

# Training Proposal for Mobile Softswitch(GSM/UMTS) Project



**HUAWEI**  
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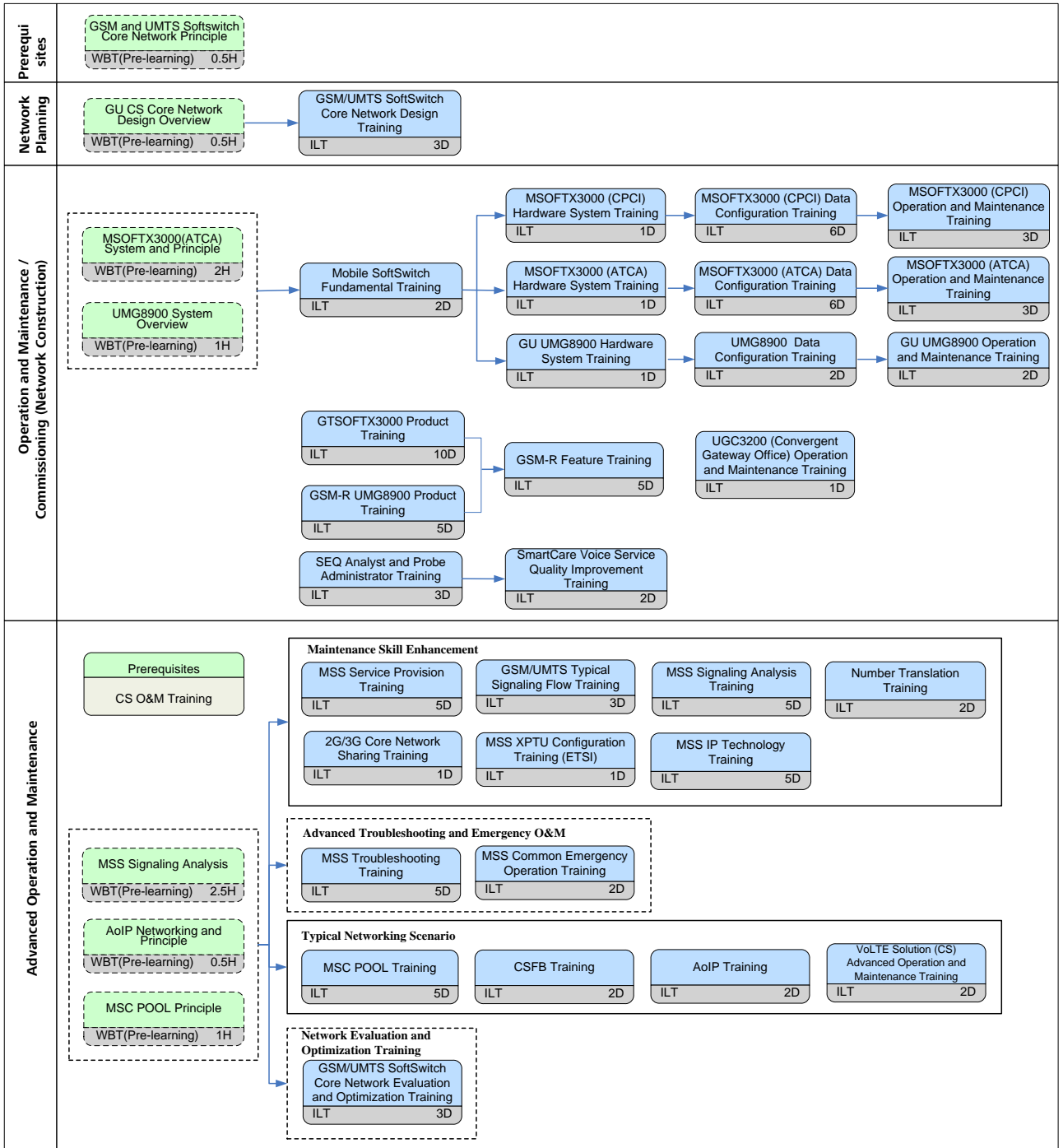
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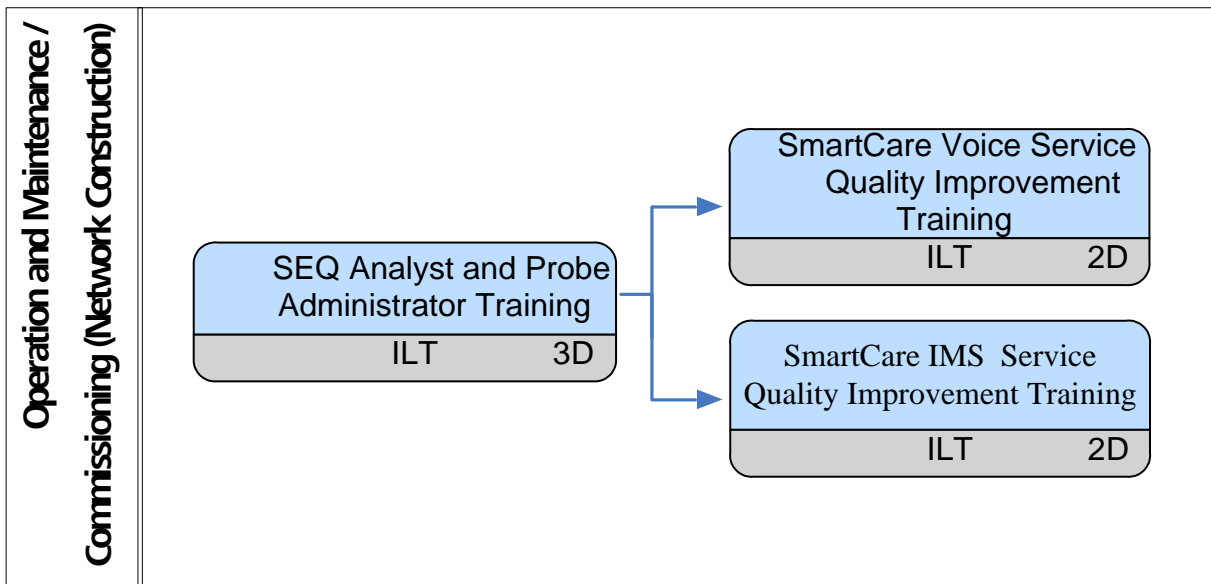
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# 1 Training Solution

## 1.1 Mobile Softswitch(GSM/UMTS) Training Path



## 1.2 SmartCare Training Path



## 1.3 Required Training Programs

Mobile Softswitch(GSM/UMTS) For this project, the whole training solution is designed into the following programs. List of Training Program(s) for Mobile Softswitch(GSM/UMTS) Project:

Training Program	Program Level	Duration (workdays)	Training Location	Class Size
<b>WCDMA-CS</b>				
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
<b>GSM-R</b>				
GTSOFTX3000 Product Training	II	10		6 ~ 12
GSM-R UMG8900 Product Training	II	5		6 ~ 12
GSM-R Feature Training	III	5		6 ~ 12
<b>UGC</b>				
UGC3200 (Convergent Gateway Office) Operation and Maintenance Training	II	8		6 ~ 12
<b>SmartCare</b>				
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
<b>WBT</b>				
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 Introduction(WBT)	III	1		0 ~ 0
<b>M-Learning</b>				
CSFB	I	1 h		No limit

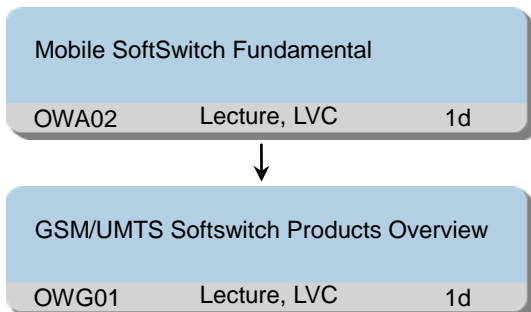
Level Description: I : Basic Course II : Intermediate Course III: Advanced Course IV: Expert Course

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## 1.4 WCDMA-CS

### 1.4.1 Mobile SoftSwitch Fundamental Training

#### Training Path



#### Target Audience

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

#### Training Content

##### OWA02 Mobile SoftSwitch Fundamental

- GSM and UMTS Softswitch Core Network Principle
  - Architecture of UMTS R4 system
  - Interfaces in UMTS R4
  - Protocols in Circuit Switch domain of R4
  - Call procedure in Circuit Switch domain of R4
  - Features of Core Network

##### OWG01 GSM/UMTS Softswitch Products Overview

- MSOFTX3000 System Overview
  - MSOFTX3000 introduction
  - System structure of MSOFTX3000



- 
- Functions and services provided by MSOFTX3000
  - Typical networking and application of MSOFTX3000
  - UMG8900 System Overview
    - UMG8900 introduction
    - System structure of UMG8900
    - Functions and services provided by UMG8900
    - Typical networking and application of UMG8900

Duration

2 working days

Class Size

Min 6, Max 12

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## 1.4.2 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

### Training Content

#### OWG10 MSOFTX3000 (CPCI) Hardware System

- MSOFTX3000(CPCI) Hardware System
  - MSOFTX3000 system structure
  - MSOFTX3000 board function
  - Internal connection and cables

### Duration

1 working day

### Class Size

Min 6, Max 12

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### 1.4.3 MSOFTX3000 (CPCI) Data Configuration Training

#### Training Path

MSOFTX3000(CPCI) data configuration		
OWG21	Lecture, Lab, E-lab	6d

#### 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

#### Training Content

OWG21 MSOFTX3000(CPCI) data configuration

- MSOFTX3000(CPCI) Hardware Data Configuration
  - Configuration flow of hardware data
  - Equipment components configuration
  - Physical port parameters configuration

- 
- Clock synchronization mode configuration
  - Query hardware data
  - MSOFTX3000(CPCI) Mc interface Data Configuration
    - Mc interface introduction
    - H.248 protocol introduction
    - Data configuration based on different scenario (Single MGW, Multi-MGW IP networking, Multi-MGW TDM networking, Multi-MGW IP and TDM networking)
    - Verification of configuration
  - MSOFTX3000(CPCI) Local Office Data Configuration
    - Configure the local signaling point
    - Configure the mobile local office information
    - Configure the MAP function
    - Add the VLR configuration
    - Configure the SCCP GT data
    - Configure the call source data
    - Configure the MSRN/HON prefixes
    - Configure the MSRN/HON suffixes
    - Add the mapping between MSC numbers and the MSRNs/HONs
    - Verification of configuration
  - MSOFTX3000(CPCI) Interworking with HLR Data Configuration
    - Networking scenario 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)
    - Interconnection configuration based on different scenario
    - Verification of configuration
  - MSOFTX3000(CPCI) Interworking with BSC Data Configuration
    - Networking scenario 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)
    - Signaling and Speech configuration to BSC based on different scenario
    - Location Area configuration
    - Verification of configuration
  - MSOFTX3000(CPCI) Interworking with PSTN-MSC Data Configuration
    - Networking scenario between MSOFTX3000 and PSTN (networking mode based on M2UA, networking mode based on M3UA)
    - Signaling and Speech configuration to PSTN based on different scenario
    - Verification of configuration
  - MSOFTX3000(CPCI) Interworking With RNC Data Configuration
    - Networking scenario between MSOFTX3000 and RNC (M3UA Non-Peer-to-Peer, Iu-Flex, IP-Based Iu Interface)
    - Signaling and Speech configuration to RNC based on different scenario
    - Location Area configuration

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- Verification of configuration
  - MSOFTX3000(CPCI) Interworking with MSC Server Data Configuration
    - Networking scenario between MSOFTX3000 and MSC Server(BICC over M3UA, SIP-I)
    - Signaling and Speech configuration to MSC Server based on different scenario
    - Verification of configuration
  - MSOFTX3000(CPCI) Number Analysis Configuration
    - Concepts introduction(call source, route selection source name, route selection name, call prefix )
    - Basic Called Number configuration
    - Basic Routing configuration

Duration

6 working days

Class Size

Min 6, Max 12

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## 1.4.4 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

### Training Content

#### OWG23 MSOFTX3000 (CPCI) Operation and Maintenance

- BAM Introduction and Operation
  - BAM software structure
  - BAM processes operation
  - BAM manager operation
  - Check BAM status
  - BAM hard disk operation
- MSOFTX3000(CPCI) System Backup and Recovery
  - Manually backing up databases
  - Checking the Automatic backup of the database

- 
- Restoring the SQL Server database
  - Restoring the password of the SQL Server database
  - MSOFTX3000(CPCI) Alarm Management and Operation
    - Browsing alarms
    - Querying alarms
    - Printing alarms
    - Dump alarm logs
    - Alarm box operation
    - Process alarm information follow the alarm help
  - MSOFTX3000(CPCI) Performance Management Operation
    - Create performance measurement task
    - Query performance measurement task
    - Dump the result of measurement
    - Customize performance entity
  - iGWB(CPCI) Introduction and Operation
    - iGWB system structure
    - iGWB operation(Checking status of processes, browsing CDR, Checking hard disk space, iGWB switchover)
    - Major alarm information related to iGWB
  - MSOFTX3000(CPCI) Routine Operation and Maintenance
    - Query equipment status
    - Query resource information
    - Perform backup
    - Query the service status
    - Browse alarm information
    - Browse the performance task
  - MSOFTX3000(CPCI) Common Operation
    - User authority operation
    - Replace board
    - Loopback operation
    - Trace operation
    - CDR operation
    - Dialing test
    - License operation
    - Log operation
  - MSOFTX3000(CPCI) Patch Management
    - List Patch
    - Display patch
    - Loading patch
    - Activate patch
    - Confirm patch
    - Rollback patch

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Duration

3 working days

Class Size

Min 6, Max 12



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## 1.4.5 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

### Training Content

#### OWG11 MSOFTX3000 (ATCA) Hardware System

- MSOFTX3000(ATCA) System Principle
  - MSOFTX3000 system architecture
  - MSOFTX3000 service processing subsystem
  - MSOFTX3000 maintenance management subsystem
  - MSOFTX3000 environment monitoring subsystem
  - MSOFTX3000 alarm management system
- MSOFTX3000(ATCA) Hardware System
  - MSOFTX3000 cabinet
  - MSOFTX3000 boards
  - MSOFTX3000 peripherals and other Components
  - MSOFTX3000 connection and Cables

### Duration

1 working day

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Class Size

Min 6, Max 12

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## 1.4.6 MSOFTX3000 (ATCA) Data Configuration Training

### Training Path

MSOFTX3000(ATCA) data configuration		
OWG22	Lecture, Lab, E-lab	6d

### 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

### Training Content

OWG22 MSOFTX3000(ATCA) data configuration

- MSOFTX3000(ATCA) Hardware and Module Configuration
  - Describe the procedure of configuration

- 
- Perform the configuration of hardware
  - Perform the configuration of module
  - MSOFTX3000(ATCA) Local Office Data Configuration
    - Configure the local signaling point
    - Configure the mobile local office information
    - Configure the MAP function
    - Add the VLR configuration
    - Configure the SCCP GT data
    - Configure the call source data
    - Configure the MSRN/HON prefixes
    - Configure the MSRN/HON suffixes
    - Add the mapping between MSC numbers and the MSRNs/HONs
    - Verification of configuration
  - MSOFTX3000(ATCA) Mc interface Data Configuration
    - Mc interface introduction
    - H.248 protocol introduction
    - Data configuration based on different scenario (Single MGW, Multi-MGW IP networking, Multi-MGW TDM networking, Multi-MGW IP and TDM networking)
    - Verification of configuration
  - MSOFTX3000(ATCA) Interworking with HLR Data Configuration
    - Networking scenario 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)
    - Interconnection configuration based on different scenario
    - Verification of configuration
  - MSOFTX3000(ATCA) Interworking with BSC Data Configuration
    - Networking scenario 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)
    - Signaling and Speech configuration to BSC based on different scenario
    - Location Area configuration
    - Verification of configuration
  - MSOFTX3000(ATCA) Interworking with PSTN-MSC Data Configuration
    - Networking scenario between MSOFTX3000 and PSTN (networking mode based on M2UA, networking mode based on M3UA)
    - Signaling and Speech configuration to PSTN based on different scenario
    - Verification of configuration
  - MSOFTX3000(ATCA) Interworking With RNC Data Configuration
    - Networking scenario between MSOFTX3000 and RNC (M3UA Non-Peer-to-Peer, Iu-Flex, IP-Based Iu Interface)
    - Signaling and Speech configuration to RNC based on different scenario
    - Location Area configuration

- 
- Verification of configuration
  - MSOFTX3000(ATCA) Interworking with MSC Server Data Configuration
    - Networking scenario between MSOFTX3000 and MSC Server(BICC over M3UA, SIP-I)
    - Signaling and Speech configuration to MSC Server based on different scenario
    - Verification of configuration
  - MSOFTX3000(ATCA) Number Analysis Configuration
    - Concepts introduction(call source, route selection source name, route selection name, call prefix )
    - Basic Called Number configuration
    - Basic Routing configuration

Duration

6 working days

Class Size

Min 6, Max 12

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## 1.4.7 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

### Training Content

#### OWG24 MSOFTX3000 (ATCA) Operation and Maintenance

- MSOFTX3000(ATCA) Product Operation and Maintenance
  - OMU Server Operation and Maintenance
  - Service Operation Status Check
  - Parts Replacement
  - Rollback
- iGWB(ATCA) Operation and Maintenance
  - Describe the iGWB functions
  - Describe the hardware structure of iGWB
  - Describe the software structure of iGWB
  - Perform the iGWB configuration

- 
- Perform the iGWB maintenance
  - MSoftX3000(ATCA) Performance Management
    - Introduction to Performance Management
    - Performance Management Routine Operation
    - Basic KPI
  - MSOFTX3000(ATCA) Routine Operation and Maintenance
    - Equipment Status Check
    - System Resource Check
    - Data Consistency Check
    - Log Management
  - MSoftX3000(ATCA) Database Management and Operation
    - MSoftX3000 Database Overview
    - Database Backup and Restoration Policy
    - Database Backup and Restoration Procedure
  - MSoftX3000(ATCA) Alarm Management and Monitoring
    - Introduction to Alarm Management
    - Alarm Collection and Management
    - Alarm Handling

Duration

3 working days

Class Size

Min 6, Max 12

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## 1.4.8 MSS Service Provision Training

### Training Path

MSS Service Provision		
OWG31	Lecture, Lab	5d

### 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

### Training Content

#### OWG31 MSS Service Provision

- Intelligent Service Provision
  - IN service trigger configuration based on different scenarios(triggered by CSI, triggered by specified called number, triggered by number segment)
  - Emergency service trigger configuration
  - Number change configuration when IN service trigger
- MSS Routing Configuration
  - General routing(on priority, load-sharing, time) principle and configuration
  - Routing configuration based on TDM and IP bearer
- Call Services and Supplementary Service



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- Normal call configuration (MOC and MTC)
  - Call barring provision
  - Call failure provision
  - Emergency call provision
  - CLIP
  - Supplementary service provision
  - USSD service provision
  - Mobility Management Provision
    - Location Area Provision
    - Location update setting
    - User data management in VLR
  - Security Management Provision
    - 2G Authentication Setting
    - 3G Authentication Setting
    - Cipher Setting
  - Roaming Service Provision
    - Roaming user configuration
    - Roaming restriction configuration
  - Network Adjustment Provision
    - VLR resource management
    - Module adjustment and management
    - Links adjustment and management
    - Circuit adjustment and management
    - Routing adjustment and management
    - New National Access Code adding
    - Change GT data
  - Announcement provision
    - Make up tone file
    - Upload tone file
    - Configure tone file
    - Set the tone file playing mode

Duration

5 working days

Class Size

Min 6, Max 12

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## 1.4.9 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

### Training Content

#### OWH10 GU UMG8900 Hardware System

- UMG8900 Hardware System(SSM32)
- UMG8900 Hardware System(SSM160)
- UMG8900 Hardware System(SSM256)
  - UMG8900 hardware structure
  - UMG8900 logical architecture
  - UMG8900 software architecture
  - UMG8900 cascading system
  - Main boards' functions of UMG8900
  - Internal message flow

### Duration

1 working day

### Class Size

Min 6, Max 12

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## 1.4.10 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

### Training Content

#### OWH23 GU UMG8900 Operation and Maintenance Training

- UMG8900 Routine Operation and Maintenance
  - Query equipment status
  - Query resource information
  - Perform backup
  - Query the service status
  - Browse alarm information
  - Browse the performance task
- UMG8900 System Backup and Recovery
  - UMG8900 System backup preparation
  - UMG8900 System backup operation
  - UMG8900 System recovery operation
- UMG8900 Common Operation
  - User authority operation
  - Replace board
  - Loopback operation

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- Trace operation
  - CDR operation
  - Dialing test
  - License operation
  - Log operation
  - Recording
  - Tone file makeup and upload
  - UMG8900 Common Operation Task List
    - UMG8900 Routine Operation and Maintenance
    - UMG8900 Common Operation
  - UMG8900 Alarm Management and Operation
    - Browse alarm
    - Manage alarm
    - Handle alarm follow the alarm help
    - Create performance tasks
    - Dump performance report
    - Customize performance entity
    - Set alarm prompt for poor performance

Duration

2 working days

Class Size

Min 6, Max 12

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## 1.4.11 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

### Training Content

#### OWH22 GU UMG8900 Data Configuration Training

- UMG8900 Basic Data Configuration(SSM32)
- UMG8900 Basic Data Configuration (SSM160)
- UMG8900 Basic Data Configuration(SSM256)
  - Configuring system time
  - Configuring frames and boards
  - Configuring the clock
- UMG8900 Mc Interface Configuration
  - Configuring MGW data
  - Configuring the Link
  - Activating the VMGW
- UMG8900 Bearer Data Configuration
  - UMG8900 IP bearer configuration
  - UMG8900 ATM bearer configuration
  - UMG8900 TDM bearer configuration
- UMG8900 interworking with BSC-MSC-PSTN Data Configuration
  - Interworking with BSC based on different scenarios
  - Interworking with MSC/PSTN based on different networking

- 
- Interworking with MGW based on different networking
  - Detailed configuration commands and key parameters
  - UMG8900 interworking with MGW Data Configuration
    - Interworking with MGW based on different networking
    - Detailed configuration commands and key parameters
  - UMG8900 interworking with RNC Data Configuration
    - Interworking with RNC based on different scenarios
    - Protocol stack interworking with RNC
    - Detailed configuration commands and key parameters

Duration

2 working days

Class Size

Min 6, Max 12

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## 1.4.12 GSM/UMTS Typical Signaling Flow Training

### Training Path

GSM/UMTS Typical Signaling Flow Training		
OWA03	Lecture, Lab	3d

### 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

### Training Content

#### OWA03 GSM/UMTS Typical Signaling Flow Training

- Location Update Flow Introduction
  - Basic Concepts
  - Location Update Procedures
  - Table Lookup during Location Update
  - Data Configuration
  - MAP Related Signaling Flows

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- MSOFTX3000 Security Management Flow Introduction
    - GSM Authentication
    - UMTS Authentication
    - TMSI Reallocation
    - Related Data Configuration
  - GSM\_UMTS CS Basic Call Signaling Flow Analysis
    - Voice Services Classification
    - Intra-MSC Call Flow
    - Inter-MSC Call Flow
    - Bearer Establishment and Release Flow
  - SMS Signaling Procedure Analysis
    - SMS Overview
    - SMMO Flow
    - SMMT Flow
    - Short Message Notification

Duration

3 working days

Class Size

Min 6, Max 12



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### 1.4.13 MSS Signaling Analysis Training

#### Training Path

MSS Signaling Analysis Training		
OWA04	Lecture, Lab	5d

#### 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

#### Training Content

##### OWA04 MSS Signaling Analysis Training

- SCTP Multi-Homing Principles and Networking of the MSOFTX3000
  - SCTP concepts introduction
  - SCTP functions and messages
  - SCTP basic signaling flows

- 
- SCTP Multi-Homing principles
  - M3UA Principles of the MSOFTX3000
    - M3UA Overview and Basic Concepts
    - M3UA Principles
    - Applications of M3UA on the MSOFTX300
  - M3UA Principles of the MSOFTX3000 Manual
    - M3UA concepts, messages structure and flows
    - Applications of M3UA on the MSOFTX3000
  - RANAP Protocol Analysis(lu CS)
    - lu interface protocol stack and function
    - Classification of RANAP messages
    - lu connection Management, RAB assignment, SRNS Relocation
    - CS Domain MM, CC procedures in lu Interfaces
    - Key parameters description in RANAP messages
  - BSSAP Protocol Analysis
    - BSSAP protocol stack and function
    - Main procedure description of BSSAP(Paging, Initial MS Message, Cipher Mode Control, Assignment, Handover, Release, DTAP Message)
    - Key parameters description in BSSAP messages
  - H.248 Descriptions of the MSOFTX3000
    - H.248 Protocol stack and functions
    - Concepts introduction (Context, Termination and Stream) in H.248
    - Descriptors and commands defined by H.248 applied in Mobile Core Network
    - Message analysis of H.248 based on scenario
  - BICC Interface and Function Descriptions of the MSOFTX3000
    - BICC Protocol stack and functions
    - BICC call model (SN, CMN)
    - Bearer establishment procedure
    - Key parameter description of BICC
    - BICC message analysis
  - SIP Interface and Function Descriptions of the MSOFTX3000
    - SIP application and functions
    - Concepts of SIP
    - SIP message analysis and description

Duration

5 working days

Class Size

Min 6, Max 12

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## 1.4.14 Number Translation Training

### Training Path

Number Translation Training		
OWG41	Lecture, Lab	2d

### 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

### Training Content

#### OWG41 Number Translation Training

- Advanced Number Analysis and Data Configuration
  - Simplified Number Analysis
  - Number Normalization Analysis
  - Call Analysis
  - Handover Analysis
  - Call Restriction Analysis

### Duration

2 working days

### Class Size

Min 6, Max 12

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## 1.4.15 GSM/UMTS SoftSwitch Core Network Design Training

### Training Path

GSM/UMTS SoftSwitch Core Network Design Training		
OWG53	Lecture, Lab	3d

### 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

### Training Content

#### OWG53 GSM/UMTS SoftSwitch Core Network Design Training

- GU CS Network Design Overview
  - Importance of Network Design
  - Overview of Network Design
- GU CS Network Design Training
  - Information Collection Introduction
  - Naming and Numbering
  - Network Solution Design
  - Signaling Network Design
  - Traffic Network Design
  - Access Network Interconnection Design
  - EMS Interconnection design
  - Billing Interconnection design
  - Time Synchronization Interconnection Design
  - Clock Synchronization Interconnection Design

- 
- IP Interconnection Design
  - GU CS Bandwidth Calculation Training
    - Bandwidth Calculation Overview
    - Signaling Bandwidth Calculation Principle
    - Traffic Bandwidth Calculation Principle
    - O&M, Billing Bandwidth Calculation Principle
    - MSRN and HON Number Quantity Calculation
  - Networking Design Practice
    - Signaling Networking Design Practice
    - Traffic Networking Design Practice
    - Signaling IP Interconnection Design Practice
    - Traffic IP Interconnection Design Practice
  - Bandwidth Calculation Practice
    - 2G/3G Network Bandwidth Calculation Practice

Duration

3 working days

Class Size

Min 6, Max 12

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## 1.4.16 GSM/UMTS SoftSwitch Core Network Evaluation and Optimization Training

### Training Path

GSM/UMTS SoftSwitch Core Network Evaluation and Optimization Training		
OWG54	Lecture, Lab	3d

### 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

### Training Content

#### OWG54 GSM/UMTS SoftSwitch Core Network Evaluation and Optimization Training

- Resource Capacity Assessment and Optimization
  - Assessment and Optimization of MSOFTX3000 Capacity
  - Assessment and Optimization of UMG8900 Capacity
  - Assessment and Optimization of Traffic Resource
  - Assessment and Optimization of Signaling Link Resource
- MSOFTX3000(ATCA) Capacity Assessment
  - MSOFTX3000 ATCA Platform
  - MSOFTX3000 Performance Assessment System
  - MSOFTX3000 Resource Capacity Counters Classification and Definition
  - MSOFTX3000 Existing Network Assessment Procedure
- Location Update Success Rate Analysis
  - Definition of Location Update Success Rate
  - Analysis of Location Update Success Rate

- 
- Operation Guide to Signaling Analysis
  - Mobile Originated Call Completion Rate Analysis
    - Definition of Mobile Originated Call Completion Rate
    - Analysis of Mobile Originated Call Completion Rate
  - Mobile Terminated Call Completion Rate Analysis
    - Definition of Mobile Terminated Call Completion Rate
    - Analysis of Mobile Terminated Call Completion Rate
  - Paging Success Rate Analysis
    - Definition of Paging Success Rate
    - Analysis of Paging Success Rate
  - Assignment Success Rate Analysis
    - Evaluation on Assignment Success Rate
    - Analysis of Assignment Failure Causes
    - Summary of Analysis Conclusions
    - Operation Guide to Signaling Analysis
  - Handover Success Rate Analysis
    - Evaluation on Handover Success Rate
    - Analysis of Failure Causes
  - Short Message Origination Success Rate Analysis
    - Definition of Short Message Origination Success Rate
    - Analysis of Short Message Origination Success Rate
  - Short Message Termination Success Rate Analysis
    - Definition of Short Message Termination Success Rate
    - Analysis of Short Message Termination Success Rate
  - Call Connection Delay Analysis
    - Analysis of Call Flow
    - Signaling Flow on the A/Iu Interface
    - Baseline of Call Delay in Each Phase
    - Overall Idea
    - Delay Analysis Before Optimization
    - Conclusion
    - Optimization Suggestions

Duration

3 working days

Class Size

Min 6, Max 12

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## 1.4.17 MSC POOL Training

### Training Path

MSC POOL Training		
OWG62	Lecture, Lab	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

### 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

### Training Content

#### OWG62 MSC POOL Training

- MSC POOL principle
  - MSC Pool networking
  - Principles related to the MSC Pool feature



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- 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
  - MSC Pool Data Configuration
    - MSC Pool Networking and Data collection
    - MSC Pool configuration flow overview
    - MSC Pool feature configuration in MSC Server and MGW
    - MSC Pool configuration based on different scenarios(NNSF implemented by RNC, NNSF implemented by MGW, Restructure MSC Pool based on current network)
  - MSC POOL Operation and Maintenance
    - Querying MSC Pool configuration
    - Monitoring MSC Pool Load in Real Time
    - Operate Performance Report of the MSC Pool
    - Manual Migration of Subscribers
    - MSC Pool configuration synchronization between NE and M2000
    - End-to-end tracing of calls on the MSC Pool
  - MSC POOL Performance Measurement Manual
    - Measurement entities for MSC Pool
    - Examples of MSC Pool performance measurement

Duration

5 working days

Class Size

Min 6, Max 12

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## 1.4.18 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

### Training Content

#### OWG33 MSS XPTU Configuration Training (ETSI)

- XPTU(ATCA) Configuration and Operation
  - 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

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## 1.4.19 2G/3G Core Network Sharing Training

### Training Path

2G/3G Core Network Sharing Training		
OWG61	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 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 lu interface protocol stack and function
- Describe key parameters of RANAP messages(
- lu connection Management, RAB assignment, SRNS Relocation, CS Domain MM, CC procedures in lu Interfaces)

### Training Content

#### OWG61 2G/3G Core Network Sharing Training

- GSM/UMTS Security Functions
  - GSM Security mechanism(authentication and encryption)
  - UMTS Security mechanism(authentication and encryption)
  - GSM security mode setting
  - UMTS security mode setting
- Security Management Flow Introduction
  - GSM Authentication
  - UMTS Authentication
  - TMSI Reallocation
  - Related Data Configuration
- 2G/3G Inter-system Handover

- 
- Handover procedure
  - Handover data configuration
  - Common faults and troubleshooting
  - 2G/3G Inter-System Handover Manual
    - GSM to UMTS inter-system handover
    - UMTS to GSM inter-system handover

Duration

1 working day

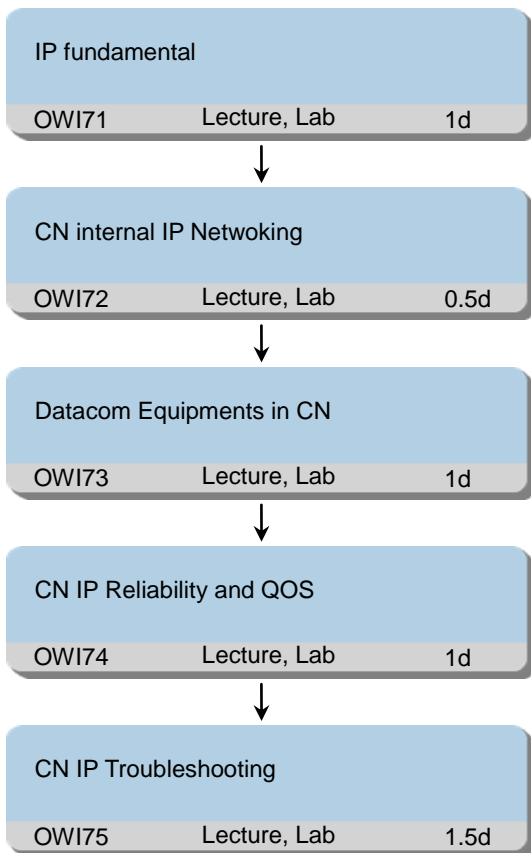
Class Size

Min 6, Max 12

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## 1.4.20 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

#### Training Content

##### OWI71 IP fundamental

- Datacom fundamental
  - The fundamental IP knowledge and the application in CN
- CN IP Bear Network Overview
  - The structure of IP bear Network and the main protocols used

##### OWI72 CN internal IP Networking

- VLAN Principle and Configuration
  - VLAN principle and the application in CN
  - the related data configuration in CN
- CN internal IP Networking
  - The internal IP networking in CN, such as MSoftX3000 and UMG8900

##### OWI73 Datacom Equipments in CN

- Datacom Equipment Hardware Introduction
  - The hardware of datacom equipments used for CN
- Datacom Equipment O&M
  - The O&M of datacom equipments used in CN

##### OWI74 CN IP Reliability and QOS

- CN IP Reliability
  - The principle and data configuration of reliability solutions, such as SCTP multihoming, BFD, PG, Route Backup and VRRP
- CN IP QOS
  - The QOS requirement to IP bear Network;
  - The QOS technical methods in CN

##### OWI75 CN IP Troubleshooting

- CN IP Troubleshooting
  - The IP troubleshooting methods, steps and typical cases in CN

#### Duration

5 working days

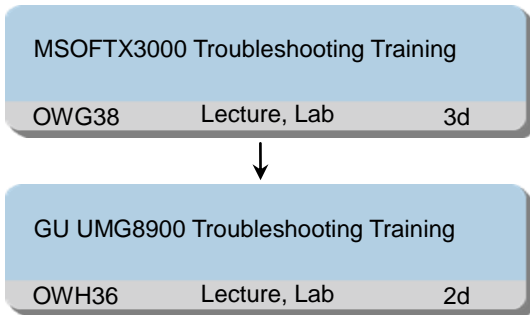
#### Class Size

Min 6, Max 12

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## 1.4.21 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

### Training Content

#### OWG38 MSOFTX3000 Troubleshooting Training

- MSOFTX3000 General Troubleshooting Methods
  - General troubleshooting methods
  - MSOFTX3000: CSIS
  - UMG8900: IP Trace, Call Trace and Loopback
- MSOFTX3000 Call Failure Troubleshooting
  - Call flow
  - Troubleshooting methods and notes of call fault
  - Cases analysis of call fault
- MSOFTX3000 IN Service Failure Troubleshooting
  - System structure of wireless IN
  - Mobile IN networking

- 
- Trigger principle of IN service
  - Principle of Playing Tone of IN service
  - Troubleshooting methods of IN fault
  - MSOFTX3000 Trunk Failure Troubleshooting
    - Introduction of the trunk circuit knowledge
    - Introduction and reason of the state of ISUP circuit
    - Troubleshooting methods for the fault of ISUP circuit and BICC circuit
  - MSOFTX3000 Signaling Failure Troubleshooting
    - Troubleshooting methods for signaling fault
    - Cases analysis for MTP, SCCP and TCAP layers fault
    - Cases analysis for SCTP, M2UA and M3UA layers fault
  - MSOFTX3000 Location Update Failure Troubleshooting
    - Location Update Flow Introduction
    - Location Update Failure Processing Method
    - Location Update Cases Analysis
- OWH36 GU UMG8900 Troubleshooting Training
- UMG8900 Voice Failure Troubleshooting
    - Troubleshooting methods for tone fault(One-way Audio, Call Accompanied by Echoes and Noise) of the UMG8900
  - UMG8900 Bearer Failure Troubleshooting
    - Troubleshooting methods for bearer fault(IP, TDM and ATM) of the UMG8900

Duration

5 working days

Class Size

Min 6, Max 12



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## 1.4.22 AoIP Training

### Training Path

AoIP Training		
OWG77	Lecture, Lab, E-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:

- 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

### Training Content

#### OWG77 AoIP Training

- AoIP Networking and Principle
  - Background
  - Networking
  - Modification from AoTDM to AoIP
  - Codec selection policy
  - AoIP Call Flow
  - QoS Control
  - IP Domain Control
- AoIP Data Configuration
  - Data configuration for direct connection mode between MSC Server and BSC
  - Data configuration for MGW connection mode between MSC server and BSC(M3UA forward)
  - Introduction to AoIP software parameter of MSC Server

- 
- AoIP Troubleshooting
    - Core network AoIP troubleshooting methods
    - Common fault handling

Duration

2 working days

Class Size

Min 6, Max 12

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### 1.4.23 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

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## Training Content

### OWG78 MSS Common Emergency Operation Training

- MSS Common Emergency Operation and Failure Prevention (MSFTX3000)
  - MSS emergency scenarios
  - MSOFTX3000 O&M communication fault
  - MSOFTX3000 hardware fault
  - Fault caused by misoperation of MSOFTX3000
  - Fault prevention for heavy traffic during holidays
  - High risky alarms of MSOFTX3000
  - 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
- MSS Common Emergency Operation and Failure Prevention (UMG8900)
  - UMG8900 O&M communication fault
  - UMG8900 hardware fault
  - UMG8900 link fault
  - Handle resource usage exceeds the threshold of UMG8900
  - Bearer network fault
  - Reset the device of UMG8900

### Duration

2 working days

### Class Size

Min 6, Max 12

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

### Training Content

#### OWG86 CSFB Training

- CSFB Solution Introduction
  - CSFB Fundamentals
  - CSFB Key Procedures
  - SGs Interface and Protocol
  - CSFB Redundancy Solution
  - Call Delay Analysis
  - CSFB Network Deployment
- CSFB Signaling Introduction
  - SGsAP Interface Protocol Overview
  - CSFB Main Signaling Procedure Analysis
- CSFB Data Configuration, Operation and Maintenance
  - Networking Overview
  - Data Configuration

- 
- System Commissioning
  - Operation and Maintenance
  - Configuration Example

Duration

2 working days

Class Size

Min 6, Max 12

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## 1.4.25 MSOFTX3000 mAGCF Feature Training

### Training Path

mAGCF feature		
OWG64	Lecture, Lab	0.5d

### Target Audience

Core network commissioning engineers  
Operation and maintenance engineers

### Prerequisites

- At least one year experience of operation and maintenance of MsoftX3000 and UMG8901 equipments

### Objectives

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

- Describe the feature of the service
- Perform the related data configuration

### Training Content

#### OWG64 mAGCF feature

- mAGCF feature introduction
  - Feature overview
  - Service Processing Flow
- mAGCF data configuration
  - Data configuration overview
  - mAGCF service configuration

### Duration

0.5 working day

### Class Size

Min 0, Max 0

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## 1.4.26 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

### Training Content

#### OWG66 VoLTE Solution (CS) Advanced Operation and Maintenance Training

- MSOFTX3000 eSRVCC Introduction
  - Commercial LTE Voice Solutions
  - Key Technologies Involved in VoLTE
  - eSRVCC Logical Architecture
  - eSRVCC Service Procedure
  - eSRVCC Charging
  - eSRVCC Codec Negotiation
- MSOFTX3000 eSRVCC Data Configuration, Operation and Maintenance



- 
- Reconstruction Method
  - MSS Data configuration
  - System Commissioning
  - Operation and Maintenance
  - MSOFTX3000 eSRVCC GTPv2-C Protocol Analysis
    - GTPv2-C Protocol Introduce
    - Key Messages and IEs Introduce
    - Case Analysis
  - MSOFTX3000 MGCF Introduction
    - MGCF Logical Architecture
    - Interface and Protocol
    - Voice Service Procedure
    - MGCF Codec Negotiation
  - MSOFTX3000 MGCF Data Configuration and Operation and Maintenance
    - MSS Data configuration
    - System Commissioning
    - Operation and Maintenance

Duration

2 working day

Class Size

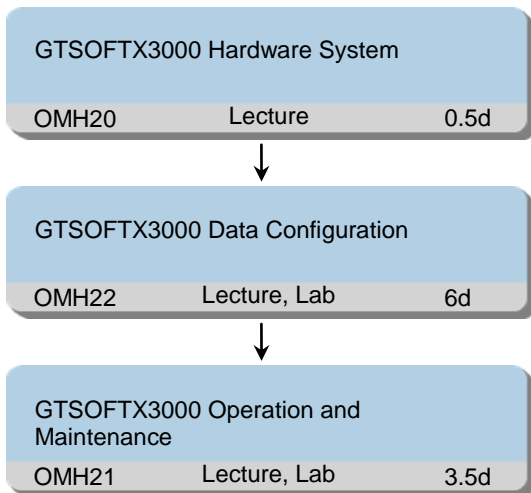
Min 6, Max 12

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## 1.5 GSM-R

### 1.5.1 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

#### Training Content

##### OMH20 GTSOFTX3000 Hardware System

- GTSOFTX3000 Hardware System
  - Describe the MISOFTX3000 hardware structures
  - Describe the MISOFTX3000 cascade structures
  - Describe the function, indicators, ports and working mode of each board
  - Explain the types and applications of different fibers and cables

##### OMH22 GTSOFTX3000 Data Configuration

- GTSOFTX3000 Hardware Data Configuration
  - Understand the concept of Hardware Configuration
  - Grasp the process and method of Hardware Configuration
  - Grasp the relations of the parameters in commands
  - Grasp how to check the results of hardware configuration
- GTSOFTX3000 interworking with MGW Configuration
  - Protocol stack between GTSOFTX3000 and MGW
  - Configuration flow
  - Configuration commands and key parameters
  - Verification of configuration
- GTSOFTX3000 Local Office Data Configuration
  - GTSOFTX3000 Office information configuration and query
- GTSOFTX3000 Interworking with HLR Data Configuration
  - Acknowledge relative basic concepts of MAP and functions of C/D interface.
  - Perform data configuration from MISOFTX3000 to HLR
- GTSOFTX3000 Interworking with BSC Data Configuration

- 
- Understand the relative concepts
  - Master the relationship between commands
  - Perform data configuration for interworking with BSC (M2UA based)
  - GTSOFTX3000 Interworking With RNC Data Configuration
    - Describe M3UA correlative concept
    - Perform the M3UA data configuration between MSOFTX3000 and MGW
    - Perform the data configuration from
    - MSOFTX3000 to RNC based on IP and ATM
  - GTSOFTX3000 Interworking with PSTN-MSOFTX3000 Data Configuration
    - Understand networking solutions between MSOFTX3000 and PSTN/MSOFTX3000
    - Perform data configuration interconnect MSOFTX3000 with PSTN/MSOFTX3000 in different mode
  - GTSOFTX3000 Number Analysis Configuration
    - Basic concepts of number analysis
    - The flow of number analysis
    - Key commands and functions for number analysis tables
    - Typical case for number analysis
- OMH21 GTSOFTX3000 Operation and Maintenance
- GTSOFTX3000 Routine Operation and Maintenance
    - 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 tasks (daily, weekly and monthly)
  - GTSOFTX3000 Parts Replacement
    - Operation of replace the hardware board
    - Operation of change the cable
    - Cautions of replacement
  - GTSOFTX3000 System Backup and Recovery
    - Operation of system backup
    - Operation of system recovery
    - Cautions of backup and recovery
  - GTSOFTX3000 BAM Introduction
    - BAM function
    - BAM components
    - Start and stop the process of BAM
    - Key information and its directory of BAM
  - GTSOFTX3000 Alarm Management and Operation
    - Browsing Alarms
    - Querying Alarms
    - Printing Alarms

- 
- Dump Alarm logs
  - Alarm Box Operation
  - GTSOFTX3000 Performance Measurement and Operation
    - Creating performance tasks
    - Checking status of performance tasks
    - Customized performance tasks
    - Suspending performance tasks
    - Delete performance tasks
    - Dumping the measurement result

Duration

10 working days

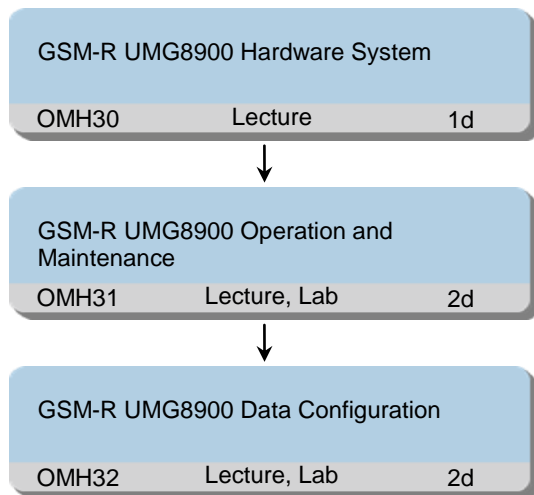
Class Size

Min 6, Max 12

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## 1.5.2 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
- A basic knowledge of telecommunication
- Successful completion of "GSM-R UMG8900 Hardware System"
- 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

#### Training Content

##### OMH30 GSM-R UMG8900 Hardware System

- GSM-R UMG8900 Hardware System(SSM256)
  - UMG8900 hardware structure
  - UMG8900 logical architecture
  - UMG8900 software architecture
  - UMG8900 Cascading System
  - Main boards' functions of UMG8900
  - Internal message flow

- GSM-R UMG8900 Hardware System(SSM32)

##### OMH31 GSM-R UMG8900 Operation and Maintenance

- GSM-R SIWF Operation and Maintenance
  - Function of SIWF
  - Configuration of SIWF
  - Operation and maintenance of SIWF
  - SIWF application in GSM-R
- GSM-R UMG8900 Routine Operation and Maintenance
  - Query equipment status
  - Query resource information
  - Perform backup
  - Query the service status
  - Browse alarm information
  - Browse the performance task
- GSM-R UMG8900 System Backup and Recovery

- 
- System backup preparation
  - System backup operation
  - System recovery operation

#### OMH32 GSM-R UMG8900 Data Configuration

- GSM-R UMG8900 Hardware Data Configuration
  - Configuring System Parameters
  - Configuring System Time
  - Configuring Frames and Boards
  - Configuring the Clock
  - Configuring the NMS Interface
  - Configuring the MGW Control Interface and SIGTRAN Interface
  - ATM bearer configuration
  - IP bearer configuration
  - TDM bearer configuration
  - Signaling Transfer configuration
- GSM-R UMG8900 Mc Interface Configuration
  - Configuring MGW data
  - Configuring the Link
  - Activating the VMGW
- GSM-R UMG8900 Interworking with BSC-MSC-PSTN-MGW Data Configuration
  - Interworking with BSC based on different scenarios
  - Interworking with MSC/PSTN based on different networking
  - Interworking with MGW based on different networking

#### Duration

5 working days

#### Class Size

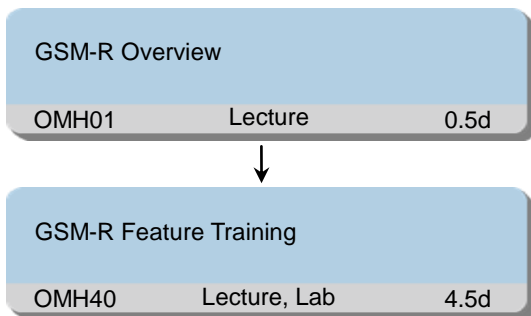
Min 6, Max 12



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### 1.5.3 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

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## Training Content

### OMH01 GSM-R Overview

- Overview of the GSM-R System
  - Describe the fundamental of GSM-R.
  - Describe the architecture of GSM-R system.
  - Describe the service and function of GSM-R system.

### OMH40 GSM-R Feature Training

- GSM-R Features Training - eMLPP
  - eMLPP Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - UUS1
  - USS1 Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - VBS
  - VBS Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - VGCS
  - VGCS Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Multiple-Engine Control
  - Multiple-Engine Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Functional Addressing
  - Functional Addressing Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Call Area Restriction
  - Call Area Restriction Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Location Dependent Addressing
  - Location Dependent Addressing Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - SMC Integration
  - SMC Integration Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Access Matrix
  - Access Matrix Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Break-in and Forced Release
  - Break-in and Force release Service Configuration, principle, service flow, service verification, troubleshooting and case analysis
- GSM-R Features Training - Missed Call SMS Prompt
  - Missed call SMS prompt Service Configuration, principle, service flow, service

- 
- verification, troubleshooting and case analysis
  - GSM-R Features Training - Priority Cell
    - Priority Cell Configuration, principle, service flow, service verification, troubleshooting and case analysis
  - GSM-R Features Training - Operation and Maintenance of the AC
    - Functions of AC(Acknowledge Center)
    - AC software installation and uninstallation
    - Configuring AC in BAM
    - AC operation
  - GSM-R Features Training - Operation and Maintenance of the GMS
    - GMS(Group Management Server) networking and functions
    - GMS installation

Duration

5 working days

Class Size

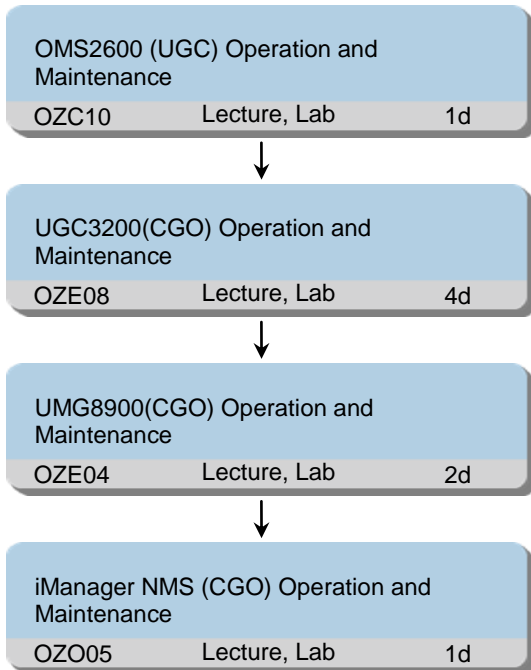
Min 6, Max 12

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## 1.6 UGC

### 1.6.1 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

#### Training Content

##### OZC10 OMS2600 (UGC) Operation and Maintenance

- ATCA Hardware Platform Introduction
  - Introduce the hardware structure, the power system and the board functions of ATCA platform, as well as the monitor system
- OMS2600(UGC) Product Introduction
  - Product Orientation of OMS2600
  - Interfaces
  - Function and Features
  - System Structure
- OMS2600(UGC) Operation and Maintenance
  - OMS2600 Operation
  - OSTA Hardware O&M
  - Software O&M
  - NE O&M

##### OZE08 UGC3200(CGO) Operation and Maintenance

- UGC3200(Convergent GW) System Overview
  - Introduce the UGC3200 hardware structure
  - Introduce the function, location and working flow of UGC3200
- UGC3200(Convergent GW) Call Number Analysis
  - Basic Concept and Basic call flow
  - Procedure and Configuration
  - Number Analysis Configuration Example
- UGC3200(Convergent GW) Data Configuration

- 
- Introduce the local office data and the data configuration related to H.248 and SIP
  - Introduce the interworking data with MGW, PSTN, GSM, CDMA, etc.
  - UGC3200(Convergent GW) Operation and Maintenance
    - Operator Guide
    - Administrator Guide
    - Device and Service status Check
  - iGWB Operation and Maintenance
    - iGWB function introduction
    - iGWB data configuration
    - iGWB operation and maintenance
- OZE04 UMG8900(CGO) Operation and Maintenance
- CGO UMG8900 Hardware Introduction
    - Introduce the system functions of UMG8900
    - Introduce the UMG8900 hardware structure
    - Introduce the function, indicators, ports and working mode of each board
  - CGO UMG8900 interworking Data Configuration
    - UMG8900 Mc (H248) Interface Configuration
    - UMG8900 Interworking with MSC-PSTN-MGW Data Configuration
  - CGO UMG8900 Operation and Maintenance
    - OMU Principle
    - GUI Operation Introduction
    - Routine Maintenance
- OZO05 iManager NMS (CGO) Operation and Maintenance
- iManager NMS (CGO) Product Introduction
    - Product network structure, main features and Typical Configuration in IMS
    - SNMP Protocol introduction
    - Northband interface
  - iManager NMS (CGO) Operation and Maintenance
    - System Login
    - User Right Management
    - Topology Management
    - Fault Management
    - Performance Management
    - System Monitor
    - Database Backup

Duration

8 working days

Class Size

Min 6, Max 12

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## 1.7 SmartCare

### 1.7.1 SEQ Analyst and Probe Administrator Training

#### Training Path

SEQ Analyst and Probe Administrator Training		
OSE01	Lecture, Lab	3d

#### Target Audience

Core network monitoring engineers

#### Prerequisites

- At least one year experience of operation and maintenance of Core Network equipments

#### Objectives

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

- Describe position, feature, function, interface protocol and structure of SEQ Analyst and Probe
- Describe hardware structure and function of different parts of SEQ Analyst and Probe
- Describe software structure and function of different software sub-system of SEQ Analyst and Probe
- Configure server, module group, local service IP and service data of SEQ Analyst and Probe
- Describe network design principles
- Describe IP address and VLAN configuration principles
- Design time synchronization
- Describe transmission and security requirements
- Describe configuration principles
- Perform SEQ Analyst data configuration, including security configuration, data Collection system interworking configuration, CS/PS Network configuration, O&M configuration, service data Configuration
- Perform routine maintenance

#### Training Content

##### OSE01 SEQ Analyst and Probe Administrator Training

- SEQ Analyst and Probe Product Overview
  - Product Description
  - Application Scenarios
  - Product Architecture
  - Interfaces and Protocols
  - Technical Specifications
- SEQ Analyst and Probe Hardware Overview
  - Hardware structure

- 
- Function of different hardware parts
  - SEQ Analyst Network Design
    - Cable Connection
    - IP Address and VLAN Configuration
    - Time Synchronization Design
    - Transmission Requirements
  - NetProbe3010 Network Design
    - Probe Networking Principle
    - Probe Access Modes
    - Probe Network Design Guide
  - SPM Network Design
    - Probe Networking Principle
    - Probe Access Modes
    - Probe Network Design Guide
  - SEQ Analyst Data Configuration and Commissioning
    - General Configuration Procedure
    - Security Configuration
    - Data Collection System Interworking Configuration
    - Database Synchronization Configuration
    - CS Network Configuration
    - PS Network Configuration
    - O&M Configuration
    - Service Data Configuration
    - Commissioning
  - SPM Data Configuration and Commissioning
    - General Configuration Process
    - Basic Function Configuration
    - Interconnection Configuration
    - Configuring CS NEs
    - Carrier Network Configuration
    - Commissioning
  - NetProbe3010 Data Configuration and Commissioning
    - Configuring Data for Interworking with the SEQ Analyst
    - Configuring Devices
    - Configuring Interface Record Reporting
  - SEQ Analyst and Probe Operation and Maintenance
    - Maintenance system structure
    - Hardware management
    - Installation management
    - Software management
    - Alarm management
    - Log management



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- Service troubleshooting

Duration

3 working days

Class Size

Min 6, Max 12

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## 1.7.2 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/SMS signaling flow
- Describe voice/SMS service modeling method
- Describe voice/SMS KQI system
- Describe relationship between the voice/SMS KQI and each PI
- Perform CS network real-time monitor
- Perform Location Update, Call Service, SMS, Handover, Paging 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

### Training Content

#### OSE02 SmartCare Voice Service Quality Improvement Training

- SmartCare CS SQx KQI Modeling Method (Voice)
  - Voice E2E signaling flow
  - Voice service modeling method
  - Voice KQI system
  - Relationship between the voice KQI and each PI

- 
- SmartCare CS SQx KQI Modeling Method (SMS)
    - SMS E2E signaling flow
    - SMS service modeling method
    - SMS KQI system
    - Relationship between the SMS KQI and each PI
  - Smartcare CS NPM Tools Operation for Voice Service
    - Real-Time Monitoring
    - CS Network Quality Analysis
    - Record Query
  - Smartcare CS SQM Tools Operation for Voice Service
    - SQM Function Overview
    - Voice Service Quality Monitoring
    - Voice Service Quality Analysis
  - Smartcare CS CEM Tools Operation for Voice Service
    - CEM Overview
    - VVIP/VIP Group Monitoring
    - Customer/Customer Group Analysis
    - VAP Analysis
    - VAC Analysis
    - Device Analysis
    - Roaming Analysis
    - Compliant Handling
  - SmartCare Voice Service Quality Assessment and Optimization Guide
    - Voice KQI System Introduction
    - Voice KQI Assessment Method
    - Voice KQI Optimization Method
    - Case Analysis

Duration

2 working days

Class Size

Min 6, Max 12

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### 1.7.3 SmartCare IMS Service Quality Improvement Training

#### Training Path

SmartCare IMS Service Quality Improvement Training		
OSE03	Lecture, Lab	2d

#### 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

#### Training Content

##### OSE03 SmartCare IMS Service Quality Improvement Training

- SmartCare IMS Service Quality Analysis
  - IMS network performance analysis
  - IMS KPIs real-time Monitoring
  - IMS xDR query
  - IMS service quality analysis

#### Duration

2 working days

#### Class Size

Min 6, Max 12

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## 1.8 WBT

### 1.8.1 MSS Signaling Analysis(WBT)

#### Training Path

MSS Signaling Analysis(WBT)		
OWG79	WBT	2.5h

#### 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

#### Training Content

OWG79 MSS Signaling Analysis(WBT)

- BICC Protocol Introduction(WBT)
  - Introduction of BICC

- 
- BICC Node Model
  - BICC Protocol Model
  - Features of BICC Protocol
  - BICC Message Structure
  - Main BICC Messages
  - BICC Specific Information Elements
  - Call Setup Procedure
  - Codec Negotiation Procedure
  - Call Release Procedure
  - SIGTRAN-SCTP Introduction(WBT)
    - SIGTRAN Overview
    - SCTP Introduction
    - SCTP Terms
    - SCTP Functions
    - SCTP Message Format
    - SCTP Signaling Procedures
  - SIGTRAN UA Layers Introduction(WBT)
    - Introduction of UA Layers
    - UA Common Terminologies
    - M2UA Function and Protocol Stack
    - Terminologies of M2UA
    - M2UASignaling Flow
    - M3UA Function and Protocol Stack
    - Terminologies of M3UA
    - M3UA and MTP3 Mapping of Messages
    - M3UA Signaling Flow
  - H.248 Protocol Introduction(WBT)
    - H.248 Protocol Structure and Function
    - Connection model
    - Descriptors and Packages
    - H.248 Message Structure
    - H.248 Commands
    - Signaling Procedure

Duration

2.5 hours

Class Size

No limit

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## 1.8.2 GSM and UMTS Softswitch Core Network Principle(WBT)

### Training Path

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

### 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

### Training Content

OWG80 GSM and UMTS Softswitch Core Network Principle(WBT)

- GSM and UMTS Softswitch Core Network Principle(WBT)
  - Softswitch Core Network Structure
  - Softswitch Interface and Protocol
  - Call Flow in Softswitch Core Network
  - Features in Softswitch

### Duration

0.5 hour

### Class Size

No limit

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### 1.8.3 MSC POOL Principle(WBT)

#### Training Path

MSC POOL Principle(WBT)		
OWG81	WBT	1h

#### 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)

#### Training Content

##### OWG81 MSC POOL Principle(WBT)

- MSC POOL Principle(WBT)
  - MSC Pool networking
  - Principles related to the MSC Pool feature
  - 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 hour

#### Class Size

No limit



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## 1.8.4 UMG8900 System Overview(WBT)

### Training Path

UMG8900 System Overview(WBT)		
OWG82	WBT	1h

### 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

### Training Content

#### OWG82 UMG8900 System Overview(WBT)

- UMG8900 System Overview(WBT)
  - UMG8900 Product Orientation
  - Product Feature
  - System Architecture
  - Service and Networking Applications
  - Technical Specification

### Duration

1 hour

### Class Size

No limit

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## 1.8.5 MSOFTX3000(ATCA) System and Principle(WBT)

### Training Path

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

### 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

### Training Content

#### OWG83 MSOFTX3000(ATCA) System and Principle(WBT)

- MSOFTX3000(ATCA) System Overview(WBT)
  - MSOFTX3000 Orientation and Networking
  - MSOFTX3000 Protocol Interfaces
  - Supporting Services and Features
  - MSOFTX3000 System Architecture
- MSOFTX3000(ATCA) System Principle(WBT)
  - MSOFTX3000 Service Processing Subsystem
  - MSOFTX3000 Maintenance Management Subsystem
  - MSOFTX3000 Environment Monitoring Subsystem
  - MSOFTX3000 Alarm Management System

### Duration

2 hours

### Class Size

No limit

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## 1.8.6 GU CS Core Network Design Overview(WBT)

### Training Path

GU CS Core Network Design Overview(WBT)		
OWG84	WBT	0.5h

### 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

### Training Content

OWG84 GU CS Core Network Design Overview(WBT)

- GU CS Core Network Design Overview(WBT)
  - Importance of network design
  - Overview of network design

### Duration

0.5 hours

### Class Size

No limit

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## 1.8.7 AoIP Networking and Principle(WBT)

### Training Path

AoIP Networking and Principle(WBT)		
OWG85	WBT	0.5h

### 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

### Training Content

#### OWG85 AoIP Networking and Principle(WBT)

- AoIP Networking and Principle(WBT)
  - The Modifications of networking from AoTDM to AoIP
  - The function of each network element on AoIP
  - AoIP codec selecting policy
  - The signaling flows difference between AoIP and AoTDM
  - The principle of QoS and IP domain on AoIP

### Duration

0.5 hour

### Class Size

No limit

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## 1.8.8 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

### Training Content

#### OWG88 CSFB Solution Introduction(WBT)

- CSFB Solution Introduction(WBT)
  - CSFB Fundamentals
  - CSFB Key Procedures
  - SGs Interface and Protocol
  - CSFB Redundancy Solution
  - Call Delay Analysis
  - CSFB Network Deployment

### Duration

1 working day

### Class Size

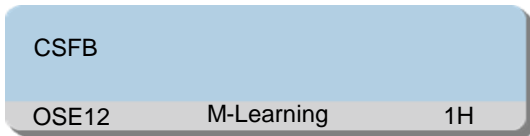
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## 1.9 M-Learning

### 1.9.1 CSFB

#### Training Path



#### Target Audience

Core network monitoring engineers

#### Prerequisites

- At least one year experience of operation and maintenance of Core Network equipments

#### Objectives

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

- Describe principle of CSFB

#### Training Content

##### CSFB

- CSFB
  - 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

#### Duration

1 hour

#### Class Size

No limit