

# Training Proposal for SingleRAN Product Technical Training Project



**HUAWEI**  
**HUAWEI Learning Service**  
2015

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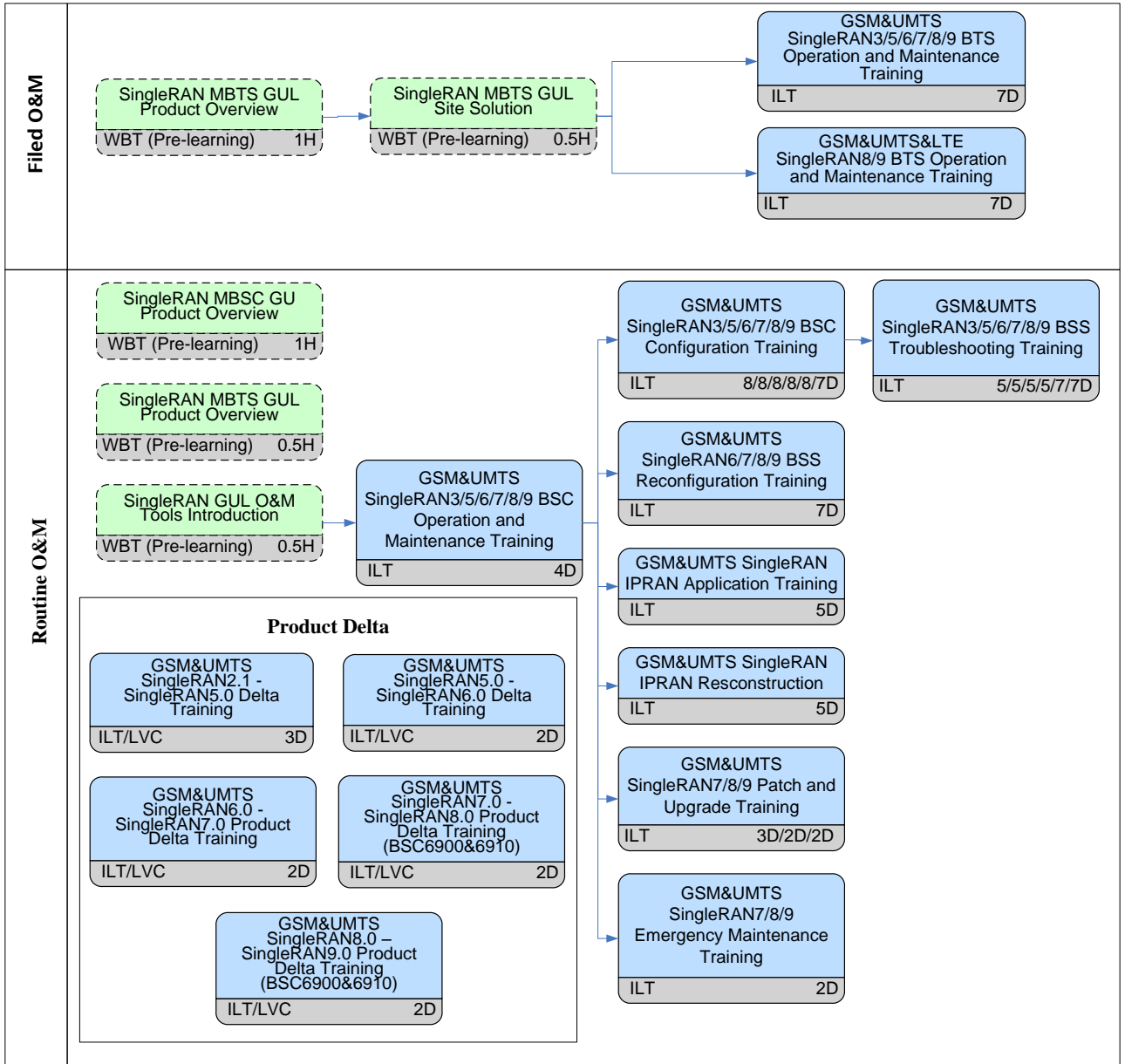
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# 1 Training Solution

## 1.1 Background Introduction

## 1.2 Overview

## 1.3 SingleRAN Product Technical Training Path



The dashed block indicates optional module

## 1.4 Required Training Programs

SingleRAN Product Technical Training For this project, the whole training solution is designed into the following programs. List of Training Program(s) for SingleRAN Product Technical Training Project:

Training Program	Program Level	Duration (workdays)	Training Location	Class Size
<b>SingleRAN</b>				
GSM/UMTS SingleRAN3.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS SingleRAN3.0 BSC Operation and Maintenance Training	II	4		6 ~ 12
GSM/UMTS SingleRAN3.0 BSC Configuration Training	II	8		6 ~ 12
GSM/UMTS SingleRAN3.0 BSS Troubleshooting Training	III	5		6 ~ 12
GSM/UMTS SingleRAN5.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS SingleRAN5.0 BSC Operation and Maintenance Training	II	4		6 ~ 12
GSM/UMTS SingleRAN5.0 BSC Configuration Training	II	8		6 ~ 12
GSM/UMTS SingleRAN5.0 BSS Troubleshooting Training	III	5		6 ~ 12
GSM/UMTS SingleRAN2.1 - SingleRAN5.0 Delta Training	III	3		6 ~ 12
GSM/UMTS SingleRAN6.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS SingleRAN6.0 BSC Operation and Maintenance Training	II	4		6 ~ 12
GSM/UMTS SingleRAN6.0 BSC Configuration Training	II	8		6 ~ 12
GSM/UMTS SingleRAN6.0 BSS Reconfiguration Training	III	7		6 ~ 12
GSM/UMTS SingleRAN6.0 BSS Troubleshooting Training	III	5		6 ~ 12
GSM/UMTS SingleRAN5.0 - SingleRAN6.0 Delta Training	III	2		6 ~ 12

GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training	II	4		6 ~ 12
GSM/UMTS SingleRAN7.0 BSC Configuration Training	II	8		6 ~ 12
GSM/UMTS SingleRAN7.0 BSS Reconfiguration Training	III	7		6 ~ 12
GSM/UMTS SingleRAN7.0 BSS Troubleshooting Training	III	5		6 ~ 12
GSM/UMTS SingleRAN6.0 - SingleRAN7.0 Product Delta Training	III	2		6 ~ 12
GSM/UMTS SingleRAN7.0 Upgrade Training	III	3		6 ~ 12
GSM/UMTS SingleRAN7.0 Emergency Maintenance Training	III	2		6 ~ 12
GSM/UMTS SingleRAN8.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS/LTE SingleRAN8.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training (BSC6900/6910)	II	4		6 ~ 12
GSM/UMTS SingleRAN8.0 BSC Configuration Training (BSC6900/6910)	II	8		6 ~ 12
GSM/UMTS SingleRAN8.0 BSS Troubleshooting Training (BSC6900/6910)	III	7		6 ~ 12
GSM/UMTS SingleRAN8.0 BSS Reconfiguration Training (BSC6900/6910)	III	7		6 ~ 12
GSM/UMTS SingleRAN7.0 - SingleRAN8.0 Product Delta Training (BSC6900/6910)	III	2		6 ~ 12
GSM/UMTS SingleRAN8.0 Patch and Upgrade Training (BSC6900/6910)	III	2		6 ~ 12
GSM/UMTS SingleRAN8.0 Emergency Maintenance Training (BSC6900/6910)	III	2		6 ~ 12
GSM/UMTS SingleRAN IPRAN Application Training	III	5		6 ~ 12
GSM/UMTS SingleRAN IPRAN Reconstruction	III	5		6 ~ 12

GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS/LTE SingleRAN9.0 BTS Operation and Maintenance Training	II	7		6 ~ 12
GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training (BSC6900/6910)	II	4		6 ~ 12
GSM/UMTS SingleRAN9.0 BSC Configuration Training (BSC6900/6910)	II	7		6 ~ 12
GSM/UMTS SingleRAN9.0 BSS Troubleshooting Training (BSC6900/6910)	III	7		6 ~ 12
GSM/UMTS SingleRAN9.0 BSS Reconfiguration Training (BSC6900/6910)	III	7		6 ~ 12
GSM/UMTS SingleRAN8.0 - SingleRAN9.0 Product Delta Training (BSC6900/6910)	III	2		6 ~ 12
GSM/UMTS SingleRAN9.0 Patch and Upgrade Training (BSC6900/6910)	III	2		6 ~ 12
GSM/UMTS SingleRAN9.0 Emergency Maintenance Training (BSC6900/6910)	III	2		6 ~ 12
<b>WBT</b>				
BSC6900 GU V900R013 Product Description (WBT)	II	1 h		No limit
MBTS GU V100R004 Product Description (WBT)	II	1 h		No limit
BSC6900 GU V900R013 Operation and Maintenance(WBT)	II	1 h		No limit
SingleRAN MBTS GUL Product Overview (WBT)	II	1 h		No limit
SingleRAN MBSC GU Product Overview (WBT)	II	1 h		No limit
SingleRAN GUL OM Tools Introduction(WBT)	II	1 h		No limit
SingleRAN MBTS GUL Site Solution(WBT)	II	1 h		No limit

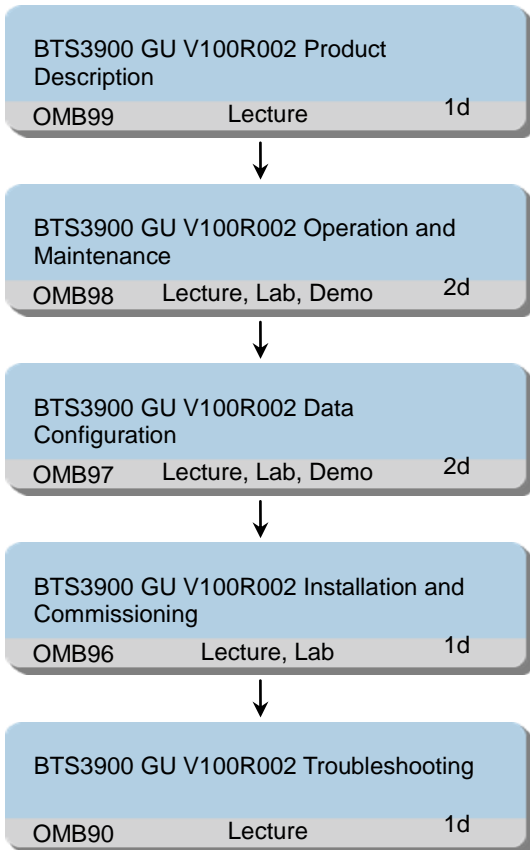
Level Description: I : Basic Course II : Intermediate Course III: Advanced Course IV: Expert Course

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## 1.5 SingleRAN

### 1.5.1 GSM/UMTS SingleRAN3.0 BTS Operation and Maintenance Training

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance

#### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT



- 
- Outline MBTS data configuration procedure based on CME
  - Complete MBTS data configuration
  - Outline MBTS Cascading data configuration principle
  - Complete MBTS Cascading data configuration
  - Detail the scenarios of multi-mode base station commissioning
  - Perform multi-mode base station Remote commissioning
  - Perform multi-mode base station Local commissioning
  - Know how to find the fault in BTS
  - Know the common fault types
  - Grasp BTS fault disposal method
  - Know how to prevent the fault

#### Training Content

##### OMB99 BTS3900 GU V100R002 Product Description

- BTS3900 GU V100R002 Hardware Description
  - BTS3900 system overview
  - BBU hardware structure
  - RFU hardware structure
  - Auxiliaries hardware structure
  - Cable connection
  - Technical specifications of the BTS3900

##### OMB98 BTS3900 GU V100R002 Operation and Maintenance

- MBTS GU V100R002 Operation and Maintenance
  - GSM BTS Operation and Maintenance
  - BTS Remote Operation via LMT
  - BTS Local Operation via SMT
  - UMTS NodeB Operation and Maintenance
  - Operation and Maintenance System
  - NodeB Routine Operation
- BTS3900 GO V100R002 Operation and Maintenance Practice Guide
- BTS3900 UO V100R002 Operation and Maintenance Practice Guide

##### OMB97 BTS3900 GU V100R002 Data Configuration

- MBTS GU V100R002 Cascading Configuration
  - MBTS Network Structure
  - MBTS UO Data Configuring
  - MBTS GO Data Configuring
  - MBTS Data Exporting and Activating
- MBTS GU V100R002 Data Configuration
  - Overview of Configuring Multi-Mode Base Stations
  - MBTS Data Configuration Preparation
  - MBTS Data Configuring
  - MBTS Data Exporting and Activating

- 
- BTS3900 GO V100R002 Data Configuration Practice Guide
  - MBTS UO V100R002 Data Configuration / Commissioning Practice Guide

OMB96 BTS3900 GU V100R002 Installation and Commissioning

- MBTS GU V100R002 Installation / Commissioning
  - Introduction to Multi-Mode Base Station Commissioning
  - Remote Commissioning the Multi-Mode Base Station
  - Local Commissioning the Multi-Mode Base Station

OMB90 BTS3900 GU V100R002 Troubleshooting

- BTS3900 GO V100R002 Troubleshooting
  - BTS3900 Hardware Overview
  - General Procedures of Troubleshooting
  - Procedure of BTS Status Verification
  - Collecting Information for Locating BTS Faults
  - Methods of Fault Judgment and Location
  - Approach to prevent BTS fault
- MBTS WCDMA V100R002 Troubleshooting
  - Troubleshooting Overview
  - Abnormal RTWP
  - Abnormal Downlink Power
  - Congestion of License CE
  - Failure to Deliver the NodeB License through M2000
  - Failure to Establish Cells
  - High Frequency Deviation (E1) of Clock
  - Intermittent Interruption of CPRI Link
  - Sleeping Cell

Duration

7 working days

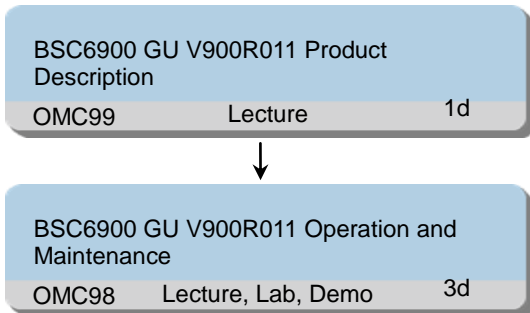
Class Size

Min 6, Max 12

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## 1.5.2 GSM/UMTS SingleRAN3.0 BSC Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance

### Objectives

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

- Detail the system structure of BSC6900
- Detail the functions of the components of BSC6900
- Detail the signal flows in BSC6900
- List the typical hardware configuration of BSC6900
- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900 routine operation
- Perform the BSC6900 routine maintenance

### Training Content

#### OMC99 BSC6900 GU V900R011 Product Description

- BSC6900 GU V900R011 Product Description
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
  - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows
  - BSC6900 Typical Configuration

#### OMC98 BSC6900 GU V900R011 Operation and Maintenance

- 
- BSC6900 GU V900R011 Operation and Maintenance
    - O/M subsystem overview
    - Web LMT introduction
    - Alarm management
    - Device panel management
    - Log management
    - User management
    - BSC maintenance
    - Routine MML commands
    - Performance monitoring
    - Trace management
  - BSC6900 GU V900R011 Operation and Maintenance Student Book
  - BSC6900 SingleRAN V900R011 Fault Management
    - Basic Concepts
    - Alarm Operation
    - MML Command Operation

Duration

4 working days

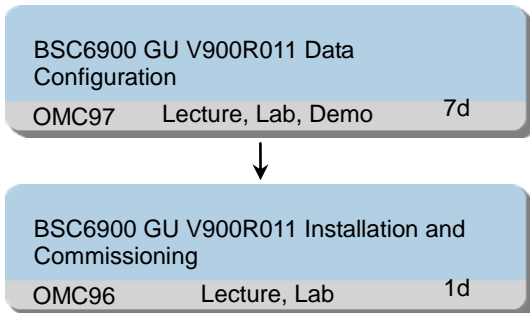
Class Size

Min 6, Max 12

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### 1.5.3 GSM/UMTS SingleRAN3.0 BSC Configuration Training

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance
- Successful completion of the following Training(s):
- GSM/UMTS SingleRAN3.0 BSC Operation and Maintenance Training

#### Objectives

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

- Detail the Procedure of BSC6900 Data Configuration
- Perform Global Data Configuration
- Perform Equipment Data Configuration
- Perform Interface Configuration
- Perform Cell Configuration
- Outline MBSC data configuration procedure based on CME
- Complete MBSC data configuration
- Describe BSC6900 commissioning procedure
- Outline OMU software functions
- Complete BSC6900 commissioning
- Complete BSC6900 application software installation

#### Training Content

##### OMC97 BSC6900 GU V900R011 Data Configuration

- BSC6900 GU V900R011 Data Configuration Based on LMT
  - Data Configuration Overview
  - Preparation for Data Configuration
  - Global Data Configuration
  - Equipment Data Configuration
  - Interface Data Configuration

- 
- Cell Data Configuration
  - BSC6900 GU V900R011 Data Configuration Based on CME
    - MBSC Data Configuration based on CME Overview
    - MBSC Data Configuration Preparation based on CME
    - MBSC Data Configuration based on CME
    - MBSC Data Exporting based on CME
  - BSC6900 GO V900R011 Data Configuration Based on CME Practice Guide
  - BSC6900 GO V900R011 Data Configuration Based on LMT Practice Guide
  - BSC6900 UO V900R011 Data Configuration Based on CME / Commissioning Practice Guide
  - BSC6900 UO V900R011 Data Configuration Based on MML / Commissioning Practice Guide
- OMC96 BSC6900 GU V900R011 Installation and Commissioning
- BSC6900 GU V900R011 Installation / Commissioning
    - BSC6900 O/M System Introduction
    - BSC6900 Software Installation
    - BSC6900 Commissioning
    - BSC6900 Commissioning Introduction
    - BSC6900 Commissioning Procedure

Duration

8 working days

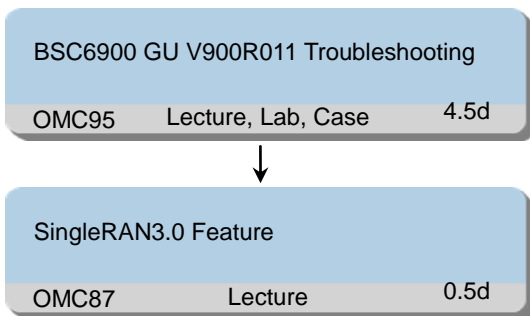
Class Size

Min 6, Max 12

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## 1.5.4 GSM/UMTS SingleRAN3.0 BSS Troubleshooting Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance
- Successful completion of the following Training(s):
- GSM/UMTS SingleRAN3.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN3.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN3.0 BSC Configuration Training

### Objectives

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

- Master SingleRAN feature: Co-TRM and Co-RRM algorithm and parameters.
- Grasp BSC6900 common fault disposal method
- Understand general procedure of fault judgment and location
- Master the way to prevent BSC6900 fault
- Analyze and handle some typical cases
- Know how to find the fault in BTS
- Know the common fault types
- Grasp BTS fault disposal method
- Know how to prevent the fault

### Training Content

#### OMC95 BSC6900 GU V900R011 Troubleshooting

- BSC6900 GU V900R011 Troubleshooting
  - Requirements for Maintenance Personnel
  - General Procedures of Troubleshooting
  - Basic Methods of Fault Judgment and Location
  - Approach to prevent BSC6900 fault
- BTS3900 GO V100R002 Troubleshooting

- 
- BTS3900 Hardware Overview
  - General Procedures of Troubleshooting
  - Procedure of BTS Status Verification
  - Collecting Information for Locating BTS Faults
  - Methods of Fault Judgment and Location
  - Approach to prevent BTS fault
  - MBTS WCDMA V100R002 Troubleshooting
    - Troubleshooting Overview
    - Abnormal RTWP
    - Abnormal Downlink Power
    - Congestion of License CE
    - Failure to Deliver the NodeB License through M2000
    - Failure to Establish Cells
    - High Frequency Deviation (E1) of Clock
    - Intermittent Interruption of CPRI Link
    - Sleeping Cell
  - SRAN3.0 GO Troubleshooting
    - Requirements for Maintenance Personnel
    - General Procedures of Troubleshooting
    - Basic Methods of Fault Judgment and Location
    - Approach to prevent BSC fault
  - SRAN3.0 GSM Case Analysis
    - BSC Common Faults Analysis
    - Voice Faults
    - Clock Faults
    - Link / Interconnection Faults
    - Loading Faults
    - BTS Common Faults Analysis
    - Transmission Faults
    - Antenna Faults
  - SRAN3.0 GO Troubleshooting Practice Guide
- OMC87 SingleRAN3.0 Feature
- BSC6900 SRAN3.0 Co-RRM Algorithm and Parameters
    - SingleRAN Feature
    - Co-RRM Algorithm
    - Co-RRM Parameters
  - BSC6900 SRAN3.0 Co-TRM Algorithm and Parameters
    - SingleRAN Feature
    - Co-TRM Algorithm
    - Co-RRM Parameters



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Duration

5 working days

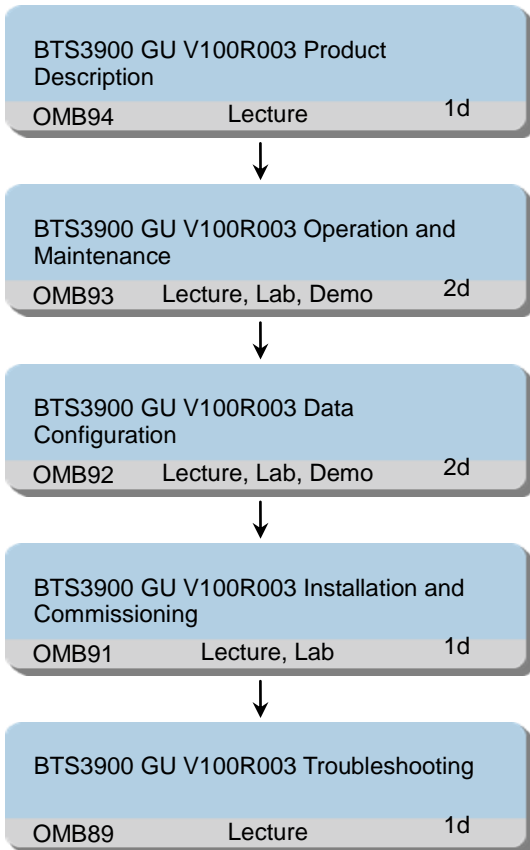
Class Size

Min 6, Max 12

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## 1.5.5 GSM/UMTS SingleRAN5.0 BTS Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance

### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT
- Outline the procedure of MBTS data configuration
- Complete the MBTS initial data configuration based on CME

- 
- Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Know how to find the fault in BTS
  - Know the common fault types
  - Grasp BTS fault disposal method
  - Know how to prevent the fault

#### Training Content

##### OMB94 BTS3900 GU V100R003 Product Description

- BTS3900 GU V100R003 Product Description ISSUE 1.00.ppt
  - BTS3900 System Overview
  - BTS3900 Hardware Structure
  - BTS3900 Cable Connection
  - BTS3900 Technical Specifications
  - BTS3900 Typical Configuration

##### OMB93 BTS3900 GU V100R003 Operation and Maintenance

- MBTS GU V100R003 Operation and Maintenance ISSUE 1.00.ppt
  - GSM BTS Operation and Maintenance
  - BTS Remote Operation
  - BTS Local Operation
  - UMTS NodeB Operation and Maintenance
- BTS3900 GU V100R003 Operation and Maintenance Practice Guide ISSUE1.00.doc

##### OMB92 BTS3900 GU V100R003 Data Configuration

- BTS3900 GU V100R003 Data Configuration based on CME
  - Overview of Configuring Multi-Mode Base Stations
  - CME Introduction
  - MBTS Configuration Mode
  - MBTS Data Configuration Procedure
  - MBTS Data Configuring
  - MBTS Data Configuration without MBTS template
  - MBTS Data Configuration with MBTS template
  - MBTS Data Exporting and Activating
- BTS3900 GU V100R003 Data Configuration based on CME Practice Guide

##### OMB91 BTS3900 GU V100R003 Installation and Commissioning

- MBTS GU V100R003 installation and commissioning
  - MBTS System Overview
  - MBTS Installation Procedures
  - MBTS Commissioning Procedures
  - MBTS Commissioning Scenarios
  - Remote Commissioning

- 
- SMT/LMT + Remote Commissioning
  - USB + Remote Commissioning
- OMB89 BTS3900 GU V100R003 Troubleshooting
- BTS3900 GO V100R003 Troubleshooting
    - BTS3900 Hardware Overview
    - General Procedures of Troubleshooting
    - Procedure of BTS Status Verification
    - Collecting Information for Locating BTS Faults
    - Methods of Fault Judgment and Location
    - Approach to prevent BTS fault
  - MBTS WCDMA V100R003 Troubleshooting
    - Troubleshooting Overview
    - Abnormal RTWP
    - Abnormal Downlink Power
    - Congestion of License CE
    - Failure to Deliver the NodeB License through M2000
    - Failure to Establish Cells
    - High Frequency Deviation (E1) of Clock
    - Intermittent Interruption of CPRI Link
    - Sleeping Cell

Duration

7 working days

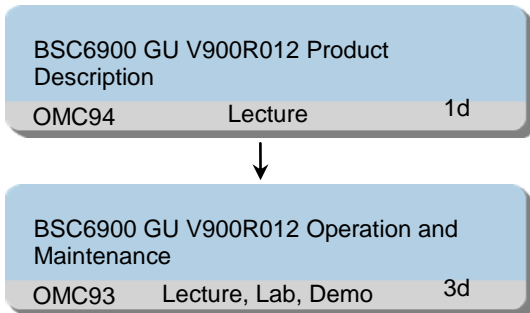
Class Size

Min 6, Max 12

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## 1.5.6 GSM/UMTS SingleRAN5.0 BSC Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance

### Objectives

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

- Detail the system structure of BSC6900
- Detail the functions of the components of BSC6900
- Detail the signal flows in BSC6900
- List the typical hardware configuration of BSC6900
- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900 routine operation
- Perform the BSC6900 routine maintenance

### Training Content

#### OMC94 BSC6900 GU V900R012 Product Description

- BSC6900 GU V900R012 Product Description
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
  - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows
  - BSC6900 Typical Configuration

#### OMC93 BSC6900 GU V900R012 Operation and Maintenance

- 
- BSC6900 GU V900R012 Operation and Maintenance (print with student book)
    - OM System Introduction
    - Operation Right Management
    - Alarm management
    - Log management
    - Device panel management
    - BSC maintenance
    - Routine MML commands
    - Trace management
    - Performance monitoring
  - BSC6900 GU V900R012 Operation and Maintenance Student Book (with practice guide)ISSUE1.00

Duration

4 working days

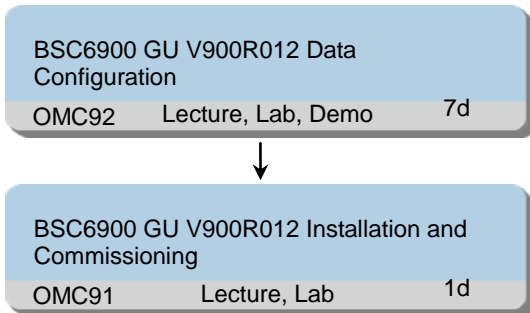
Class Size

Min 6, Max 12

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## 1.5.7 GSM/UMTS SingleRAN5.0 BSC Configuration Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance
- Successful completion of the following Training(s):
- GSM/UMTS SingleRAN5.0 BSC Operation and Maintenance Training

### Objectives

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

- Detail the Procedure of BSC6900 Data Configuration
- Perform Global Data Configuration
- Perform Equipment Data Configuration
- Perform Interface Configuration
- Perform Cell Configuration
- Outline MBSC data configuration procedure based on CME
- Complete MBSC data configuration
- Export and activate the configuration data
- Describe BSC6900 commissioning procedure
- Outline OMU software functions
- Complete BSC6900 commissioning

### Training Content

#### OMC92 BSC6900 GU V900R012 Data Configuration

- BSC6900 GU V900R012 Data Configuration Based on CME
  - Concepts of CME
  - MBSC Data Configuring
  - MBSC Data Exporting
- BSC6900 GU V900R012 Data Configuration Based on LMT
  - Data Configuration Overview

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- Preparation
  - Global Data Configuration
  - Equipment Data Configuration
  - Interface Data Configuration
  - Cell Data Configuration
  - BSC6900 GU V900R012 Data Configuration Based on LMT Practice Guide
  - BSC6900 GU V900R012 Data Configuration Based on CME Practice Guide
- OMC91 BSC6900 GU V900R012 Installation and Commissioning
- BSC6900 GU V900R012 Installation / Commissioning
    - BSC6900 O/M System Introduction
    - BSC6900 Software Installation
    - BSC6900 Commissioning
    - BSC6900 Commissioning Introduction
    - BSC6900 Commissioning Procedure
  - BSC6900 GU V900R012 Installation & Commissioning Practice Guide

Duration

8 working days

Class Size

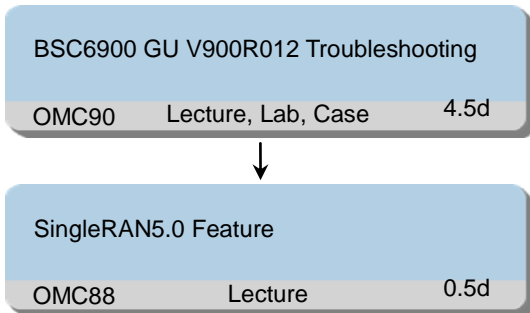
Min 6, Max 12



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## 1.5.8 GSM/UMTS SingleRAN5.0 BSS Troubleshooting Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance
- Successful completion of the following Training(s):
- GSM/UMTS SingleRAN5.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN5.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN5.0 BSC Configuration Training

### Objectives

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

- Master SingleRAN feature: Co-TRM and Co-RRM algorithm and parameters.
- Grasp BSC6900 common fault disposal method
- Understand general procedure of fault judgment and location
- Master the way to prevent BSC6900 fault
- Analyze and handle some typical cases
- Know how to find the fault in BTS
- Know the common fault types
- Grasp BTS fault disposal method
- Know how to prevent the fault

### Training Content

#### OMC90 BSC6900 GU V900R012 Troubleshooting

- SRAN5.0 GO Troubleshooting
  - Requirements for Maintenance Personnel
  - General Procedures of Troubleshooting
  - Basic Methods of Fault Judgment and Location
  - Approach to prevent BSC fault
- SRAN5.0 GSM Case Analysis

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- BSC Common Faults Analysis
  - Voice Faults
  - Clock Faults
  - Link / Interconnection Faults
  - Loading Faults
  - BTS Common Faults Analysis
  - Transmission Faults
  - Antenna Faults
  - SRAN5.0 GO Troubleshooting Practice Guide
  - BTS3900 GO V100R003 Troubleshooting
    - BTS3900 Hardware Overview
    - General Procedures of Troubleshooting
    - Procedure of BTS Status Verification
    - Collecting Information for Locating BTS Faults
    - Methods of Fault Judgment and Location
    - Approach to prevent BTS fault
  - MBTS WCDMA V100R003 Troubleshooting
    - Troubleshooting Overview
    - Abnormal RTWP
    - Abnormal Downlink Power
    - Congestion of License CE
    - Failure to Deliver the NodeB License through M2000
    - Failure to Establish Cells
    - High Frequency Deviation (E1) of Clock
    - Intermittent Interruption of CPRI Link
    - Sleeping Cell
  - BSC6900 UO V900R012 Troubleshooting
    - Requirements for Maintenance Personnel
    - General Procedures of Troubleshooting
    - Basic Methods of Fault Judgment and Location
    - Approach to prevent BSC6900 fault
- OMC88 SingleRAN5.0 Feature
- BSC6900 SRAN5.0 Co-RRM Algorithm and Parameters
    - SingleRAN Feature
    - Co-RRM Algorithm
    - Co-RRM Parameters
  - BSC6900 SRAN5.0 Feature-Co-Transmission
    - SingleRAN Feature
    - Co-TRM Algorithm
    - Co-RRM Parameters

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Duration

5 working days

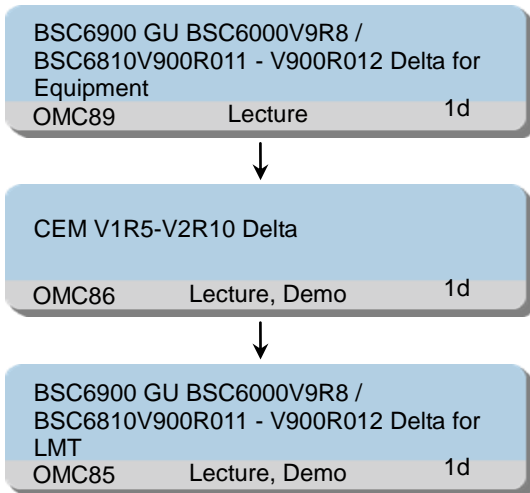
Class Size

Min 6, Max 12

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## 1.5.9 GSM/UMTS SingleRAN2.1 - SingleRAN5.0 Delta Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM BSC6000 or UMTS BSC6810 wireless network operation and maintenance

### Objectives

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

- Describe BSC6900 Evolution
- Outline New Hardware of BSC6900
- Master the different O/M methods of BSC6900
- Describe the features of Web LMT
- Outline the different concepts between GSM/UMTS LMT and Web LMT
- Outline the different OM functions between GSM/UMTS LMT and Web LMT
- Outline the changing of some MML commands
- Describe Changes and advantage of CME V2R10
- Outline Concept of the Current Area, Planned Area of CME
- Outline CME GUI configuration interface Enhancement
- Know about new functions of the CME V200R010

### Training Content

OMC89 BSC6900 GU BSC6000V9R8 / BSC6810V900R011 - V900R012 Delta for Equipment

- BSC6900 GU BSC6000V9R8 / BSC6810V900R011 - V900R012 Delta for Equipment
  - BSC6900 Evolution Overview
  - Hardware Changing in BSC6900

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- Software Changing in BSC6900
  - Typical Configuration
- OMC86 CEM V1R5-V2R10 Delta
- CME UO V1R5 - V2R10 Delta
    - New Features Configured to the UMTS
    - RNP/RNO Import and Export
    - Iub Consistency Check
    - Reconstruction of R99 Cells in Batches to HSPA Cells
    - UMTS FallBack
    - New Features Configured to the GSM
    - New 2G Consistency Check Rules
    - Balance Check for the Carrier STB Power
    - NBI Import and Export of the Cell Configuration Based on Operators
    - Parameter Check and Update of the External and Neighboring Cell
    - Check and Adding of the Cross-System Unidirectional Neighboring Cells
    - New Features Configured to the SingleRAN
    - New Features of the Platform
  - CME GO V1R5 - V2R10 Delta
    - CME V2R10 Introduction
    - Management of the Current Area, Planned Area
    - Function Navigation Enhancement
    - GUI Enhancement
- OMC85 BSC6900 GU BSC6000V9R8 / BSC6810V900R011 - V900R012 Delta for LMT
- BSC6900 GO V9R8 - V900R012 Delta for Web LMT
    - Web LMT Introduction
    - OM Function Changing
    - MML Function Changing
    - Alarm Management Function Changing
    - Monitor Management Function Changing
    - Trace Management Function Changing
    - Device Maintenance Function Changing
    - Data Backup and Restore Function Changing
    - Log Management Function Changing
    - MML Command Changing in Data Configuration
  - BSC6900 UO V2R10 - V900R012 Delta for Web LMT ISSUE 1.00.ppt
    - MML Function Changing
    - Alarm Management Function Changing
    - Monitor Management Function Changing
    - Trace Management Function Changing
    - Device Maintenance Function Changing
    - Data Backup and Restore Function Changing
    - Log Management Function Changing

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Duration

3 working days

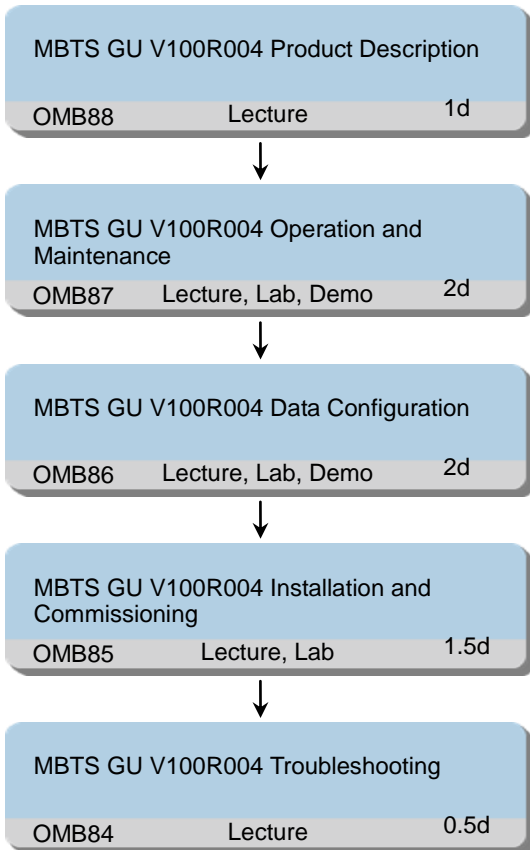
Class Size

Min 6, Max 12

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## 1.5.10 GSM/UMTS SingleRAN6.0 BTS Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance

### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT
- Outline the procedure of MBTS data configuration
- Complete the MBTS initial data configuration based on CME

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- Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Know how to find the fault in BTS
  - Know the common fault types
  - Grasp BTS fault disposal method
  - Know how to prevent the fault

#### Training Content

##### OMB88 MBTS GU V100R004 Product Description

- MBTS GU V100R004 Product Description ISSUE 1.00.ppt
  - BTS3900 System Overview
  - BTS3900 Hardware Structure
  - BTS3900 Cable Connection
  - BTS3900 Technical Specifications
  - BTS3900 Typical Configuration

##### OMB87 MBTS GU V100R004 Operation and Maintenance

- BTS3900 GO V100R004 Operation and Maintenance Practice Guide ISSUE1.00.doc
- BTS3900 UO V100R004 Operation and Maintenance Practice Guide ISSUE1.00.doc
- MBTS GU V100R004 Operation and Maintenance ISSUE 1.00.ppt
  - GSM BTS Operation and Maintenance
  - BTS Remote Operation
  - BTS Local Operation
  - UMTS NodeB Operation and Maintenance
- MBTS GU V100R004 Field Maintenance
  - Checking hardware
  - LEDs
  - Cable connections
  - Site local maintenance
  - Replacing boards
  - Routine maintenance list
- MBTS GU V100R004 Field Maintenance Practice Guide
  - N/A

##### OMB86 MBTS GU V100R004 Data Configuration

- MBTS GU V100R004 Data Configuration based on CME
  - Overview of Configuring Multi-Mode Base Stations
  - CME Introduction
  - MBTS Configuration Mode
  - MBTS Data Configuration Procedure
  - MBTS Data Configuring
  - MBTS Data Configuration without MBTS template



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- MBTS Data Configuration with MBTS template
  - MBTS Data Exporting and Activating
  - MBTS GU V100R004 Data Configuration based on CME Practice Guide
    - N/A
- OMB85 MBTS GU V100R004 Installation and Commissioning
- MBTS GU V100R004 installation and Local commissioning
    - Hardware Installation
    - SMT/LMT Commissioning
    - USB Commissioning
  - MBTS GU V100R004 installation and Local commissioning Practice Guide
  - MBTS GU V100R004 Remote commissioning
    - MBTS System Overview
    - MBTS Installation Procedures
    - MBTS Commissioning Procedures
    - MBTS Commissioning Scenarios
    - Remote Commissioning
  - MBTS GU V100R004 Remote commissioning practice guide

OMB84 MBTS GU V100R004 Troubleshooting

- MBTS GU V100R004 Troubleshooting
  - Principles of MBTS Alarm Design and Operations
  - Process of MBTS Troubleshooting
  - Methods to Locate an MBTS Fault and Case Analysis
  - Preventive Measures Against MBTS Faults

Duration

7 working days

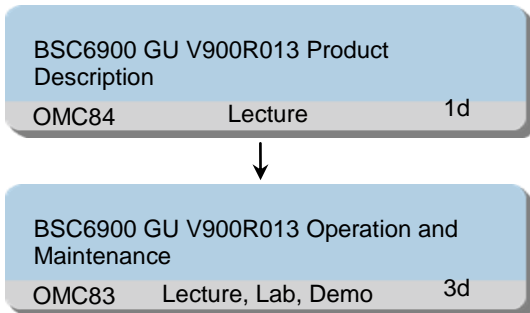
Class Size

Min 6, Max 12

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## 1.5.11 GSM/UMTS SingleRAN6.0 BSC Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM/UMTS wireless network operation and maintenance

### Objectives

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

- Detail the system structure of BSC6900
- Detail the functions of the components of BSC6900
- Detail the signal flows in BSC6900
- List the typical hardware configuration of BSC6900
- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900 routine operation
- Perform the BSC6900 routine maintenance

### Training Content

#### OMC84 BSC6900 GU V900R013 Product Description

- BSC6900 GU V900R013 Product Description
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
  - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows
  - BSC6900 Typical Configuration

#### OMC83 BSC6900 GU V900R013 Operation and Maintenance

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- BSC6900 GU V900R013 Operation and Maintenance

- OM System Introduction
- Operation Right Management
- Alarm management
- Log management
- Device panel management
- BSC maintenance
- Routine MML commands
- Trace management
- Performance monitoring

- BSC6900 GU V900R013 Operation and Maintenance Practice guide ISSUE1.00

Duration

4 working days

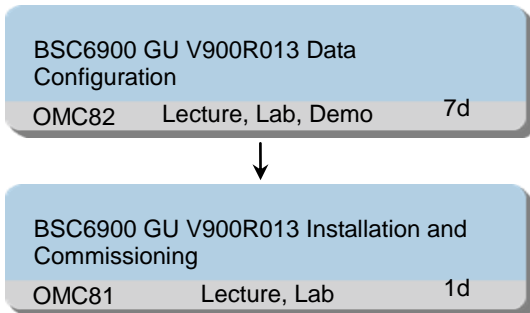
Class Size

Min 6, Max 12

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## 1.5.12 GSM/UMTS SingleRAN6.0 BSC Configuration Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Operation and Maintenance Training

### Objectives

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

- Detail the Procedure of BSC6900 Data Configuration
- Perform Global Data Configuration
- Perform Equipment Data Configuration
- Perform Interface Configuration
- Perform Cell Configuration
- Outline MBSC data configuration procedure based on CME
- Complete MBSC data configuration
- Export and activate the configuration data
- Describe BSC6900 commissioning procedure
- Outline OMU software functions
- Complete BSC6900 commissioning

### Training Content

#### OMC82 BSC6900 GU V900R013 Data Configuration

- BSC6900 GU V900R013 Initial Data Configuration Based on LMT Practice Guide
- BSC6900 GU V900R013 Initial Data Configuration Based on CME Practice Guide
- BSC6900 GU V900R013 Initial Data Configuration Based on CME
  - Concepts of CME
  - MBSC Data Configuring

- 
- MBSC Data Exporting
  - BSC6900 GU V900R013 Initial Data Configuration Based on LMT
    - Data Configuration Overview
    - Preparation
    - Global Data Configuration
    - Equipment Data Configuration
    - Interface Data Configuration
    - Cell Data Configuration
- OMC81 BSC6900 GU V900R013 Installation and Commissioning
- BSC6900 GU V900R013 Installation / Commissioning
    - BSC6900 O/M System Introduction
    - BSC6900 Software Installation
    - BSC6900 Commissioning
    - BSC6900 Commissioning Introduction
    - BSC6900 Commissioning Procedure
  - BSC6900 GU V900R013 Installation / Commissioning Practice Guide

Duration

8 working days

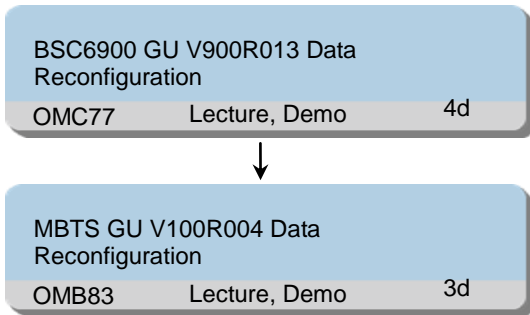
Class Size

Min 6, Max 12

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### 1.5.13 GSM/UMTS SingleRAN6.0 BSS Reconfiguration Training

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Configuration Training

#### Objectives

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

- Describe the procedure of adjusting the BSC
- Describe the modification of OPC and DPC
- Perform the way to adding/removing subracks and boards
- Expand the transmission resource in A, GB and Abis interface.
- Reconfiguring the Transmission Mode on A, Gb and Abis interface.
- Adjust the cell processing in DPU board
- Perform how to Increase Frequencies on the UMTS Network
- Perform how to Reconfigure the Parameters of Physical NodeBs
- Perform how to Reconfigure the Data of Cells and Neighboring Cells in Batches
- Perform how to Reconfigure Cell Algorithm Parameters
- Describe the procedure of the RNC migration
- Perform the RNC migration reconfiguration
- Describe the procedure of MBTS dynamic data adjustment
- Adjust the Global/Device/Transmission Data
- Adjust the Cells/TRXs/Channels Data
- Adjust the BTS Data
- Reparent BTSs

- Detail the scenarios of NodeB migration
- Detail the procedure of NodeB migration
- Perform the NodeB migration

#### Training Content

##### OMC77 BSC6900 GU V900R013 Data Reconfiguration

- WCDMA RAN13 Dynamic Data Reconfiguration
  - Introduction of CME
  - Reconfiguring Global Algorithm Parameters of the Radio Layer
  - Reconfiguring the Parameters of Physical NodeBs
  - Increasing Frequencies on the UMTS Network
  - Deleting Physical NodeBs in Batches
  - Reconfiguring the Data of Cells and Neighboring Cells in Batches
  - Reconfiguring Cell Algorithm Parameters
  - Modifying UMTS Cell Frequencies
- WCDMA RAN13 Dynamic Data Reconfiguration Practice Guide
- BSC6900 WCDMA V900R013 RNC Migration Reconfiguration
  - RNC Migration Scenarios
  - Reparenting RNC Between MGWs
  - Reparenting RNC Between MSC Servers
  - Reparenting RNC Between SGSN
- BSC6900 WCDMA V900R013 RNC Migration Reconfiguration Practice Guide
- BSC6900 GSM V900R013 Data Reconfiguration based on LMT
  - Changing the Connection Between the BSC and the MSC
- BSC6900 GSM V900R013 Data Reconfiguration based on LMT Practice Guide

##### OMB83 MBTS GU V100R004 Data Reconfiguration

- BTS3900 WCDMA V100R004 NodeB Migration Reconfiguration
  - NodeB Reparenting Scenarios
  - Reparenting NodeBs Under an RNC
  - Reparenting NodeBs Between RNCs of the Same Version
- BTS3900 WCDMA V100R004 NodeB Migration Reconfiguration Practice Guide
- MBTS GSM V100R004 Data Reconfiguration based on CME
  - Dynamic Data Adjustment Introduction
- MBTS GSM V100R004 Data Reconfiguration based on CME Practice Guide
- MBTS GSM V100R004 Data Reconfiguration based on LMT
  - Reconfiguring a BTS via LMT
- MBTS GSM V100R004 Data Reconfiguration based on LMT Practice Guide

#### Duration

7 working days

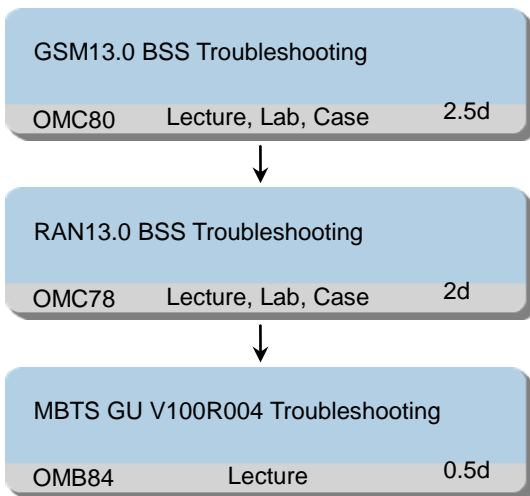
#### Class Size

Min 6, Max 12

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## 1.5.14 GSM/UMTS SingleRAN6.0 BSS Troubleshooting Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Configuration Training

### Objectives

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

- Grasp BSC6900 common fault disposal method
- Understand general procedure of fault judgment and location
- Master the way to prevent BSC6900 fault
- Analyze and handle some typical cases
- Know how to find the fault in BTS
- Know the common fault types
- Grasp BTS fault disposal method
- Know how to prevent the fault
- Grasp BSC6900 common fault disposal method
- Understand general procedure of fault judgment and location
- Master the way to prevent BSC6900 fault
- Analyze and handle some typical cases
- Know how to find the fault in BTS



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- Know the common fault types
  - Grasp BTS fault disposal method
  - Know how to prevent the fault
  - Know how to find the fault in BTS
  - Know the common fault types
  - Grasp BTS fault disposal method
  - Know how to prevent the fault

## Training Content

### OMC80 GSM13.0 BSS Troubleshooting

- BSC6900 GU V900R013 Troubleshooting
  - Requirements for Maintenance Personnel
  - General Procedures of Troubleshooting
  - Basic Methods of Fault Judgment and Location
  - Approach to prevent BSC fault
- BSC6900 GSM V900R013 Case Analysis
  - BSC Common Faults Analysis
  - Voice Faults
  - Clock Faults
  - Link / Interconnection Faults
  - Loading Faults
  - BTS Common Faults Analysis
  - Transmission Faults
  - Antenna Faults
- SRAN6.0 GSM Troubleshooting Practice Guide
- SRAN6.0 GU Comprehensive Troubleshooting Practice Guide
- BTS3900 GSM V100R004 Troubleshooting method
  - BTS3900 Hardware Overview
  - General Procedures of Troubleshooting
  - Procedure of BTS Status Verification
  - Collecting Information for Locating BTS Faults
  - Methods of Fault Judgment and Location
  - Approach to prevent BTS fault

### OMC78 RAN13.0 BSS Troubleshooting

- BSC6900 WCDMA V900R013 Troubleshooting
  - ATM Transmission Test Methodes
  - IP Transmission Test Methodes
  - Transmission Faults Troubleshooting
  - E1/T1 Fault Troubleshooting
  - IMA Fault Troubleshooting
  - SAALNK Fault Troubleshooting
  - AAL2PATH Fault Troubleshooting

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- FE Fault Troubleshooting
  - SCTP Fault Troubleshooting
  - IPPATH Fault Troubleshooting
  - Equipments Faults Troubleshooting
  - MSP Switch Fault
  - Reset Fault of Interface Boards
  - O/M Faults Troubleshooting
  - OMU Service Abnormality
  - RNC Active and Standby OMUs Synchronization Failure
  - RNC OMU Command Execution Timeout
  - Basic Service Faults Troubleshooting
  - BSC6900 WCDMA V900R013 Troubleshooting Practice Guide
  - BTS3900 WCDMA V100R004 Troubleshooting
    - Troubleshooting Overview
    - Abnormal RTWP
    - Abnormal Downlink Power
    - Congestion of License CE
    - Failure to Deliver the NodeB License through M2000
    - Failure to Establish Cells
    - High Frequency Deviation (E1) of Clock
    - Intermittent Interruption of CPRI Link
    - Sleeping Cell
  - BTS3900 WCDMA V100R004 Troubleshooting Practice Guide
  - OMB84 MBTS GU V100R004 Troubleshooting
    - MBTS GU V100R004 Troubleshooting
      - Principles of MBTS Alarm Design and Operations
      - Process of MBTS Troubleshooting
      - Methods to Locate an MBTS Fault and Case Analysis
      - Preventive Measures Against MBTS Faults

Duration

5 working days

Class Size

Min 6, Max 12

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## 1.5.15 GSM/UMTS SingleRAN5.0 - SingleRAN6.0 Delta Training

### Training Path

BSC6900 GU V900R012 - V900R013 Delta		
OMC79	Lecture	2d

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN5.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN5.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN5.0 BSC Configuration Training

### Objectives

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

- Describe BSC6900 Evolution
- Outline New Hardware of BSC6900
- Master the different O/M methods of BSC6900

### Training Content

#### OMC79 BSC6900 GU V900R012 - V900R013 Delta

- CME GU V200R10 - V200R11 Delta
  - New/Enhanced Platform Features
  - New/Enhanced GSM Configuration Features
  - New/Enhanced UMTS Configuration Features
  - New/Enhanced SRAN Configuration Features
- BSC6900 GU V900R012 - V900R013 New Maintainability and Testability Feature
  - GU Maintainability and Testability
  - Auto Software Management
  - Alarm Optimization and OM Engineering Status Optimization Requirements in SRAN Scenario
  - IP Transmission Quality Test
  - Enhanced Message Tracking
  - GSM Maintainability and Testability
  - Query of GBTS in Batches (Query of Board Versions and Boards, and Export of Query Results)
  - Maintenance and Test of Air Interface and RF Fault

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- BTS IP Port Backup and Monitoring Equipment IP Access
  - Detection Requirement of Transmission Connection over Abis Interface
  - UMTS Maintainability and Testability
  - MSISDN Based Single User Tracking
  - BSC6900 GU V900R012 - V900R013 New Feature
    - GSM/UMTS Feature
    - IP maintenance testing enhancements: UDP ping and IP network quality monitoring and tracking
    - Security enhancements: software integrity protection, security alarms, and security logs
    - GSM Feature
    - Enhanced Voice Fault Location Method
    - Transmission resource savings display
    - RTCP Introduction
    - UMTS Feature
    - DPI
    - MOCN Enhancement
    - Multi-Carrier Switch off Based on QoS
    - PTT
  - BSC6900 GU V900R012 - V900R013 Delta for Equipment
    - BSC6900 Evolution Overview
    - BSC6900 Hardware Evolution
    - BSC6900 Typical Hardware Configuration
  - BSC6900 GU V900R012 - V900R013 Delta for OM
    - MML Command Changing in Data Configuration
    - Alarm Function Changing

Duration

2 working days

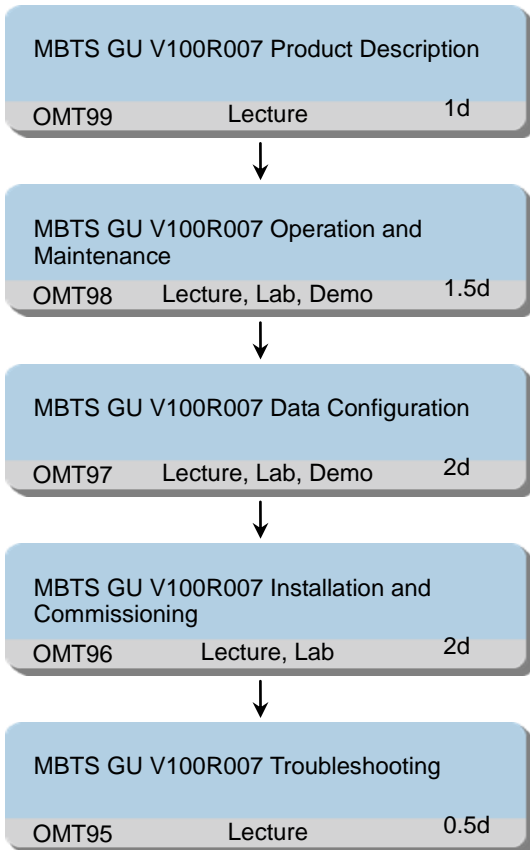
Class Size

Min 6, Max 12

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## 1.5.16 GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT
- Outline the procedure of MBTS data configuration
- Complete the MBTS initial data configuration based on CME

- 
- Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Know how to find the fault in BTS
  - Know the common fault types
  - Grasp BTS fault disposal method
  - Know how to prevent the fault

#### Training Content

##### OMT99 MBTS GU V100R007 Product Description

- MBTS GU V100R007 Product Description
  - BTS3900 System Overview
  - BTS3900 Hardware Structure
  - BTS3900 Cable Connection
  - BTS3900 Technical Specifications
  - BTS3900 Typical Configuration

##### OMT98 MBTS GU V100R007 Operation and Maintenance

- MBTS GU V100R007 Operation and Maintenance
  - GSM BTS Operation and Maintenance
  - BTS Remote Operation
  - BTS Local Operation
  - UMTS NodeB Operation and Maintenance
- MBTS GU V100R007 Operation and Maintenance Practice Guide
- MBTS GU V100R007 Field Maintenance
  - Checking hardware
  - LEDs
  - Cable connections
  - Site local maintenance
  - Replacing boards
  - Routine maintenance list
- MBTS GU V100R007 Field Maintenance Practice Guide

##### OMT97 MBTS GU V100R007 Data Configuration

- MBTS GU V100R007 Data Configuration based on CME
  - Overview of Configuring Multi-Mode Base Stations
  - CME Introduction
  - MBTS Configuration Mode
  - MBTS Data Configuration Procedure
  - MBTS Data Configuring
  - MBTS Data Configuration without MBTS template
  - MBTS Data Configuration with MBTS template
  - MBTS Data Exporting and Activating

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- MBTS GU V100R007 Data Configuration based on CME Practice Guide
  - OMT96 MBTS GU V100R007 Installation and Commissioning
    - MBTS GU V100R007 installation and Local commissioning
      - Hardware Installation
      - SMT/LMT Commissioning
      - USB Commissioning
    - MBTS GU V100R007 installation and Local commissioning Practice Guide
    - MBTS GU V100R007 Remote commissioning
      - MBTS System Overview
      - MBTS Installation Procedures
      - MBTS Commissioning Procedures
      - MBTS Commissioning Scenarios
      - Remote Commissioning
    - MBTS GU V100R007 Remote commissioning practice guide
  - OMT95 MBTS GU V100R007 Troubleshooting
    - MBTS GU V100R004 Troubleshooting
      - Principles of MBTS Alarm Design and Operations
      - Process of MBTS Troubleshooting
      - Methods to Locate an MBTS Fault and Case Analysis
      - Preventive Measures Against MBTS Faults

Duration

7 working days

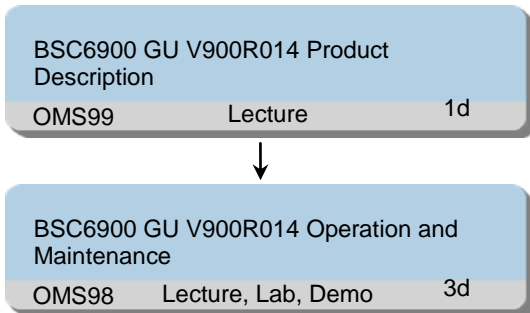
Class Size

Min 6, Max 12

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## 1.5.17 GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Detail the system structure of BSC6900
- Detail the functions of the components of BSC6900
- Detail the signal flows in BSC6900
- List the typical hardware configuration of BSC6900
- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900 routine operation
- Perform the BSC6900 routine maintenance

### Training Content

#### OMS99 BSC6900 GU V900R014 Product Description

- BSC6900 GU V900R014 Product Description
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
  - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows
  - BSC6900 Typical Configuration

#### OMS98 BSC6900 GU V900R014 Operation and Maintenance



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- BSC6900 GU V900R014 Operation and Maintenance
    - OM System Introduction
    - Operation Right Management
    - Alarm management
    - Log management
    - Device panel management
    - BSC maintenance
    - Routine MML commands
    - Trace management
    - Performance monitoring
  - BSC6900 GU V900R014 Operation and Maintenance Practice guide

Duration

4 working days

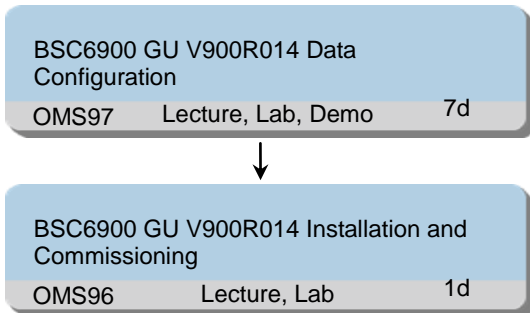
Class Size

Min 6, Max 12

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## 1.5.18 GSM/UMTS SingleRAN7.0 BSC Configuration Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Detail the Procedure of BSC6900 Data Configuration
- Perform Global Data Configuration
- Perform Equipment Data Configuration
- Perform Interface Configuration
- Perform Cell Configuration
- Outline MBSC data configuration procedure based on CME
- Complete MBSC data configuration
- Export and activate the configuration data
- Describe BSC6900 commissioning procedure
- Outline OMU software functions
- Complete BSC6900 commissioning

### Training Content

#### OMS97 BSC6900 GU V900R014 Data Configuration

- BSC6900 GU V900R014 Initial Data Configuration Based on LMT
  - Data Configuration Overview
  - Preparation
  - Global Data Configuration
  - Equipment Data Configuration
  - Interface Data Configuration
  - Cell Data Configuration
- BSC6900 GU V900R014 Initial Data Configuration Based on LMT Practice Guide

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- BSC6900 GU V900R014 Initial Data Configuration Based on CME
    - Concepts of CME
    - MBSC Data Configuring
    - MBSC Data Exporting
  - BSC6900 GU V900R014 Initial Data Configuration Based on CME Practice Guide
- O/S96 BSC6900 GU V900R014 Installation and Commissioning
- BSC6900 GU V900R014 Installation & Commissioning
    - BSC6900 O/M System Introduction
    - BSC6900 Software Installation
    - BSC6900 Commissioning
    - BSC6900 Commissioning Introduction
    - BSC6900 Commissioning Procedure
  - BSC6900 GU V900R014 Installation & Commissioning Practice Guide
    - N/A

Duration

8 working days

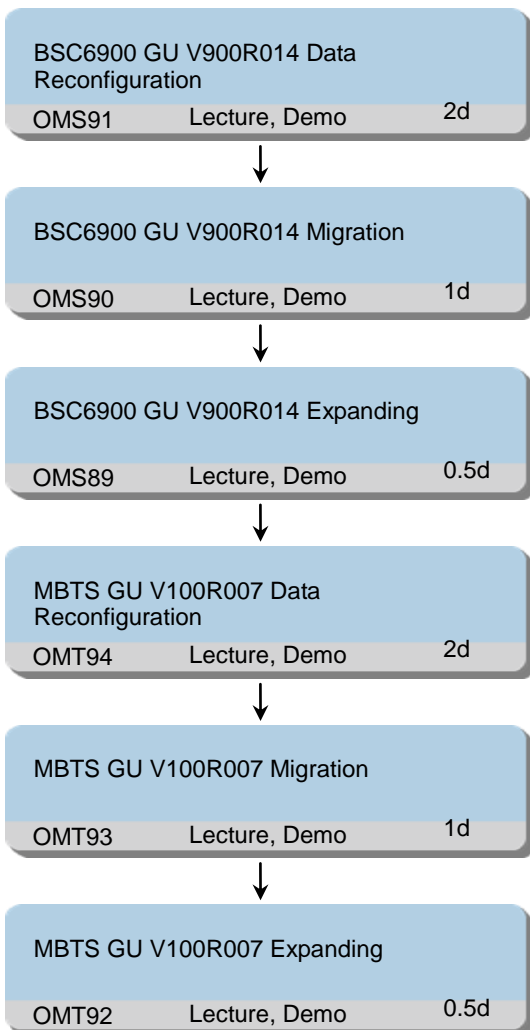
Class Size

Min 6, Max 12

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## 1.5.19 GSM/UMTS SingleRAN7.0 BSS Reconfiguration Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Configuration Training

### Objectives

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

- Describe the procedure of adjusting the BSC

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- Describe the modification of OPC and DPC
  - Perform the way to adding/removing subracks and boards
  - Expand the transmission resource in A, GB and Abis interface.
  - Reconfiguring the Transmission Mode on A, Gb and Abis interface.
  - Adjust the cell processing in DPU board
  - Perform how to Increase Frequencies on the UMTS Network
  - Perform how to Reconfigure the Parameters of Physical NodeBs
  - Perform how to Reconfigure the Data of Cells and Neighboring Cells in Batches
  - Perform how to Reconfigure Cell Algorithm Parameters
  - Describe what is BSC migration
  - Describe the procedure of the BSC migration
  - Perform the BSC migration
  - Describe the procedure of expanding the BSC/RNC capacity
  - Perform how to add a BSC/RNC board
  - Perform how to add an EPS/RNC of BSC
  - Describe the procedure of MBTS dynamic data adjustment
  - Adjust the Global/Device/Transmission Data
  - Adjust the Cells/TRXs/Channels Data
  - Adjust the BTS Data
  - Repairment BTSs
  - Detail the scenarios of BTS/NodeB migration
  - Detail the procedure of BTS/NodeB migration
  - Perform the BTS/NodeB migration
  - Describe the procedures of expanding the BTS capacity
  - Perform how to add BTS Cells
  - Perform how to add BTS TRXs
  - Perform how to add WBBP Board
  - Perform how to add RF Unit

#### Training Content

##### OMS91 BSC6900 GU V900R014 Data Reconfiguration

- BSC6900 GU V900R014 Data Reconfiguration based on LMT
  - Modify OPC and DPC
  - Modify N7 signaling link from 64k to 2M
  - Add STP in A interface
  - add subracks and boards
  - Remove Boards and Subracks
  - modify single OMU to double OMU
  - Expand the transmission resource in A, GB and Abis interface.
  - Reconfiguring the Transmission Mode
  - Changing the Transmission Mode on the A Interface
  - Reconfiguring the Transmission Mode on the Ater Interface

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- Changing the Transmission Mode on the Gb Interface
  - Changing the Transmission Mode on the Abis Interface
  - Adjust the cell processing in DPU board
  - BSC6900 WCDMA Data Reconfiguration
  - Changing the Work Mode of a Board
  - Setting the Working Mode of the OMU
  - Changing Connections of Optical Fibers for Interface Boards
  - Adjusting Boards and Subracks
  - BSC6900 GU V900R014 Data Reconfiguration based on LMT Practice Guide
- OMS90 BSC6900 GU V900R014 Migration
- BSC6900 GU V900R014 Migration
    - Changing the Connection Between the GSM BSC and the MSC
    - Cutting Over an MSC (with IP Transmission Mode Retained over the A Interface)
    - Cutting Over an MSC (TDM to TDM Transmission Mode over the A Interface)
    - Cutting Over an MSC (TDM to IP Transmission Mode over the A Interface)
    - WCDMA RNC Migration Scenarios
    - Reparenting WCDMA RNC Between MGWs
    - Reparenting WCDMA RNC Between MSC Servers
    - Reparenting WCDMA RNC Between SGSN
  - BSC6900 GU V900R014 Migration Practice Guide
- OMS89 BSC6900 GU V900R014 Expanding
- BSC6900 GU V900R014 Expanding
    - Overview of Expanding the BSC Capacity
    - Adding BSC/RNC Board
    - Adding EPS Subrack
  - BSC6900 GU V900R014 Expanding Practice Guide
- OMT94 MBTS GU V100R007 Data Reconfiguration
- MBTS GU V100R007 Data Reconfiguration based on CME
    - Dynamic GSM Data Adjustment Introduction
    - Adjusting the GSM Global/Device/Transmission Data
    - Adjusting the GSM Cells/TRXs/Channels Data
    - Adjusting the GSM BTS Data
    - Reparenting GSM BTSs
    - Reconfiguring UMTS Global Algorithm Parameters of the Radio Layer
    - Reconfiguring the Parameters of Physical NodeBs
    - Increasing Frequencies on the UMTS Network
    - Deleting Physical NodeBs in Batches
    - Reconfiguring the Data of Cells and Neighboring Cells in Batches
    - Reconfiguring Cell Algorithm Parameters
    - Modifying UMTS Cell Frequencies
  - MBTS GU V100R007 Data Reconfiguration based on CME Practice Guide
  - MBTS GU V100R007 Data Reconfiguration based on LMT

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- Reconfiguring a GSM BTS via LMT
  - Reconfiguring a GSM Cell via LMT
  - Reconfiguring a GSM Channel via LMT
  - Modifying the NodeB Clock Source,the Clock Working Mode,or the Time Information
  - Adding the Board/Equipment to the NodeB
  - Adjusting NodeB Connection Data
  - Reconfiguring a Cell
  - Reconfiguring the Channel
  - MBTS GU V100R007 Data Reconfiguration based on LMT Practice Guide
- OMT93 MBTS GU V100R007 Migration
- MBTS GU V100R007 Migration
    - BTS Reparenting Overview
    - Reparenting BTSs within a BSC (TDM)
    - Reparenting BTSs within a BSC (IP)
    - Reparenting BTSs between BSCs (TDM/Static IP/Non-Static IP)
    - NodeB Reparenting Scenarios
    - Reparenting NodeBs Under an RNC
    - Reparenting NodeBs Between RNCs of the Same Version
  - MBTS GU V100R007 Migration Practice Guide
- OMT92 MBTS GU V100R007 Expanding
- MBTS GU V100R007 Expanding
    - Overview of Expanding the BTS Capacity
    - Adding a GSM BTS cell
    - Adding a GSM BTS TRX
    - Adding a UMTS Baseband Board to a 3900 Series Base Station
    - Adding an UMTS RF Unit
  - MBTS GU V100R007 Expanding Practice Guide

Duration

7 working days

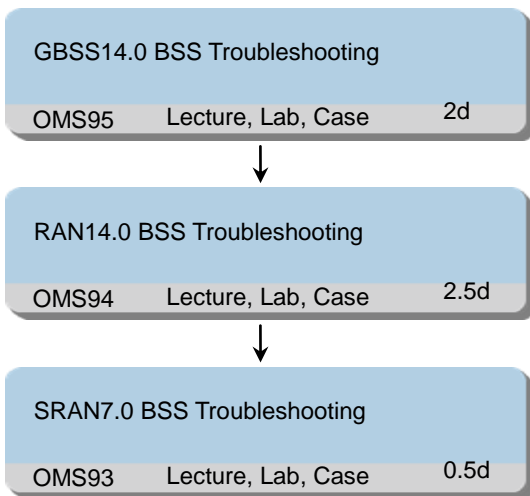
Class Size

Min 6, Max 12

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## 1.5.20 GSM/UMTS SingleRAN7.0 BSS Troubleshooting Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Configuration Training

### Objectives

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

- Grasp BSC6900 GSM common fault disposal method
- Understand general procedure of fault judgment and location
- Master the way to prevent BSC6900 GSM fault
- Analyze and handle some typical cases
- Know how to find the fault in GSM BTS
- Know the common fault types
- Grasp GSM BTS fault disposal method
- Know how to prevent the fault
- Describe UMTS RAN troubleshooting process
- Handling UMTS Transmission Faults
- Handling UMTS Equipments Faults
- Handling UMTS O/M Faults
- Handling UMTS Basic Service Faults



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- Handling Failure to Install the NodeB LMT
  - Handling NodeB High Frequency Deviation NodeB (E1) of Clock
  - Handling NodeB Intermittent Interruption of CPRI Link
  - Handling NodeB Sleeping Cell
  - Grasp BSC6900 GU common fault disposal method
  - Analyse and handle some BSC6900 GU typical cases
  - Know how to locate the fault in MBTS
  - Know how to locate the causes of a fault
  - Know how to solve a fault in MBTS
  - Collect and analyze cases to improve the troubleshooting capability

#### Training Content

##### OMS95 GBSS14.0 BSS Troubleshooting

- BSC6900 GU V900R013 Troubleshooting
  - Requirements for Maintenance Personnel
  - General Procedures of Troubleshooting
  - Basic Methods of Fault Judgment and Location
  - Approach to prevent BSC fault
- BSC6900 GSM V900R013 Case Analysis
  - BSC Common Faults Analysis
  - Voice Faults
  - Clock Faults
  - Link / Interconnection Faults
  - Loading Faults
  - BTS Common Faults Analysis
  - Transmission Faults
  - Antenna Faults
- SRAN6.0 GSM Troubleshooting Practice Guide
- BTS3900 GSM V100R004 Troubleshooting method
  - BTS3900 Hardware Overview
  - General Procedures of Troubleshooting
  - Procedure of BTS Status Verification
  - Collecting Information for Locating BTS Faults
  - Methods of Fault Judgment and Location
  - Approach to prevent BTS fault

##### OMS94 RAN14.0 BSS Troubleshooting

- BSC6900 WCDMA V900R014 Troubleshooting
  - ATM Transmission Test Methods
  - IP Transmission Test Methods
  - Transmission Faults Troubleshooting
  - E1/T1 Fault Troubleshooting
  - IMA Fault Troubleshooting

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- SAALNK Fault Troubleshooting
  - AAL2PATH Fault Troubleshooting
  - FE Fault Troubleshooting
  - SCTP Fault Troubleshooting
  - IPPATH Fault Troubleshooting
  - Equipments Faults Troubleshooting
  - MSP Switch Fault
  - Reset Fault of Interface Boards
  - O/M Faults Troubleshooting
  - OMU Service Abnormality
  - RNC Active and Standby OMUs Synchronization Failure
  - RNC OMU Command Execution Timeout
  - Basic Service Faults Troubleshooting
  - BSC6900 WCDMA V900R014 Troubleshooting Practice Guide
  - NodeB WCDMA V200R014 Troubleshooting
    - Troubleshooting Overview
    - Abnormal RTWP
    - CE Faults
    - Hardware Faults
    - License Delivery Failure
    - Clock Faults
    - Cell Setup Failure at NodeB side
    - Sleeping Cell
    - OMCH Faults
  - NodeB WCDMA V200R014 Troubleshooting Practice Guide
- OMS93 SRAN7.0 BSS Troubleshooting
- MBTS GU V100R004 Troubleshooting
    - Principles of MBTS Alarm Design and Operations
    - Process of MBTS Troubleshooting
    - Methods to Locate an MBTS Fault and Case Analysis
    - Preventive Measures Against MBTS Faults

Duration

5 working days

Class Size

Min 6, Max 12

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## 1.5.21 GSM/UMTS SingleRAN6.0 - SingleRAN7.0 Product Delta Training

### Training Path

BSC6900 GU V900R013 - V900R014 Delta		
OMS92	Lecture	2d

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0 BSC Configuration Training

### Objectives

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

- Describe BSC6900 GU evolution overview
- Describe the hardware changing in BSC6900 GU and MBTS GU, including cabinet, subrack and boards.
- Describe the software changing in BSC6900 GU, including OMU board software and OM software
- Describe the new features of BSC6900 GU and MBTS GU.

### Training Content

#### OMS92 BSC6900 GU V900R013 - V900R014 Delta

- CME GU V200R11 - V200R12 Delta
  - New/Enhanced Platform Features
  - New/Enhanced GSM Configuration Features
  - New/Enhanced UMTS Configuration Features
  - New/Enhanced SRAN Configuration Features
- BSC6900 GU V900R013 - V900R014 New Maintainability and Testability Feature
  - GU Maintainability and Testability
  - Fault management Enhancement
  - Enhancement of centralized auditing for operation logs
  - Optimization of single-user trace file naming
  - Trace creation interface optimization
  - Support for online SPC modification
  - Engineering alarm optimization

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- Enhanced IP PM introduction
  - End-to-End Deployment, Maintenance, and Commissioning
  - GSM Maintainability and Testability
  - NS Signaling Tracing over Gb Interface
  - PDCH Loopback
  - Enhanced BTS Deployment in Abis over IP Mode
  - Optimized Signaling Tracing and Analysis
  - BBU Supporting 126 TRXs and RRU Supporting 21-Level Cascading
  - MAC Packet Capture and Uploading
  - Enhanced CPRI O/M
  - UMTS Maintainability and Testability
  - Iub/Iu/Iur Transmission Resource Pool in RNC
  - Node B security(Node B Integrated IPSec and Node B PKI Support)
  - Multi-sectors solution
  - BSC6900 GU V900R013 - V900R014 New Feature
    - GSM Feature
    - Abis transmission backup enhancement
    - Intelligent Battery Management
    - IPHC in IP over E1
    - Abis transmission backup enhancement
    - UMTS Feature
    - MOCN cell recourse demarcation
    - Independent Demodulation of Signals from Multiple RRUs in One Cell
  - BSC6900 GU V900R013 - V900R014 Delta for Equipment
    - BSC6900 Evolution Overview
    - BSC6900 Hardware Evolution
    - BSC6900 Typical Hardware Configuration
  - MBTS GU V100R004 - V100R007 Delta for Hardware
    - UTRPc board introduction
    - WBBPf board introduction
    - Overview of the new TRX modules
    - Product hardware of the new TRX modules
    - Configuration specifications of the new TRX modules
    - Applications and version matching policies of the new TRX modules

Duration

2 working days

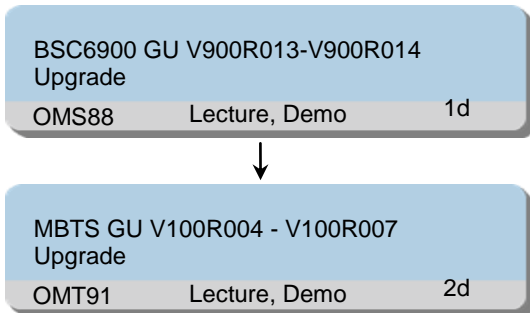
Class Size

Min 6, Max 12

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## 1.5.22 GSM/UMTS SingleRAN7.0 Upgrade Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Configuration Training

### Objectives

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

- Describe the software installation and upgrade flow
- Outline the backup and restore operations
- Complete the installation and upgrade tasks
- Grasp the OMU routine maintenance commands
- Describe the upgrade procedure
- Describe the upgrade of MBTS
- Describe the verification operations after upgrade.
- Describe how to roll the version back to the one before upgrade

### Training Content

#### OMS88 BSC6900 GU V900R013-V900R014 Upgrade

- BSC6900 GU V900R013-V900R014 Upgrade
  - BSC6900 OMU Introduction
  - BSC6900 Application Software Upgrade Directly
  - BSC6900 Application Software Upgrade by M2000
  - OMU Operation and Maintenance
- BSC6900 GU V900R013-V900R014 Upgrade Practice Guide

#### OMT91 MBTS GU V100R004 - V100R007 Upgrade

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- MBTS GU V100R004 - V100R007 Upgrade
    - MBTS GU Upgrade Overview
    - MBTS GU Upgrade Guide based on LMT
    - MBTS GU Upgrade Guide based on M2000
  - MBTS GU V100R004 - V100R007 Upgrade Practice Guide

Duration

3 working days

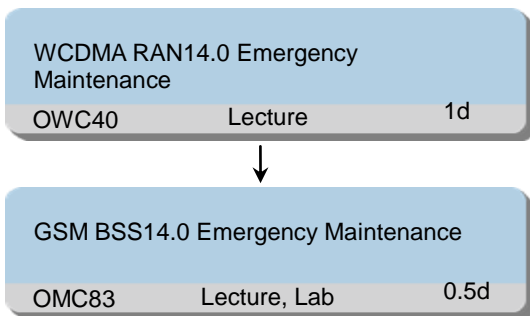
Class Size

Min 6, Max 12

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## 1.5.23 GSM/UMTS SingleRAN7.0 Emergency Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Configuration Training

### Objectives

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

- Understand the Basic Symptoms About the Accident
- Know how to collect the related information
- Execute the quick emergency handling methods.
- Describe Brief Guide to Emergent Accidents
- implement Emergency Measures in Emergency Situations
- Describe Preparations and the Suggestions on the Parameter Value Change Before a Holiday
- implement Emergency Measures in Heavy Traffic Situations

### Training Content

#### OWC40 WCDMA RAN14.0 Emergency Maintenance

- WCDMA RAN14.0 Emergency Maintenance
  - Emergency maintenance overview
  - Brief guide to troubleshoot fault
  - Learning about fault symptoms
  - Collecting fault information
  - Measures for accident recovery
  - Typical emergency fault scenarios
  - Upgrade-related Faults

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- Operation-related Faults
  - Dysfunctional Iub Interface
  - Dysfunctional Iu Interface
  - Congestion on the Iu Signaling Plane
  - UE Access Restricted by the License
  - Low Success Rate of SCCP Connection Establishment
  - WCDMA RAN14.0 Emergency Maintenance Practice Guide
  - WCDMA RAN14.0 Heavy Traffic Precaution
    - General overview and basic skills introduction
    - General overview
    - Back up and restore Configuration Data
    - View the CPU Usage of SPU and DPU
    - Preparation and suggestions on parameter adjustment before a heavy traffic
    - Preparation before heavy traffic
    - Parameter adjustment before heavy traffic
    - Emergency measures for heavy traffic fault
    - Final preparations
    - CPU overload on the SPU
    - Traffic volume over an SPU subsystem is 0
    - CPU overload on the MPU
    - CPU overload on the Interface board
    - Congestion on the Iu Signaling Plane
    - CN overload
  - WCDMA RAN14.0 Heavy Traffic Precaution Practice Guide
  - OMC83 GSM BSS14.0 Emergency Maintenance
  - GSM BSS14.0 Emergency Maintenance
    - Emergency Maintenance Overview
    - Basic symptoms about the accident
    - collecting related information
    - quick emergency handling methods
  - GSM BSS14.0 Emergency Maintenance Practice Guide

Duration

2 working days

Class Size

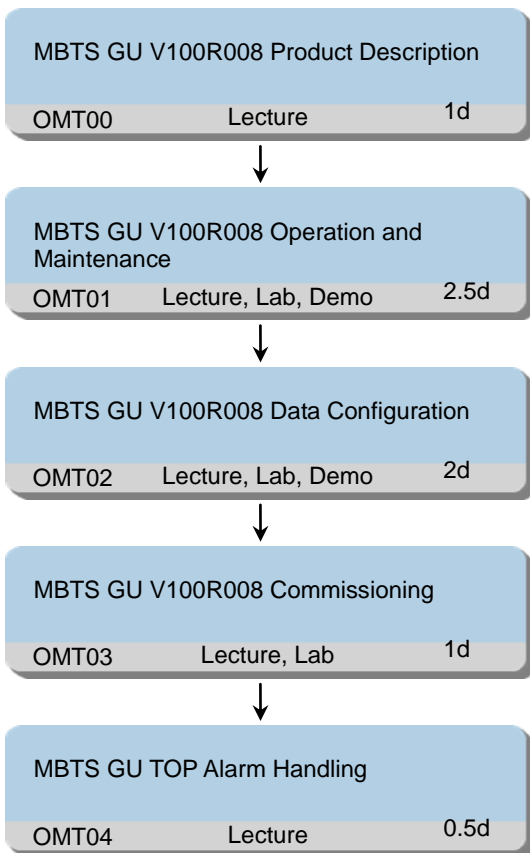
Min 6, Max 12



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## 1.5.24 GSM/UMTS SingleRAN8.0 BTS Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT
- Outline the procedure of MBTS data configuration
- Complete the MBTS initial data configuration based on CME

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- Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Comprehend the basic concepts of alarms
  - Perform the methods of handling alarms via M2000 / LMT
  - Complete TOP alarms handling

## Training Content

### OMT00 MBTS GU V100R008 Product Description

- MBTS GU V100R008 Product Description
  - MBTS System Overview
  - MBTS Hardware Structure
  - MBTS Cable Connection
  - MBTS Technical Specifications
  - MBTS Typical Configuration

### OMT01 MBTS GU V100R008 Operation and Maintenance

- MBTS GU V100R008 Operation and Maintenance
  - Connecting to BTS O/M System
  - Alarm Management via M2000
  - MBTS Device maintenance
  - MBTS Transmission Layer Maintenance
  - MBTS Radio Layer maintenance
  - MBTS Tracing Management
  - MBTS Monitoring Management
  - MBTS System Management
- MBTS GU V100R008 Operation and Maintenance Practice Guide
- MBTS GU V100R008 Field Maintenance
  - Checking hardware
  - LEDs
  - Cable connections
  - Site local maintenance
  - Replacing boards
  - Routine maintenance list
- MBTS GU V100R008 Field Maintenance Practice Guide

### OMT02 MBTS GU V100R008 Data Configuration

- MBTS GU V100R008 Data Configuration based on CME
  - MBTS Data Configuration Introduction
  - Preparing MBTS Data
  - Creating MBTS Data
  - Exporting MBTS Data
  - Creating MBTS Data in Batches (Summary Data File)

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- MBTS GU V100R008 Data Configuration based on CME Practice Guide

OMT03 MBTS GU V100R008 Commissioning

- MBTS GU V100R008 commissioning
  - Overview of MBTS Commissioning
  - Commissioning the MBTS based on M2000
  - Commissioning the MBTS based on M2000 + USB
- MBTS GU V100R008 commissioning practice guide

OMT04 MBTS GU TOP Alarm Handling

- MBTS GU TOP Alarm Handling
  - Basic Concept / Operation of Alarm
  - Procedure of Alarm Handling
  - GSM Top Alarm Handling
  - UMTS Top Alarm Handling

Duration

7 working days

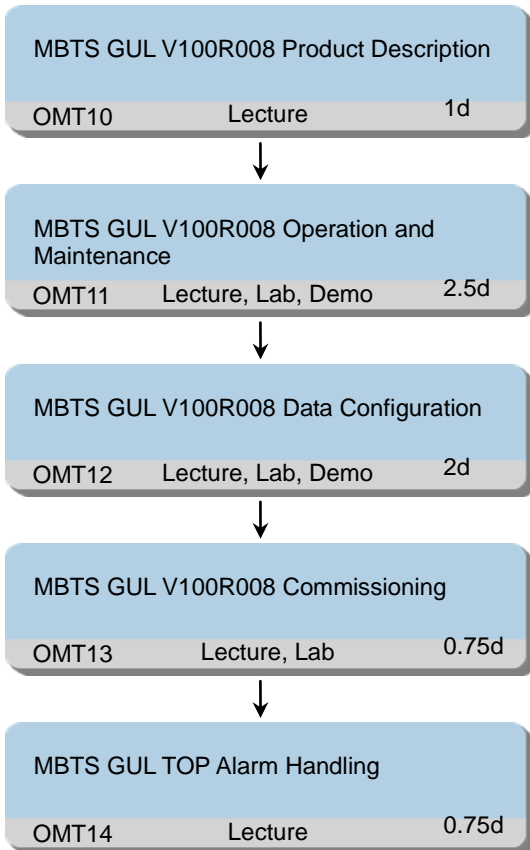
Class Size

Min 6, Max 12

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## 1.5.25 GSM/UMTS/LTE SingleRAN8.0 BTS Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT
- Outline the procedure of MBTS data configuration
- Complete the MBTS initial data configuration based on CME

- 
- Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Comprehend the basic concepts of alarms
  - Perform the methods of handling alarms via M2000 / LMT
  - Complete TOP alarms handling

## Training Content

### OMT10 MBTS GUL V100R008 Product Description

- MBTS GUL V100R008 Product Description
  - MBTS System Overview
  - MBTS Hardware Structure
  - MBTS Cable Connection
  - MBTS Technical Specifications
  - MBTS Typical Configuration

### OMT11 MBTS GUL V100R008 Operation and Maintenance

- MBTS GUL V100R008 Operation and Maintenance
  - Connecting to BTS O/M System
  - Alarm Management via M2000
  - MBTS Device maintenance
  - MBTS Transmission Layer Maintenance
  - MBTS Radio Layer maintenance
  - MBTS Tracing Management
  - MBTS Monitoring Management
  - MBTS System Management
- MBTS GUL V100R008 Operation and Maintenance Practice Guide
- MBTS GUL V100R008 Field Maintenance
  - Checking hardware
  - LEDs
  - Cable connections
  - Site local maintenance
  - Replacing boards
  - Routine maintenance list
- MBTS GUL V100R008 Field Maintenance Practice Guide

### OMT12 MBTS GUL V100R008 Data Configuration

- MBTS GUL V100R008 Data Configuration based on CME
  - MBTS Data Configuration Introduction
  - Preparing MBTS Data
  - Creating MBTS Data
  - Exporting MBTS Data
  - Creating MBTS Data in Batches (Summary Data File)

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- MBTS GUL V100R008 Data Configuration based on CME Practice Guide

OMT13 MBTS GUL V100R008 Commissioning

- MBTS GUL V100R008 commissioning
  - Overview of MBTS Commissioning
  - Commissioning the MBTS based on M2000
  - Commissioning the MBTS based on M2000 + USB
- MBTS GUL V100R008 commissioning practice guide

OMT14 MBTS GUL TOP Alarm Handling

- MBTS GU TOP Alarm Handling
  - Basic Concept / Operation of Alarm
  - Procedure of Alarm Handling
  - GSM Top Alarm Handling
  - UMTS Top Alarm Handling
- MBTS LTE TOP Alarm Handling
  - Basic Concept / Operation of Alarm
  - LTE Top Alarm Handling

Duration

7 working days

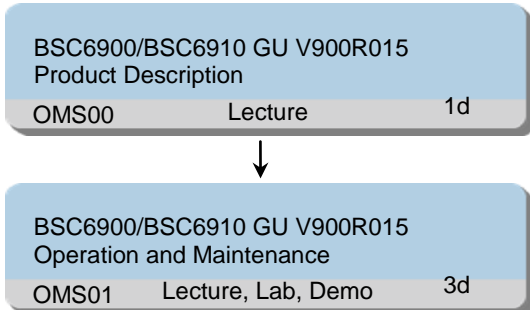
Class Size

Min 6, Max 12

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## 1.5.26 GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Detail the system structure of BSC6900
- Detail the functions of the components of BSC6900
- Detail the signal flows in BSC6900
- List the typical hardware configuration of BSC6900
- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900 routine operation
- Perform the BSC6900 routine maintenance

### Training Content

#### OMS00 BSC6900/BSC6910 GU V900R015 Product Description

- BSC6900 GU V900R015 Product Description
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
  - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows

- 
- BSC6900 Typical Configuration
  - BSC6910 GU V900R015 Product Description
    - BSC6910 System Overview
    - BSC6910 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
    - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows
    - BSC6900 Typical Configuration

OMS01 BSC6900/BSC6910 GU V900R015 Operation and Maintenance

- BSC6900/BSC6910 GU V900R015 Operation and Maintenance
  - OM System Introduction
  - Alarm Monitoring
  - Device Maintenance
  - Transmission Detecting
  - Troubleshooting Assistant
  - Hardware Replacement
  - Data Backup and Restore
  - Other OM Functions
- BSC6900/BSC6910 GU V900R015 Operation and Maintenance Practice guide

Duration

4 working days

Class Size

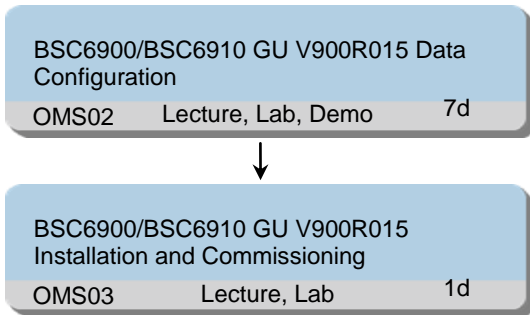
Min 6, Max 12



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## 1.5.27 GSM/UMTS SingleRAN8.0 BSC Configuration Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training

### Objectives

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

- Detail the Procedure of BSC6900 Data Configuration
- Perform Global Data Configuration
- Perform Equipment Data Configuration
- Perform Interface Configuration
- Perform Cell Configuration
- Outline MBSC data configuration procedure based on CME
- Complete MBSC data configuration
- Export and activate the configuration data
- Describe BSC6900 commissioning procedure
- Outline OMU software functions
- Complete BSC6900 commissioning

### Training Content

#### OMS02 BSC6900/BSC6910 GU V900R015 Data Configuration

- BSC6900/BSC6910 GU V900R015 Initial Data Configuration Based on LMT
  - Data Configuration Overview
  - Preparation
  - Global Data Configuration
  - Equipment Data Configuration
  - Interface Data Configuration

- 
- Cell Data Configuration
  - BSC6900/BSC6910 GU V900R015 Initial Data Configuration Based on LMT Practice Guide
  - BSC6900/BSC6910 GU V900R015 Initial Data Configuration Based on CME
    - Introduction of CME
    - Configuration Preparation
    - BSC6900/BSC6910 Data Configuration
    - BSC6900/BSC6910 Data Export
  - BSC6900/BSC6910 GU V900R015 Initial Data Configuration Based on CME Practice Guide
- O/S03 BSC6900/BSC6910 GU V900R015 Installation and Commissioning
- BSC6900/BSC6910 GU V900R015 Installation and Commissioning
    - BSC6900 O/M System Introduction
    - BSC6900 Software Installation
    - BSC6900 Commissioning
    - BSC6900 Commissioning Introduction
    - BSC6900 Commissioning Procedure
  - BSC6900/BSC6910 GU V900R015 Installation and Commissioning Practice Guide

Duration

8 working days

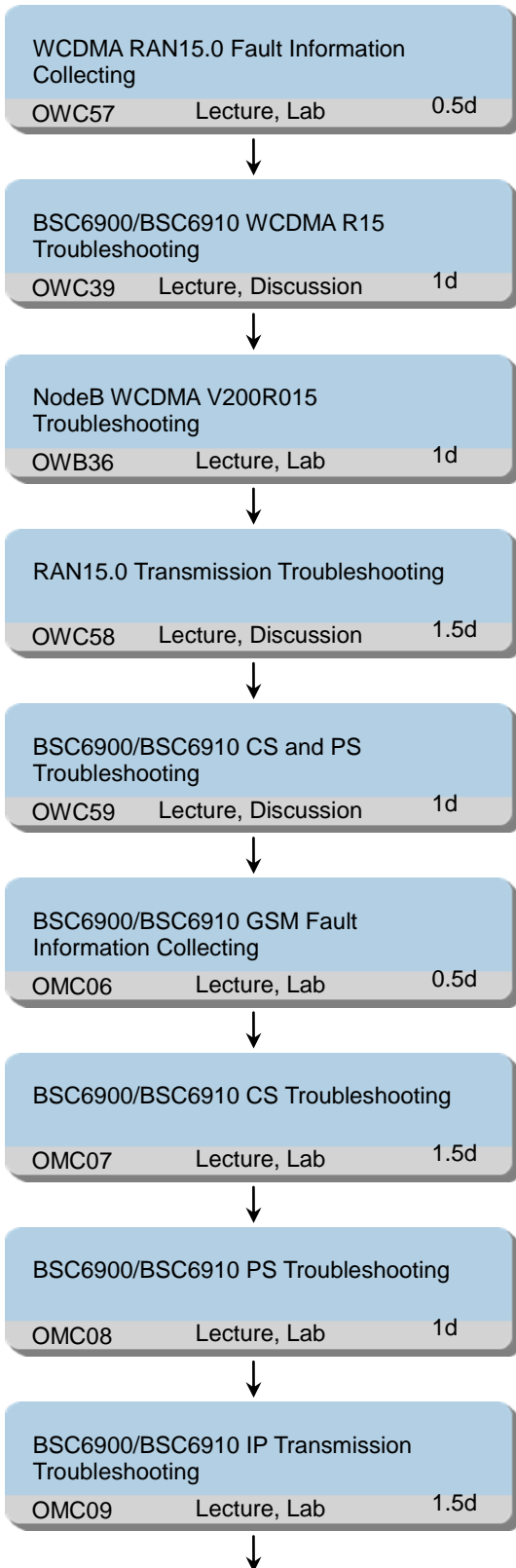
Class Size

Min 6, Max 12

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## 1.5.28 GSM/UMTS SingleRAN8.0 BSS Troubleshooting Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Configuration Training

### Objectives

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

- Describe the OMU Maintenance and Operation
- Know how to collect the fault information for CS and PS fault
- Describe where is the different file in OMU.
- Describe the functions of different files
- Describe the CS Fault Troubleshooting flow
- Know how to do Single pass and no voice Troubleshooting
- Know how to do Cross pass Troubleshooting
- Know how to do Noise Troubleshooting
- Know how to do Echo Troubleshooting
- Describe the PS Fault Troubleshooting flow
- Know how to do PS Data rate Troubleshooting
- Know how to do PS Access Troubleshooting
- Know how to Analyze PS KPI
- Understand typical IP transmission troubleshooting cases
- Understand fault isolation in case of emergencies in IP transmission mode
- Understand how to analyze typical IP transmission troubleshooting cases
- Describe Clock Fault Troubleshooting Flow
- Know how to do Clock troubleshooting
- Describe the OMU Maintenance and Operation
- Know how to collect the fault information for different faults
- Know how to handle RNC equipment-related faults
- Know how to handle NodeB-related faults
- Know how to handle ATM Transmission Faults
- Know how to handle IP Transmission Faults
- Describe the CS and PS Fault Troubleshooting flow

- 
- Know how to handle CS and PS faults

#### Training Content

##### OWC57 WCDMA RAN15.0 Fault Information Collecting

- WCDMA RAN15.0 Fault Information Collecting
  - OMU Overview
  - Accident information collecting
  - WRAN problems information collecting
  - HSPA Rate Problems
  - Voice Quality Problems
  - Cell Flow Problems
  - RNC Fault information collecting
  - Equipment Problems
  - Traffic Problems
  - Upgrade Problems
  - Loading Problems
  - NodeB Fault information collecting
  - RTWP Problems
  - License CE Problems
  - Clock Problems
  - Hardware and OM Problems
  - RF Problems
- WCDMA RAN15.0 Fault Information Collecting Student Book

##### OWC39 BSC6900/BSC6910 WCDMA R15 Troubleshooting

- BSC6900/BSC6910 WCDMA R15 Troubleshooting
  - OMU Service Abnormality
  - Equipment Troubleshooting
  - Service Setup Failure Troubleshooting
  - PS Relocation and Inter-RAT Handover Failure Troubleshooting
- BSC6900/BSC6910 WCDMA R15 Troubleshooting Student Book

##### OWB36 NodeB WCDMA V200R015 Troubleshooting

- NodeB WCDMA V200R015 Troubleshooting
  - RTWP Fault
  - CE Fault
  - Clock Reference Fault
  - CPRI Link Fault
  - RF Channel Failure
- NodeB WCDMA V200R015 Troubleshooting Student Book

##### OWC58 RAN15.0 Transmission Troubleshooting

- RAN15.0 Transmission Troubleshooting
  - ATM Transmission Faults Troubleshooting
  - ATM QoS Faults

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- E1/T1 Faults
  - IMA Faults
  - SAAL Faults
  - IP Transmission Faults Troubleshooting
  - FE/GE Transmission Fault
  - IP Layer Fault
  - Signaling Link Fault
  - User Plane Fault
  - IP Clock Fault
- RAN15.0 Transmission Troubleshooting Student Book
- OWC59 BSC6900/BSC6910 CS and PS Troubleshooting
- BSC6900/BSC6910 PS Troubleshooting
    - HSPA+ and HSPA Data Transmission
    - HSUPA Data Transmission Fault Analysis
    - HSDPA Data Transmission Fault
    - Cell Setup Failure
  - BSC6900/BSC6910 PS Troubleshooting Student Book
- OMC06 BSC6900/BSC6910 GSM Fault Information Collecting
- BSC6900/BSC6910 GSM V900R015 Fault Information Collecting Student Book
    - OMU Overview
    - CS Fault information collecting
    - PS Fault information collecting
- OMC07 BSC6900/BSC6910 CS Troubleshooting
- BSC6900/BSC6910 GSM V900R015 CS Troubleshooting Student Book
    - CS Fault Troubleshooting flow
    - Single pass and no voice Troubleshooting
    - Cross pass Troubleshooting
    - Noise Troubleshooting
    - Echo Troubleshooting
- OMC08 BSC6900/BSC6910 PS Troubleshooting
- BSC6900/BSC6910 GSM V900R015 PS Troubleshooting Student Book
    - PS Fault Troubleshooting flow
    - PS Data rate Troubleshooting
    - PS Access Troubleshooting
    - PS KPI Anylase
- OMC09 BSC6900/BSC6910 IP Transmission Troubleshooting
- BSC6900/BSC6910 GSM V900R015 IP Transmission Troubleshooting Student Book
    - TCP/IP Protocol
    - Physical layer Troubleshooting
    - Data link layer Troubleshooting
    - Network layer Troubleshooting
    - LAPD/SCTP Troubleshooting

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- IPPATH Troubleshooting
- OMC10 BSC6900/BSC6910 Clock Troubleshooting

- BSC6900/BSC6910 GSM V900R015 Clock Troubleshooting Student Book
  - Clock Fault Troubleshooting

Duration

7 working days

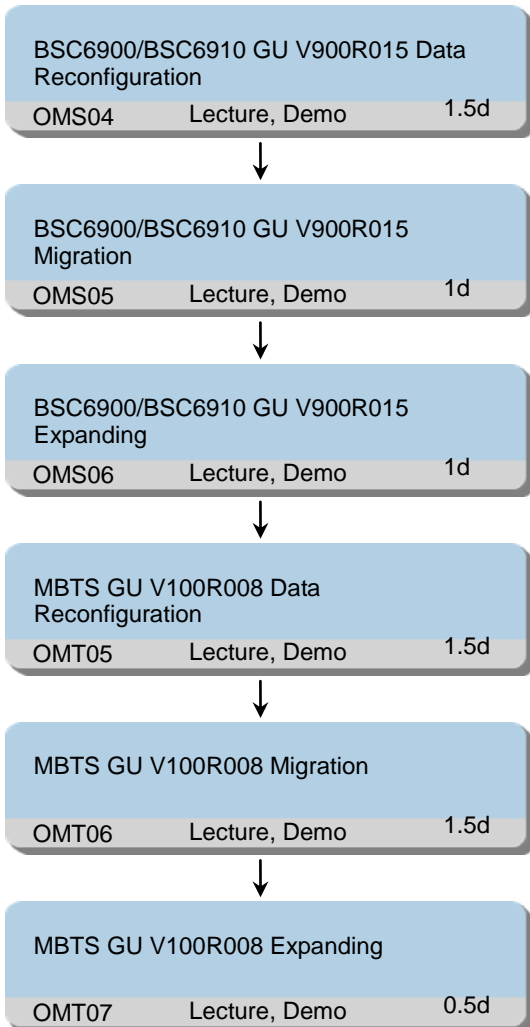
Class Size

Min 6, Max 12

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## 1.5.29 GSM/UMTS SingleRAN8.0 BSS Reconfiguration Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Configuration Training

### Objectives

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

- Describe the procedure of adjusting the BSC



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- Describe the modification of OPC and DPC
  - Perform the way to adding/removing subracks and boards
  - Expand the transmission resource in A, GB and Abis interface.
  - Reconfiguring the Transmission Mode on A, Gb and Abis interface.
  - Adjust the cell processing in DPU board
  - Perform how to Increase Frequencies on the UMTS Network
  - Perform how to Reconfigure the Parameters of Physical NodeBs
  - Perform how to Reconfigure the Data of Cells and Neighboring Cells in Batches
  - Perform how to Reconfigure Cell Algorithm Parameters
  - Describe what is BSC migration
  - Describe the procedure of the BSC migration
  - Perform the BSC migration
  - Describe the procedure of expanding the BSC/RNC capacity
  - Perform how to add a BSC/RNC board
  - Perform how to add an EPS/RNC of BSC
  - Describe the procedure of MBTS dynamic data adjustment
  - Adjust the Global/Device/Transmission Data
  - Adjust the Cells/TRXs/Channels Data
  - Adjust the BTS Data
  - Repair BTSs
  - Detail the scenarios of BTS/NodeB migration
  - Detail the procedure of BTS/NodeB migration
  - Perform the BTS/NodeB migration
  - Describe the procedures of expanding the BTS capacity
  - Perform how to add BTS Cells
  - Perform how to add BTS TRXs
  - Perform how to add WBBP Board
  - Perform how to add RF Unit

#### Training Content

##### OMS04 BSC6900/BSC6910 GU V900R015 Data Reconfiguration

- WCDMA RAN15 Interface Capacity Expansion Based on LMT
  - Iub Interface Capacity Expansion
  - Iub Interface Capacity Expansion in ATM Transmission Mode
  - Iub Interface Capacity Expansion in IP Transmission Mode for BSC6900
  - Iub Interface Capacity Expansion IP Pool
  - Iur Interface Capacity Expansion
  - Iur Interface Capacity Expansion in ATM Transmission Mode
  - Iur Interface Capacity Expansion in IP Transmission Mode for BSC6900
  - Iur Interface Capacity Expansion IP Pool
  - Iu-CS Interface Capacity Expansion
  - Iu-CS Interface Capacity Expansion in ATM Transmission Mode

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- lu-CS Interface Capacity Expansion in IP Transmission Mode for BSC6900
    - lu-CS Interface Capacity Expansion IP Pool
    - lu-PS Interface Capacity Expansion
    - lu-PS Interface Capacity Expansion in IP Transmission Mode for BSC6900
    - lu-PS Interface Capacity Expansion IP Pool
  - WCDMA RAN15 Interface Capacity Expansion Based on LMT Practice Guide
  - NodeB WCDMA V200R015 NodeB Resource Distribution Adjusting Based on LMT (Only for BSC6900)
    - Reconfiguring resource management based on NodeBs
    - Reconfiguring resource management based on cells
    - Reconfiguring resource management based on NCPs or CCPs
  - NodeB WCDMA V200R015 NodeB Resource Distribution Adjusting Based on LMT Practice Guide (Only for BSC6900)
  - BSC6900/BSC6910 GSM V900R015 Data Reconfiguration based on LMT
    - Changing the Connection Between the BSC and the MSC
    - Cutting Over an MSC (with IP Transmission Mode Retained over the A Interface)
    - Cutting Over an MSC (TDM to TDM Transmission Mode over the A Interface)
    - Cutting Over an MSC (TDM to IP Transmission Mode over the A Interface)
    - Modify OPC and DPC
    - Modify N7 signaling link from 64k to 2M
    - Add STP in A interface
    - add subracks and boards
    - Remove Boards and Subracks
    - modify single OMU to double OMU
    - expand the transmission resource in A, GB and Abis interface.
    - Reconfiguring the Transmission Mode
    - Changing the Transmission Mode on the A Interface
    - Reconfiguring the Transmission Mode on the Ater Interface
    - Changing the Transmission Mode on the Gb Interface
    - Changing the Transmission Mode on the Abis Interface
    - Adjust the cell processing in DPU board(BSC6900)
  - BSC6900/BSC6910 GSM V900R015 Data Reconfiguration based on LMT Practice Guide
  - OMS05 BSC6900/BSC6910 GU V900R015 Migration
    - BSC6900 WCDMA V900R015 Migration Data Configuration Based on LMT
      - RNC Migration Scenarios
      - Adjusting the Connection Between the RNC and MSC (ATM to IP over the lu-CS interface)
      - Adjusting the Connection Between the RNC and MSC Without Changing the ATM Transmission Scheme on the lu-CS Interface)
      - Adjusting the Connection Between the RNC and MSC (ATM to IP over the lu-CS Interface)
    - BSC6900 WCDMA V900R015 Migration Data Configuration Based on LMT Practice Guide

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- BSC6900/BSC6910 GSM V900R015 Migration
    - BSC Migration Summary
    - Reparenting BSC Between MSC Servers
    - Reparenting BSC Between SGSN
  - BSC6900/BSC6910 GSM V900R015 Migration Practice Guide
  - OMS06 BSC6900/BSC6910 GU V900R015 Expanding
    - BSC6900/BSC6910 WCDMA RAN15 Expansion Based on LMT
      - Overview of Expanding the RNC Capacity
      - Adding a SPUa or SPUB Board for BSC6900
      - Adding a DPUb or DPUe Board for BSC6900
      - Adding an EGPUa Board for BSC6910
      - Adding an Interface Board
      - Adding a Subrack
    - BSC6900/BSC6910 WCDMA RAN15 Expansion Based on LMT Practice Guide
    - BSC6900/BSC6910 GSM V900R015 Expanding
      - Overview of Expanding the BSC Capacity
      - Adding a BSC Board
      - Adding an EPS Subrack
    - BSC6900/BSC6910 GSM V900R015 Expanding Practice Guide
  - OMT05 MBTS GU V100R008 Data Reconfiguration
    - WCDMA RAN15 Dynamic Data Reconfiguration Based on CME
      - Changing Signaling Points
      - Reconfiguring a Cell
      - Modifying an SCCPCH
      - Reconfiguring Neighboring Cells
      - Reconfiguring the NodeB Clock Source or the Clock Working Mode
    - WCDMA RAN15 Dynamic Data Reconfiguration Based on CME Practice Guide
    - MBTS GSM V100R008 Data Reconfiguration based on CME
      - Dynamic Data Adjustment Introduction
      - Adjusting the Global/Device/Transmission Data
      - Adjusting the Cells/TRXs/Channels Data
      - Adjusting the BTS Data
      - Reparenting BTSs
    - MBTS GSM V100R008 Data Reconfiguration based on CME Practice Guide
    - MBTS GSM V100R008 Data Reconfiguration based on LMT
      - Reconfiguring a BTS via LMT
      - Changing the Connection Between the BSC and the MSC via LMT
      - Reconfiguring a Cell via LMT
      - Reconfiguring a Channel via LMT
    - MBTS GSM V100R008 Data Reconfiguration based on LMT Practice Guide
  - OMT06 MBTS GU V100R008 Migration
    - NodeB WCDMA V200R015 Migration Data Configuration Based on CME (Only for BSC6900)

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- NodeB Reparenting Scenarios
  - Reparenting NodeBs Under an RNC
  - Reparenting NodeBs Between RNCs of the Same Version
  - NodeB WCDMA V200R015 Migration Data Configuration Based on CME Practice Guide (Only for BSC6900)
  - MBTS GSM V100R008 Migration
    - BTS Reparenting Overview
    - Reparenting BTSs within a BSC (TDM)
    - Reparenting BTSs within a BSC (IP)
    - Reparenting BTSs between BSCs (TDM/Static IP/Non-Static IP)
  - MBTS GSM V100R008 Migration Practice Guide
- OMT07 MBTS GU V100R008 Expanding
- NodeB WCDMA V200R015 Expansion Based on CME
    - Adding a Baseband Board to a 3900 Series Base Station
    - Adding an RF Unit
  - NodeB WCDMA V200R015 Expansion Based on CME Practice Guide
  - MBTS GSM V100R008 Expanding
    - Overview of Expanding the BTS Capacity
    - Adding a BTS cell
    - Adding a BTS TRX
  - MBTS GSM V100R008 Expanding Practice Guide

Duration

7 working days

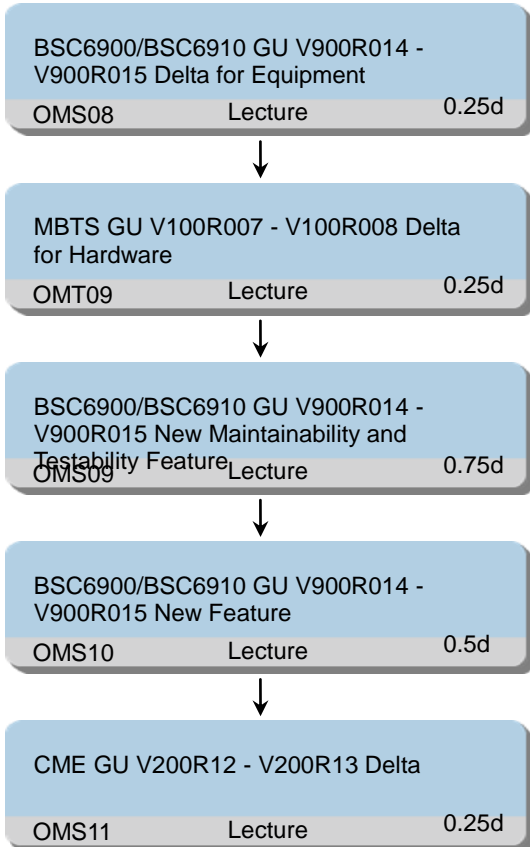
Class Size

Min 6, Max 12

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### 1.5.30 GSM/UMTS SingleRAN7.0 - SingleRAN8.0 Product Delta Training (BSC6900/6910)

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN7.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN7.0 BSC Configuration Training

#### Objectives

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

- Know the capacity specifications of the BSC6900/6910 V900R015
- Know the new hardware adopted by the BSC6900/6910 V900R015
- Know the hardware configuration and capacity of the BSC6900/6910 V900R015

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- Know the new hardware adopted by the MBTS GU V100R008
  - Know the New hardware configuration
  - Know the principles and application scenarios of the O/M features
  - Know the configuration procedures and implementation methods of the O/M features
  - Know the principles and application scenarios of the new features
  - Know the configuration procedures and implementation methods of the new features
  - Know the new feature of CME
  - Master the new feature for GSM, UMTS and SRAN

#### Training Content

##### OMS08 BSC6900/BSC6910 GU V900R014 - V900R015 Delta for Equipment

- BSC6900/BSC6910 GU V900R015 - V900R015 Delta for Equipment
  - BSC6900/6910 Evolution Overview
  - BSC6900/6910 Hardware Evolution
  - BSC6900/6910 Typical Hardware Configuration

##### OMT09 MBTS GU V100R007 - V100R008 Delta for Hardware

- MBTS GU V100R007 - V100R008 Delta for Hardware
  - SRAN8.0 Solution Introduction
  - Overview of the new TRX modules
  - Product hardware of the new TRX modules
  - Configuration specifications of the new TRX modules

##### OMS09 BSC6900/BSC6910 GU V900R014 - V900R015 New Maintainability and Testability Feature

- BSC6900/BSC6910 GU V900R015 - V900R015 New Maintainability and Testability Feature
  - GBSS O/M feature
  - Enhanced Multi-Site Cell Maintenance and RF Maintenance
  - CGI Used in MML Commands for Cell Identification
  - eGBTS O/M Changes
  - WRAN O/M feature
  - Enhanced Single-User Signaling Tracing During RRC Connection Setup
  - Trace of UEs Belonging to a Certain Type
  - Optimized PCHR Log Storage on the OMU
  - Improved Speech Quality Problem Diagnosis: FPPM Detection
  - Transmission and Platform Services Maintenance Features
  - Automatic Detection of Optical Power and Alarm Reporting
  - Enhanced Crossed Pair Connection Detection
  - Cell Out of Service Alarm Masked at the Cell Level
  - Enhanced OMU Maintenance and Test
  - Remote Deployment Optimization: DHCP Trace
  - DSCP Value Change Detection

##### OMS10 BSC6900/BSC6910 GU V900R014 - V900R015 New Feature

- BSC6900/BSC6910 GU V900R015 - V900R015 New Feature
  - GSM Features

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- Baseband Extension
  - Enhanced Multi-site Cell
  - Synchronous Ethernet-based Soft-Synchronized Network
  - IP QoS-EAMRC
  - UMTS Features
  - New RNC Platform
  - New NodeB Hardware-WRFU
  - New Micro NodeB -BTS3803E
  - RNC in Pool
  - SRAN Features
  - Transmission Resource Pool in RNC/BSC
  - Enhanced Backup Power Saving

OMS11 CME GU V200R12 - V200R13 Delta

- CME GU V200R12 - V200R13 Delta
  - New NE Types
  - New and Modified Features on the Platform
  - New and Modified Common Features
  - New and Modified Features for GSM Configuration
  - New and Modified Features for UMTS Configuration
  - New and Modified Features for SRAN Configuration

Duration

2 working days

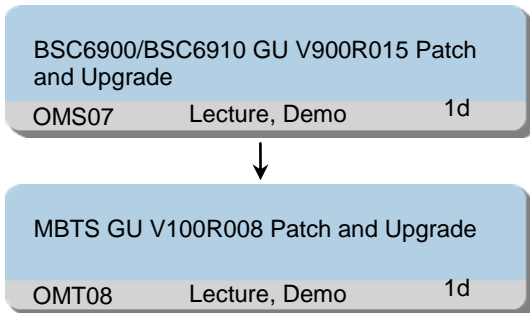
Class Size

Min 6, Max 12

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## 1.5.31 GSM/UMTS SingleRAN8.0 Patch and Upgrade Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training

### Objectives

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

- Describe the software installation and upgrade flow
- Outline the backup and restore operations
- Complete the installation and upgrade tasks
- Grasp the OMU routine maintenance commands
- Describe the upgrade procedure
- Describe the upgrade of MBTS
- Describe the verification operations after upgrade.
- Describe how to roll the version back to the one before upgrade

### Training Content

#### OMS07 BSC6900/BSC6910 GU V900R015 Patch and Upgrade

- BSC6900/BSC6910 GU V900R015 Patch and Upgrade
  - BSC6900/BSC6910 OMU Introduction
  - BSC6900/BSC6910 Application Software Upgrade Directly
  - BSC6900/BSC6910 Application Software Upgrade by M2000
  - OMU Operation and Maintenance
- BSC6900/BSC6910 GU V900R015 Patch and Upgrade Practice Guide

#### OMT08 MBTS GU V100R008 Patch and Upgrade

- MBTS GU V100R008 Patch and Upgrade



- 
- MBTS GU Upgrade Overview
  - MBTS GU Upgrade Guide based on LMT
  - MBTS GU Upgrade Guide based on M2000
  - MBTS GU V100R008 Patch and Upgrade Practice Guide

Duration

2 working days

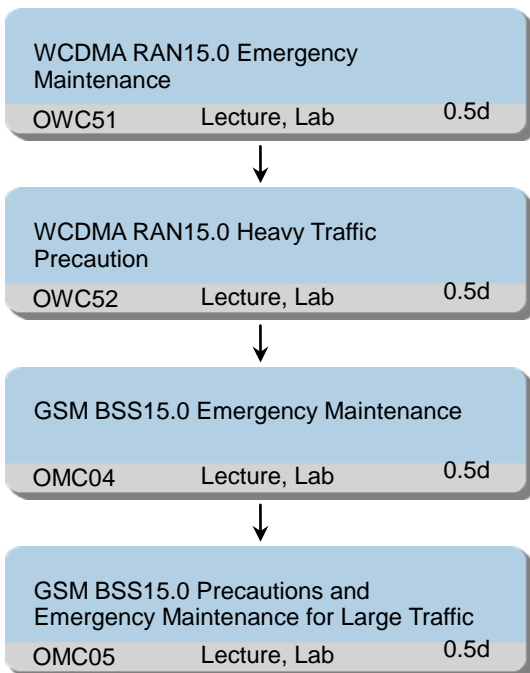
Class Size

Min 6, Max 12

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## 1.5.32 GSM/UMTS SingleRAN8.0 Emergency Maintenance Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN8.0 BSC Configuration Training

### Objectives

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

- Understand the Basic Symptoms About the Accident
- Know how to collect the related information
- Execute the quick emergency handling methods.
- Understand Precautions and Emergency Maintenance for Large Traffic
- Know how to adjust BSC parameters before large traffic
- Execute emergency maintenance for large traffic
- Describe Brief Guide to troubleshoot emergency fault
- Collect fault information for troubleshooting
- Grasp some typical emergency faults troubleshooting

- Master basic skills for heavy traffic precaution
- Understand preparations for heavy traffic precaution
- Master parameter adjustment of heavy traffic precaution
- Deal with typical heavy traffic caused fault

#### Training Content

##### OWC51 WCDMA RAN15.0 Emergency Maintenance

- WCDMA RAN15.0 Emergency Maintenance
  - Emergency maintenance overview
  - Brief guide to troubleshoot fault
  - Learning about fault symptoms
  - Collecting fault information
  - Measures for accident recovery
  - Typical emergency fault scenarios
  - Upgrade-related Faults
  - Operation-related Faults
  - Dysfunctional Iub Interface
  - Dysfunctional Iu Interface
  - Congestion on the Iu Signaling Plane
  - UE Access Restricted by the License
  - Low Success Rate of SCCP Connection Establishment
- WCDMA RAN15.0 Emergency Maintenance Practice Guide

##### OWC52 WCDMA RAN15.0 Heavy Traffic Precaution

- WCDMA RAN15.0 Heavy Traffic Precaution
  - The overview of the heavy traffic precaution
  - Pre-Festival network evaluation and expansion
  - Important KPIs
  - General overview and basic skills introduction
  - General overview
  - Back up and restore Configuration Data
  - View the CPU Usage of SPU and DPU
  - Preparation and suggestions on parameter adjustment before a heavy traffic
  - Preparation before heavy traffic
  - Parameter adjustment before heavy traffic
  - Emergency measures for heavy traffic fault
  - Final preparations
  - CPU overload on the SPU
  - Traffic volume over an SPU subsystem is 0
  - CPU overload on the MPU
  - CPU overload on the Interface board
  - Congestion on the Iu Signaling Plane
  - CN overload

- 
- WCDMA RAN15.0 Heavy Traffic Precaution Practice Guide
  - OMC04 GSM BSS15.0 Emergency Maintenance
    - GSM BSS15.0 Emergency Maintenance
      - Emergency Maintenance Overview
      - Basic symptoms about the accident
      - collecting related information
      - quick emergency handling methods
    - GSM BSS15.0 Emergency Maintenance Practice Guide
  - OMC05 GSM BSS15.0 Precautions and Emergency Maintenance for Large Traffic
    - GSM BSS15.0 Precautions and Emergency Maintenance for Large Traffic
      - Precautions and Emergency Maintenance for Large Traffic Overview
      - Adjusting BSC Parameters Before Large Traffic
      - Emergency Maintenance for Large Traffic
    - GSM BSS15.0 Precautions and Emergency Maintenance for Large Traffic Practice Guide

Duration

2 working days

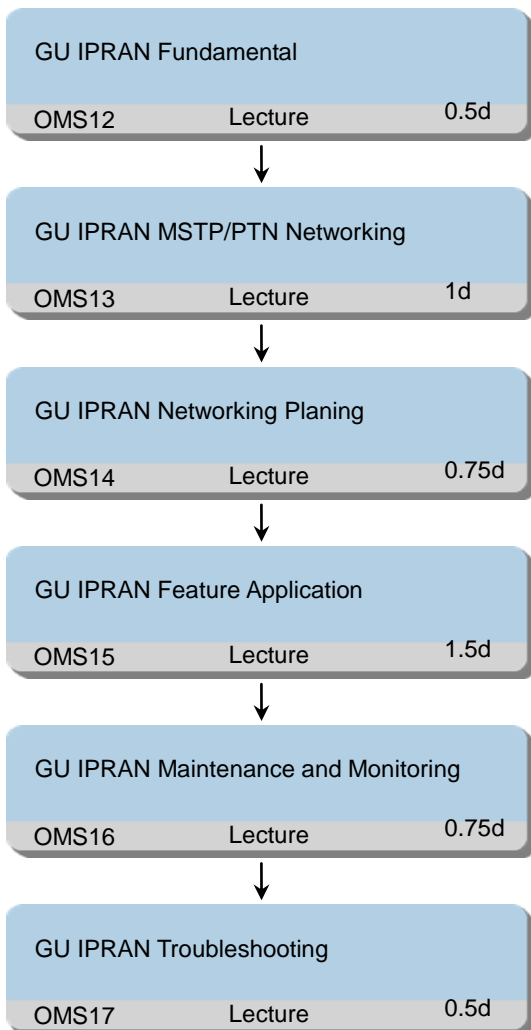
Class Size

Min 6, Max 12

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### 1.5.33 GSM/UMTS SingleRAN IPRAN Application Training

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

#### Objectives

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

- Learn about IP protocol specifications and common RFC standards

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- Learn about common IP RAN concepts such as the MSTP and PTN
  - Understand the TCP/IP protocol structure, and learn common technologies such as the VLAN and DSCP
  - Learn the protocol stack composition on IP RAN interfaces
  - Learn the IP components, and understand the data exchange process
  - Be familiar with common IP RAN devices and maintenance applications
  - Learn about differences among the IP, ATM, and TDM technologies, and problems caused by IP-based networking
  - Learn about the evolution of IP RANs
  - Understand IP RAN concepts and advantages
  - Understand changes in IP RAN networking
  - Learn about feature requirements for IP RAN networking
  - Learn the implementation of key features for IP RAN MSTP networking
  - Understand differences between the layer 2 networking and layer 3 networking
  - Learn about the concepts and advantages of IP RAN
  - Understand IP RAN networking variations
  - Learn data exchanges and encapsulation in the packet transport network (PTN)
  - Understand implementation of the key features using PTN networking for the IP RAN
  - Understand the differences between the Layer 2 networking and Layer 3 networking
  - Learn about the basic IP RAN resource planning
  - Learn principles of IP address allocation and internal limitation of the RAN equipment
  - Plan and configure the IP addresses for interface boards
  - Learn principles of planning VLAN and how to process VLAN tags
  - Understand data transmission between the protocol layer and the RAN equipment
  - Understand the IP RAN reliability-ensuring implementation mechanism
  - Understand the principles and application of the reliability detection mechanism
  - Know how to configure IP RAN reliability-ensuring parameters
  - Learn about the differences in reliability guarantee in different networking scenarios
  - Master the application schemes of the reliability-ensuring mechanism in different scenarios
  - Know how to handle faults that occur in reliability-ensuring application in different scenarios
  - Describe the requirements of the IP RAN for clock synchronization
  - Know the differences between clock synchronization and phase synchronization
  - Learn about the typical IP RAN clock solution
  - Describe the architecture of an IP RAN clock network
  - Learn about the differences between IP RAN clock networking applications
  - Understand the differences between the IEEE 1588v2 technology and synchronous Ethernet technology
  - Learn the concept of IP Quality of Service (QoS)
  - Learn about radio services' QoS requirements for IP RANs
  - Understand the QoS implementation at each layer from the perspective of transmission protocols
  - Learn the QoS configuration and application in IP RANs

- 
- Learn the parameters and commands used to ensure the QoS of IP RANs
  - Describe the procedures of implementing QoS in IP RAN end to end (E2E) services
  - Learn different QoS configuration and applications in different protocol and networking scenarios
  - Understand changes in maintenance modes due to introduction of the IP radio access network (RAN)
  - Learn the active monitoring scheme and implementation process for the IP RAN transmission
  - Learn detailed parameter configuration for IP RAN check
  - Monitor IP RAN transmission links, analyze and locate the faults
  - Learn the monitoring points for locating common faults
  - Understand theories for IP active detection
  - Learn procedures for detecting IP faults
  - Learn methods for locating IP faults
  - Learn about packet capturing tool for IP RANs
  - Learn methods for using packet capturing tool for IP networks
  - Learn about the process of analyzing packets and locating faults
  - Understand the IP transmission troubleshooting roadmap
  - Understand typical IP transmission troubleshooting cases
  - Understand fault isolation in case of emergencies in IP transmission mode
  - Understand how to analyze typical IP transmission troubleshooting cases

#### Training Content

##### OMS12 GU IPRAN Fundamental

- GU IPRAN Fundamental
  - IP Origin and Standards
  - IP RAN Networking Overview
  - IP Protocol Structure and Service Implementation
  - Comparison and Prospect of IP RAN Technologies

##### OMS13 GU IPRAN MSTP/PTN Networking

- GU IPRAN MSTP Networking
  - IP RAN Overview
  - MSTP Networking for IP RANs
  - IP RAN Development
- GU IPRAN PTN Networking
  - Introduction to IP RAN
  - PTN Networking for IP RAN
  - IP RAN Development

##### OMS14 GU IPRAN Networking Planing

- GU IPRAN Networking Planing
  - IP RAN Design Basics
  - IP RAN Resource Planning
  - IP RAN Internetworking Switching Process

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## OMS15 GU IPRAN Feature Application

- GU IPRAN Reliability Ensuring Application
  - IP RAN Reliability Requirements and Solution Application
  - IP RAN Reliability Schemes for Different Interfaces
  - IP RAN Reliability Parameter Configuration
- GU IPRAN Clock Application
  - Requirements and Functions of IP RAN Clocks
  - Application of IP RAN Clocks
  - Parameter Configuration of IP RAN Clocks
- GU IPRAN QoS Applications
  - QoS Overview
  - QoS Configuration and Application
  - E2E QoS Implementation
- GU IPRAN Feature Application Practice Guide
  - N/A

## OMS16 GU IPRAN Maintenance and Monitoring

- GU IPRAN Transmission Monitoring
  - Overview for IP RAN O/M
  - Active Monitoring Scheme and Implementation for IP RANs
  - Active Monitoring for Common Faults in IP RANs
- GU IPRAN Maintenance and Test Tools
  - Overview of IP RAN Troubleshooting
  - Application of IP RAN Tools
  - Ping
  - Tracert
  - Packet capturing tool
- GU IPRAN Maintenance and Monitoring Practice Guide

## OMS17 GU IPRAN Troubleshooting

- GU IPRAN Troubleshooting and Case Analysis
  - IP Transmission Troubleshooting Roadmap
  - IP Transmission Faults
  - Three Steps in IP Transmission Fault Isolation
  - Analysis of Typical IP Transmission Troubleshooting Cases
- GU IPRAN Troubleshooting Practice Guide

Duration

5 working days

Class Size

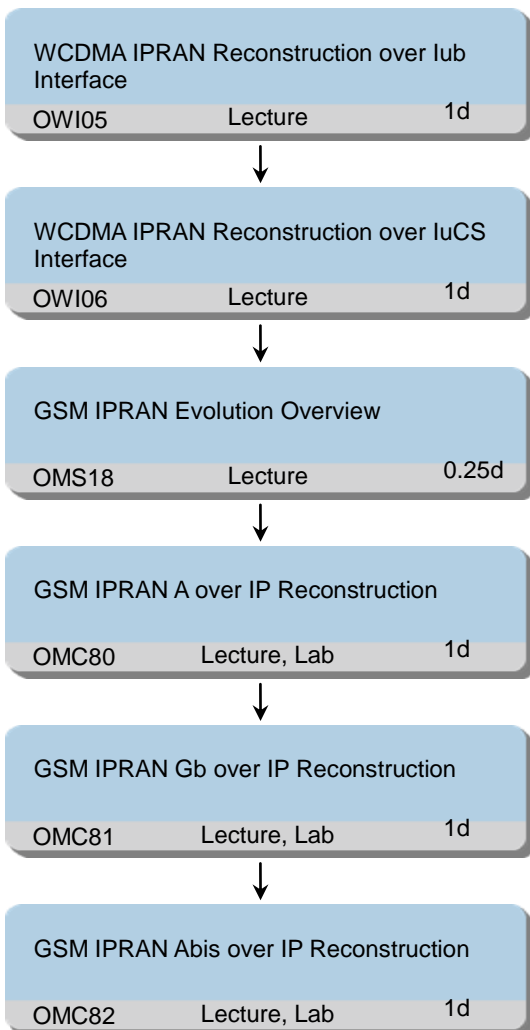
Min 6, Max 12



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## 1.5.34 GSM/UMTS SingleRAN IPRAN Reconstruction

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

### Objectives

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

- Describe the IP Evolution

- 
- Grasp the key steps in IP Evolution
  - Understand the IP Evolution Policies
  - Understand A over IP Networking, Hardware and IP design
  - Prepare A over IP reconstruction script
  - verify the A over IP reconstruction
  - Understand Gb over IP Networking, Hardware and IP design
  - Prepare Gb over IP reconstruction script
  - verify the Gb over IP reconstruction
  - Understand Abis over IP Networking, Hardware and IP design
  - Prepare Abis over IP reconstruction script
  - verify the Abis over IP reconstruction
  - Describe the background of IPRAN Reconstruction
  - Understand IPRAN basic knowledge about RNC
  - Understand IUB IPRAN Reconstruction policy
  - Describe and perform IPRAN Reconstruction scenarios, such as ATM to IP, ATM to dual-stack, dual-stack to IP over Iub interface
  - Describe the background of IPRAN Reconstruction
  - Understand IPRAN basic knowledge about RNC
  - Understand IPRAN networking policy
  - Understand the procedure of Reconstruction in Iu-CS interface from ATM to IP

#### Training Content

##### OWI05 WCDMA IPRAN Reconstruction over Iub Interface

- BSC6900 WCDMA IPRAN Reconstruction Over Iub Interface
  - IPRAN Network Reconstruction Overview
  - IPRAN Basic Knowledge
  - Difference from ATM-based to IPRAN
  - IPRAN Network Design and Strategy for Iub Interface
  - OMCH Design and Strategy
  - Clock Synchronization Design and Strategy
  - RAN Interface Transmission Reliability Design
  - Board and Port Reliability Design
  - Iub ATM to IP Reconstruction Cases
  - Reconstruction from the ATM to the IP over the Iub Interface
  - Reconstruction from the ATM to Dual Stack over the Iub Interface
  - Reconstruction from the Dual Stack to IP over the Iub Interface
- BSC6900 WCDMA IPRAN Reconstruction Over Iub Interface Practice Guide

##### OWI06 WCDMA IPRAN Reconstruction over IuCS Interface

- BSC6900 WCDMA IPRAN Reconstruction Over Iu-CS Interface
  - IP RAN Network Overview
  - IP RAN Basic Knowledge
  - IP Network Design Policy for IuCS Interface

- 
- Iu-CS Interface Networking Solution
  - Board and Port Reliability Backup
  - Transport Layer Reliability
  - IuCS ATM to IP Reconstruction Solution
  - IuCS ATM to IP Reconstruction Cases
  - Reconstruction Introduction
  - Procedure of Hardware Replacement
  - Data Configuration of IP Reconstruction
  - Key Actions During IP Reconstruction
  - BSC6900 WCDMA IPRAN Reconstruction Over Iu-CS Interface Practice Guide
- OMS18 GSM IPRAN Evolution Overview
- GSM IPRAN Evolution Overview
    - Description of the IP Evolution
    - Key Steps in IP Evolution
    - IP Evolution Policies
    - Clock Design
- OMC80 GSM IPRAN A over IP Reconstruction
- GSM IPRAN A over IP Reconstruction
    - A over IP Networking design
    - A over IP Hardware design
    - A over IP IP design
    - A over IP Operation guide
    - A over IP Test Verification
  - GSM IPRAN A over IP Reconstruction Practice Guide
- OMC81 GSM IPRAN Gb over IP Reconstruction
- GSM IPRAN Gb over IP Reconstruction
    - Gb over IP Networking design
    - Gb over IP Hardware design
    - Gb over IP IP design
    - Gb over IP Operation guide
    - Gb over IP Testverification
  - GSM IPRAN Gb over IP Reconstruction Practice Guide
- OMC82 GSM IPRAN Abis over IP Reconstruction
- GSM IPRAN Abis over IP Reconstruction
    - Abis over IP Networking design
    - Abis over IP Hardware design
    - Abis over IP IP design
    - Abis over IP Operation guide
    - Abis over IP Testverification
  - GSM IPRAN Abis over IP Reconstruction Practice Guide

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Duration

5 working days

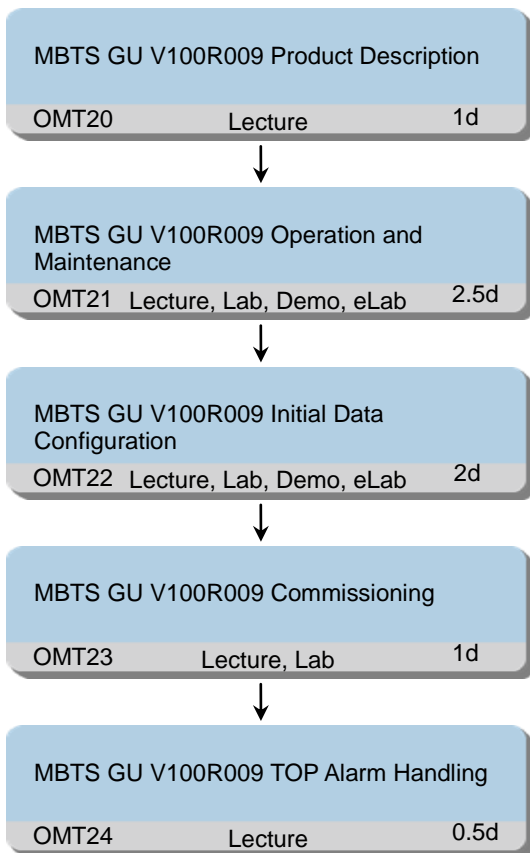
Class Size

Min 6, Max 12

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### 1.5.35 GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

#### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by U2000
- Perform GSM BTS local operation by LMT
- Perform UMTS NodeB routine operation by U2000
- Outline the procedure of MBTS data configuration

- 
- Complete the MBTS initial data configuration based on CME
  - Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Comprehend the basic concepts of alarms
  - Perform the methods of handling alarms via U2000 / LMT
  - Complete TOP alarms handling

#### Training Content

##### OMT20 MBTS GU V100R009 Product Description

- MBTS GU V100R009 Product Description
  - MBTS System Overview
  - MBTS Hardware Structure
  - MBTS Cable Connection
  - MBTS Technical Specifications
  - MBTS Typical Configuration

##### OMT21 MBTS GU V100R009 Operation and Maintenance

- MBTS GU V100R009 Operation and Maintenance
  - Connecting to BTS O/M System
  - Alarm Management via U2000
  - MBTS Device maintenance
  - MBTS Transmission Layer Maintenance
  - MBTS Radio Layer maintenance
  - MBTS Tracing Management
  - MBTS Monitoring Management
  - MBTS System Management
- MBTS GU V100R009 Operation and Maintenance Practice Guide
- MBTS GU V100R009 Field Maintenance
  - Checking hardware
  - LEDs
  - Cable connections
  - Site local maintenance
  - Replacing boards
  - Routine maintenance list
- MBTS GU V100R009 Field Maintenance Practice Guide

##### OMT22 MBTS GU V100R009 Initial Data Configuration

- MBTS GU V100R009 Data Configuration based on CME
  - MBTS Data Configuration Introduction
  - Preparing MBTS Data
  - Creating MBTS Data
  - Exporting MBTS Data

- 
- Creating MBTS Data in Batches (Summary Data File)
  - MBTS GU V100R009 Data Configuration based on CME Practice Guide

OMT23 MBTS GU V100R009 Commissioning

- MBTS GU V100R009 commissioning
  - Overview of MBTS Commissioning
  - Commissioning the MBTS based on U2000
  - Commissioning the MBTS based on U2000 + USB
- MBTS GU V100R009 commissioning practice guide

OMT24 MBTS GU V100R009 TOP Alarm Handling

- MBTS GU V100R009 TOP Alarm Handling
  - Basic Concept / Operation of Alarm
  - Procedure of Alarm Handling
  - GSM Top Alarm Handling
  - UMTS Top Alarm Handling

Duration

7 working days

Class Size

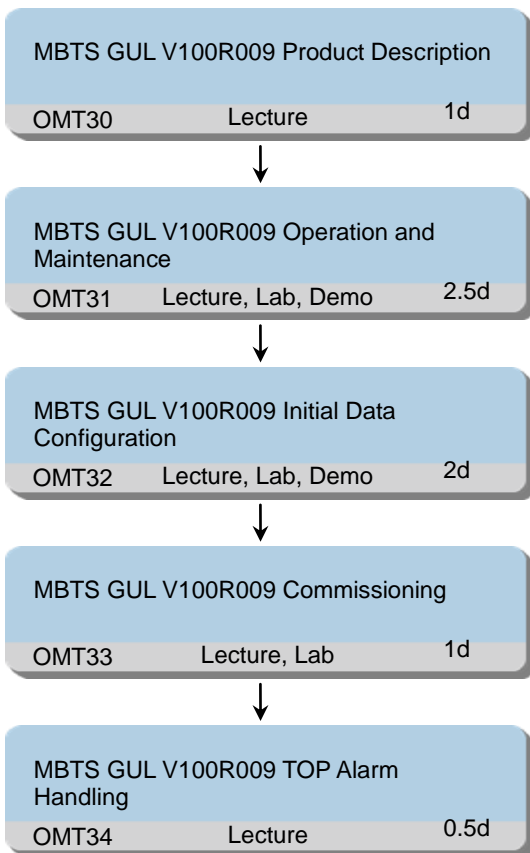
Min 6, max 12

Training Timetable(Optional)

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## 1.5.36 GSM/UMTS/LTE SingleRAN9.0 BTS Operation and Maintenance Training

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Outline BTS3900 product functions
- Detail the hardware structure of BTS3900
- Detail the functions of different modules
- Perform hardware configuration and cables connection
- Perform GSM BTS remote operation by web LMT
- Perform GSM BTS local operation by SMT
- Perform UMTS NodeB routine operation by LMT
- Outline the procedure of MBTS data configuration



- 
- Complete the MBTS initial data configuration based on CME
  - Describe the meaning of some important parameters
  - Understand the MBTS installation procedure.
  - Describe the steps of MBTS commissioning.
  - Master the commissioning of MBTS.
  - Comprehend the basic concepts of alarms
  - Perform the methods of handling alarms via U2000 / LMT
  - Complete TOP alarms handling

#### Training Content

##### OMT30 MBTS GUL V100R009 Product Description

- MBTS GUL V100R009 Product Description
  - MBTS System Overview
  - MBTS Hardware Structure
  - MBTS Cable Connection
  - MBTS Technical Specifications
  - MBTS Typical Configuration

##### OMT31 MBTS GUL V100R009 Operation and Maintenance

- MBTS GUL V100R009 Operation and Maintenance
  - Connecting to BTS O/M System
  - Alarm Management via U2000
  - MBTS Device maintenance
  - MBTS Transmission Layer Maintenance
  - MBTS Radio Layer maintenance
  - MBTS Tracing Management
  - MBTS Monitoring Management
  - MBTS System Management
- MBTS GUL V100R009 Operation and Maintenance Practice Guide
- MBTS GUL V100R009 Field Maintenance
  - Checking hardware
  - LEDs
  - Cable connections
  - Site local maintenance
  - Replacing boards
  - Routine maintenance list
- MBTS GUL V100R008 Field Maintenance Practice Guide

##### OMT32 MBTS GUL V100R009 Initial Data Configuration

- MBTS GUL V100R009 Data Configuration based on CME
  - MBTS Data Configuration Introduction
  - Preparing MBTS Data
  - Creating MBTS Data
  - Exporting MBTS Data

- 
- Creating MBTS Data in Batches (Summary Data File)
  - MBTS GUL V100R009 Data Configuration based on CME Practice Guide

OMT33 MBTS GUL V100R009 Commissioning

- MBTS GUL V100R009 commissioning
  - Overview of MBTS Commissioning
  - Commissioning the MBTS based on U2000
  - Commissioning the MBTS based on U2000 + USB
- MBTS GUL V100R009 commissioning practice guide

OMT34 MBTS GUL V100R009 TOP Alarm Handling

- MBTS GUL V100R009 TOP Alarm Handling
  - Basic Concept / Operation of Alarm
  - Procedure of Alarm Handling
  - GSM Top Alarm Handling
  - UMTS Top Alarm Handling
  - LTE Top Alarm Handling

Duration

7 working days

Class Size

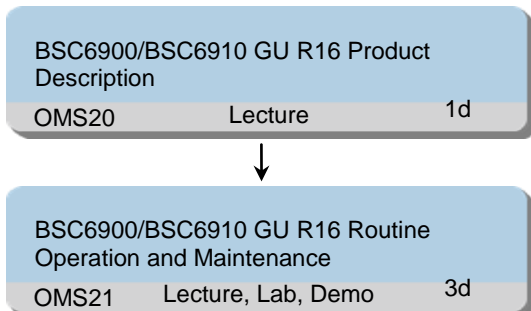
Min 6, max 12

Training Timetable(Optional)

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## 1.5.37 GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance

### Objectives

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

- Detail the system structure of BSC6900/BSC6910
- Detail the functions of the components of BSC6900/BSC6910
- Detail the signal flows in BSC6900/BSC6910
- List the typical hardware configuration of BSC6900/BSC6910
- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900/BSC6910 routine operation
- Perform the BSC6900/BSC6910 routine maintenance

### Training Content

#### OMS20 BSC6900/BSC6910 GU R16 Product Description

- BSC6900 GU V900R016 Product Description
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
  - BSC6900 Signal Flows
  - BSC6900 UMTS Signal Flows

- 
- BSC6900 GSM Signal Flows
  - BSC6900 Typical Configuration
  - BSC6910 GU V900R016 Product Description
    - BSC6910 System Overview
    - BSC6910 Hardware Structure
    - Cabinets
    - Subracks
    - Subsystems and Boards
    - Cables
    - BSC6900 Signal Flows
    - BSC6900 UMTS Signal Flows
    - BSC6900 GSM Signal Flows
    - BSC6900 Typical Configuration

OMS21 BSC6900/BSC6910 GU R16 Operation and Maintenance

- BSC6900/BSC6910 GU R16 Operation and Maintenance
  - OM System Introduction
  - Alarm Monitoring
  - Device Maintenance
  - Transmission Detecting
  - Troubleshooting Assistant
  - Hardware Replacement
  - Data Backup and Restore
  - Other OM Functions
- BSC6900/BSC6910 GU R16 Operation and Maintenance Practice guide

Duration

4 working days

Class Size

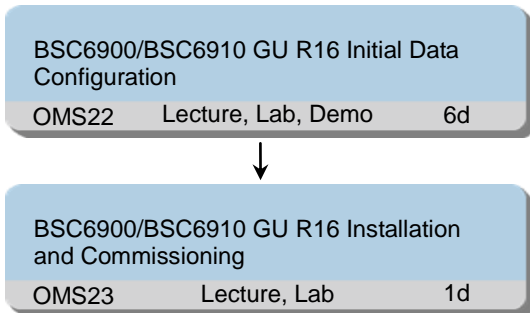
Min 6, max 12

Training Timetable(Optional)

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## 1.5.38 GSM/UMTS SingleRAN9.0 BSC Configuration Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training

### Objectives

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

- Detail the Procedure of BSC6900/BSC6910 Data Configuration
- Perform Global Data Configuration
- Perform Equipment Data Configuration
- Perform Interface Configuration
- Perform Cell Configuration
- Outline MBSC data configuration procedure based on CME
- Complete MBSC data configuration
- Export and activate the configuration data
- Describe BSC6900/BSC6910 commissioning procedure
- Outline OMU software functions
- Complete BSC6900/BSC6910 commissioning

### Training Content

#### OMS22 BSC6900/BSC6910 GU R16 Initial Data Configuration

- BSC6900/BSC6910 GU R16 Initial Data Configuration Based on LMT
  - Data Configuration Overview
  - Preparation
  - Global Data Configuration
  - Equipment Data Configuration

- 
- Interface Data Configuration
  - Cell Data Configuration
  - BSC6900/BSC6910 GU R16 Initial Data Configuration Based on LMT Practice Guide
  - BSC6900/BSC6910 GU R16 Initial Data Configuration Based on CME
    - Introduction of CME
    - Configuration Preparation
    - BSC6900/BSC6910 Data Configuration
    - BSC6900/BSC6910 Data Export
  - BSC6900/BSC6910 GU R16 Initial Data Configuration Based on CME Practice Guide
- OMS23 BSC6900/BSC6910 GU R16 Installation and Commissioning
- BSC6900/BSC6910 GU R16 Installation and Commissioning
    - BSC6900 O/M System Introduction
    - BSC6900 Software Installation
    - BSC6900 Commissioning
    - BSC6900 Commissioning Introduction
    - BSC6900 Commissioning Procedure
  - BSC6900/BSC6910 GU R16 Installation and Commissioning Practice Guide

Duration

7 working days

Class Size

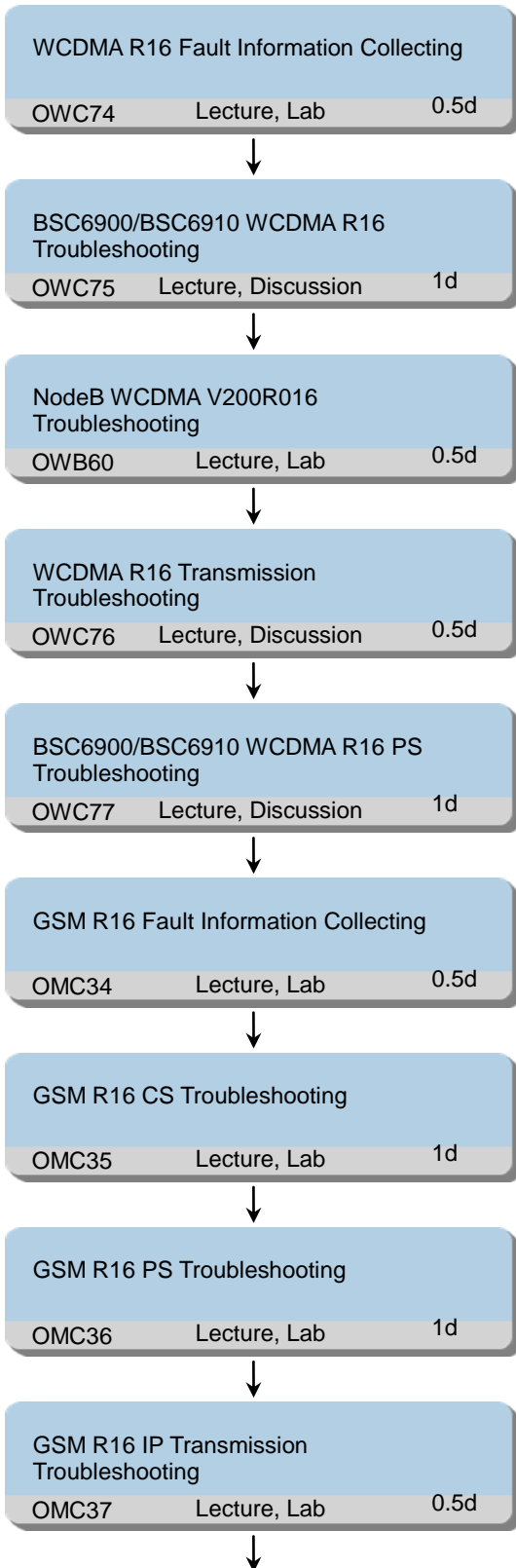
Min 6, max 12

Training Timetable(Optional)

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### 1.5.39 GSM/UMTS SingleRAN9.0 BSS Troubleshooting Training (BSC6900/6910)

#### Training Path



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## GSM R16 Clock Troubleshooting

OMC38      Lecture, Lab      0.5d

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Configuration Training

### Objectives

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

- Describe the OMU Maintenance and Operation
- Know how to collect the fault information for CS and PS fault
- Describe where is the different file in OMU.
- Describe the functions of different files
- Describe the CS Fault Troubleshooting flow
- Know how to do Single pass and no voice Troubleshooting
- Know how to do Cross pass Troubleshooting
- Know how to do Noise Troubleshooting
- Know how to do Echo Troubleshooting
- Describe the PS Fault Troubleshooting flow
- Know how to do PS Data rate Troubleshooting
- Know how to do PS Access Troubleshooting
- Know how to Analyze PS KPI
- Understand typical IP transmission troubleshooting cases
- Understand fault isolation in case of emergencies in IP transmission mode
- Understand how to analyze typical IP transmission troubleshooting cases
- Describe Clock Fault Troubleshooting Flow
- Know how to do Clock troubleshooting
- Describe the OMU Maintenance and Operation
- Know how to collect the fault information for different faults
- Know how to handle RNC equipment-related faults
- Know how to handle NodeB-related faults
- Know how to handle ATM Transmission Faults
- Know how to handle IP Transmission Faults
- Describe the CS and PS Fault Troubleshooting flow



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Know how to handle CS and PS faults Training Content

OWC74 WCDMA R16 Fault Information Collecting

- WCDMA R16 Fault Information Collecting
  - OMU Overview
  - Accident information collecting
  - WRAN problems information collecting
  - HSPA Rate Problems
  - Voice Quality Problems
  - Cell Flow Problems
  - RNC Fault information collecting
  - Equipment Problems
  - Traffic Problems
  - Upgrade Problems
  - Loading Problems
  - NodeB Fault information collecting
  - RTWP Problems
  - License CE Problems
  - Clock Problems
  - Hardware and OM Problems
  - RF Problems
- WCDMA R16 Fault Information Collecting Student Book

OWC75 BSC6900/BSC6910 WCDMA R16 Troubleshooting

- BSC6900/BSC6910 WCDMA R16 Troubleshooting
  - OMU Service Abnormality
  - Equipment Troubleshooting
  - Service Setup Failure Troubleshooting
  - PS Relocation and Inter-RAT Handover Failure Troubleshooting
- BSC6900/BSC6910 WCDMA R16 Troubleshooting Student Book

OWB60 NodeB WCDMA V200R016 Troubleshooting

- NodeB WCDMA V200R016 Troubleshooting
  - RTWP Fault
  - CE Fault
  - Clock Reference Fault
  - CPRI Link Fault
  - RF Channel Failure
- NodeB WCDMA V200R016 Troubleshooting Student Book

OWC76 WCDMA R16 Transmission Troubleshooting

- WCDMA R16 Transmission Troubleshooting
  - ATM Transmission Faults Troubleshooting
  - ATM QoS Faults
  - E1/T1 Faults

- 
- IMA Faults
  - SAAL Faults
  - IP Transmission Faults Troubleshooting
  - FE/GE Transmission Fault
  - IP Layer Fault
  - Signaling Link Fault
  - User Plane Fault
  - IP Clock Fault
  - WCDMA R16 Transmission Troubleshooting Student Book
- OWC77 BSC6900/BSC6910 WCDMA R16 PS Troubleshooting
- BSC6900/BSC6910 WCDMA R16 PS Troubleshooting
    - HSPA+ and HSPA Data Transmission
    - HSUPA Data Transmission Fault Analysis
    - HSDPA Data Transmission Fault
    - Cell Setup Failure
  - BSC6900/BSC6910 WCDMA R16 PS Troubleshooting Student Book
- OMC34 GSM R16 Fault Information Collecting
- GSM R16 Fault Information Collecting Student Book
    - OMU Overview
    - CS Fault information collecting
    - PS Fault information collecting
- OMC35 GSM R16 CS Troubleshooting
- GSM R16 CS Troubleshooting Student Book
    - CS Fault Troubleshooting flow
    - Single pass and no voice Troubleshooting
    - Cross pass Troubleshooting
    - Noise Troubleshooting
    - Echo Troubleshooting
- OMC36 GSM R16 PS Troubleshooting
- GSM R16 PS Troubleshooting Student Book
    - PS Fault Troubleshooting flow
    - PS Data rate Troubleshooting
    - PS Access Troubleshooting
    - PS KPI Anylase
- OMC37 GSM R16 IP Transmission Troubleshooting
- GSM R16 IP Transmission Troubleshooting Student Book
    - TCP/IP Protocol
    - Physical layer Troubleshooting
    - Data link layer Troubleshooting
    - Network layer Troubleshooting
    - LAPD/SCTP Troubleshooting
    - IPPATH Troubleshooting

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OMC38 GSM R16 Clock Troubleshooting

- GSM R16 Clock Troubleshooting Student Book
  - Clock Fault Troubleshooting

Duration

7 working days

Class Size

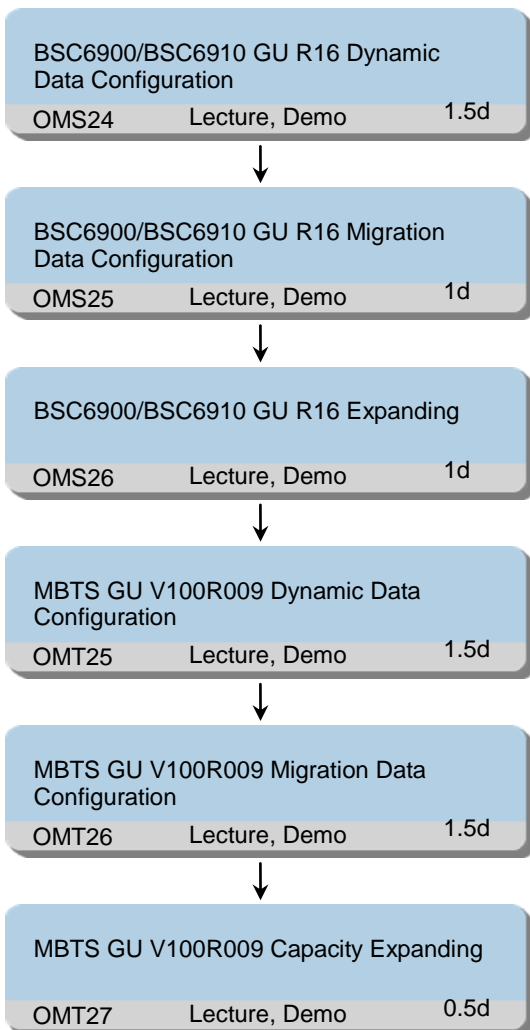
Min 6, max 12

Training Timetable(Optional)

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## 1.5.40 GSM/UMTS SingleRAN9.0 BSS Reconfiguration Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Configuration Training

### Objectives

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

- Describe the procedure of adjusting the BSC

- 
- Describe the modification of OPC and DPC
  - Perform the way to adding/removing subracks and boards
  - Expand the transmission resource in A, GB and Abis interface.
  - Reconfiguring the Transmission Mode on A, Gb and Abis interface.
  - Adjust the cell processing in DPU board
  - Perform how to Increase Frequencies on the UMTS Network
  - Perform how to Reconfigure the Parameters of Physical NodeBs
  - Perform how to Reconfigure the Data of Cells and Neighboring Cells in Batches
  - Perform how to Reconfigure Cell Algorithm Parameters
  - Describe what is BSC migration
  - Describe the procedure of the BSC migration
  - Perform the BSC migration
  - Describe the procedure of expanding the BSC/RNC capacity
  - Perform how to add a BSC/RNC board
  - Perform how to add an EPS/RNC of BSC
  - Describe the procedure of MBTS dynamic data adjustment
  - Adjust the Global/Device/Transmission Data
  - Adjust the Cells/TRXs/Channels Data
  - Adjust the BTS Data
  - Repair BTSs
  - Detail the scenarios of BTS/NodeB migration
  - Detail the procedure of BTS/NodeB migration
  - Perform the BTS/NodeB migration
  - Describe the procedures of expanding the BTS capacity
  - Perform how to add BTS Cells
  - Perform how to add BTS TRXs
  - Perform how to add WBBP Board
  - Perform how to add RF Unit

#### Training Content

##### OMS24 BSC6900/BSC6910 GU R16 Dynamic Data Configuration

- WCDMA R16 Interface Capacity Expansion Based on LMT
  - Iub Interface Capacity Expansion
  - Iub Interface Capacity Expansion in ATM Transmission Mode
  - Iub Interface Capacity Expansion in IP Transmission Mode for BSC6900
  - Iub Interface Capacity Expansion IP Pool
  - Iur Interface Capacity Expansion
  - Iur Interface Capacity Expansion in ATM Transmission Mode
  - Iur Interface Capacity Expansion in IP Transmission Mode for BSC6900
  - Iur Interface Capacity Expansion IP Pool
  - Iu-CS Interface Capacity Expansion
  - Iu-CS Interface Capacity Expansion in ATM Transmission Mode

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- lu-CS Interface Capacity Expansion in IP Transmission Mode for BSC6900
    - lu-CS Interface Capacity Expansion IP Pool
    - lu-PS Interface Capacity Expansion
    - lu-PS Interface Capacity Expansion in IP Transmission Mode for BSC6900
    - lu-PS Interface Capacity Expansion IP Pool
  - WCDMA R16 Interface Capacity Expansion Based on LMT Practice Guide
  - NodeB WCDMA V200R016 NodeB Resource Distribution Adjusting Based on LMT (Only for BSC6900)
    - Reconfiguring resource management based on NodeBs
    - Reconfiguring resource management based on cells
    - Reconfiguring resource management based on NCPs or CCPs
  - NodeB WCDMA V200R016 NodeB Resource Distribution Adjusting Based on LMT Practice Guide (Only for BSC6900)
  - BSC6900/BSC6910 GSM R16 Dynamic Data Configuration based on LMT
    - Changing the Connection Between the BSC and the MSC
    - Cutting Over an MSC (with IP Transmission Mode Retained over the A Interface)
    - Cutting Over an MSC (TDM to TDM Transmission Mode over the A Interface)
    - Cutting Over an MSC (TDM to IP Transmission Mode over the A Interface)
    - Modify OPC and DPC
    - Modify N7 signaling link from 64k to 2M
    - Add STP in A interface
    - add subracks and boards
    - Remove Boards and Subracks
    - modify single OMU to double OMU
    - expand the transmission resource in A, GB and Abis interface.
    - Reconfiguring the Transmission Mode
    - Changing the Transmission Mode on the A Interface
    - Reconfiguring the Transmission Mode on the Ater Interface
    - Changing the Transmission Mode on the Gb Interface
    - Changing the Transmission Mode on the Abis Interface
    - Adjust the cell processing in DPU board(BSC6900)
  - BSC6900/BSC6910 GSM R16 Dynamic Data Configuration based on LMT Practice Guide
- OMS25 OMS05 BSC6900/BSC6910 GU R16 Migration
- BSC6900 WCDMA V900R016 Migration Data Configuration Based on LMT
    - RNC Migration Scenarios
    - Adjusting the Connection Between the RNC and MSC (ATM to IP over the lu-CS interface)
    - Adjusting the Connection Between the RNC and MSC Without Changing the ATM Transmission Scheme on the lu-CS Interface)
    - Adjusting the Connection Between the RNC and MSC (ATM to IP over the lu-CS Interface)
  - BSC6900 WCDMA V900R016 Migration Data Configuration Based on LMT Practice Guide

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- BSC6900/BSC6910 GSM R16 Migration
    - BSC Migration Summary
    - Reparenting BSC Between MSC Servers
    - Reparenting BSC Between SGSN
  - BSC6900/BSC6910 GSM R16 Migration Practice Guide
  - OMS26 BSC6900/BSC6910 GU R16 Capacity Expanding
    - BSC6900/BSC6910 GSM R16 Capacity Expanding
      - Overview of Expanding the BSC Capacity
      - Adding a BSC Board
      - Adding an EPS Subrack
    - BSC6900/BSC6910 GSM R16 Capacity Expanding Practice Guide
    - BSC6900/BSC6910 WCDMA R16 Capacity Expansion Based on LMT
      - Overview of Expanding the RNC Capacity
      - Adding a SPUa or SPUb Board for BSC6900
      - Adding a DPUb or DPUe Board for BSC6900
      - Adding an EGPUa Board for BSC6910
      - Adding an Interface Board
      - Adding a Subrack
    - BSC6900/BSC6910 WCDMA R16 Capacity Expansion Based on LMT Practice Guide
  - OMT25 MBTS GU V100R009 Dynamic Data Configuration
    - MBTS GSM V100R009 Data Reconfiguration based on CME
      - Dynamic Data Adjustment Introduction
      - Adjusting the Global/Device/Transmission Data
      - Adjusting the Cells/TRXs/Channels Data
      - Adjusting the BTS Data
      - Reparenting BTSs
    - MBTS GSM V100R009 Data Reconfiguration based on CME Practice Guide
    - MBTS GSM V100R009 Data Reconfiguration based on LMT
      - Reconfiguring a BTS via LMT
      - Changing the Connection Between the BSC and the MSC via LMT
      - Reconfiguring a Cell via LMT
      - Reconfiguring a Channel via LMT
    - MBTS GSM V100R009 Data Reconfiguration based on LMT Practice Guide
    - WCDMA R16 Dynamic Data Reconfiguration Based on CME
      - Changing Signaling Points
      - Reconfiguring a Cell
      - Modifying an SCCPCH
      - Reconfiguring Neighboring Cells
      - Reconfiguring the NodeB Clock Source or the Clock Working Mode
    - WCDMA R16 Dynamic Data Reconfiguration Based on CME Practice Guide
  - OMT26 MBTS GU V100R009 Migration Data Configuration
    - MBTS GSM V100R009 Migration

- 
- BTS Reparenting Overview
  - Reparenting BTSs within a BSC (TDM)
  - Reparenting BTSs within a BSC (IP)
  - Reparenting BTSs between BSCs (TDM/Static IP/Non-Static IP)
  - MBTS GSM V100R009 Migration Practice Guide
  - NodeB WCDMA V200R016 Migration Data Configuration Based on CME (Only for BSC6900)
    - NodeB Reparenting Scenarios
    - Reparenting NodeBs Under an RNC
    - Reparenting NodeBs Between RNCs of the Same Version
  - NodeB WCDMA V200R016 Migration Data Configuration Based on CME Practice Guide (Only for BSC6900)

#### OMT27 MBTS GU V100R009 Capacity Expanding

- MBTS GSM V100R009 Expanding
  - Overview of Expanding the BTS Capacity
  - Adding a BTS cell
  - Adding a BTS TRX
- MBTS GSM V100R009 Expanding Practice Guide
- NodeB WCDMA V200R016 Expansion Based on CME
  - Adding a Baseband Board to a 3900 Series Base Station
  - Adding an RF Unit
- NodeB WCDMA V200R016 Expansion Based on CME Practice Guide

#### Duration

7 working days

#### Class Size

Min 6, max 12

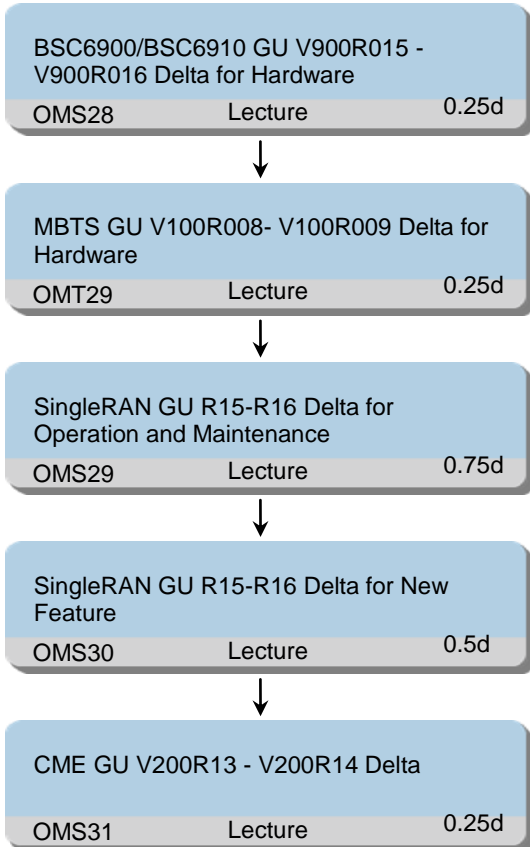
#### Training Timetable(Optional)



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## 1.5.41 GSM/UMTS SingleRAN8.0 - SingleRAN9.0 Product Delta Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Configuration Training

### Objectives

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

- Know the capacity specifications of the BSC6900/6910 V900R016
- Know the new hardware adopted by the BSC6900/6910 V900R016

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- Know the hardware configuration and capacity of the BSC6900/6910 V900R016
  - Know the new hardware adopted by the MBTS GU V100R009
  - Know the New hardware configuration
  - Know the principles and application scenarios of the O/M features
  - Know the configuration procedures and implementation methods of the O/M features
  - Know the principles and application scenarios of the new features
  - Know the configuration procedures and implementation methods of the new features
  - Know the new feature of CME
  - Master the new feature for GSM, UMTS and SRAN

#### Training Content

##### OMS28 BSC6900/BSC6910 GU V900R015 - V900R016 Delta for Hardware

- BSC6900/BSC6910 GU V900R015 - V900R016 Delta for Hardware
  - BSC6900/6910 Evolution Overview
  - BSC6900/6910 Hardware Evolution
  - BSC6900/6910 Typical Hardware Configuration

##### OMT29 MBTS GU V100R008- V100R009 Delta for Hardware

- MBTS GU V100R008 - V100R009 Delta for Hardware
  - SRAN8.0 Solution Introduction
  - Overview of the new TRX modules
  - Product hardware of the new TRX modules
  - Configuration specifications of the new TRX modules

##### OMS29 SingleRAN GU R15-R16 Delta for Operation and Maintenance

- BSC6900/BSC6910 GU V900R015 - V900R016 New Maintainability and Testability Feature
  - GBSS O/M feature
  - Quickly Collecting Fault Information
  - Collecting BTS Logs
  - Real-Time Monitoring of Cell Performance Monitoring
  - GSM 1-Minute Performance Real-Time Monitoring
  - E2E Voice Problem Location
  - Single-User Tracing Optimization
  - Optimization of the Function of Co-MPT Base Stations
  - WRAN O&M feature
  - Fault Management Assistant
  - Enhancement of Batch Configuration
  - Monitoring EVQI
  - Real-Time Monitoring of Cell Performance Monitoring
  - SingleOM

##### OMS30 SingleRAN GU R15-R16 Delta for New Feature

- BSC6900/BSC6910 GU V900R015 - V900R016 New Feature
  - GSM Features
  - 4-Way Receiver Diversity Supported by Multi-Carrier Modules

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- Antenna Frequency Hopping
  - Multi-Site Cell Enhancement
  - MOCN II
  - Base Station OMCH Self-recovery
  - UMTS Features
  - RNC in Pool Solution
  - MOCN Cell Resource Demarcation
  - MOCN Independent Iub Transmission Resource Allocation
  - SRAN Features
  - Co-MPT Reconstruction
  - Multi-BBU Interconnection
  - Base Station OMCH Self-recovery

OMS31 CME GU V200R13 - V200R14 Delta

- CME GU V200R13 - V200R14 Delta
  - New NE Types
  - New and Modified Features on the Platform
  - New and Modified Common Features
  - New and Modified Features for GSM Configuration
  - New and Modified Features for UMTS Configuration
  - New and Modified Features for SRAN Configuration

Duration

2 working days

Class Size

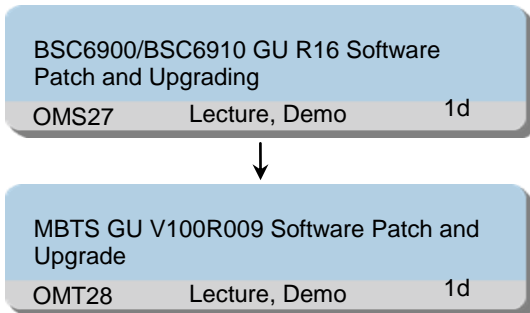
Min 6, max 12

Training Timetable(Optional)

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## 1.5.42 GSM/UMTS SingleRAN9.0 Patch and Upgrade Training (BSC6900/6910)

### Training Path



### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training

### Objectives

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

- Describe the software installation and upgrade flow
- Outline the backup and restore operations
- Complete the installation and upgrade tasks
- Grasp the OMU routine maintenance commands
- Describe the upgrade procedure
- Describe the upgrade of MBTS
- Describe the verification operations after upgrade.
- Describe how to roll the version back to the one before upgrade

### Training Content

#### OMS27 BSC6900/BSC6910 GU R16 Software Patch and Upgrade

- BSC6900/BSC6910 GU R16 Software Patch and Upgrade
  - BSC6900/BSC6910 OMU Introduction
  - BSC6900/BSC6910 Application Software Upgrade Directly
  - BSC6900/BSC6910 Application Software Upgrade by U2000
  - OMU Operation and Maintenance
- BSC6900/BSC6910 GU R16 Software Patch and Upgrade Practice Guide

#### OMT28 MBTS GU V100R009 Software Patch and Upgrade

- MBTS GU V100R009 Software Patch and Upgrade

- 
- MBTS GU Upgrade Overview
  - MBTS GU Upgrade Guide based on LMT
  - MBTS GU Upgrade Guide based on U2000

MBTS GU V100R008 Patch and Upgrade Practice Guide

Duration

2 working days

Class Size

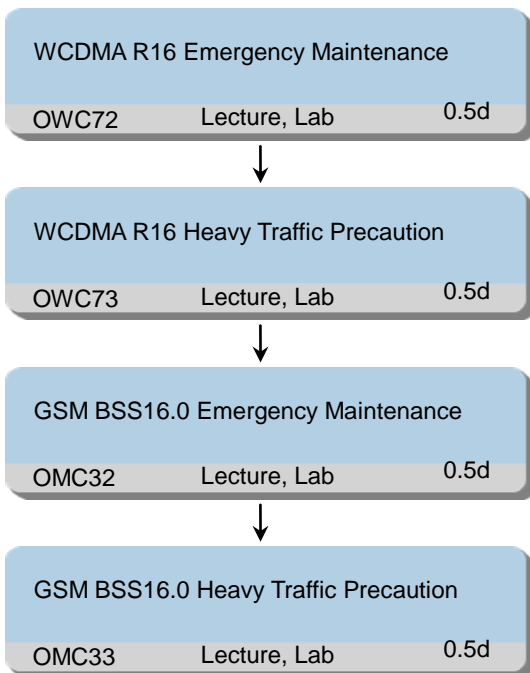
Min 6, max 12

Training Timetable(Optional)

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### 1.5.43 GSM/UMTS SingleRAN9.0 Emergency Maintenance Training (BSC6900/6910)

#### Training Path



#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN9.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN9.0 BSC Configuration Training

#### Objectives

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

- Understand the Basic Symptoms About the Accident
- Know how to collect the related information
- Excute the quick emergency handling methods.
- Understand Precautions and Emergency Maintenance for heavy Traffic
- Know how to adjust BSC parameters before heavy traffic
- Excute emergency maintenance for heavy traffic
- Describe Brief Guide to troubleshoot emergency fault
- Collect fault information for troubleshooting
- Grasp some typical emergency faults troubleshooting

- Master basic skills for heavy traffic precaution
- Understand preparations for heavy traffic precaution
- Master parameter adjustment of heavy traffic precaution
- Deal with typical heavy traffic caused fault

#### Training Content

##### OMC72 WCDMA R16 Emergency Maintenance

- WCDMA R16 Emergency Maintenance
  - Emergency maintenance overview
  - Brief guide to troubleshoot fault
  - Learning about fault symptoms
  - Collecting fault information
  - Measures for accident recovery
  - Typical emergency fault scenarios
  - Upgrade-related Faults
  - Operation-related Faults
  - Dysfunctional Iub Interface
  - Dysfunctional Iu Interface
  - Congestion on the Iu Signaling Plane
  - UE Access Restricted by the License
  - Low Success Rate of SCCP Connection Establishment
- WCDMA R16 Emergency Maintenance Practice Guide

##### OMC73 WCDMA R16 Heavy Traffic Precaution

- WCDMA R16 Heavy Traffic Precaution
  - The overview of the heavy traffic precaution
  - Pre-Festival network evaluation and expansion
  - Important KPIs
  - General overview and basic skills introduction
  - General overview
  - Back up and restore Configuration Data
  - View the CPU Usage of SPU and DPU
  - Preparation and suggestions on parameter adjustment before a heavy traffic
  - Preparation before heavy traffic
  - Parameter adjustment before heavy traffic
  - Emergency measures for heavy traffic fault
  - Final preparations
  - CPU overload on the SPU
  - Traffic volume over an SPU subsystem is 0
  - CPU overload on the MPU
  - CPU overload on the Interface board
  - Congestion on the Iu Signaling Plane
  - CN overload

- 
- WCDMA R16 Heavy Traffic Precaution Practice Guide
  - OMC32 GSM BSS16.0 Emergency Maintenance
    - GSM BSS16.0 Emergency Maintenance
      - Emergency Maintenance Overview
      - Basic symptoms about the accident
      - collecting related information
      - quick emergency handling methods
    - GSM BSS16.0 Emergency Maintenance Practice Guide
  - OMC33 GSM BSS16.0 Heavy Traffic Precaution
    - GSM BSS16.0 Heavy Traffic Precaution
      - Precautions and Emergency Maintenance for Large Traffic Overview
      - Adjusting BSC Parameters Before Large Traffic
      - Emergency Maintenance for Large Traffic
    - GSM BSS16.0 Heavy Traffic Precaution Practice Guide

Duration

2 working days

Class Size

Min 6, max 12

Training Timetable(Optional)



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## 1.6 WBT

### 1.6.1 BSC6900 GU V900R013 Product Description (WBT)

#### Training Path

BSC6900 GU V900R013 Product Description (WBT)		
NA	WBT	1 H

#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

#### Objectives

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

- List the system structure of BSC6900
- Describe the functions of the components of BSC6900
- List the typical hardware configuration of BSC6900

#### Training Content

NA BSC6900 GU V900R013 Product Description (WBT)

- BSC6900 GU V900R013 Product Description (WBT)
  - BSC6900 System Overview
  - BSC6900 Hardware Structure
  - BSC6900 Typical Configuration

#### Duration

1 hour

#### Class Size

No limit

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## 1.6.2 MBTS GU V100R004 Product Description (WBT)

### Training Path

MBTS GU V100R004 Product Description (WBT)		
NA	WBT	1 H

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

### Objectives

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

- Know the application scenarios of Dual-Mode BTS3900
- Grasp the hardware structure of Dual-Mode BTS3900
- Grasp the functions of the modules
- Master typical configuration of Dual-Mode BTS3900
- Know the networking topology of Dual-Mode BTS3900

### Training Content

NA MBTS GU V100R004 Product Description (WBT)

- MBTS GU V100R004 Product Description (WBT)
  - MBTS39 Overview
  - MBTS Hardware Components
  - BBU
  - RXU
  - MBTS Typical Configuration
  - MBTS Network

### Duration

1 hour

### Class Size

No limit

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### 1.6.3 BSC6900 GU V900R013 Operation and Maintenance(WBT)

#### Training Path

BSC6900 GU V900R013 Operation and Maintenance (WBT)		
NA	WBT	1 H

#### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

#### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

#### Objectives

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

- Detail the structure of operation and maintenance subsystem
- Perform the BSC6900 routine operation
- Perform the BSC6900 routine maintenance

#### Training Content

NA BSC6900 GU V900R013 Operation and Maintenance(WBT)

- BSC6900 GU V900R013 Operation and Maintenance(WBT)
  - OM System Introduction
  - Introduction of web LMT
  - Alarm management
  - Device panel management
  - BSC maintenance
  - Trace management
  - Performance monitoring

#### Duration

1 hour

#### Class Size

No limit

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## 1.6.4 SingleRAN MBTS GUL Product Overview (WBT)

### Training Path

SingleRAN MBTS GUL Product Overview (WBT)		
NA	WBT	1 H

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

### Objectives

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

- Understand concept of the 3900 series base station.
- Grasp the hardware architecture.
- Master the typical application.

### Training Content

#### NA SingleRAN MBTS GUL Product Overview (WBT)

- SingleRAN MBTS GUL Product Overview (WBT)
  - MBTS Overview
  - Hardware Architecture
  - Typical Application Scenarios

### Duration

1 hour

### Class Size

No limit

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## 1.6.5 SingleRAN MBSC GU Product Overview (WBT)

### Training Path

SingleRAN MBSC GU Product Overview (WBT)		
NA	WBT	1H

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

### Objectives

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

- Know Concept of the single RAN
- Know MBSC product benefits
- Know MBSC basic architecture.

### Training Content

#### NA SingleRAN MBSC GU Product Overview (WBT)

- SingleRAN MBSC GU Product Overview (WBT)
  - Concept of the SingleRAN
  - Concept MBSC
  - MBSC benefits
  - MBSC base architecture

### Duration

1 hour

### Class Size

No limit

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## 1.6.6 SingleRAN GUL OM Tools Introduction(WBT)

### Training Path

SingleRAN GUL O&M Tools Introduction (WBT)		
NA	WBT	1H

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

### Objectives

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

- Describe SingleRAN GUL OM Tools
- Know how to use Web LMT
- Know how to use M2000
- Know how to use CME

### Training Content

NA SingleRAN GUL O&M Tools Introduction (WBT)

- SingleRAN GUL O&M Tools Introduction(WBT)
  - SingleRAN GUL OM Tools Introduction
  - Web LMT Introduction
  - M2000 Introduction
  - CME Introduction

### Duration

1 hour

### Class Size

No limit

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## 1.6.7 SingleRAN MBTS GUL Site Solution(WBT)

### Training Path

SingleRAN MBTS GUL Site Solution (WBT)		
NA	WBT	1 H

### Target Audience

BSS Field Technicians, Operation and Maintenance Technicians and Engineers

### Prerequisites

- Basic knowledge of mobile communications
- At least 1 year working experience in GSM UMTS wireless network operation and maintenance
- Successful completion of the following program(s):
- GSM/UMTS SingleRAN6.0/7.0/8.0 BTS Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Operation and Maintenance Training
- GSM/UMTS SingleRAN6.0/7.0/8.0 BSC Configuration Training

### Objectives

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

- Describe SingleRAN MBTS GUL Site Solution
- Describe Site Solution for different application Scenarios

### Training Content

#### NA SingleRAN MBTS GUL Site Solution (WBT)

- SingleRAN MBTS GUL Site Solution(WBT)
  - SingleRAN MBTS GUL Site Solution Overview
  - Site Solution based on application Scenarios
  - Site Solution based on BTS/DBS

### Duration

1 hour

### Class Size

No limit

