understand the concept of Abis local connectivity
3.5 Explain the characteristics of the Air Interface
3.6 List the various Air Interface channels

4 Identify the RBS 2000 and RBS 6000 series nodes, their functionalities, capabilities and structure, using the student material and checking physically in the available BTS.
4.1 Explain the RBS architecture and functional blocks
4.2 Differentiate various RBS 2000 and 6000 family units
4.3 List the Replaceable Units (RUs) in the RBS 2000 and RBS 6000
4.4 Explain the concept of remote OMT and OMT over IP

5 Apply the command structure used in RBS/BSC communication, using the Winfiol software and command documentation.
5.1 Define the purpose of Man-Machine Language (MML) commands
5.2 List various command parameters
5.3 Interpret the format of commands
5.4 Use ALEX to search for a given command
5.5 Differentiate between CODs, PODs, and OPIs
5.6 Explain the difference between “RL” and “RX” commands
5.7 Given a list of commands, match a command with its function

6 Discuss cell-related concepts, obtaining cell definition, neighbor cell set-up, measurement reports, locating, and handovers entering commands and parameters, in practical exercises.
6.1 Express a high-level description of the cell/site integration process
6.2 Identify cell-related parameters and data
6.3 Create the necessary command file to define a cell

7 Define the Managed Object concept and the RBS in a functional-oriented way, from the BSC point of view, and create command files defining MOs.
7.1 Define the Managed Object (MO) concept
7.2 Identify the logical model for Ericsson RBS 2000 and 6000
7.3 Explain the purpose of TEIs and DCPs
7.4 Create the necessary command file to define a TG and its related MOs

8 Finish MO and Cell integration, using the Winfiol and correspondent commands connected in the BSC.
8.1 Define the purpose of an RBLT device
8.2 Identify the commands to bring an MO into service and to unblock it
8.3 Execute the process of connecting a cell to a site
8.4 Use the process of loading software into an RBS
8.5 List various RBS maintenance commands

Target audience

The target audience for this course is:

System Engineer, Field Technician, Network Engineer, Network Implementation Engineers and Service Engineers

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Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 108 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863
GSM BSS RBS 2000 Basics, LZU 108 8833
RBS Overview, LZU 108 7503

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 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction	1.0
	Chapter 1: Cell Planning Process	1.0
	Chapter 2: GSM RAN Overview	2.0
	Chapter 3: GSM RAN Interfaces	2.0
2	Chapter 3 GSM RAN Interfaces (continued)	1.0
	Chapter 4: RBS 2000 Functionality Overview	1.0
	Chapter 5: Command Handling	1.0
	Exercise 1: MML Commands	0.5
	Chapter 6: Cell-Related Concepts	1.0
	Exercise 2: Cell Definition	1.5
3	Chapter 7: Managed Objects	1.5
	Exercise 3: Managed Objects Definition	1.5
	Chapter 8: Cell/Site Integration	1.0
	Exercise 4: Cell/Site Integration	1.5
	Test and Evaluation	0.5

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Packet Abis Workshop

LZU1088849 R2A

Description

If you want to improve your knowledge about Packet Abis over TDM and Packet Abis over IP features, this workshop is for you. The GSM Radio Access Network is in constant evolution and this course shows how to smoothly migrate to IP based transport and obtain great results with the support of many features such as Abis Local Connectivity, provided by the Site Integration Unit (SIU). This course is in accordance with Ericsson´s IP RAN T12A solution. Information regarding the new RBS 6000 family is also included.

Learning objectives

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

9 Provide the concepts of the Packet Abis over TDM feature.
9.1 Identify the transport evolution through packet Abis
9.2 Describe the Packet Abis over TDM feature
9.3 Determine the Packet Gateway (PGW) Load Distribution feature
9.4 Define Super Channel Concept
9.5 Indicate how bandwidth savings are achieved
9.6 Identify the performance management statistics
9.7 Describe the transport characteristics
9.8 Determine the dimensioning strategy

10 Provide the functionalities of the Site Integration Unit (SIU) within the Packet Abis over IP feature.
10.1 Identify the Packet Abis over IP feature
10.2 Verify the New BSC IP Infrastructure (BSC NWI-E)
10.3 Describe the functions and capabilities of the SIU
10.4 Verify the new scenarios using an RBS 6000
10.5 Determine the Abis Local Connectivity feature (ALC)
10.6 Identify how Security is accomplished
10.7 List the transport characteristics
10.8 Describe the synchronization scenarios
10.9 Describe Quality of Service
10.10 Define the Dimensioning parameters
10.11 List the AIPCM tool Capabilities

11 Provide the necessary informations to implement the features Packet Abis over TDM and Packet Abis over IP.

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11.1 Describe the MCPA_Multi Carrier Power Amplifier
11.2 Describe the Multi Carrier Transceiver (MCTR)
11.3 Describe the Managed Objects (MOs) concepts
11.4 Implement Packet Abis over TDM feature in BSC
11.5 Implement Packet Abis over IP feature in BSC
11.6 Performance Management on Packet Abis over TDM
11.7 Performance Management on Packet Abis over IP

Target audience

The target audience for this course is:

Service Planning Engineers, Service Design Engineers, Network Design Engineers and Network Deployment Engineers.

Prerequisites

Successful completion of the following courses:

IP Networking, LZU 102 397
GSM BSS Signaling, LZU 108 8847
GSM BSS Integration for Field Maintenance, LZU 108 8842

Duration and class size

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

Learning situation

This is a workshop based on interactive training sessions in a technical environment using equipment and tools

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction and Pre Test	0.5
	Packet Abis over TDM features	2.5
	Packet Abis over IP and SIU	3.0
2	Packet Abis over IP and SIU (cont.)	2.5
	Features Implementation	3.0
	Post Test and Course Evaluation	0.5

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Abis over IP Operation and Configuration in GSM RAN G15

LZU1089963 R1A

Description

This course describes Abis over IP feature concepts, operation details and configuration procedures in G15. The students will learn how to set up the interface from both RBS 6000, SIU 02, TCU 02 and BSC EVO 8200 sites.

Learning objectives

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

12 Describe Abis over IP hardware and feature concepts.
12.1 Describe Abis over IP feature concepts.
12.2 Show RBS 6000 and SIU 02 / TCU 02 hardware details.
12.3 List the RBS 6000 and SIU 02 / TCU 02 physical connections.
12.4 Show BSC EVO 8200 hardware details and physical connections.

13 Configure Abis over IP from SIU 02 / TCU 02 side.
13.1 Configure SIU 02 / TCU 02 E1 physical ports.
13.2 Define SIU 02 / TCU 02 supper channels.
13.3 Perform SIU 02 / TCU 02 output routes configuration.

14 Configure Abis over IP from BSC EVO 8200 and NWI-E side.
14.1 Configure BSC EVO 8200 Abis over IP software functions.
14.2 Perform BSC EVO 8200 and NWI-E routes configuration.

Target audience

The target audience for this course is:

Network Deployment Engineer, System Technician, System Engineer, Field Technician

Prerequisites

Successful completion of the following courses:

GSM RAN G15 BSC IP Infrastructure Operation and Configuration, LZU1089964
SIU 02 / TCU 02 T15 Operation and Configuration, LZU1089961
GSM RBS 6102 Field Maintenance, LZU1087643

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

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Course Introduction and Pre-test (if necessary)	0.25
	Abis over IP Hardware and Concepts	5.75
2	Abis over IP SIU 02 / TCU 02 Side	4
	Abis over IP BSC EVO 8200 and NWI-E Side	2
3	Abis over IP BSC EVO 8200 and NWI-E Side	5.75
	Course Evaluation and Test (if necessary)	0.25

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09 – Packet and Voice Configuration

BSC Fundamentals (and NWI/LAN Switch, if relevant for the BSC-type) are prerequisite courses .

GSM BSS GPRS Operation

LZU1088846 R2A

Description

If you need to perform hardware configuration and operation of your GPRS network, including Gb over IP / Packet Abis over IP / EVO Controller 8100/BSC or EVO Controller 8200/BSC & EGPRS2-A then this course is for you. The main focus of this learning product is to build up competence to perform operational procedures in the BSS of a GPRS Network.

Learning objectives

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

1 Explain the impact of GPRS on the GSM Network and the capabilities of the BSS system in relation to Core Network
1.1 List and describe the GPRS in the BSS
1.2 Describe the connection of the BSS to the GPRS network
1.3 Describe basic Attach,Paging & PDP Context Activation Procedures

2 Describe the GPRS Exchange Hardware Structure and its Capacity
2.1 Describe the BSC hardware structure and PCU
2.2 List the PCU capacity
2.3 Describe High Density BSC
2.4 Describe the EVO Controller 8100
2.5 Describe the EVO Controller 8200
2.6 Describer RBS 6000 series
2.7 Describe SIU

3 Describe Traffic Flow thru GPRS
3.1 Describe GPRS Call flow
3.2 Describe Gb over FR
3.3 Describe Gb over IP
3.4 Describe Abis Resources
3.5 Describe Traffic flow for Abis over IP
3.6 Describe Load Regulation in Abis over IP

4 Configure and Manage Gb Interface
4.1 Configure and Manage GPRS Exchange Hardware
4.2 Configure and Manage Gb over FR
4.3 Configure and Manage Gb over IP
4.4 Manage IP Application in BSC
4.5 Manage NWI-E Configuration

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5 Explain the basic Air Interfaces concepts related to the GRPs network
5.1 Explain the air interface of the GPRS network
5.2 Describe the concept of channels in GSM and GPRS
5.3 Describe Cell Reselection
5.4 Describe DTM
5.5 Describe Subscriber based mobility using SPID
5.6 Explain GSM-UMTS-LTE Cell Reselection and Handover

6 Describe the EDGE
6.1 Describe the EDGE solution
6.2 Describe EDGE Evolution Reduced Latency
6.3 Describe EDGE Evolution 16/32 QAM
6.4 Describe EDGE Evolution – Dual Carrier
6.5 Describe EGPRS2-A
6.6 Describe Supervison of Frequecy Group Configuration
6.7 Explain GSM/WCDMA/LTE cell reselection

7 Describe and handle the main categories and exchange properties in the GPRS part of BSC
7.1 Describe the BSC Exchange properties for GPRS / EGPRS / EGPRS2-A
7.2 Describe the GPRS coding schemes
7.3 Describe the EDGE coding schemes
7.4 Handle the main GPRS/EGPRS/EGPRS2-A exchange parameters

8 Demonstrate the use of the OSS-RC to handle the BSS part
8.1 Show the purpose of OSS-RC
8.2 List and briefly describe the common components of OSS-RC

Target audience

The target audience for this course is:

Service Design Engineers, Network Design Engineers, Service Engineers and System Engineers.

The target audience for this course is personnel providing second line O&M support in an OSS environment. It is suitable for configuration management personnel, GSN and BSS support engineers.

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Prerequisites

Successful completion of the following courses:

GSM AXE Operation, LZU 108 5024/2
BSC IP Infrastructure Operation and Configuration, LZU 108 7766
GSM BSS BSC EVO Controller 8100 Operation and Configuration, LZU 108 8845
GSM BSS EVO Controller 8200/BSC Operationa and Configuration, LZU 108 9134
GSM System Survey, LZU 108 852

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 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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction of GPRS on the GSM network	1.0
	Understand the hardware and capacity PCU	0.5
	Describe the GPRS Hardware	0.5
	Describe the PCU boards and put the hardware in service	1.0
	Describe GPRS Traffic Flow	1.5
	Describe and configure Gb interface over FR	0.5
	Describe and configure Gb over IP	1.0
2	Describe Packet Abis over IP	1.0
	Describe and Configure NWI-E Board	1.0
	Know the GSM/GPRS air interface	1.0
	Describe the GSM/GPRS logical channels	0.5
	Describe EDGE Solution	0.5
	Describe EDGE Evolution/EGPRS2-A Solution	0.5
	Describe GSM/WCDMA Cell reselection	0.5
	Describe GSM/LTE Cell reselection	0.5
	Describe DTM	0.5
3	Understand the main BSC/GPRS/EDGE parameters	1.0
	Understand the use of the OSS-RC to handle the BSS part	0.5
	Practical cases	4.5

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A-Interface over IP in MSS

LZU1087999 R4A

Description

Do you want to know how to configure the A-Interface over IP (AoIP) for the nodes MSC-S, BSC and M-MGW? How this new architecture can provide new feature such as: Transcoder Free Operation with AoIP and 2G&3G M-MGW pool enabled by AoIP.
This course is a must for those who want to know how to configure the A-Interface for the nodes MSC-S, BSC and M-MGW using a Data Transcript example.

Learning objectives

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

9 Describe the A-Interface
9.1 Introduce A-Interface over IP (AoIP)
9.2 List the Operator Benefits

10 Discuss the protocols used for A-interface user plane traffic
10.1 Examine the protocols used for A-Interface control plane traffic (BSSAP)

11 Establish the steps to configure A-Interface over IP (AoIP)
11.1 Explain how the A-Interface over IP is configured on the MSC-S
11.2 Configure the A-Interface over IP on the MSC-S
11.3 Explain how the A-Interface over IP is configured on the BSC
11.4 Explain how the A-Interface over IP is configured on the M-MGW

12 Describe Transcoder Free Operation with A-Interface (AoIP)

13 Clarify MSC Pool with AoIP

Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, System Engineer, Service Engineer, Field Technician, System Administrator, Application Developer, Business Developer, Customer Care Administrator.

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Prerequisites

Successful completion of the following courses:

MSS Network Configuration, LZU 108 8625
M-MGw 13A Operation and Configuration, LZU1089161

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

Time schedule

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

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Day	Topics in the course	Estimated time
1	Describe the A-interface	0.5
	Introduce A-Interface over IP (AoIP)	0.3
	List the Operator Benefits	0.2
	Discuss the protocols used for A-Interface user plane traffic	0.5
	Examine the protocols used for A-Interface control plane traffic (BSSAP)	0.5
	Perform the exercises	2.0
	Explain Transcoder Free Operation with A-Interface over IP (AoIP).	1.0
	Clarify MSC Pool with AoIP	0.5
	Perform the exercises	0.5
2	Establish the steps to configure A-Interface over IP (AoIP)	0.5
	Explain how the A-Interface over IP interface is configured on the MSC-S	1.0
	Explain how the A-Interface over IP interface is configured on the BSC	1.0
	Explain how the A-Interface over IP interface is configured on the M-MGw	1.0
	Perform the exercises	2.5

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10 – OSS GSM Management

Both SIU/TCU/Baseband T, NWI/LAN Switch and BSC Fundamentals are prerequisite courses.

Please check the **Ericsson Network Manager (ENM)** training portfolio to see a complete list of ENM trainings. Similarly, for the OSS-RC, the **Mobile OSS-RC** training portfolio have more offers.

GSM Network Management with OSS-RC 17

LZU1082407 R1A

Description

Do you find network management a high-pressure and challenging activity? On a daily basis must you respond to demands for information on the status of the network, network trends and optimization? This GSM Network Management with OSS-RC 17 course will show you an introduction to the applications available in OSS-RC 17 for the management of GSM networks.

This course gives an introduction to the various GSM applications for management of Ericsson BSS. Along with identifying the OSS-RC and tools for management of specific GSM nodes there are also a number of common applications that will be described in this training, such as those used for fault and performance management.

The course approaches network management proactively, introducing the OSS-RC applications that are used for the following key aspects of network management:
Finding the current status of the network, and troubleshooting the network in the event of errors.
Identifying trends in the network, prediciting problems and optimising the network as a result.
Regular maintanance tasks to keep the network running smoothly at all times.

After the course, the participants should have a basic understanding of how to operate all the GSM OSS-RC applications and of how to proceed using the application themselves.

Learning objectives

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

1 Explore on overview level the OSS-RC Network Management system
1.1 Explore why network management is necessary, and outline the role of OSS-RC as a network management system
1.2 Analyze the overall functionality offered by OSS-RC
1.3 Identify the OSS-RC components
1.4 Analyze the OSS Network Explorer and the Active Library Explorer (ALEX)
1.5 Analyze how to add NE's to be managed by OSS through the use of ARNE
1.6 Explore the purpose and functionality of the Common Integration Framework (CIF)
1.7 Analyze in brief the client server architecture

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1.8 Explore the x86 migration and the high-availability solutions for OSS-RC

2 Analyze and use the Fault Management applications in OSS-RC
2.1 Explore the purpose of Fault Management (FM) and outline its benefits
2.2 Analyze the architecture of the FM System
2.3 Examine the alarm flow
2.4 Identify the various FM applications available

3 Analyze the AXE management tools within OSS-RC
3.1 Analyze the MML command structure
3.2 Explore the CHA and WinFIOL tools available in OSS-RC for MML communication with AXE network elements
3.3 Explore the functionality of the AXE Element Management tools (EMT)
3.4 Analyze the Operations Support Procedure (OPS) tool and explore the OPS Scripting language for script development for AXE network elements

4 Examine the various tools within the OSS for management of the GSM network
4.1 Analyze the following GSM RAN configuration applications; Cellular Network Administration (CNA), Cellular Network Administration Interface (CNAI), Base Station Management (BSM)
4.2 Describe the new Baseband radio node support in GSM RAN
4.3 Analyze the IP support applications for the GSM RAN

5 Explore the Software Management Organizer application
5.1 Explore the importance of Software Management Organizer (SMO) in OSS RC for regular maintenance of Network Elements
5.2 Analyze the functionality of SMO

6 Explore the functionality of the Job Manager applications
6.1 Examine the Job Structure and differentiate between the various components of a job such as tasks and activities.
6.2 Explore the options available from the Job Editor, Task Editor and Job Supervisor GUIs

7 Explore the Performance Management setup within OSS-RC
7.1 Explore the Performance Measurement Initiation (PMI) solution
7.2 Analyze Statistical Measurement Initiation & Administration (SMIA)
7.3 Analyze Measurement Initiation & Administration job list (MIA)
7.4 Analyze Performance Data Mediation application (PDM)
7.5 Performance Management Traffic Recording (PMR)
7.6 Analyze Statistical Gateway (SGw) data mediation tool
7.7 Analyze the Ericsson Network IQ (ENIQ) performance management solution

8 Explore the Event Based Applications setup within OSS-RC
8.1 Analyze the optional features of the Event Based Applications for GSM
8.2 Analyze Real Time Performance monitoring (RPMO)
8.3 Explore the need for and concepts of EBS-S, EBS-G
8.4 Explore the need for and concepts of FFAX (and BLR)
8.5 Explore the need for and concepts of RTTM

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9 Explore the Radio Network Optimization Application and its recordings
9.1 Analyze the various optimization applications within RNO, FAS, FOX, SYROX, NCS, NOX, GWNCS, TET, CCE, MRR and RNDBI
9.2 Identify how to record results and generate reports using the RNO application
10 Examine the various tools within the OSS for Common Transport Network

Target audience

The target audience for this course is:

Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Engineer, Service Engineer

Prerequisites

Successful completion of the following courses:

OSS-RC Overview, LZU1089803
GSM System Survey, LZU108852
or
The participants should be familiar with the GSM network.

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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	OSS-RC Introduction	3.0
	Fault Management	3.0
2	AXE handling in OSS-RC	3.0
	GSM RAN Applications	3.0
3	GSM RAN Applications continued	2.0
	Software/Hardware Management	2.0
	Network Element Scripting	2.0
4	Network Statistics & ENIQ	2.0
	Event Based Applications	1.0
	Radio Network Optimization	2.0
	Common Transport Network Applications	1.0

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ENIQ 17 Statistics Overview and Operation

LZU1082409 R1A

Description

ENIQ, KPI, BIS, WAS, BOXI, IQ! Too many abbreviations? Not enough time?
With the increasing number of statistical data generated by your network (3G, IMS, LTE, IP convergence), you will need to understand what is the new Ericsson performance management solution (ENIQ) . You will also want to know how it can support statistics for Ericsson and other vendor's technologies.
This course is intended for users who are new to ENIQ, but are familiar with Performance Management (PM). It describes the functionalities of the latest ENIQ, how it brings value to your business, and how it differs from the previous solutions and previous releases.
It also provides a practical understanding on how to best use the Product Reports day-to-day and in addition you will be prepared to customize your own reports

Learning objectives

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

1 Relate to the ENIQ reporting solution
1.1 Recognize the ENIQ Web Portal reports
1.2 Search the CPI for generic ENIQ information
1.3 Mention the delta changes from ENIQ Stats 16 to 17
1.4 Introduce the optional module Network Analytics Server

2 Discuss the basic concepts involved in ENIQ
2.1 Identify 3 reasons why ENIQ was introduced
2.2 Recognize the relationship between the ENIQ components
2.3 Name the benefits of Sybase IQ over alternative types of databases
2.4 Underline the degree of integration of ENIQ with OSS-RC

3 Describe the Ericsson Network IQ performance management solution
3.1 Clarify the network configuration
3.2 Identify the ENIQ related application (for operation and administration)
3.3 State in one's own words how the data reaches the reports
3.4 Explore the Customer Documentation to identify which technologies are supported by ENIQ

4 Illustrate the features and functionalities of ENIQ
4.1 Clarify the data aggregation principles

5 Perform the reporting operations using the Web Portal

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5.1 Navigate the Web Portal interface

6 Practice the reporting operations using the Web Intelligence Rich Client
6.1 Navigate the Web Intelligence Rich Client interface
6.2 Run a product sub-report

7 Manage sub-reports in the CMC or Web Portal
7.1 Schedule a sub-report
7.2 Manage sub-report instances
7.3 Administer Business Objects access

8 Define an ad-hoc report
8.1 Create a sub-report (Raw, Day, Day BH)
8.2 Use a customized busy hour criteria
8.3 Select query objects
8.4 Filter a query
8.5 Create once-off operational KPI's at report level
8.6 Publish a customer report set

9 Study a BO universe's structure
9.1 Connect the universe objects to the SQL query
9.2 Navigate the Business Objects Designer interface
9.3 Use linked universes
9.4 Create re-usable variables at universe level

10 Customize reports design
10.1 tables and charts
10.2 Use formats and format templates
10.3 Modify a product sub-report for scheduling

11 Set up reduced-delay statistical alarms
11.1 Clarify the workflow relating to performance alarm generation
11.2 Recognize the different types of templates, and when to use them
11.3 a defined alarm type, using the Web Intelligence Rich Client
11.4 a defined alarm type, using the alarm configuration interface

12 Troubleshoot reports
12.1 Determine who is responsible to deal with what challenge
12.2 Gather relevant information
12.3 Escalate the issue after having documented the steps taken to identify and resolve the issue

Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, Service Engineer, System Engineer, Field Technician, System Administrator,

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Application Developer, Business Developer, Customer Care Administrator

Prerequisites

Successful completion of the following courses:

- Core or Radio Access Network Fundamentals
- Be familiar with Performance Management for a given managed technology (Core, GSM, WCDMA, LTE, etc.)

Duration and class size

The length of the course is 4 days and 0 hours 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

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Introduction	0.5
	ENIQ reporting solution	1.5
	ENIQ concepts	1
	Ericsson Network IQ PM Solution	1.5
	ENIQ functionalities	1.5
2	Perform the reporting operations using the Web Portal	2.0
	Practice the reporting operations using the Web Intelligence Rich Client	2.0
	Manage sub-reports in the CMC or Web Portal	2.0
3	ENIQ universe's structure	2.0
	Customizing reports	4.0
4	Statistical alarms	3.0
	Report troubleshooting	2.5
	Conclusion and post-test	0.5

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GSM BSS Statistics Introduction

LZU1088851 R2A

Description

If you need to understand and perform basic statistics in the GSM Radio Access Network (RAN), this course is for you. You learn about the overall function of STS. This includes how to understand the relationships about the terms "Object Types", "Objects" and "Counters", how to access the different ways to monitor the GSM radio network performance in the areas of accessibility, retainability and speech quality, and how to identify the Statistics Recording Tools.

Learning objectives

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

1 Describe basic traffic theory and engineering concepts

2 Discuss the overall function of STS
2.1 Define the terms “Object Types”, “Objects”, and “Counters” and the relationships between each one
2.2 Discriminate the process of stepping counters in the BSC
2.3 Explain the process of counter values collection from the different program blocks and storage in STS

3 Relate some of the counter that can be retrieved from STS
3.1 Clear the relation between several object types and their respective counters
3.2 Define and briefly describe the three performance monitor indicators in the radio network
3.3 Demonstrate the different ways how important statistical elements – such as congestion, dropped calls, and availability – can be derived from the counter values, and describe the characteristics of these results
3.4 List some of the specific radio network features which STS addresses
3.5 Calculate some user formulas for the key performance indicators
3.6 Analyze and evaluate a number of Key performance indicators

4 Analyze how OSS can be used for statistics recording and list the various tools available
4.1 Explain the purpose of Mobile Traffic Recording (MTR)
4.2 Discriminate the purpose of Cell Traffic Recording (CTR)
4.3 Discuss the purpose of Channel Event Recording (CER)
4.4 Show the NWS Structure
4.5 Express the purpose of Measurement Result Recording (MRR)
4.6 Tell the purpose of Radio Interference Recording (RIR)

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4.7 Describe the purpose of the Active BA-list Recording (ABAL)
4.8 Identify the purpose of the Real-Time Performance Monitoring (R-PMO)
4.9 Clear the purpose of the TEMS Visualization

Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer

Prerequisites

Successful completion of the following courses:

GSM System Survey, LZU 108 852
GPRS System Survey, LZU 108 876
OSS-RC Overview, LZU 108 6863
GSM BSS RBS 2000 Basic, LZU 108 8833

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.

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Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	• Course Introduction	0.5
	• Pre test	1.0
	• Basic Traffic Theory Concepts/ STS Functionality	1.0
	• Exercise 1 and 2	1.0
1/2	• GSM Advanded Radio Statistics Statistics Recording Tools	4.0
	• Exercise 3 and 4	1.5
	• Exercise 5	1.5
	• Post Test	1.0

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11 – Internet of Things (IoT)

Internet of Things is a new area. GSM and/or LTE Overview level training is the pre-requisite. For more detailed portfolio on IoT, please check the catalogue "**Internet of Things (IoT)**".

Internet of Things (IoT) Overview

LZU1082344 R2A

Description

Internet of Things (IoT) is the next evolutionary step in enabling the Networked Society. Beyond connecting people with voice and data communications, IoT enables the inter-connection of devices in various fields of application, from consumer devices, to utilities based meters to sensors in industries. The objective of this course is to describe, on an overview level, the Internet of Things (IoT) concept. Ericsson offerings and solutions as we move into the Networked Society will also be discussed, together with products and features, requirements, use cases, and network description.

Learning objectives

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

1 Explain the concept of Internet of Things (IoT)
1.1 Underline the IoT market landscape
1.2 Identify the difference between critical and massive Machine-Type Communication (MTC)
1.3 Explain the challenges involved with IoT
1.4 Describe current IoT connectivity options available for IoT
1.5 Explain the Standardization in IoT
1.6 Highlight the IoT related network evolution

2 Describe Ericsson IoT portfolio
2.1 Analyze the IoT functional stack
2.2 Underline IoT devices and gateways characteristics
2.3 Explain the network architecture
2.4 List current connectivity solutions
2.5 Discuss IoT requirements and solutions in the Evolved Packet Core (EPC)
2.6 Explain the User Data Management (UDM) solution
2.7 Describe analytics and exposure concepts
2.8 Explain the AppIoT and Ericsson IoT Accelerator
2.9 Discuss 5G in the IoT context

3 List the Internet of Things use cases
3.1 Highlight how different solutions fit in IoT landscape
3.2 Discuss potential use cases
3.3 List existing use cases
3.4 Show 5G use cases

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Target audience

The target audience for this course is:

Service Planning Engineer, Service Design Engineer, Network Design Engineer, Network Deployment Engineer, Service Deployment Engineer, System Technician, Service Technician, System Engineer, Service Engineer, Field Technician, System Administrator, Application Developer, Business Developer, Customer Care Administrator

Prerequisites

Successful completion of the following courses:

General telecom/IT background (equivalent to overview trainings)

Duration and class size

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

Learning situation

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

Time schedule

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

Day	Topics in the course	Estimated Time (hours)
1	Explain the concept of Internet of Things (IoT)	1 hours
	Describe Ericsson IoT Portfolio	4 hours
	List the Internet of Things use cases	1 hour

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