



Customer Training Catalog Training Programs Mobile Softswitch(GSM/UMTS)



HUAWEI
HUAWEI Learning Service
2015



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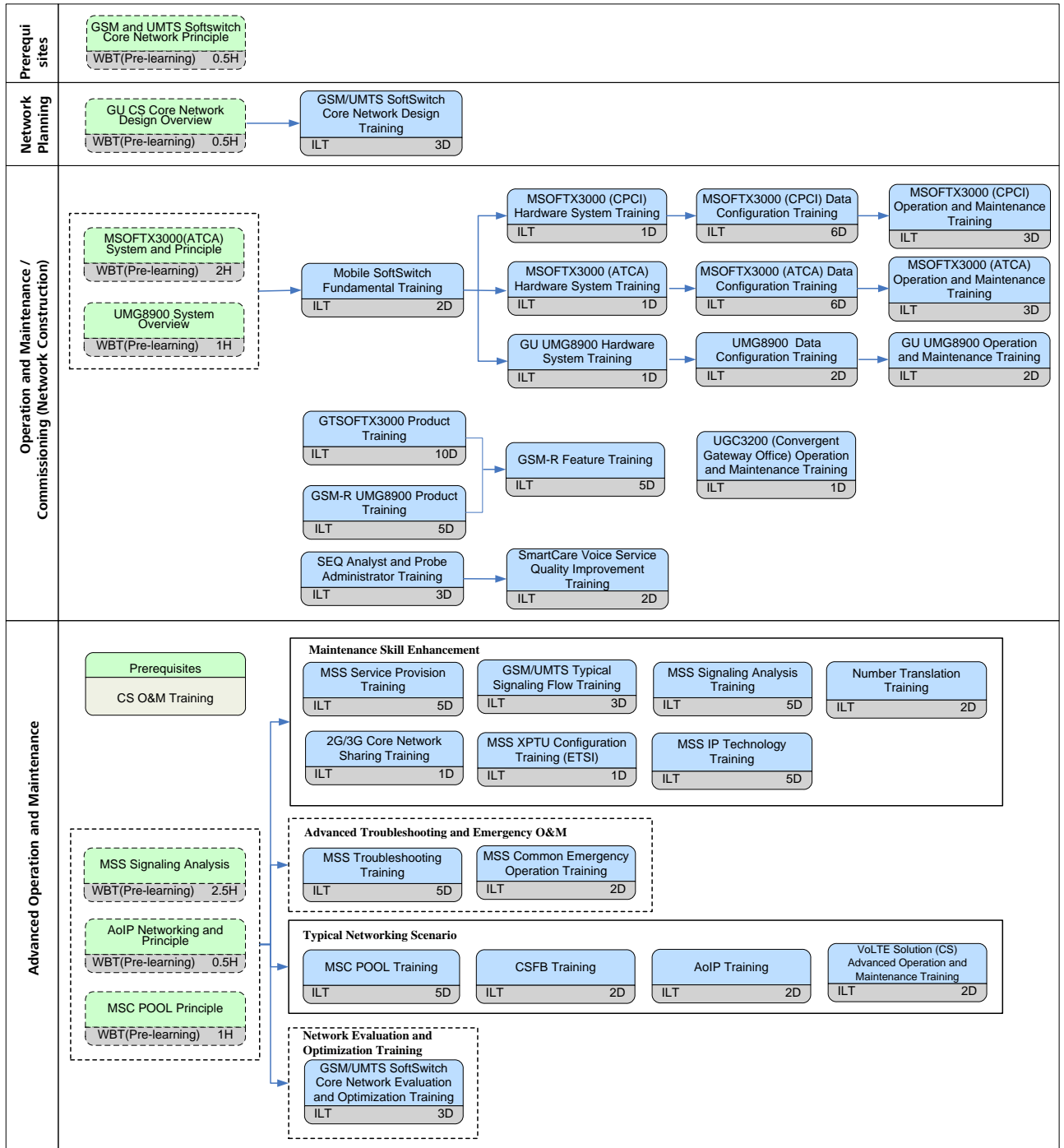
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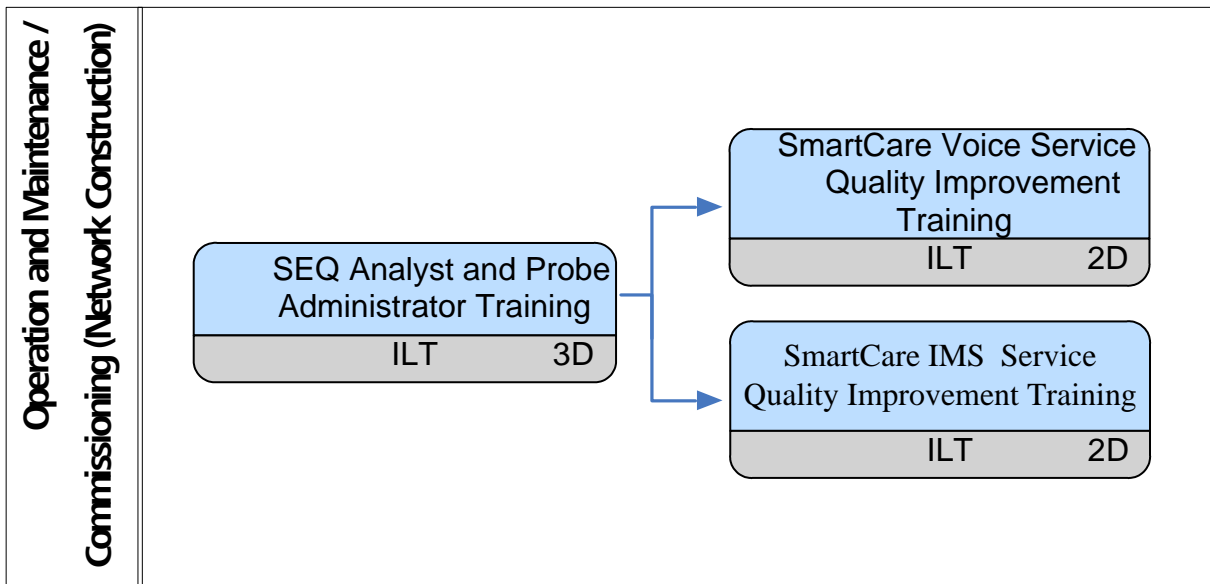
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1 Training Path

1.1 WCDMA-CS Training Path



1.2 SmartCare Training Path



2 Training Programs

Mobile Softswitch(GSM/UMTS) Training Programs are designed as follows:

Training Programs	Level	Duration (working days)	Training Location	Class Size
WCDMA-CS				
Mobile SoftSwitch Fundamental Training	I	2		6 ~ 12
MSOFTX3000 (CPCI) Hardware System Training	I	1		6 ~ 12
MSOFTX3000 (CPCI) Data Configuration Training	II	6		6 ~ 12
MSOFTX3000 (CPCI) Operation and Maintenance Training	II	3		6 ~ 12
MSOFTX3000 (ATCA) Hardware System Training	I	1		6 ~ 12
MSOFTX3000 (ATCA) Data Configuration Training	II	6		6 ~ 12
MSOFTX3000 (ATCA) Operation and Maintenance Training	II	3		6 ~ 12
MSS Service Provision Training	III	5		6 ~ 12
GU UMG8900 Hardware System Training	I	1		6 ~ 12
GU UMG8900 Operation and Maintenance Training	II	2		6 ~ 12
UMG8900 Data Configuration Training	II	2		6 ~ 12

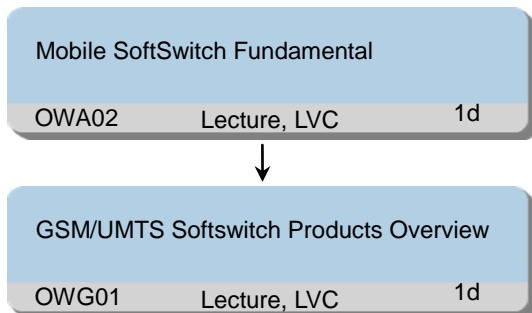
GSM/UMTS Typical Signaling Flow Training	III	3		6 ~ 12
MSS Signaling Analysis Training	III	5		6 ~ 12
Number Translation Training	III	2		6 ~ 12
GSM/UMTS SoftSwitch Core Network Design Training	IV	3		6 ~ 12
GSM/UMTS SoftSwitch Core Network Evaluation and Optimization Training	IV	3		6 ~ 12
MSC POOL Training	III	5		6 ~ 12
MSS XPTU Configuration Training (ETSI)	II	1		6 ~ 12
2G/3G Core Network Sharing Training	III	1		6 ~ 12
MSS IP Technology Training	III	5		6 ~ 12
MSS Troubleshooting Training	III	5		6 ~ 12
AoIP Training	III	2		6 ~ 12
MSS Common Emergency Operation Training	III	2		2 ~ 6
CSFB Training	III	2		4 ~ 12
MSOFTX3000 mAGCF Feature Training	III	0.5		0 ~ 0
VoLTE Solution (CS) Advanced Operation and Maintenance Training	IV	2		6 ~ 12
GSM-R				
GTSOFTX3000 Product Training	II	10		6 ~ 12
GSM-R UMG8900 Product Training	II	5		6 ~ 12
GSM-R Feature Training	III	5		6 ~ 12
UGC				
UGC3200 (Convergent Gateway Office) Operation and Maintenance Training	II	8		6 ~ 12
SmartCare				
SEQ Analyst and Probe Administrator Training	III	3		6 ~ 12
SmartCare Voice Service Quality Improvement Training	IV	2		6 ~ 12
SmartCare IMS Service Quality Improvement Training	IV	2		6 ~ 12
WBT				
MSS Signaling Analysis(WBT)	II	2.5 h		No limit

GSM and UMTS Softswitch Core Network Principle(WBT)	II	0.5 h		No limit
MSC POOL Principle(WBT)	II	1 h		No limit
UMG8900 System Overview(WBT)	II	1 h		No limit
MSOFTX3000(ATCA) System and Principle(WBT)	II	2 h		No limit
GU CS Core Network Design Overview(WBT)	II	0.5 h		No limit
AoIP Networking and Principle(WBT)	II	0.5 h		No limit
CSFB Solution Introdcution(WBT)	III	1		0 ~ 0
M-Learning				
CSFB	I	1 h		No limit

2.1 WCDMA-CS Training Programs

2.1.1 Mobile SoftSwitch Fundamental Training

Training Path



Target Audience

All Technical and non-Technical Personnel
All Technical and non-Technical Personnel

Prerequisites

A basic knowledge of mobile communication

Objectives

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

- Describe architecture of UMTS R4 system
- Describe interfaces in UMTS R4
- Describe protocols in Circuit Switch domain of R4
- Describe call procedure in Circuit Switch domain of R4
- Describe Features of Core Network
- Describe system structure of MSOFTX3000 and UMG8900
- Describe functions and services provided by MSOFTX3000 and UMG8900
- Describe typical networking and application of MSOFTX3000 and UMG8900

Duration

2 working days

Class Size

Min 6, Max 12

2.1.2 MSOFTX3000 (CPCI) Hardware System Training

Training Path

MSOFTX3000 (CPCI) Hardware System		
OWG10	Lecture, LVC	1d

Target Audience

Core network monitor engineers
Installation engineers
Commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication

Objectives

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

- Describe logical structures of MSOFTX3000
- Describe the board functions of MSOFTX3000
- Describe the internal connection and cables of MSOFTX3000

Duration

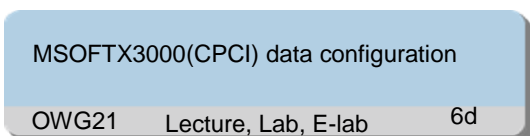
1 working day

Class Size

Min 6, Max 12

2.1.3 MSOFTX3000 (CPCI) Data Configuration Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication
Successful completion of "MSOFTX3000(CPCI)
Hardware System Training"

Objectives

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

- Describe configuration flow of local office integration
- Perform hardware configuration of MSOFTX3000
- Perform physical port configuration of MSOFTX3000
- Perform the interconnection between MSOFTX3000 and UMG8900
- Perform the local office information (SPC, MCC, MNC, MSRN) configuration
- Perform interworking configuration between

MSOFTX3000 and HLR (MTP-based networking mode, M3UA-based non-peer-to-peer networking mode, M3UA-based peer-to-peer networking mode, STP-transferred networking mode)

- Perform interworking configuration between MSOFTX3000 and BSC (MTP-based networking mode, M2UA-based networking mode, M3UA-based non-peer-to-peer networking mode, Mini-A-Flex networking mode, IP-based A interface)
- Perform interworking configuration MSOFTX3000 and PSTN (networking mode based on M2UA, M3UA)
- Perform interworking configuration MSOFTX3000 and RNC (M3UA Non-Peer-to-Peer, lu-Flex, IP-Based lu Interface)
- Perform interworking configuration MSOFTX3000 and MSC Server (BICC over M3UA, SIP over SCTP)
- Verify the configuration result

Duration

6 working days

Class Size

Min 6, Max 12

2.1.4 MSOFTX3000 (CPCI) Operation and Maintenance Training

Training Path

MSOFTX3000 (CPCI) Operation and Maintenance		
OWG23	Lecture, Lab, E-lab	3d

Target Audience

- Core network monitor engineers
- Operation and maintenance engineers

Prerequisites

- A basic knowledge of mobile communication
- Successful completion of "MSOFTX3000(CPCI) Hardware System Training"

Objectives

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

- Operate BAM process and manager
- Check BAM status
- Backup and restore system

- Perform alarm management (browsing alarms, querying alarms, printing alarms, dumping alarm logs)
- Perform performance management (creating performance measurement tasks, customizing performance entity, dumping the result of measurement)
- Perform iGWB operation(checking status of processes, browsing CDR, checking hard disk space, iGWB switchover)
- Query equipment status
- Query resource information
- Query the service status
- Replace board or cable

Duration

3 working days

Class Size

Min 6, Max 12

2.1.5 MSOFTX3000 (ATCA) Hardware System Training

Training Path

MSOFTX3000 (ATCA) Hardware System		
OWG11	Lecture, LVC	1d

Target Audience

Core network monitor engineers
Installation engineers
Commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication

Objectives

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

- Describe MSOFTX3000 boards and its functions
- Describe MSOFTX3000 peripherals and other components
- Describe MSOFTX3000 internal connection and external connection
- Describe logical system architecture of MSOFTX3000
- Describe the signaling processing flow, service processing flow, maintenance processing flow, alarm management flow of MSOFTX3000

Duration

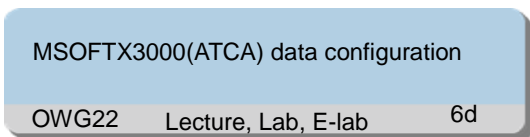
1 working day

Class Size

Min 6, Max 12

2.1.6 MSOFTX3000 (ATCA) Data Configuration Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication
Successful completion of "MSOFTX3000(ATCA)
Hardware System Training"

Objectives

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

- Install the host software and local maintenance software after MGC and MGW hardware installation
- Describe configuration flow of local office integration
- Perform hardware configuration of MSOFTX3000
- Perform physical port configuration of MSOFTX3000
- Perform the interconnection between MSOFTX3000 and UMG8900
- Perform the local office information (SPC, MCC,

MNC, MSRN) configuration

- Perform interworking configuration between MSOFTX3000 and HLR (MTP-based networking mode, M3UA-based non-peer-to-peer networking mode, M3UA-based peer-to-peer networking mode, STP-transferred networking mode)
- Perform interworking configuration between MSOFTX3000 and BSC (MTP-based networking mode, M2UA-based networking mode, M3UA-based non-peer-to-peer networking mode, Mini-A-Flex networking mode, IP-based A interface)
- Perform interworking configuration MSOFTX3000 and PSTN (networking mode based on M2UA, M3UA)
- Perform interworking configuration MSOFTX3000 and RNC (M3UA Non-Peer-to-Peer, lu-Flex, IP-Based lu Interface)
- Perform interworking configuration MSOFTX3000 and MSC Server (BICC over M3UA, SIP over SCTP)
- Verify the configuration result

Duration

6 working days

Class Size

Min 6, Max 12

2.1.7 MSOFTX3000 (ATCA) Operation and Maintenance Training

Training Path

MSOFTX3000 (ATCA) Operation and Maintenance		
OWG24	Lecture, Lab, E-lab	3d

Target Audience

Core network monitor engineers

Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication

Successful completion of "MSOFTX3000(ATCA)

Hardware System Training"

Objectives

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

- Perform the device management
- Perform the tracing task

- Perform the alarm operation
- Querying Logs
- Perform security management
- Perform the OMU status checking
- Perform the License management
- Perform the Oracle processes starting and stopping
- Perform the system backup and recovery
- Perform the service checking
- Perform the replacing boards
- Perform the iGWB configuration and maintenance

Duration

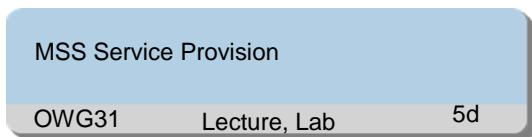
3 working days

Class Size

Min 6, Max 12

2.1.8 MSS Service Provision Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication
Successful completion of "MSOFTX3000 Data Configuration" and "UMG8900 Data Configuration"

Objectives

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

- Configure roaming restriction
- Configure call service, USSD service
- Change the resource of VLR

- Set authentication configuration and cipher configuration
- Configure roaming data in MSC Server
- Configure IN service in MSC Server
- Adjust the load among SS7 trunk routes
- Adjust the load among M3UA or MTP3 signaling links
- Makeup tone file
- Set announcement configuration
- Add an MSISDN number segment
- Modify a route in an office direction
-

Duration

5 working days

Class Size

Min 6, Max 12

2.1.9 GU UMG8900 Hardware System Training

Training Path

GU UMG8900 Hardware System		
OWH10	Lecture, LVC	1d

Target Audience

Core network monitor engineers
Installation engineers
Commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication

Objectives

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

- Describe UMG8900 hardware structure
- Describe UMG8900 logical architecture
- Describe UMG8900 software architecture
- Describe UMG8900 Cascading System
- Describe main boards' functions of UMG8900
- Describe Internal message processing flow

Duration

1 working day

Class Size

Min 6, Max 12

2.1.10 GU UMG8900 Operation and Maintenance Training

Training Path

GU UMG8900 Operation and Maintenance Training		
OWH23	Lecture, Lab, E-lab	2d

Target Audience

Core network monitor engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication
Successful completion of "GU UMG8900
Hardware System Training"

Objectives

On completion of this program, the participants will

be able to:

- Query equipment status
- Query resource information
- Operate performance task
- Perform system backup and recovery
- Query the service status
- Replace the hardware boards
- Replace the cable

Duration

2 working days

Class Size

Min 6, Max 12

2.1.11 UMG8900 Data Configuration Training

Training Path

GU UMG8900 Data Configuration Training		
OWH22	Lecture, Lab, E-lab	2d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication
Successful completion of "GU UMG8900
Hardware System Training"

Objectives

On completion of this program, the participants will

be able to:

- Perform hardware and hardware interface configuration
- Perform bearer(IP, TDM, ATM) configuration on UMG8900
- Perform UMG8900 interworking with BSC
- Perform UMG8900 interworking with MSC/PSTN
- Perform UMG8900 interworking with RNC

Duration

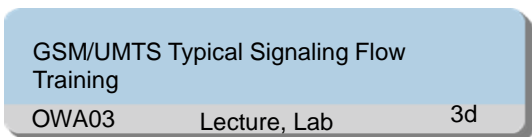
2 working days

Class Size

Min 6, Max 12

2.1.12 GSM/UMTS Typical Signaling Flow Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers
Optimization engineers

Prerequisites

At least one year experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe the different types of location update
- Describe the flow procedure of location update
- Describe the data configuration of location

update

- Describe the 2G\3G security architecture
- Describe the Generating quintuple
- Describe the principle for key transmission within a system and between systems
- Describe the basic call signaling flow
- Describe the signaling flow messages and associated IEs
- Describe the call related routing flow
- Describe the BICC call related data configuration
- Describe SMS function and classification
- Describe SMMO flow and messages
- Describe SMMT flow and messages
- Describe short message notification flow

Duration

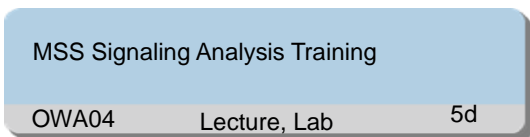
3 working days

Class Size

Min 6, Max 12

2.1.13 MSS Signaling Analysis Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers
Optimization engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication and soft switch principle

Objectives

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

- Describe BSSAP protocol stack and function
- Analysis main procedures of BSSAP(Paging, Initial MS Message, Cipher Mode Control, Assignment, Handover, Release, DTAP Message)
- Describe lu interface protocol stack and

function

- Describe classification of RANAP messages
- Analysis lu connection Management, RAB assignment, SRNS Relocation, CS Domain MM, CC procedures in lu Interfaces
- Perform protocol stack and main functions of SIGTRAN
- Analysis SCTP association establishment and close flows
- Explain UA concepts (AS, SG, IPSP, Entity, Routing key)
- Perform messages analysis of SCTP, M2UA, M3UA
- Describe H248 Protocol stack and functions
- Perform message analysis of H248 based on scenario
- Describe BICC protocol stack and functions
- Analysis key parameters of BICC
- Analysis BICC message

Duration

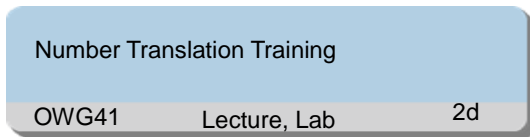
5 working days

Class Size

Min 6, Max 12

2.1.14 Number Translation Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers
Optimization engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe number translation flow
- Perform number change
- Perform failure process
- Perform call barring
- Perform typical number translation based on scenarios
- Perform general routing configuration on request of priority, load-sharing and time schedule
- Perform routing configuration based on TDM and IP bearer

Duration

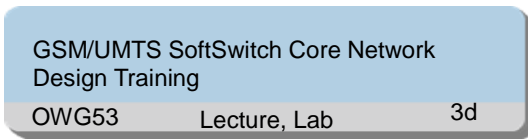
2 working days

Class Size

Min 6, Max 12

2.1.15 GSM/UMTS SoftSwitch Core Network Design Training

Training Path



Target Audience

Core network operation and maintenance engineers

Core network design engineers

Prerequisites

At least one year experience of core network design

A basic knowledge of core network design

Objectives

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

- Describe GSM/UMTS softswitch network

planning procedure and rules

- Calculate broadband signaling interfaces in core network
- Perform signaling network design
- Perform traffic network design
- Perform access network interconnection design
- Perform service network interconnection design
- Perform billing system interconnection design
- Perform EMS interconnection design

Duration

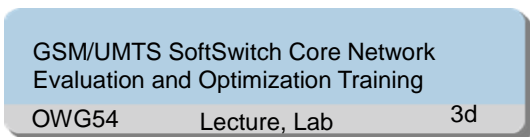
3 working days

Class Size

Min 6, Max 12

2.1.16 GSM/UMTS SoftSwitch Core Network Evaluation and Optimization Training

Training Path



Target Audience

Core network operation and maintenance engineers
Optimization engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of core network optimization

Objectives

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

- Describe procedure for evaluating resources of V/G office

- Perform evaluation and optimization of the hardware resource, logical resource, signaling resource, TC/EC resource, trunk resource, traffic resource
- Perform paging success rate analysis and optimization
- Perform SMS success rate analysis and optimization
- Perform assignment success rate analysis and optimization
- Perform handover success rate analysis and optimization
- Perform MO/MT call completion rate analysis and optimization

Duration

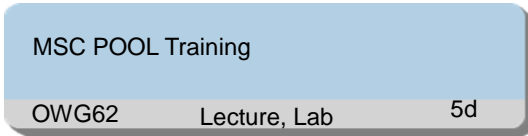
3 working days

Class Size

Min 6, Max 12

2.1.17 MSC POOL Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe MSC Pool networking
- Describe principles related to the MSC Pool features (The load balancing of MSC Pool, Handover in MSC Pool, Disaster tolerance in MSC Pool, Subscriber migration in MSC Pool, A-Flex by the MGW, Managing A-Interface Circuits on the MGW, Charging based on Virtual MSC IDs or Location Areas)

- Describe MSC Pool configuration flow overview
- Perform MSC Pool feature configuration in MSC Server and MGW
- Perform MSC Pool configuration based on different scenarios(NNSF implemented by RNC, NNSF implemented by MGW, Restructure MSC Pool based on current network)
- Monitor MSC Pool Load in real time
- Operate performance report of the MSC Pool
- Perform migration of subscribers
- Perform MSC Pool configuration synchronization between NE and M2000
- Perform end-to-end tracing of calls on the MSC Pool
- Understand the measurement units, measurement entities, and related calculation formulas for the MSC Pool
- Understand how to analyze the operating status of networks before and after an MSC Pool reconstruction

Duration

5 working days

Class Size

Min 6, Max 12

2.1.18 MSS XPTU Configuration Training (ETSI)

Training Path

MSS XPTU Configuration Training (ETSI)		
OWG33	Lecture, Lab	1d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

On completion of this program, the participants will

be able to:

- Describe Structure of the ETSI lawful interception system
- Outline MSC Server Function in LI system
- Outline function of X1 , X2 interface in LI system
- Outline function of X3 interface in LI system
- Describe the XPTU Configuration in the MSC Server
- Perform the XPTU interworking with LIG

Duration

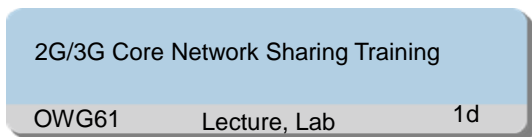
1 working day

Class Size

Min 6, Max 12

2.1.19 2G/3G Core Network Sharing Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe GSM security mechanism(authentication and encryption)
- Describe UMTS Security

mechanism(authentication and encryption)

- Perform GSM security mode setting
- Perform UMTS security mode setting
- Describe GSM to UMTS inter-system handover operation
- Describe UMTS to GSM inter-system handover operation
- Describe Iu interface protocol stack and function
- Describe key parameters of RANAP messages(
- Iu connection Management, RAB assignment, SRNS Relocation, CS Domain MM, CC procedures in Iu Interfaces)

Duration

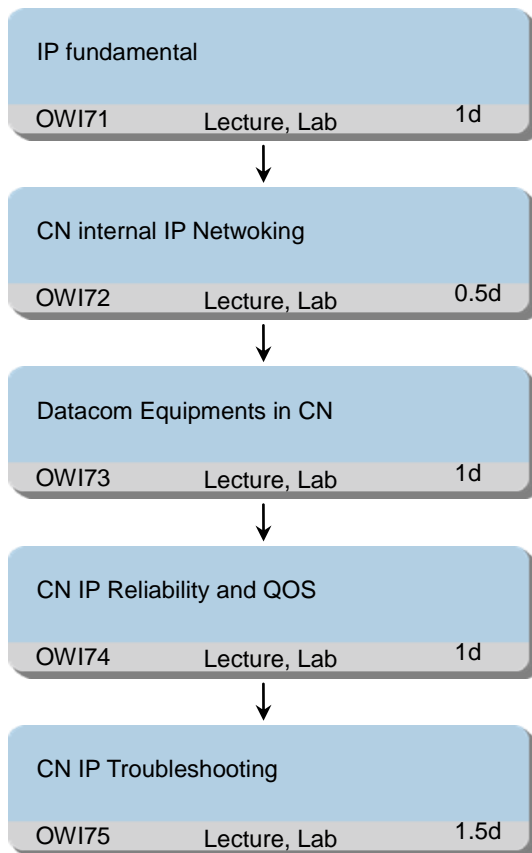
1 working day

Class Size

Min 6, Max 12

2.1.20 MSS IP Technology Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least one year experience of operation and maintenance of MsoftX3000 and UMG8900

equipments

Objectives

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

- Outline the structure of IP Bear network and the main protocols used
- Outline the IP fundamental knowledge and the application in CN
- Describe the IP networking inside CN
- Describe the hardware of datacom equipments used in CN
- Perform the O&M of the datacom equipments used in CN
- Describe the IP reliability solutions in CN
- Perform the data configuration of the IP reliability solutions
- Outline the QOS requirements for IP bear network
- Apply the QOS methods in CN
- When there happens the IP related trouble, perform basic analysis of the trouble location and recover the service

Duration

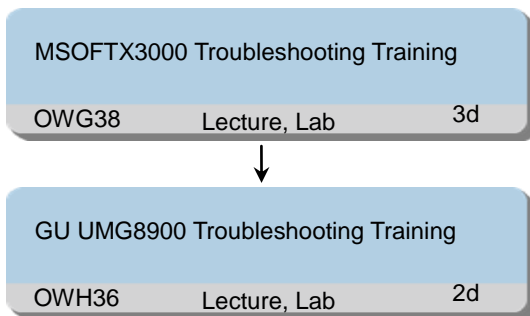
5 working days

Class Size

Min 6, Max 12

2.1.21 MSS Troubleshooting Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least one year experience of operation and maintenance of Huawei MSOFTX3000
At least one year experience of operation and maintenance of Huawei UMG8900

Objectives

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

- Perform tracer, CSIS of MSOFTX3000 to fault finding and locating
- Perform MSOFTX3000 signaling troubleshooting
- Perform MSOFTX3000 service troubleshooting and case analysis (Call fault, Data service fault, SMS fault, Location Update fault, announcement playing)
- Perform tracer, loopback, voice recorder for fault finding and troubleshooting
- Perform signaling troubleshooting
- Perform the bearer troubleshooting

Duration

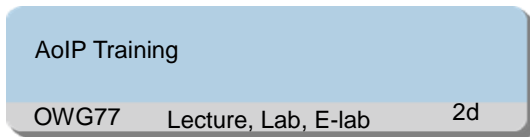
5 working days

Class Size

Min 6, Max 12

2.1.22 AoIP Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Outline the Modifications from AoTDM to AoIP

- Describe the function of each network element on AoIP
- Describe AoIP codec selecting policy
- Describe the difference of signaling flow between AoIP and AoTDM
- Describe the principle of QoS and IP domain on AoIP
- Configure AoIP data on MSC Server and MGW
- Analyze and handle faults related to core network AoIP
- Complete analysis and handling of common faults

Duration

2 working days

Class Size

Min 6, Max 12

2.1.23 MSS Common Emergency Operation Training

Training Path

MSS Common Emergency Operation Training		
OWG78	Lecture, Lab	2d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe MSS emergency scenarios
- Recover MSOFTX3000 O&M communication
- Handle MSOFTX3000 hardware fault
- Handle the fault caused by misoperation of MSOFTX3000
- Perform fault prevention for heavy traffic during holidays
- Clear high risky alarms of MSOFTX3000
- Recover MSOFTX3000 emergency in different scenario, including C/D interface congestion,

interworking failure with SCP and OCS, CPU overload, calls fail because of abnormal circuit state and so on

- Recover UMG8900 O&M communication
- Handle UMG8900 hardware fault
- Handle UMG8900 link fault
- Handle resource usage exceeds the threshold of UMG8900
- Handle bearer network fault
- Reset the device of UMG8900
- Solve the A interface, C/D interface congestion problem
- Implement the database recovery operation
- Replace WCCU board
- Replace the BAM by the EWS
- Export Content of CDR Pool
- Switch the iGWB Nodes
- Backup and recover the system configuration manually
- Replacing OMU board

Duration

2 working days

Class Size

Min 6, Max 12

2.1.24 CSFB Training

Training Path

CSFB Training		
OWG86	Lecture, Lab	2d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe the fundamental of the CSFB
- Describe the key procedures of the CSFB

- Describe the SGs interface and protocol
- Describe the network deployment of the CSFB
- Describe the main service procedure of CSFB
- Describe CSFB signaling message and main information element
- Analyze CSFB signaling message and service status
- Describe data configuration procedure of CSFB
- Perform CSFB interworking and service commissioning
- Describe measurement units and alarms about CSFB

Duration

2 working days

Class Size

Min 4, Max 12

2.1.25 VoLTE Solution (CS) Advanced Operation and Maintenance Training

Training Path

VoLTE Solution (CS) Advanced Operation and Maintenance Training		
OWG66	Lecture, Lab	2d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

- At least one year experience of operation and maintenance of MsoftX3000 and UMG8900 equipments
- Finish Operation and Maintenance Training of MSOFTX3000 and UMG8900

Objectives

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

- Describe VoLTE Solution Basic Concepts
- Describe eSRVCC Logical Architecture
- Describe eSRVCC Service Procedure

- Describe MSOFTX3000 eSRVCC Charging
- Describe MSOFTX3000 eSRVCC Codec Negotiation
- Describe MSOFTX3000 eSRVCC reconstruction methods
- Describe MSOFTX3000 eSRVCC data configuration procedures
- Perform MSOFTX3000 eSRVCC data configuration
- Describe GTPv2-C Protocol stack
- Describe function of key messages and IEs on Sv interface
- Describe MGCF Logical Architecture
- Describe MGCF voice service procedure
- Perform MSOFTX3000 MGCF data configuration

Duration

2 working days

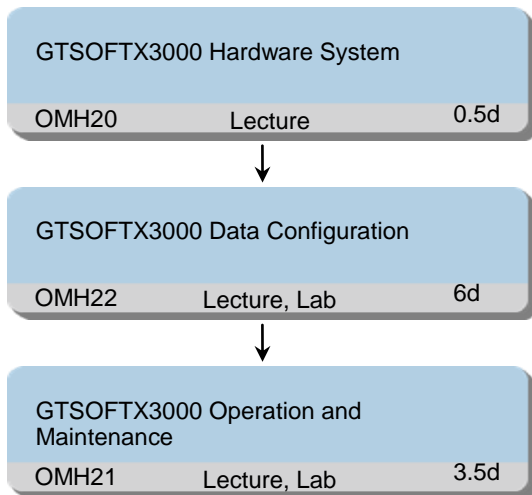
Class Size

Min 6, Max 12

2.2 GSM-R Training Programs

2.2.1 GTSOFTX3000 Product Training

Training Path



Target Audience

GSM-R core network monitor engineers
 Installation engineers
 Commissioning engineers
 Operation and maintenance engineers

Prerequisites

A basic knowledge of telecommunication
 Successful completion of "GTSOFTX3000
 Hardware System"

Objectives

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

- Describe the MSOFTX3000 hardware structures
- Describe the MSOFTX3000 cascade structures
- Describe the function, indicators, ports and working mode of each board
- Explain the types and applications of different fibers and cables
- Describe the concept of Hardware Configuration
- Perform hardware configuration
- Know how to verify hardware configuration

- Perform the connection between GTSOFTX3000 and MGW
- Perform GTSOFTX3000 Office information configuration
- Perform data configuration between GTSOFTX3000 to HLR
- Perform data configuration between GTSOFTX3000 and BSC (M2UA based, M3UA based)
- Perform the data configuration from GTSOFTX3000 to RNC based on IP and ATM
- Perform data configuration between GTSOFTX3000 and PSTN/MSC in different mode
- Manage equipments, for example: checking board status and version
- Manage data, for example: backup system data, executing MML commands
- Manage logs, for example: querying logs, saving logs
- Manage tracing tasks, for example: creating a tracing task, checking tracing result, saving result
- Perform the routine operation and maintenance
- Operation of replace the hardware board
- Operation of change the cable
- Operation of system backup
- Operation of system recovery
- Manage alarms (browsing alarms, querying alarms, printing alarms, dump alarm logs)
- Create performance tasks
- Checking status of performance tasks
- Customized performance tasks
- Dump the measurement result
- Start and stop the process of BAM
- Point out key information and its directory of BAM

Duration

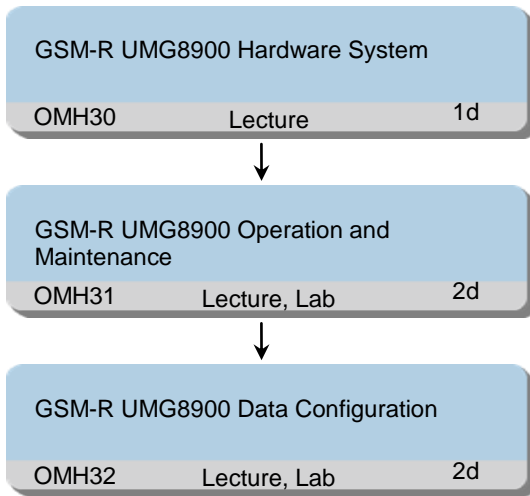
10 working days

Class Size

Min 6, Max 12

2.2.2 GSM-R UMG8900 Product Training

Training Path



Target Audience

GSM-R core network monitor engineers
 Installation engineers
 Commissioning engineers
 Operation and maintenance engineers

Prerequisites

A basic knowledge of telecommunication
 Successful completion of "GSM-R UMG8900
 Hardware System"

Objectives

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

- Describe UMG8900 hardware structure
- Describe UMG8900 logical architecture
- Describe UMG8900 software architecture
- Describe UMG8900 Cascading System
- Describe main boards' functions of UMG8900
- Describe Internal message flow of UMG8900

- Describe function of SIWF
- Configure SIWF
- Perform operation and maintenance of SIWF
- Query equipment status
- Query resource information
- Perform backup and recovery of UMG8900
- Query the service status
- Browse alarm information
- Browse the performance task
- Configure System Parameters
- Configure System Time
- Configure Frames and Boards
- Configure the Clock
- Configure the NMS Interface
- Configure the MGW Control Interface and SIGTRAN Interface
- Configure ATM bearer, IP bearer, TDM bearer
- Configure signaling transfer
- Configure MGW data
- Configure the link
- Perform interworking with MGW based on different networking
- Perform interworking with BSC based on different scenarios
- Perform interworking with MSC/PSTN based on different networking

Duration

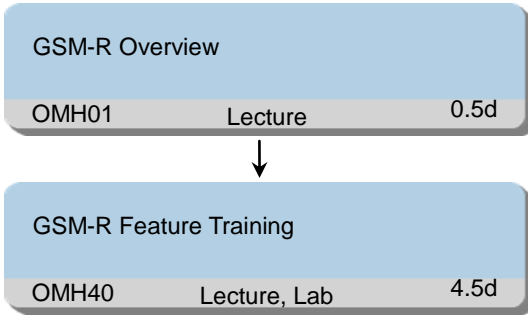
5 working days

Class Size

Min 6, Max 12

2.2.3 GSM-R Feature Training

Training Path



Target Audience

GSM-R core network telecommunication engineers

GSM-R core network commissioning engineers

Operation and maintenance engineers

Prerequisites

A basic knowledge of railway telecommunication system

Objectives

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

- Describe the fundamental of GSM-R
- Describe the architecture of GSM-R system
- Describe the service and function of GSM-R system
- Configure and verify eMLPP service

- Configure and verify USS1 service
- Configure and verify VBS service
- Configure and verify VGCS service
- Configure and verify Multiple-Engine service
- Configure and verify functional addressing
- Configure and verify call area restriction
Configure and verify location dependent addressing service
- Configure and verify SMC integration service
- Configure and verify access matrix service
- Configure and verify break-in and force release service
- Configure and verify missed call SMS prompt service
- Configure and verify priority cell service
- Perform AC (Acknowledgement Center) server software installation and uninstallation
- Configure AC in BAM
- Operate GMS(Group Management Server) installation

Duration

5 working days

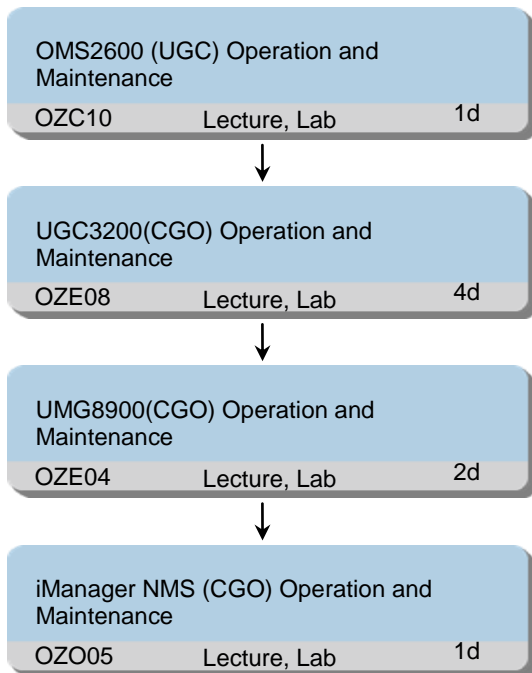
Class Size

Min 6, Max 12

2.3 UGC Training Programs

2.3.1 UGC3200 (Convergent Gateway Office) Operation and Maintenance Training

Training Path



Target Audience

Convergency Gateway Office monitor engineers
 Commissioning engineers
 Operation and maintenance engineers

Prerequisites

A basic knowledge of telecommunication

Objectives

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

- Introduce the hardware structure, the power system and the board functions of ATCA platform, as well as the monitor system
- Describe function and features of OMS2600
- Perform OMS2600 hardware operation(replacing boards, checking running status)
- Perform software O&M(checking process

status and so on)

- Introduce the UGC3200 hardware structure
- Introduce the function, location and working flow of UGC3200
- Perform number analysis configuration
- Perform the local office data and the data configuration related to H248 and SIP
- Perform the interworking data with MGW,PSTN, GSM, CDMA, etc
- Perform device and service status check
- Perform iGWB operation and maintenance
- Introduce the system functions of UMG8900
- Introduce the UMG8900 hardware structure
- Introduce the function, indicators, ports and working mode of each board
- Perform UMG8900 Mn(H248) interface configuration
- Perform UMG8900 interworking with MSC-PSTN-MGW data configuration
- Operate GUI
- Perform routine maintenance
- Describe the NMS structure
- Perform system login
- Operate user right management
- Operate topology management
- Operate fault management
- Operate performance management
- Perform system monitor
- Backup database

Duration

8 working days

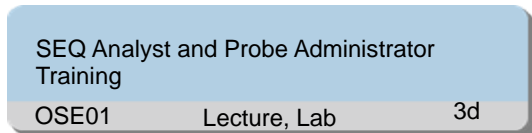
Class Size

Min 6, Max 12

2.4 SmartCare Training Programs

2.4.1 SEQ Analyst and Probe Administrator Training

Training Path



Target Audience

Core network monitoring engineers

Prerequisites

At least one year experience of operation and maintenance of CS and PS equipments

Objectives

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

- Describe position, feature, function, interface protocol and structure of SEQ Analyst
- Describe hardware structure and function of different parts of SEQ Analyst
- Describe software structure and function of

different software sub-system of SEQ Analyst

- Configure server, module group, local service IP and service data of SEQ Analyst
- Monitor network
- Analysis KPIs
- Handle equipment fault
- Describe network design principles
- Describe IP address and VLAN configuration principles
- Design time synchronization
- Describe transmission and security requirements
- Describe configuration principles

Duration

3 working days

Class Size

Min 6, Max 12

2.4.2 SmartCare Voice Service Quality Improvement Training

Training Path

SmartCare Voice Service Quality Improvement Training		
OSE02	Lecture, Lab	2d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile communication

Objectives

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

- Describe voice signaling flow
- Describe voice service modeling method
- Describe voice KQI system
- Describe relationship between the voice KQI and each PI
- Describe SMS signaling flow
- Describe SMS service modeling method
- Describe SMS KQI system
- Describe relationship between the SMS KQI

and each PI

- Perform CS network real-time monitor
- Perform Location Update, Call Service, SMS, Call Forwarding, Handover, Paging, and MAP Operation Analysis
- Perform Pingpong Handover, Short/Repeated Call, 2G/3G Interoperability, Paging Blackhole, Call Loss, General Delay, Service Analysis by Region and Number Normality Analysis
- Describe SmartCare SQM function
- Perform voice quality monitoring
- Perform voice service quality analysis
- Describe SmartCare CEM function
- Perform VVIP/VIP group monitoring
- Perform Customer/Customer group analysis
- Perform VAP/VAC/Device analysis
- Describe voice KQI analysis flow
- Detect voice KQI problems
- Assess and demarcate voice KQI problems

Duration

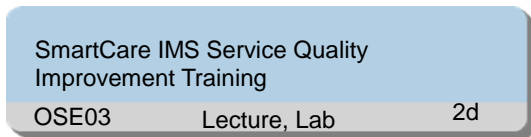
2 working days

Class Size

Min 6, Max 12

2.4.3 SmartCare IMS Service Quality Improvement Training

Training Path



Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

- At least two years experience of operation and maintenance of IMS or other telecommunication equipments

- A basic knowledge of mobile communication

Objectives

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

- Perform IMS network performance analysis
- Perform IMS KPIs real-time Monitoring
- Perform IMS service quality analysis

Duration

2 working days

Class Size

Min 6, Max 12

2.5 WBT

2.5.1 MSS Signaling Analysis(WBT)

Training Path

MSS Signaling Analysis(WBT)		
OWG79	WBT	2.5d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments

A basic knowledge of mobile communication and soft switch principle

Objectives

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

- Describe BICC protocol stack and functions
- Describe the Bearer Independent Call Control model
- Describe BICC message structure
- Describe the similarities and differences between BICC and ISUP, and the main

difference between BICC CS1 and CS2

- Describe basic BICC call procedures
- Describe the functions of SIGTRAN
- Describe SIGTRAN protocol structure, message and signaling flow
- Describe SCTP functions
- Describe the signaling message and procedures of SCTP
- Describe the functions of SIGTRAN UA layers
- Describe the procedures and implementation of M2UA
- Describe the procedures and implementation of M3UA
- Describe H248 protocol function
- Describe H248 message structure
- Describe the function of H248 commands
- Describe H248 signaling procedure

Duration

2.5 working days

Class Size

No limit

2.5.2 GSM and UMTS Softswitch Core Network Principle(WBT)

Training Path

GSM and UMTS Softswitch Core Network Principle(WBT)		
OWG80	WBT	0.5d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

All Technical and non-Technical Personnel

Objectives

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

- Write down the Softswitch core network structure
- Describe the Softswitch core network technical features
- Describe interfaces and protocol in softswitch
- Write down the call flow in Softswitch core network

Duration

0.5 working day

Class Size

No limit

2.5.3 MSC POOL Principle(WBT)

Training Path

MSC POOL Principle(WBT)		
OWG81	WBT	1d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least two years experience of operation and maintenance of GSM NSS/UMTS CS or other telecommunication equipments
A basic knowledge of mobile

Objectives

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

- Describe MSC Pool networking
- Describe principles related to the MSC Pool features (The load balancing of MSC Pool, Handover in MSC Pool, Disaster tolerance in MSC Pool, Subscriber migration in MSC Pool, A-Flex by the MGW, Managing A-Interface Circuits on the MGW, Charging based on Virtual MSC IDs or Location Areas)

Duration

1 working day

Class Size

No limit

2.5.4 UMG8900 System Overview(WBT)

Training Path

UMG8900 System Overview(WBT)		
OWG82	WBT	1d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

A basic knowledge of mobile communication

Objectives

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

- Describe UMG8900 product orientation
- Describe product feature
- Describe system architecture
- Describe service and networking applications

Duration

1 working day

Class Size

No limit

2.5.5 MSOFTX3000(ATCA) System and Principle(WBT)

Training Path

MSOFTX3000(ATCA) System and Principle(WBT)		
OWG83	WBT	2d

Target Audience

- Core network commissioning engineers
- Operation and maintenance engineers

Prerequisites

- A basic knowledge of mobile communication

Objectives

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

- Describe the orientation of MSOFTX3000 in

the network

- Describe MSOFTX3000 system structure
- Describe the networking and application of MSOFTX3000
- Describe the interfaces and protocols
- Describe MSOFTX3000 physical structure
- Describe MSOFTX3000 logical system architecture
- Describe Signaling internal processing flows

Duration

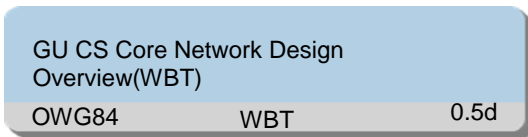
2 working days

Class Size

No limit

2.5.6 GU CS Core Network Design Overview(WBT)

Training Path



Target Audience

Core network operation and maintenance engineers

Core network design engineers

Prerequisites

At least one year experience of core network design

Objectives

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

- Describe the importance of network design
- Describe the main contents of network design

Duration

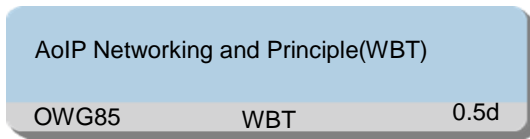
0.5 working day

Class Size

No limit

2.5.7 AoIP Networking and Principle(WBT)

Training Path



Target Audience

Core network operation and maintenance engineers

Core network design engineers

Prerequisites

At least one year experience of core network design

Objectives

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

- Outline the Modifications from AoTDM to AoIP
- Describe the function of each network element on AoIP
- Describe AoIP codec selecting policy
- Describe the signaling flow difference between AoIP and AoTDM
- Describe the principle of QoS and IP domain on AoIP

Duration

0.5 working day

Class Size

No limit

2.5.8 CSFB Solution Introduction(WBT)

Training Path

CSFB Solution Introduction(WBT)		
OWG88	Lecture, Lab	1d

Target Audience

Core network commissioning engineers
Operation and maintenance engineers

Prerequisites

At least one year experience of operation and maintenance of MsoftX3000 and UMG8903 equipments

Objectives

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

- Describe the fundamental of the CSFB
- Describe the key procedures of the CSFB

- Describe the SGs interface and protocol
- Describe the network deployment of the CSFB
- Describe the main service procedure of CSFB
- Describe CSFB signaling message and main information element
- Analyze CSFB signaling message and service status
- Describe data configuration procedure of CSFB
- Perform CSFB interworking and service commissioning
- Describe measurement units and alarms about CSFB

Duration

1 working day

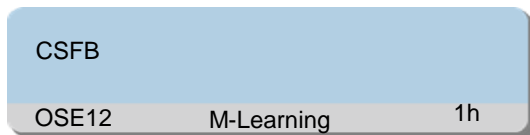
Class Size

Min 0, Max 0

2.6 M-Learning

2.6.1 CSFB

Training Path



- CSFB Networking
- CSFB Location Update Flow
- CSFB SMS MO Signaling Flow
- CSFB SMS MT Signaling Flow
- CSFB Mobile Originated Call Signaling Flow
- CSFB Mobile Terminated Call Signaling Flow
- CSFB Call Delay Analysis
- CSFB MTRR and MTRF Signaling Flow

Target Audience

Core network monitoring engineers

Prerequisites

At least one year experience of operation and maintenance of CS and PS equipments

Objectives

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

Duration

1 hour

Class Size

No limit