

# Customer Training Catalog Course Descriptions PS



**HUAWEI**  
**HUAWEI Learning Service**  
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## 1.1 Training Course Descriptions

PS Training Courses are designed as follows:

Code	Training Courses	Level	Duration (working days)	Training Location	Class Size
<b>PS Training Courses</b>					
OWA01	GPRS/UMTS PS Fundamental Training	I	2		6 ~ 12
OEA10	EPC Principle Fundamental Training	II	2		6 ~ 12
OEB90	EPC product (USN&UGW&CG) overview	II	2		6 ~ 12
OEB9B	USN ATCA platform Operation and Maintenance Training	II	3		6 ~ 12
OEB9B	USN9810 (MME) Data Configuration Training (4G)	III	5		6 ~ 12
OEB9B	USN9810 (SGSN/MME) Data Configuration Training (2G/3G/4G)	III	10		6 ~ 12
OEB91	USN9810 (SGSN) Data Configuration Training (2G/3G)	III	9		6 ~ 12
OEB10	USN9810 Delta and new feature Training	III	1		6 ~ 12
OEB31	USN9810 APN and Roaming Solution Training	III	2		6 ~ 12
OEB21	UGW Routine Operation and Maintenance Training	II	2		6 ~ 12
OEB30	UGW (SGW/PGW) Data Configuration Training(4G)	III	6		6 ~ 12
OED99	UGW (SGW/PGW/GGSN) Data Configuration Training (2/3/4G)	III	6		6 ~ 12
OED99	UGW (GGSN) Data Configuration Training (2/3G)	III	5		6 ~ 12
OED10	UGW9811 Delta and new feature Training	III	1		6 ~ 12
OWD30	SA Application Configuration Training	III	2		6 ~ 12
OWI30	CG9812 Administration (Windows) Training	II	2		6 ~ 12
OWI31	CG9812 Administration (UNIX) Training	II	2		6 ~ 12
OWI50	CG9812 Operation and Maintenance Training(ATCA)	II	2		6 ~ 12
OWB93	PS Alarm Monitoring and Management	II	1		6 ~ 12
OEB93	EPC Alarm Monitoring and Management Training	II	1		6 ~ 12
OWB92	PS Performance Monitoring Training	III	1		6 ~ 12
OEB92	EPC Performance Monitoring and Management Training	III	1		6 ~ 12

OWB06	EPC Network Security Training	III	1		6 ~ 12
OWA90	GUL Convergence Training	III	2		6 ~ 12
OEB33	EPC VOLTE Solution Training (CSFB)	IV	2		6 ~ 12
OEB30	EPC VOLTE Solution Training (SRVCC)	IV	2		6 ~ 12
OEY00	IPv6 Solution for PS/EPC	IV	1		6 ~ 12
OWB76	SGSN POOL Training	III	3		6 ~ 12
OEB32	MME POOL Training	III	2		6 ~ 12
OWA11	PS QOS Training	IV	1		6 ~ 12
OWA06	IP Convergence for Packet Core Training	III	4		6 ~ 12
OWB76	PS Signaling Procedure Analysis and Troubleshooting	IV	2		6 ~ 12
OWB77	PS Interface Signaling Analysis and Troubleshooting Training	IV	3		6 ~ 12
OWA78	PS Data Transfer Troubleshooting Training	IV	2		6 ~ 12
OEA02	EPC Interface Protocol Analysis Training	IV	2		6 ~ 12
OEA03	EPC Signaling Analysis Training	IV	2		6 ~ 12
OEB04	EPC Troubleshooting Training	IV	3		6 ~ 12
OWB67	PS Network Optimization Training	IV	2		6 ~ 12
OWB68	PS Network Planning and Design Training	IV	2		6 ~ 12
OEA07	EPC Network Planning and Design Training	IV	2		6 ~ 12
OWB68	EPC Network Optimize Training	IV	2		6 ~ 12
OWL21	M2000 Routine Operation and Maintenance Training	II	2		6 ~ 12
OEN11	DNS9816 Operation and Maintenance Training	II	1		6 ~ 12
OWB34	UAG Operation and Maintenance Training	II	4		6 ~ 12
OXE30	WASN9770 Operation and Maintenance Training	II	5		6 ~ 12
OXT11	TGW9811 Operation and Maintenance Training	II	3		6 ~ 12
ORP03	CDMA PDSN Operation and Maintenance Training	II	7		6 ~ 12
OED99	UGW9811(CDMA) Data configuration Training	II	5		6 ~ 12
OWT12	PS Nstar Training	II	1		6 ~ 12
OWW01	PS PRS Engineer Training	II	1		6 ~ 12

OWW02	UGW9811(EPSN) Product Training	II	5		6 ~ 12
OWW03	UDN9813 Operation and Maintenance Training	II	0.5		6 ~ 12
OWW05	DT Feature Training	II	1		6 ~ 12
OSE03	Smartcare Service Quality Improvement Training	III	3		6 ~ 12
OCC02	LTE System Overview Training (HC)	I	1		6 ~ 12
OCC03	LTE Field Maintenance Training (HC)	I	2		6 ~ 12
OEA07	EPC Principle Testing Training(HC)	II	1		6 ~ 12
OEB9B	USN ATCA platform Operation and Maintenance Training (HC)	II	2		6 ~ 12
OEB9B	USN9810 (MME) Data Configuration Training (4G) (HC)	III	3		6 ~ 12
OEB21	UGW Routine Operation and Maintenance Training (HC)	II	2		6 ~ 12
OEB30	UGW (SGW/PGW) Data Configuration Training (HC)	III	4		6 ~ 12
OEB34	EPC HSS Data Configuration (HC)	II	2		6 ~ 12

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## 1.2 PS Training Course Descriptions

### 1.2.1 OWA01 GPRS/UMTS PS Fundamental Training



#### Objectives

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

- Outline the UMTS PS Network Structure.
- Describe the PS Core Network interface and Protocol.
- Describe the PS Core Network Working Principle.

#### Target Audience

All Technical and non-Technical Persons

#### Prerequisites

- A general understanding of mobile communication and data communication.

#### Content

- Describe the UMTS PS Network Structure.
- Describe the PS Core Network elements and function.
- Describe the PS Core Network Interface and

Protocol.

- Describe the PS Core Network Working Principle.
- Describe the PS Core Network attach work flow.
- Describe the PS Core Network PDP active work flow.
- Describe the PS Core Network MM work flow.
- Describe the PS Core Network SM work flow.
- Describe the PS Core Network RAU work flow.
- Describe the PS Core Network relocation work flow.

#### Training Methods

Lecture

#### Duration

2 working days

#### Class Size

Min 6, max 12

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## 1.2.2 OEA10 EPC Principle Fundamental Training



### Objectives

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

- Outline the EPC network structure.
- Describe the EPC network interface and protocol.
- Describe the EPC network working procedures.

### Target Audience

All Technical and non-Technical Persons

### Prerequisites

- A general understanding of mobile communication and data communication.
- Be familiar with Windows operation system.
- Have basic knowledge of mobile network.

### Content

- Describe EPC architecture.
- Describe function of each node in EPC.
- Describe PDN connection.
- Describe EPC bearers and TFT(s).
- Describe tracking areas and tracking area lists.

- Describe identifiers and legacy IDs.
- Describe security mechanisms in EPC.
- Describe QoS in EPC.
- Describe the selection function in EPC.
- Describe the protocol used in EPC (GTP, PMIP, diameter, etc.).
- Describe attach and detach procedure.
- Describe tracking area update procedure.
- Describe handover procedure.
- Describe bearer activation/modification/deactivation procedure.
- Describe SRVCC for voice service.
- Describe CSFB for voice service.

### Training Methods

Lecture

### Duration

2 working days

### Class Size

Min 6, max 12



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### 1.2.3 OEB90 EPC product (USN&UGW&CG) overview



#### Objectives

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

- Outline USN9810 background, function, feature and specification.
- Outline UGW9811 background, function, feature and specification.
- Outline CG9812 background, function, feature and specification.

#### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

#### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and EPC Principle.

#### Content

- Describe background knowledge of USN9810.
- Describe functions of USN9810.
- Describe feature and specification of USN9810.
- Describe background knowledge of UGW9811.
- Describe function of UGW9811.
- Describe feature and specification of UGW9811.
- Describe background knowledge of CG9812.
- Describe function of CG9812.
- Describe feature and specification of CG9812.

#### Training Methods

Lecture, Hands-on Exercise, Demonstration

#### Duration

2 working days

#### Class Size

Min 6, max 12

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## 1.2.4 OEB9B USN9810 ATCA platform Operation and Maintenance Training



### Objectives

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

- Describe system structure and hardware structure of USN9810.
- Perform software related installation and upgrade procedure.
- Perform hardware operation and maintenance.
- Perform the Routine Operation and Maintenance including security management, system information management, alarm management, trace management, data management, license management, performance management.
- Describe USN9810 software structure.
- Perform USN9810 LMT software Installation.
- Perform USN9810 host software installation.
- Describe power on and power off the USN9810.
- Describe USN9810 hardware system status checking.
- Perform board replacement.
- Perform dust cleaning.
- Perform LMT account management.
- Perform FTP account management.
- Perform log management.
- Perform trace management.
- Describe configuration data backup and restore.
- Describe system data backup and restore.
- Describe patch management.
- Perform license checking.
- Describe license related alarms.
- Perform license applying.
- Perform license installation.
- Perform operation and maintenance of alarm system.
- Describe basic alarm handling procedure.
- Perform performance task setting.
- Perform performance result operation.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program EPC Principle Fundamental Training.

### Content

- Describe background knowledge of USN9810.
- Describe functions of USN9810.
- Describe feature and specification of USN9810.
- Describe system structure of USN9810.
- Describe cable connection of USN9810.
- Describe service flow of USN9810.
- Describe USN9810 LMT software.
- USN9810 LMT Introduction.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

3 working days

### Class Size

Min 6, max 12

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## 1.2.5 OEB9B USN9810 (MME) Data Configuration Training (4G)



### Objectives

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

- Describe protocol stack of different interfaces.
- Perform configuration of USN hardware, System Information, interworking with eNodeB, HSS, MME, S-GW, DNS and NTP.
- Perform configuration of mobility management and session management.

### Target Audience

Field Maintenance Engineer, Second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program USN ATCA platform Operation and Maintenance Training.

### Content

- Describe basic hardware configuration and commissioning on the ATCA.
- Describe process group configuration and commissioning on the ATCA.
- Describe port configuration and commissioning on the ATCA.
- Describe clock configuration and commissioning on the ATCA.
- Describe system information configuration and perform commissioning.
- Describe background knowledge about the S1-MME interface.

- Perform configuration procedure of S1-MME interface and commissioning.
- Describe background knowledge about the S6a interface.
- Perform S6a interface configuration and commissioning
- Describe background knowledge about the S10/S11 interface.
- Perform S10/S11 interface configuration and commissioning
- Describe intelligent gateway selection principle
- Perform intelligent gateway selection configuration.
- Perform EMM mobility management parameter data configuration.
- Perform ESM session management parameter data configuration.
- Describe multiple basic concepts of IP network.
- Perform IP interface-related configuration and commissioning.
- Configure and commission the static IP route and open shortest path first (OSPF) route.
- Describe the DNS data configuration of the MME.
- Complete simple DNS configuration of the MME.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

5 working days

### Class Size

Min 6, max 12

## 1.2.6 OEB9B USN9810 (SGSN/MME) Data Configuration Training (2G/3G/4G)



### Objectives

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

- Describe the functions of protocol stacks of different interfaces.
- Perform configuration of SGSN Gb , lu-PS, Gn, Ga and Gr interfaces.
- Perform configuration of SGSN basic service.
- Perform configuration of USN hardware, System Information, interworking with eNodeB, HSS, MME, S-GW, DNS and NTP.
- Perform configuration of mobility management and session management.

### Target Audience

Field Maintenance Engineer, Second line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program USN ATCA platform Operation and Maintenance Training.

### Content

- Describe basic hardware configuration and commissioning on the ATCA.
- Describe process group configuration and commissioning on the ATCA.
- Describe port configuration and commissioning on the ATCA.
- Describe clock configuration and commissioning on the ATCA.
- Describe system information configuration and perform commissioning.
- Describe background knowledge about the S1-MME interface.
- Perform S1-MME interface configuration and

commissioning.

- Describe background knowledge about the S6a interface.
- Perform S6a interface configuration and commissioning.
- Describe background knowledge about the S10/S11 interface.
- Perform S10/S11 interface configuration and commissioning.
- Describe intelligent gateway selection principle
- Perform intelligent gateway selection configuration.
- Describe background knowledge about the lu interface.
- Perform lu interface configuration and commissioning.
- Describe background knowledge about the Gb interface.
- Perform Gb interface configuration and commissioning.
- Describe background knowledge about the Gr interface.
- Perform Gr interface configuration and commissioning.
- Describe background knowledge about the Gn/Gp interface.
- Perform Gn/Gp interface configuration and commissioning.
- Perform EMM mobility management parameter data configuration.
- Perform ESM session management parameter data configuration.
- Describe the charging concept.
- Perform charging configuration.
- Describe multiple basic concepts of IP network.
- Perform IP interface-related configuration and commissioning.
- Configure and commission the static IP route and open shortest path first (OSPF) route.

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- Describe the DNS data configuration of the MME and SGSN.
  - Complete simple DNS configuration of the MME and SGSN.
  - Describe the NTP principle.
  - Perform the NTP configuration of the USN9810.
  - Perform the NTP commissioning of the USN9810.

#### Training Methods

Lecture, Hands-on Exercise, Demonstration

#### Duration

10 working days

#### Class Size

Min 6, max 12

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## 1.2.7 OEB91 USN9810 (SGSN) Data Configuration Training (2G/3G)



### Objectives

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

- Perform configuration of SGSN hardware.
- Perform configuration of SGSN Gb, Iu-PS, Gn, Ga and Gr interfaces.
- Perform configuration of SGSN basic service.

### Target Audience

Field Maintenance Engineer, Second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Perform configuration of ATCA SGSN9810 hardware.
- Describe the procedure of ATCA SGSN9810 Data Configuration.
- Perform configuration of ATCA SGSN9810 system.

- Perform configuration of Iu-PS interface and commissioning.
- Perform configuration of Gb interface and commissioning.
- Describe narrowband SS7 and broadband SS7 related concept.
- Perform configuration of Gr interface and commissioning.
- Perform configuration of Gn/Gp and Ga interfaces and commissioning.
- Perform configuration of MM.
- Perform configuration of SM.
- Describe the charging concept.
- Perform charging configuration.
- Perform IP configuration.
- Perform DNS configuration.
- Perform NTP configuration.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

9 working days

### Class Size

Min 6, max 12

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## 1.2.8 OEB10 USN9810 Delta and new feature Training



### Objectives

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

- Describe the difference between USN9810 (MME/SGSN) V900R012C00 and USN9810 V900R011C02.
- Perform some new feature in USN9810(MME/SGSN) V900R012C00

### Target Audience

Field Maintenance Engineer, First and second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.

### Content

- Comparison of System Specifications.
- Hardware Comparison.
- Platform Comparison.
- New Features in version V900R012C00.
- The networks involving the Support S4 Architecture feature.
- The implementation principles of the Support S4 Architecture feature.
- The service procedures of the Support S4 Architecture feature.
- The deployment notes of the Support S4 Architecture feature.
- Support Null-MSISDN Feature Background.
- Support Null-MSISDN Feature Implementation.
- Support Null-MSISDN Feature Commissioning.
- The basic principles of the Paging Optimization

for Fixed Terminal feature.

- The deployment of the Paging Optimization for Fixed Terminal feature.
- Commissioning of the Paging Optimization for Fixed Terminal feature.
- The principles of APN based Signaling Congestion Control.
- The deployment of APN based Signaling Congestion Control.
- The commissioning of APN based Signaling Congestion Control.
- The function of the Multi Time Zone Service feature.
- The application limitation of the Multi Time Zone Service feature.
- The configuration and application of the Multi Time Zone Service feature.
- The principles of Gateway Selection Based on Load.
- The service procedure of Gateway Selection Based on Load.
- The activation of Gateway Selection Based on Load.
- The commissioning of Gateway Selection Based on Load.

### Training Methods

Lecture

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.9 OEB31 USN9810 APN and Roaming Solution Training



### Objectives

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

- Describe principle of international roaming.
- Perform roaming data configurations of SGSN/GGSN/DNS/FW.
- Describe principle of APN rectify.
- Perform data configurations of APN rectify.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and EPC Principle.

### Content

- Describe the application of international roaming.
- Describe the configuration of international roaming.
- Describe the function of APN rectify.
- Describe APN Configuration.
- Describe the function of alias APN.
- Describe the configuration of alias APN.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12



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## 1.2.10 OEB21 UGW9811 Routine Operation and Maintenance Training



### Objectives

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

- Describe system structure and hardware structure of UGW9811.
- Perform software related installation and upgrade procedure.
- Perform hardware operation and maintenance.
- Perform the Routine Operation and Maintenance including authorization management, system information management, alarm management, trace management, log management, license management, patch management, data backup and restore.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program EPC Principle Training.

### Content

- Describe background knowledge of UGW9811.
- Describe function of UGW9811.

- Describe feature and specification of UGW9811.
- Describe system structure of UGW9811.
- Describe cable connection of UGW9811.
- Describe service flow of UGW9811.
- Describe software directory structure.
- Describe LMT software management.
- Describe host software management.
- Describe power on and power off the UGW9811.
- Describe hardware system status checking.
- Perform board replacement.
- Perform dust cleaning.
- Describe authorization management.
- Describe system information management.
- Describe alarm management.
- Describe trace management.
- Describe log management.
- Describe patch management.
- Describe license management.
- Describe data backup and restore.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.11 OEB30 UGW9811 (SGW/PGW) Data Configuration Training



### Objectives

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

- Perform data configuration of S1-U/S11, S5/S8 and SGi interfaces.
- Describe basic concept of VPN, APN and charging.
- Perform configuration of VPN, APN and charging.
- Describe the BWM principles and PCC concepts.
- Perform configuration of the BWM function, content based charging and PCC.

### Target Audience

Field Maintenance Engineer, Second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program of UGW Routine Operation and Maintenance Training.

### Content

- Perform UGW9811 PLMN management.
- Perform user attribute management.

- Describe system time management.
- Describe S-GW/SGSN access control.
- Describe the solution of Single IP function.
- Perform the data configuration of all interfaces involved in Single IP solution.
- Perform APN configuration.
- Perform virtual APN configuration.
- Perform alias APN configuration.
- Perform interworking with AAA server.
- Perform interworking with internet.
- Perform interworking with enterprise network.
- Describe basic concept of VPN.
- Perform configuration of L2TP VPN.
- Perform configuration of GRE VPN.
- Describe PCC concepts.
- Perform Gx interface configuration.
- Overview of security supported on the UGW9811.
- Perform security configuration.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

6 working days

### Class Size

Min 6, max 12

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## 1.2.12 OED99 UGW9811 (SGW/PGW/GGSN) Data Configuration Training



### Objectives

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

- Perform data configuration of S1-U/S11, S5/S8 and SGi interfaces.
- Describe basic concept of VPN, APN and charging.
- Perform configuration of VPN, APN and charging.
- Describe the BWM principles and PCC concepts.
- Perform configuration of the BWM function and PCC.

### Target Audience

Field Maintenance Engineer, Second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program of UGW9811 Routine Operation and Maintenance Training.

### Content

- Perform UGW9811 PLMN management.
- Perform user attribute management.
- Describe system time management.

- Describe S-GW/SGSN access control.
- Describe the solution of Single IP function.
- Perform the data configuration of all interfaces involved in Single IP solution.
- Perform APN configuration.
- Perform virtual APN configuration.
- Perform alias APN configuration.
- Describe VPN concept.
- Perform GRE VPN configuration.
- Perform L2TP VPN configuration.
- Perform interworking with AAA server.
- Perform interworking with internet.
- Perform interworking with enterprise network.
- Describe PCC concepts.
- Perform Gx interface configuration.
- Overview of security support on the UGW9811.
- Perform security configuration.
- Describe the basic concepts about GUL convergence operation.
- Introduce the scenarios of GUL, the working flow and key points.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

6 working days

### Class Size

Min 6, max 12

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## 1.2.13 OED99 UGW (GGSN) Data Configuration Training



### Objectives

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

- Perform configuration of Gn/Gp, Ga and Gi interfaces and route.
- Perform data Describe basic concept of VPN, APN and charging.
- Perform configuration of VPN, APN and charging.
- Describe the BWM principles and PCC concepts.
- Perform configuration of the BWM function, service control function and PCC.

### Target Audience

Field Maintenance Engineer, Second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program of UGW Routine Operation and Maintenance Training.

### Content

- Perform UGW9811 PLMN management.

- Perform user attribute management.
- Describe system time management.
- Describe S-GW/SGSN access control.
- Describe the solution of Single IP function.
- Perform the data configuration of all interfaces involved in Single IP solution.
- Perform APN configuration.
- Perform virtual APN configuration.
- Perform alias APN configuration.
- Perform interworking with AAA server.
- Perform interworking with internet.
- Perform interworking with enterprise network.
- Perform Gn interface configuration.
- Perform Gx configuration.
- Overview of security support on the UGW9811.
- Perform security configuration.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

5 working days

### Class Size

Min 6, max 12

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## 1.2.14 OED10 UGW9811 Delta and new feature Training



### Objectives

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

- Describe about the version difference between UGW9811 V900R010C00 and UGW9811 V900R009C01
- Perform new feature in UGW9811 V900R010C00

### Target Audience

Field Maintenance Engineer, First and second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.

### Content

- Introduce the version difference in all aspects.
- Describe the overall new features of this version.
- Describe the background of EPSN.
- Describe the main functions of EPSN.
- Describe the key features and specification of EPSN.
- Describe the three implementation methods of EPSN.

- Describe the principle of EPSN application.
- Describe the data configuration of EPSN.
- Describe the principle of TCP optimization.
- Describe the service procedures of TCP optimization.
- Describe the service configuration and commissioning of TCP optimization.
- Describe the background of eQCI and service procedures.
- Describe the implementation planning and service configuration.
- Describe the background and solution of PCC and ADC features.
- Describe the service procedures of PCC and ADC features.
- Describe the implementation planning and service commissioning of PCC and ADC features.

### Training Methods

Lecture

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.15 OWD30 SA Application Configuration Training



### Objectives

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

- Describe UGW9811 SA Structure.
- Perform the SA application content base charging and service control.

### Target Audience

Second line Maintenance Engineer, Senior Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication. Get familiar with TCP/IP protocol stack.
- Successful completion of the program EPC Principle Training.
- Successful completion of the program UGW9811 Routine Operation and Maintenance training.

- Successful completion of the program UGW9811 data configuration Training.

### Content

- Describe Service Awareness Principle of UGW9811.
- Describe UGW9811 content based charging principles.
- Perform UGW9811 content based charging configuration.
- Describe the BWM configuration.

### Training Methods

Lecture, Hands-on Exercise

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.16 OWI30 CG9812 Administration (Windows) Training



### Objectives

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

- Describe the charging principle of PS core network.
- Describe the CG9812 system structure.
- Perform key maintenance parameters configuration in CG server.
- Perform Routine Operation and Maintenance of CG server.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program GPRS/UMTS PS Fundamental Training.

### Content

- Describe the charging principle of PS core network.
- Describe charging relative concept and basic structure of CDR.
- Describe the CG9812 system structure.
- Configure key maintenance parameters in CG server.
- Perform data backup of CG server.
- Perform alarm management.
- Perform CG status checking.
- Execute CDR query and analysis.

### Training Methods

Lecture, Hands-on Exercise

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.17 OWI31 CG9812 Administration (UNIX) Training



### Objectives

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

- Outline the charging principle of PS core network.
- Describe the CG9812 system structure.
- Perform key maintenance parameters configuration in CG9812 server.
- Perform the Routine Operation and Maintenance of CG9812 server.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program GPRS/UMTS PS Fundamental Training.

### Content

- Describe the charging principle of PS core network.
- Describe charging relative concept and basic structure of CDR.
- Describe the CG9812 system structure.
- Configure key maintenance parameters in CG9812 server.
- Perform data backup of CG9812 server.
- Perform alarm management.
- Perform CG9812 status checking.
- Execute CDR query and analysis.

### Training Methods

Lecture, Hands-on Exercise

### Duration

2 working days

### Class Size

Min 6, max 12



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## 1.2.18 OWI50 CG9812 Operation and Maintenance Training(ATCA)



### Objectives

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

- Perform CG9812 routine maintenance.
- Perform CG9812 client software installation and CDR browsing/query.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.

### Content

- Describe CG9812 system structure.
- Describe CG9812 function and service.
- Describe CG9812 operation and maintenance.

- Describe CG9812 technical standard.
- Describe CG9812 software installation procedure.
- Describe how to install CG9812.
- Describe CG9812 basic procedure of data configuration.
- Perform CG9812 IP address planning.
- Perform CG9812 data configuration.
- Perform CG9812 Client operation and maintenance.
- Perform CG9812 Server operation and maintenance through OMU.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.19 OWB93 PS Alarm Monitoring and Management



### Objectives

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

- Describe basic alarm.
- Perform basic method of alarm monitoring and management.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Describe the related alarm knowledge of

SGSN9810.

- Perform the alarm monitoring of SGSN9810.
- Perform the ordinary alarm analysis and handling of SGSN9810.
- Perform the alarm monitoring of GGSN9811.
- Perform the ordinary alarm analysis and handling of GGSN9811.
- Perform the alarm monitoring of CG9812.
- Perform the ordinary alarm analysis and handling of GGSN9811.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.20 OEB93 EPC Alarm Monitoring and Management Training



### Objectives

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

- Perform the basic alarm monitoring.
- Perform the basic alarm analysis and process.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and EPC Principle.

### Content

- Describe the alarm related knowledge of USN9810.

- Perform the alarm monitoring of USN9810.
- Perform the basic alarm analysis and handling of USN9810.
- Describe the related knowledge of alarm about UGW9811.
- Perform the alarm monitoring of UGW9811.
- Perform the basic alarm analysis and handling of UGW9811.
- Perform the alarm monitoring of CG9812.
- Perform the ordinary alarm analysis and handling of CG9812.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.21 OWB92 PS Performance Monitoring Training



### Objectives

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

- Describe Key Performance Indicator of SGSN.
- Describe Key Performance Indicator of GGSN.
- Perform KPI collection method.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Describe the SGSN critical KPIs.
- Describe the GGSN critical KPIs.
- Describe the CG critical KPIs.
- Master the KPI targets methods of observation.
- Perform M2000 Performance Management

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.22 OEB92 EPC Performance Monitoring and Management Training



### Objectives

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

- Describe the KPIs in USN.
- Describe the KPIs in UGW.
- Describe the KPIs in CG.
- Describe the observation method of KPI.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP Protocol and GPRS

### Principle.

### Content

- Describe the KPIs in USN.
- Describe the KPIs in UGW.
- Describe the KPIs in CG.
- Describe the observation method of KPI.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.23 OWA90 GUL Convergence Training



### Objectives

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

- Describe EPC Principle.
- Describe EPC Network Deployment Policy.
- Describe EPC Network Element Deployment Policy.
- Describe the networking of GUL interoperation.
- Describe the principle of GUL Interoperation.
- Describe key point of GUL Interoperation Deployment.

### Target Audience

All Technical and non-Technical Persons

### Prerequisites

- A general understanding of mobile communication and data communication.
- Be familiar with Windows operating system.
- Having basic knowledge of mobile network.

### Content

- Describe the EPC network structure.

- Describe the EPC Network interface and protocol.
- Describe the EPC Network working procedures.
- Describe the GUL interoperation networking.
- Describe the GUL interoperation basic principle.
- Describe the key point of GUL interoperation deployment.
- Describe the TAU signaling procedure.
- Describe the Handover signaling procedure.
- Describe the configuration of GUL interoperation.
- Describe the basic commissioning of GUL interoperation.

### Training Methods

Lecture

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.24 OEB33 EPC VOLTE Solution Training (CSFB)



### Objectives

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

- Describe network structure of CSFB.
- Perform signaling analysis of CSFB.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer, senior engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and EPC Principle.

### Content

- Describe CSFB principle.
- Describe CSFB key procedure.
- Describe SGs interface and protocol.
- Perform CSFB feature data configuration.
- Perform CSFB network deployment.

### Training Methods

Lecture

### Duration

2 working day

### Class Size

Min 6, max 12

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## 1.2.25 OEB30 EPC VOLTE Solution Training (SRVCC)



### Objectives

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

- Describe network structure of SRVCC.
- Perform signaling analysis of SRVCC.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer, senior engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and EPC Principle.

### Content

- Describe VoIMS call procedure.
- Describe SRVCC interface and protocol.
- Describe SRVCC signaling analysis.
- Describe SRVCC solution.

### Training Methods

Lecture

### Duration

2 working day

### Class Size

Min 6, max 12



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## 1.2.26 OEY00 IPv6 Solution for PS/EPC



### Objectives

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

- Describe the IPv6 implementation for PS and EPC.
- Describe the data configuration for IPv6 solution in PS and EPC.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.

- Get familiar with TCP/IP protocol stack and GPRS/EPC Principle.
- IPv6 basis.

### Content

- Introduce the IPv6 solution in PS/EPC.
- Describe the data configuration for IPv6 solution.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.27 OWB76 SGSN POOL Training



### Objectives

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

- Describe the principle of SGSN POOL.
- Perform data configuration of SGSN POOL.
- Perform Operation and Maintenance of SGSN POOL.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- Successful completion of the program GPRS/UMTS Principle Training.
- Successful completion of the program SGSN Routine Operation and Maintenance training.
- Successful completion of the program SGSN data configuration Training.

### Content

- Describe the principle of SGSN POOL.

- Describe the planning of SGSN POOL.
- Perform data configuration of SGSN POOL.
- Perform data configuration of user migration.
- Perform Operation and Maintenance of SGSN POOL.
- Perform signaling analysis of SGSN POOL.
- Describe the parameter of SGSN POOL procedure.
- List the common troubleshooting case of SGSN POOL.
- Perform SGSN POOL troubleshooting after analysis the signaling procedure.
- Describe the procedure of SGSN POOL troubleshooting.

### Training Methods

Lecture, Hands-on Exercise, Case-study,  
discussion

### Duration

3 working days

### Class Size

Min 6, max 12

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## 1.2.28 OEB32 MME POOL Training



### Objectives

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

- Describe principle of MME pool.
- Perform data configuration of MME pool.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program of USN ATCA platform Operation and Maintenance Training (2G/3G/4G).

- Successful completion of the program of USN9810 Data Configuration Training.

### Content

- Describe MME POOL principle.
- Describe MME POOL data configuration.
- Describe MME POOL Operation and Maintenance.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.29 OWA11 PS QoS Training



### Objectives

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

- Describe PS QoS parameter.
- Describe PS QoS negotiation process.
- Check PS service QoS parameter default value.
- Perform SGSN QoS handling.
- Perform UE and Radio Part QoS handling.

### Target Audience

Routine Maintenance Engineer, Optimization Engineer, Senior Maintenance Engineer.

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS principle.

- 2 years related experience in PS domain.

### Content

- Describe PS QoS parameter.
- Describe PS QoS negotiation process.
- PS service QoS parameter default value.
- SGSN/GGSN QoS handling.
- UE and Radio Part QoS handling.

### Training Methods

Lecture

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.30 OWA06 IP Convergence for Packet Core Training



### Objectives

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

- Describe TCP/IP fundamental related to GPRS/UMTS PS network.
- Describe IP backbone and key Data communication technology.
- Describe interconnection solution between PS and CE.
- Perform IP Planning between PS and CE.
- Perform Data configuration between PS and CE.
- Perform Iu/Gb/Gr/Gn/Ga interface networking and reliability solution.
- Execute OM interface networking and reliability solution.
- Describe PS networking troubleshooting method.
- Perform common troubleshooting according to case study.

### Target Audience

Routine Maintenance Engineer, Optimization Engineer, Senior Maintenance Engineer.

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Describe TCP/IP protocol stack fundamental.
- Describe VLAN and IP Routing fundamental.
- Describe OSPF, VRRP and BFD protocol and application.
- Describe IP backbone and key IP technology.
- Describe interconnection solution between PS and CE.
- Describe IP Planning between PS and CE.
- Describe Data configuration between PS and CE.
- Describe Iu, Gb interface networking and reliability solution.
- Describe Gr interface networking and reliability solution.
- Describe Gn interface networking and reliability solution.
- Describe Ga interface networking and reliability solution.
- Describe O/M interface networking and reliability solution.
- Describe PS networking troubleshooting method.
- Common troubleshooting case study.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

4 working days

### Class Size

Min 6, max 12

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## 1.2.31 OWB76 PS Signaling Procedure Analysis and Troubleshooting



### Objectives

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

- Describe important procedures and parameters of MM/SM.
- Perform MM/SM/Service Troubleshooting.

### Target Audience

Routine Maintenance Engineer, Optimization Engineer, Senior Maintenance Engineer.

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- 1 year related experience in PS equipment maintenance.
- Successful completion of the program of GPRS/UMTS PS Fundamental Training.

### Content

- Analyze GPRS and UMTS PS basic mobility management procedure.

- Analyze GPRS and UMTS PS basic session management flow.
- Perform the mobility management troubleshooting.
- Describe the method of troubleshooting.
- Perform RAU troubleshooting.
- Describe the method of troubleshooting.
- Perform the session management troubleshooting.
- Describe the method of troubleshooting.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.32 OWB77 PS Interface Signaling Analysis and Troubleshooting Training



### Objectives

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

- Describe important procedures and parameters of RANAP/MAP/GTP.
- Perform signaling procedures analysis.

### Target Audience

Routine Maintenance Engineer, Optimization Engineer, Senior Maintenance Engineer.

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- 1 year related experience in PS equipment maintenance.
- Successful completion of the program of GPRS/UMTS PS Fundamental Training.

### Content

- Analyze GTP Protocol.
- Describe key parameter related to GTP protocol.

- Describe GTP Troubleshooting Methods.
- Introduce Common GTP troubleshooting case.
- Analyze MAP Protocol.
- Describe important parameter related to MAP protocol.
- Describe MAP Troubleshooting Methods.
- Introduce Common MAP troubleshooting case.
- Analyze GTP' Protocol.
- Describe important parameter related to GTP' protocol.
- Describe GTP' Troubleshooting Methods.
- Introduce Common GTP' troubleshooting case.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

3 working days

### Class Size

Min 6, max 12

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### 1.2.33 OWA78 PS Data Transfer Troubleshooting Training



#### Objectives

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

- Perform locating method of Data Transfer fault.
- Perform Troubleshooting method of Data Transfer fault.

#### Target Audience

Routine Maintenance Engineer, Optimization Engineer, Senior Maintenance Engineer.

#### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- 1 year related experience in PS equipment maintenance.
- Successful completion of the program of GPRS/UMTS PS Fundamental Training.

#### Content

- Know TCP/IP Protocol stack knowledge.
- Know Ethereal/Wireshark tools usage.
- Know Huawei SW/Router port mirroring method.
- Know GGSN9811 port mirroring method.
- Describe general service flow and troubleshooting.
- Describe Data transmission problem located method.
- Case study for Data transmission.
- Describe TCP typical analysis

#### Training Methods

Lecture, Hands-on Exercise, Demonstration

#### Duration

2 working days

#### Class Size

Min 6, max 12



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## 1.2.34 OEA02 EPC Interface Protocol Analysis Training



### Objectives

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

- Perform USN9810 signaling tracing method.
- Perform S1-MME interface signaling flow and key parameters analysis.
- Perform S6a interface signaling flow and key parameters analysis.
- Perform S5/S8 interface signaling flow and key parameters analysis.

### Target Audience

EPC Engineer and Experts, PS Network Planning Engineer, System Design Engineer

### Prerequisites

- A general understanding of mobile communication and data communication. Get familiar with TCP/IP protocol stack.
- Successful completion of the program of EPC

product Data Configuration Training.

- Successful completion of the program of EPC Equipment Commissioning Training.

### Content

- Analyze S1-AP signaling flow and key parameters through S1-MME interface.
- Analyze Diameter signaling flow and key parameters through S6a interface.
- Analyze GTP V2 signaling flow and key parameters through S5/S8 interface.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.35 OEA03 EPC Signaling Analysis Training



### Objectives

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

- Perform USN9810 signaling tracing method.
- Perform UGW9811 signaling tracing method.
- Perform EMM signaling flow and key parameters analysis.
- Perform ESM signaling flow and key parameters analysis.

### Target Audience

EPC Engineer and Experts, PS Network Planning Engineer, System Design Engineer

### Prerequisites

- A general understanding of mobile communication and data communication. Get familiar with TCP/IP protocol stack.
- Successful completion of the program of EPC Data Configuration Training.
- Successful completion of the program of EPC Equipment Commissioning Training.

### Content

- Analyze Attach procedure signaling flow and key parameters.
- Analyze Detach procedure signaling flow and key parameters.
- Analyze S1 release procedure signaling flow and

key parameters.

- Analyze Service request procedure signaling flow and key parameters.
- Analyze tracking area update procedure signaling flow and key parameters.
- Analyze X2 based handover procedure signaling flow and key parameters.
- Analyze S1 based handover procedure signaling flow and key parameters.
- Analyze bearer activation procedure signaling flow and key parameters.
- Analyze bearer modification procedure signaling flow and key parameters.
- Analyze bearer deactivation procedure signaling flow and key parameters.
- Analyze UE requested PDN connectivity procedure signaling flow and key parameters.
- Analyze PDN disconnection procedure signaling flow and key parameters.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.36 OEB04 EPC Troubleshooting Training



### Objectives

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

- Describe USN9810/UGW9811 EMM/ESM troubleshooting method.
- Perform USN9810/UGW9811 EMM/ESM related fault locating and signaling analysis.

### Target Audience

Senior maintenance Engineer, Specialist, Experts

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- EPC USN9810 Data Configuration Training.
- EPC UGW9811 Data Configuration Training.

### Content

- List the common troubleshooting case of attach procedure.
- Describe the procedure of attach procedure troubleshooting.
- Perform troubleshooting after analysis the signaling of attach procedure.
- List the common troubleshooting case of TAU procedure.

- Describe the procedure of TAU procedure troubleshooting.
- Perform troubleshooting after analysis the signaling of TAU procedure.
- List the common troubleshooting case of session management procedure.
- Describe the procedure of session management procedure troubleshooting.
- Perform troubleshooting after analysis the signaling of session management procedure.
- List the common troubleshooting case of handover procedure.
- Describe the procedure of handover procedure troubleshooting.
- Perform troubleshooting after analysis the signaling of handover procedure.
- Exist network troubleshooting cases study.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

3 working day

### Class Size

Min 6, max 12

## 1.2.37 OWB67 PS Network Optimization Training



### Objectives

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

- Describe the general procedure of PS core network optimization.
- Analyze the PS core network KPI.
- Describe Traffic Statistics Model Extraction.
- Perform Evaluation and Optimization of the SGSN9810/GGSN9811/DNS/CG Resource Capacity.

### Target Audience

GPRS/UMTS PS Network Optimization Engineer, System Design Engineer, Senior Engineer and Experts

### Prerequisites

- A general understanding of mobile communication and data communication. Get familiar with TCP/IP protocol stack.
- Successful completion of the program GPRS/UMTS Principle Training.
- Successful completion of the program SGSN/GGSN Routine Operation and Maintenance training.
- Successful completion of the program SGSN/GGSN data configuration Training.

### Content

- Describe the function of PS optimization.
- Describe the procedure of PS optimization.
- Describe definition of Attach KPI.
- Describe the method of Attach KPI evaluation.
- Describe the method of Attach KPI optimization.
- Describe definition of PDP Activity KPI.

- Describe the method of PDP Activity KPI evaluation.
- Describe the method of PDP Activity KPI optimization.
- Describe Evaluation and Optimization of the SGSN9810 Resource Capacity.
- Describe Evaluation and Optimization of the GGSN9811 Resource Capacity.
- Describe Evaluation of the DNS Resource Capacity.
- Describe Optimization of the DNS Resource Capacity.
- Describe Evaluation of the CG Resource Capacity.
- Describe Optimization of the CG Resource Capacity.
- Describe definition of FTP download KPI.
- Describe the method of FTP download KPI evaluation.
- Describe the method of FTP download KPI optimization.
- Describe definition of inter-RAU KPI.
- Describe the method of inter-RAU KPI evaluation.
- Describe the method of inter-RAU KPI optimization.

### Training Methods

Lecture, Hands-on Exercise

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.38 OWB68 PS Network Planning Training



### Objectives

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

- Describe PS Network Planning Principle.
- Perform the Networking Scheme for Gb/Iu/SS7/Gn/Gp/OM/Ga/Li/Gy and GGSN-SUR, GGSN-SCCG networking scheme.

### Target Audience

GPRS/UMTS PS Network Planning Engineer, System Design Engineer, Senior Engineer and Experts

### Prerequisites

- A general understanding of mobile communication and data communication. Get familiar with TCP/IP protocol stack.
- Successful completion of the program GPRS/UMTS Principle Training.
- Successful completion of the program SGSN/GGSN Routine Operation and Maintenance training.
- Successful completion of the program SGSN/GGSN data configuration Training.

### Content

- Describe Network Structure Planning.
- Describe Interface Networking Mode Planning.
- Describe APN Planning.
- Describe IP Address Planning.
- Describe Roaming Planning.
- Describe Networking Security Planning.
- Perform Iu/Gr/Gb/Gi/Ga/Gn/Gp Interface Bandwidth Calculation.
- Describe Gb Interface Design.
- Describe Iu Interface Design.
- Describe SS7 Interface Design.
- Describe Gn/Gp Interface Design.
- Describe Ga Interface Design.
- Describe OM Network Design.
- Describe NTP Network Design.
- Describe Gi Interface Design.

### Training Methods

Lecture

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.39 OEA07 EPC Network Planning and Design Training



### Objectives

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

- Describe EPC planning and designing steps.
- Determine IP address, QoS, APN needs for different services.
- Determine capacity for different interfaces.
- Determine the internetworking for different interfaces.

### Target Audience

PS Network Planning Engineer, System Design Engineer, Senior Engineer and Experts

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- Successful completion of the program of EPC principle and Procedure Training.
- Successful completion of the program of EPC

Equipment Commissioning Training.

### Content

- Introduce network planning principles.
- Basic steps for network planning.
- Describe the networking design principle
- Describe EPC network planning procedure
- Finish a simple network planning task
- Describe the principle of Interface Bandwidth Calculation
- Complete an EPC network interface bandwidth calculation task.

### Training Methods

Lecture, Case-study, discussion

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.40 OWB68 EPC Network Optimize Training



### Objectives

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

- Perform Evaluation and Optimization of the USN9810 and UGW9811 Resource Capacity.
- Analyze and optimize the EPC network KPI including Attach Success rate, TAU Success rate, Handover success rate, Dedicated bearer activation success rate.

### Target Audience

PS Network Optimization Engineer, System Design Engineer, Senior Engineer and Experts

### Prerequisites

- A general understanding of mobile communication and data communication
- Successful completion of the program EPC Principle Training.
- Successful completion of the program USN9810 /UGW9811 Routine Operation and Maintenance training.

- Successful completion of the program USN9810/UGW9811 data configuration Training.

### Content

- Describe Evaluation and Optimization of the USN9810 Resource Capacity.
- Describe Evaluation and Optimization of the UGW9811 Resource Capacity.
- Describe definition of Attach Success Rate.
- Describe the method of Attach Success Rate evaluation.
- Describe the method of Attach Success Rate optimization.
- Describe definition of TAU Success Rate.
- Describe the method of TAU Success Rate evaluation.
- Describe the method of TAU Success Rate optimization.
- Describe definition of Handover Success Rate.
- Describe the method of Handover Success Rate evaluation.
- Describe the method of Handover Success Rate optimization
- Describe definition of Dedicated Bearer Activation Success Rate.
- Describe the method of Dedicated Bearer Activation Success Rate evaluation.
- Describe the method of Dedicated Bearer Activation Success Rate optimization.

### Training Methods

Lecture, Case-study, discussion

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.41 OWL21 M2000 Routine Operation and Maintenance Training



### Objectives

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

- Describe the overall architecture, hardware architecture, software architecture, typical configuration and interfaces of the M2000.
- Describe the software structure of the M2000 equipment, the functions of different parts.
- Describe the system reliability of the M2000 system from the aspects of system security.
- Perform the Routine Operation and Maintenance of M2000 client.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- General training program.

### Content

- Describe the overall architecture, hardware architecture, software architecture, typical configuration and interfaces of the M2000.
- Describe the software structure of the M2000 equipment, the functions of different parts.
- Describe the system reliability of the M2000 system from the aspects of system security, hardware security and operation security.
- Describe the performance specifications of the M2000 system, including system capacity, bandwidth, storage capacity, processing capability, and client number.
- Create NE.
- Modify NE.

- Remove NE.
- Describe alarm definition.
- Perform Alarm Filtering.
- Perform Alarm Correlation.
- Perform Alarm Handling.
- Export the performance result file.
- Define the performance query template.
- Check the performance task status.
- Conduct Configuration Management.
- Execute command to NE.
- Query the Log information and Analysis.
- Perform collect client logs.
- Perform patch uploading to the NE through the M2000.
- Perform the patching operation on NE through the M2000.
- Perform Performance Report System operation.
- Use command to perform the daily operation and maintenance of iManager M2000 System.
- Resolve the basic problems in M2000 server based on the fault and alarm information.
- Start, stop and monitor the status of procedures in M2000 server.
- Execute UNIX command to check the CPU occupation ratio and hard disk space occupation ratio of M2000 server.

### Training Methods

Lecture, Hands-on Exercise

### Duration

2 working days

### Class Size

Min 6, max 12



## 1.2.42 OEN11 DNS9816 Operation and Maintenance Training



### Objectives

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

- Describe the main functions and key features of DNS9816.
- Describe the theory of system realizing and query procedure of DNS9816.
- Describe the hardware and software architecture of DNS9816.
- Perform the basic data configurations of DNS9816.
- Perform the data configurations of optional features about equipment.
- Perform the routine operation and maintenance.

### Target Audience

Field Maintenance Engineer, First line Maintenance Engineer, Routine Maintenance Engineer.

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Describe the main functions and key features of DNS9816.
- Describe the typical network structure scheme of DNS9816.
- Describe the service functions of DNS9816.

- Describe the applications and circumstances that equipment can apply.
- Describe the basic structure of DNS9816.
- Describe the query procedure of DNS9816.
- Describe the iterative principles and recursion theorem applied in the DNS9816.
- Describe the data planning and cases of DNS9816.
- Describe the PS service procedure of DNS9816.
- Describe equipment hardware structure.
- Describe physical cable connections of the equipment.
- Describe equipment software structure.
- Perform data configuration of APN parsing.
- Perform data configuration of relocation.
- Perform data configuration of RAI parsing.
- Describe the View function of DNS9816.
- Perform data configuration of View function.
- Perform the routine operation and maintenance including system maintenance, alarm management and features management.
- Perform the MML start-up service.
- Perform system data back-up and recovery.
- Perform basic troubleshooting.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.43 OWB34 UAG Operation and Maintenance Training



### Objectives

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

- Describe the physical and logical structure of UAG equipment.
- Explain the functions of different boards in UAG.
- Perform the hardware, eIU, lu-PS, lu-Cs and AHR/NTP interface data configuration of UAG.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.

### Content

- Describe network structure of uBro.
- Describe the product function of uBro.
- Describe signaling procedure of uBro.
- Describe the physical and logical structure of UAG equipment.
- Explain the functions of different boards in UAG.
- Identify and interpret the necessary data processing procedure (operation and maintenance realization procedure, interface signaling processing procedures, etc) according to the engineering requirements.
- Draw the diagram of the signaling and data traffic flow in equipment among different boards.
- Describe UAG product function.
- Describe UAG service feature.
- Check power and hardware status of UAG.
- Power on and Power off system of UAG.
- Perform boards and cable replacement of UAG.
- Perform system data back-up and recovery of UAG.

- Perform system log management of UAG.
- Monitor and check system status with LMT client software of UAG.
- Perform the interface commissioning in UAG.
- Describe equipment software structure and start-up sequence.
- Describe the software upgrade procedure.
- Perform UAG software upgrade.
- Perform UAG patch loading.
- Perform license loading.
- Upload system script, test system status.
- Perform lu-PS Interface Control Plane Data Configuration.
- Perform lu-PS Interface User Plane Data Configuration.
- Perform AG IU-PS service procedure.
- Perform UAG Data Configuration Work Flow.
- Perform UAG Hardware Data Configuration.
- Perform UAG Clock Data Configuration.
- Perform UAG Office Data Configuration.
- Basic Knowledge of elu Interface.
- Perform elu Interface Control Plane Data Configuration.
- Perform elu Interface User Plane Data Configuration.
- Perform lu-CS Interface Control Plane Data Configuration.
- Perform lu-CS Interface User Plane Data Configuration.
- Describe lu-CS common procedure.

### Training Methods

Lecture, Hands-on Exercise

### Duration

4 working days

### Class Size

Min 6, max 12

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## 1.2.44 OXE30 WASN9770 Operation and Maintenance Training



### Objectives

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

- Describe system structure and hardware structure of WASN9770.
- Describe signaling flow and message.
- Perform operation and maintenance of hardware and software.
- Perform data configuration of basic service, route, and VPN.
- Describe typical application scenarios of IP-CS authentication access, Mobile IP, hot-lining, Eth-CS.
- Perform system commissioning and performance management.

### Target Audience

Field Maintenance Engineer, First line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.

### Content

- Describe Product Overview.
- Describe product function.
- Describe the hardware structure of WASN9770.
- Describe the working principle and functions of different subsystems.
- Describe the function of each board.
- Analyze the signal flow in WASN9770.
- Analyze the typical hardware configuration of WASN9770.
- Perform checking hardware status.
- Perform boards and cable replacement.
- Perform system data back-up and recovery.
- Perform system log management.

- Monitor and check system status with LMT.
- Describe basic concepts.
- Perform LMT software installation.
- Perform host software installation through the LMT.
- Perform initial installation of host software.
- System commissioning overview.
- Perform system running commissioning.
- Perform interface commissioning.
- Perform basic service commissioning.
- Describe concepts.
- Performance analysis.
- Performance calculation.
- Introduction to the architecture of the WiMAX network.
- Describe initial network entry process of an IP-CS user.
- Describe initial network entry process of an ETH-CS user.
- Describe Mobile IP technology.
- Describe Huawei WiMAX Mobile IP solution.
- Describe the related concept.
- Perform service configuration.
- Describe the related concept.
- Perform basic configuration, such as interface configuration.
- Describe the related concept.
- Perform routing configuration.
- Describe the related concept.
- IP-CS Overview.
- Describe Authentication and Authorization.
- Describe configuration examples of IP-CS authentication access.
- Describe Mobile IP technology.
- Describe Huawei WiMAX Mobile IP solution.
- Describe Hot-Lining application.
- Describe Eth-CS termination scenario.
- Describe Eth-CS transparent transmission



scenario.

Duration

Training Methods

5 working days

Lecture, Hands-on Exercise

Class Size

Min 6, max 12

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## 1.2.45 OXT11 TGW9811 Operation and Maintenance Training



### Objectives

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

- Describe WLAN solution and product overview.
- Describe the physical and logical structure of the TGW.
- Describe the board function of TGW.
- Perform the software upgrade and patch/license loading procedure.
- Perform the routine operation and maintenance.
- Perform configuration of Wa, Wa' and Gn' interfaces.
- Perform configuration of Charging.
- Perform configuration to AAA.
- Perform commissioning of TGW.

### Target Audience

TGW9811 Operation and Maintenance Engineer,  
Second line Engineer, Technical Support Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack.
- Successful completion of the program GPRS/UMTS PS Fundamental Training
- Get familiar with WLAN.

### Content

- Describe WIFI-OFFLOAD system.
- Describe the access principle of TGW911.
- Describe the typical WIFI-OFFLOAD networking solution.
- Describe system structure of TGW9811.

- Describe cable connection of TGW9811.
- Describe service flow of TGW9811.
- Describe basic concepts.
- Describe software directory structure.
- Describe software component.
- Describe function and purpose of software component.
- Describe the routine operation and maintenance of TGW9811.
- Perform the board replacement.
- Perform the fan replacement.
- Describe the basic data configuration of TGW9811 hardware.
- Describe the data configuration of TGW9811 interfaces.
- Describe the charging principle of TGW911.
- Perform the data configuration for charging.
- Describe the Key IE in WIFI-OFFLOAD signaling.
- Describe the signaling procedure of TGW911.
- Describe the subscriber access method of TGW9811.
- Describe the Local Service Policy Control of TGW9811.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

3 working days

### Class Size

Min 6, max 12

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## 1.2.46 ORP03 CDMA PDSN Operation and Maintenance Training



### Objectives

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

- Perform the routine and emergency operation of CDMA PDSN equipments.
- Perform data configuration for equipment interconnection and charging of PDSN.
- Implement data configuration for service of CDMA PDSN.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.

### Content

- Describe hardware structure of PDSN.
- Describe board function of PDSN.
- Describe the software upgrade procedure.
- Perform the software upgrade and fall back.
- Perform the patch loading.
- Perform the license loading.
- Check power and hardware status.
- Power on and Power off system.
- Perform boards and cable replacement.
- Perform system data back-up and recovery.

- Perform system log management.
- Monitor and check system status with LMT client software.
- Describe domain concept and perform domain configuration.
- Perform interface data configuration.
- Perform mobile IP data configuration.
- Describe routing related concept and perform routing data configuration.
- Describe IPSec concept and perform IPSec data configuration.
- Describe VPN concept and perform VPN data configuration.
- Perform Content-based Charging.
- Describe SA Principle and perform SA configuration.
- Perform Online Charging Configuration.
- Describe service control related concept.
- Perform service control configuration.
- Perform Reliability Networking Data Configuration.

### Training Methods

Lecture, Hands-on Exercise

### Duration

7 working days

### Class Size

Min 6, max 12

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## 1.2.47 OEB99 UGW9811(CDMA) Data configuration Training



### Objectives

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

- Describe UGW9811 system structure and function.
- Describe UGW9811 hardware structure.
- Describe UGW9811 software structure.
- Perform UGW9811 routine operation and maintenance.
- Perform UGW9811 interface data configuration and system data configuration.
- Describe principle of content based charging.
- Describe CSN/Mobile IP/Follow control feature.

### Target Audience

- Field Maintenance Engineer, First line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication
- Successful completion of the program of CDMA principle training.

### Content

- Describe Concept of the VPN
- Perform Configuration of the GRE VPN

- Perform Configuration of the L2TP VPN
- Perform System Data Configuration
- Perform Interface Data Configuration
- Describe the feature of PCC function
- Describe the network structure of PCC solution
- Describe the Principle and Function of Online Charging.
- Familiar with the Commands and Steps of Online Charging
- Describe SA Principle
- Perform SA Configuration

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

5 working days

### Class Size

Min 6, max 12

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## 1.2.48 OWW02 UGW9811(EPSN) Product Training



### Objectives

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

- Perform the Routine Operation and Maintenance including authorization management, system information management, alarm management, trace management ,log management, license management ,patch management ,data backup and restore.
- Outline the EPSN network architecture.
- Outline the main features of the EPSN.
- Outline key features and specifications of the EPSN.
- Be familiar with the EPSN and its three service deployment modes.
- Understand EPSN access principles.
- Understand EPSN access configurations.
- Complete access data configuration on the EPSN.
- Understand EPSN charging feature.
- Grasp how to deploy EPSN PCC feature.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program of GPRS fundamental Training.
- Successful completion of the program EPC Principle Training.

### Content

- Describe background knowledge of UGW9811.
- Describe system structure of UGW9811.

- Describe cable connection of UGW9811.
- Describe service flow of UGW9811.
- Describe software directory structure.
- Describe LMT software management.
- Describe host software management.
- Describe power on and power off the UGW9811.
- Describe hardware system status checking.
- Perform board replacement of UGW9811
- Perform dust cleaning of UGW9811
- Describe alarm management.
- Describe trace management.
- Describe log management.
- Describe patch management.
- Describe license management.
- Describe data backup and restore.
- Describe EPSN Background Knowledge
- Describe EPSN Functions
- Describe EPSN Features and Specifications
- Introduction to the EPSN
- Describe EPSN Basic Networking Modes
- Describe EPSN Networking Configuration
- Describe Service Deployment Modes
- Introduction to EPSN Access
- Describe EPSN Access Configuration
- Describe EPSN Charging Overview
- Describe EPSN PCC Feature Overview
- Describe EPSN PCC Feature Scheme
- Describe EPSN PCC Feature Deployment
- Describe EPSN PCC Feature Commissioning
- Describe EPSN PCC Feature Impact
- Describe Service Awareness Principle of UGW9811.
- Describe Captive-Portal service.
- Describe Web Proxy service.
- Describe UGW9811 content based charging



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principles.

- Perform UGW9811 content based charging configuration.

Training Methods

Lecture, Hands-on Exercise, Demonstration

Duration

5 working days

Class Size

Min 6, max 12

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## 1.2.49 OWT12 PS Nastar Training



### Objectives

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

- Describe PS Nastar architecture, hardware deployment and feature function.
- Grasp PS Nastar typical networking, software installation.
- Perform client server operation, configuration and maintenance.

### Target Audience

Routine Maintenance Engineer, Optimization Engineer, Senior Maintenance Engineer.

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Describe the function of Nastar.
- Outline the solution of Nastar.
- Describe the networking and configuration of Nastar.
- Describe generation mechanism of records.
- Describe the Operation and Maintenance of Nastar.

- Describe the Files Structure of Nastar.
- Describe the Software architecture of Nastar.
- Describe the Interface Protocols of Nastar.
- Describe the Software Installation procedure of Nastar.
- Describe the interworking data configuration in SGSN9810.
- Describe the interworking data configuration in GGSN9811.
- Describe the method of customized service query.
- Describe the method of customized service statistics.
- Describe the method of network analysis.
- Describe the method of real-time monitoring.
- Describe the method of scheduled Report.
- Describe the application case study.
- Describe the method of fault query.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.50 OWW01 PS PRS Engineer Training



### Objectives

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

- Describe function and system structure of PRS.
- Perform hardware deployment.
- Perform PRS operation and maintenance.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP protocol stack and GPRS Principle.

### Content

- Describe PRS location in smartcare networking.
- Describe the function and service feature of PRS product.
- Describe the system principle and service procedure of PRS.
- Describe the function of location analysis.
- Describe the function of APN analysis.
- Describe the function of access network

analysis.

- Analyze the bandwidth of subscriber.
- Analyze the package of subscriber.
- Analyze the specific subscriber.
- Describe the function of Top N application analysis.
- Describe the function of Top N website analysis.
- Describe the function of Top N server analysis.
- Describe the function of Terminal's service application analysis.
- Describe the access information data configuration.
- Describe the basic data configuration.
- Describe hardware of PRS.
- Describe the routine maintenance of PRS.
- Describe the configuration and commissioning of PRS.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.51 OWW03 UDN9813 Operation and Maintenance Training



### Objectives

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

- Describe the principle of UDN9813 equipment and network.
- Describe the UDN9813 system hardware and software structure.
- Configure key maintenance parameters in CG server.
- Perform Routine Operation and Maintenance of CG server.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Get familiar with TCP/IP and GPRS Principle.
- Successful completion of the program GPRS/UMTS PS Fundamental Training.

### Content

- Understand UDN9813 System.
- Understand the principle of UDN9813 network.
- Understanding of typical UDN9813 networking solution.
- Understand UDN9813 hardware system.
- Master UDN9813 system function.
- Describe UDN9813 software system.
- Master UDN9813 software architecture.
- Master UDN9813 software components.
- Master UDN9813 Routine operation and maintenance methods.
- Master UDN9813 basic data configuration.
- Master UDN9813 the security management data configuration.

- Master UDN9813 the commissioning data configuration.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

0.5 working day

### Class Size

Min 6, max 12

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## 1.2.52 OWW05 DT Feature Training



### Objectives

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

- Describe the principle of PS Direct Tunnel.
- Perform data configuration of PS Direct Tunnel.
- Perform Operation and Maintenance of PS Direct Tunnel.

### Target Audience

PS Advance Engineer, PS Routine Maintenance Engineer

### Prerequisites

- A general mobile communication and data communication.
- Successful completion of the program GPRS/UMTS Principle Training.
- Successful completion of the program SGSN Routine Operation and Maintenance training.
- Successful completion of the program SGSN data configuration Training.

### Content

- Describe the principle of PS Direct Tunnel.
- Describe the planning of PS Direct Tunnel.
- Describe the application scenarios of PS Direct Tunnel
- Perform data configuration of PS Direct Tunnel.
- Introduce PS Direct Tunnel related KPI
- List the common troubleshooting case of PS Direct Tunnel.
- Perform PS DIRECT TUNNEL troubleshooting after analysis the signaling procedure.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.53 OSE03 Smartcare Service Quality Improvement Training



### Objectives

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

- Describe the theory of SmartCare KQI modeling of packet service
- Master PS KPI monitoring and analysis methods in SmartCare NPM
- Master PS KQI monitoring and analysis methods in SmartCare SQM
- Master VIP/VVIP/VAC/Roaming analysis methods in SmartCare CEM

### Target Audience

PS network optimization engineers  
PS network performance monitoring engineers

### Prerequisites

- At least two years experience of operation and maintenance of GPRS/UMTS/EPC telecommunication equipments
- A basic knowledge of SmartCare Platform
- Familiar with PS network KPI evaluation and optimization

### Content

- Describe the definition of CEM/SQM/NPM
- Describe the application of CEM/SQM/NPM
- WEB Service E2E signaling flow
- WEB service modeling method
- WEB KQI system
- Relationship between the WEB KQI and each KPI

- NPM function overview
- Describe NPM PS/EPC KPI Monitoring function
- Describe NPM PS/EPC KPI Analysis function
- Describe NPM PS xDR query function
- Describe PS session trace function
- Describe PS network traffic Analysis function
- Web Service Quality Monitoring
- Web Service Quality Analysis
- Streaming Service Quality Monitoring
- Streaming Service Quality Analysis
- Email Service Quality Monitoring
- Email Service Quality Analysis
- MMS Service Quality Monitoring
- MMS Service Quality Analysis
- CEM Overview
- VVIP/VIP Group Monitoring
- Customer/Customer Group Analysis
- VAP Analysis
- VAC Analysis
- Device Analysis
- Roaming Analysis
- Compliant Handling

### Training Methods

Lectures

### Duration

3 working days

### Class Size

Min 6, max 12

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## 1.2.54 OCC02 LTE System Overview Training (HC)



### Objectives

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

- Describe the evolution of cellular networks.
- Summarize the evolution of 3GPP releases, from release 99 to release 10.
- Explain the logical architecture of EPS (E-UTRAN and EPC).
- Give an overview of the interfaces in EPS.
- Describe the Evolved Packet Core (EPC).
- Describe the role of the MME and the S-GW.
- Describe the S1, X2 and radio-interface and their protocol stacks.
- Describe the radio interface techniques used in uplink and downlink.
- Describe the channel structure of the radio interface.
- Describe the time-domain structure in the radio interface in UL and DL for both FDD and TDD mode.
- Describe the Frequency-domain structure in the radio interface in UL and DL for both FDD and TDD mode.
- Have a good understanding of the OFDM principle, signal generation and processing.
- Detail the reference symbols in DL.
- Describe MIMO technology.
- Outline MBMS for LTE.
- Have a good understanding of the SC-FDMA principle, signal generation and processing.
- Describe Huawei eNodeB Family.
- Describe Huawei LTE products and application scenarios.
- Describe Huawei LTE products Operation and Maintenance System.

### Target Audience

Field Technician, Service Technician  
System Technician

Network Deployment Engineer  
Service Engineer  
Service Design Engineer  
Service Planning Engineer  
System Engineer

### Prerequisites

- A general knowledge in cellular systems and radio technology.

### Content

- Network Architecture.
- Evolution of Cellular Networks.
- E-UTRAN Architecture.
- E-UTRAN Interfaces and Protocols.
- EPC Architecture.
- EPC Interfaces and Protocols.
- LTE Air Interface Principle.
- Radio Interface Techniques.
- Principles of OFDM.
- LTE Channel Structures.
- LTE Frame Structure.
- Downlink OFDMA.
- Uplink SC-FDMA.
- Multiple Input Multiple Output
- Multimedia Broadcast Multicast Service.
- eNodeB product overview.
- The Huawei eNodeB family.
- Products and application scenarios.
- Operation and maintenance.
- LTE EPC System Overview Student Book.

### Training Methods

Lectures

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.55 OCC03 LTE Field Maintenance Training (HC)



### Objectives

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

- Describe the hardware structure of eNodeB.
- Describe the logical structure of eNodeB.
- Describe the working principle and functions of eNodeB boards.
- Describe the procedure of eNodeB commissioning.
- Describe the related concept of eNodeB software and configuration file.
- Querying the current version of eNodeB.
- Use USB disk to commission the eNodeB.
- Commission the eNodeB through LMT.
- Verify commissioning result
- Power up/down the eNodeB and connect up LMT to the node.
- Find the alarm list of eNodeB.
- Perform corrective and preventive maintenance on eNodeB.
- Find faulty hardware units and replace them.

### Target Audience

Network Deployment Engineer  
Field Technician  
System Technician

### Prerequisites

- Successful completion of the following courses:
- LTE System Overview.
- eNodeB LTE V100R005 Product Description.

### Content

- eNodeB System Overview.

- eNodeB System Structure.
- eNodeB Auxiliary Devices.
- eNodeB Typical Networking.
- Powering up/off the eNodeB and connect up LMT to the node.
- Finding the alarm list of eNodeB.
- Perform corrective and preventive maintenance on eNodeB.
- Finding faulty hardware units and replace them.
- eNodeB Commissioning Overview.
- eNodeB Local Commissioning through the USB Disk.
- Procedure for the Local Commissioning through the USB Disk.
- Download/Activate the Software and Data Configuration File.
- eNodeB Local Commissioning on the LMT.
- Prepare for the Local eNodeB commissioning on the LMT.
- Upgrade the eNodeB Software and Data Configuration File on the LMT.
- Download the License on the LMT.
- Query the Running Status.
- Establish an O/M Link between the M2000 and the eNodeB.

### Training Methods

Lectures, Hands-on Exercise

### Duration

2 working days

### Class Size

Min 6, max 12



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## 1.2.56 OEA07 EPC Principle Testing Training(HC)



### Objectives

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

- Perform USN9810 signaling tracing method.
- Perform UGW9811 signaling tracing method.
- Perform EMM signaling flow and key parameters analysis.
- Perform ESM signaling flow and key parameters analysis.

### Target Audience

EPC Engineer and Experts, PS Network Planning Engineer, System Design Engineer

### Prerequisites

- A general understanding of mobile communication and data communication. Get familiar with TCP/IP protocol stack.

- Familiar with EPC products.

### Content

- Perform USN9810 signaling tracing method.
- Perform UGW9811 signaling tracing method.
- Perform EMM signaling flow and key parameters analysis.
- Perform ESM signaling flow and key parameters analysis.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

1 working day

### Class Size

Min 6, max 12

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## 1.2.57 OEB34 EPC HSS Data Configuration (HC)



### Objectives

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

- Describe HSS9820V900R006 product function and application.
- Describe HSS9820 interface protocol function.
- Describe HSS9820 physical and logical structure.
- Describe HSS9820 board function.
- Describe HSS9820 signaling flow.
- Describe HSS9820 software structure.
- Describe HSS9820 IP planning.
- Perform installation of operation PGW client.
- Perform the method of adding or deleting subscriber.
- Modify subscription according to customer requirement.
- Perform configuration of subscription data.
- Describe the steps of HSS9820 data configuration.
- Perform hardware and system data configuration.
- Perform interface data configuration.
- Check the data configuration correctness and validity.
- Perform basic debugging of EPC-HSS9820.
- Describe Board configuration principle.
- Describe data configuration principles and steps.
- Perform Hardware Data Configuration of USCDB.
- Perform Local Office Data Configuration of USCDB.
- Perform Signaling Data Configuration of USCDB.

### Target Audience

Operation and Maintenance Engineer; Technical Support Engineer;

### Prerequisites

- At least half a year experience of operation and maintenance of telecommunication equipments.

### Content

- HSS9820 product function and application.
- HSS9820 interface protocol function.
- HSS9820 physical and logical structure.
- HSS9820 board function.
- HSS9820 signaling flow.
- HSS9820 software structure.
- HSS9820 IP planning.
- Installation of operation PGW client.
- The method of adding or deleting subscriber.
- Modify subscription according to customer requirement.
- Configuration of subscription data.
- Procedure of HSS9820 data configuration.
- Hardware and system data configuration.
- Interface data configuration.
- Check the data configuration correctness and validity.
- Debugging operation of EPC-HSS9820.
- Board configuration principle.
- Data configuration principles and steps.
- Hardware Data Configuration of USCDB.
- Local Office Data Configuration of USCDB.
- Signaling Data Configuration of USCDB.

### Training Methods

Lecture

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.58 OEB9B USN ATCA platform Operation and Maintenance Training (HC)



### Objectives

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

- Describe system structure and hardware structure of USN9810.
- Perform software related installation and upgrade procedure.
- Perform hardware operation and maintenance.
- Perform the Routine Operation and Maintenance including security management, system information management, alarm management, trace management, data management, license management, performance management.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program EPC Principle Fundamental Training.

### Content

- Describe background knowledge of USN9810.
- Describe functions of USN9810.
- Describe feature and specification of USN9810.
- Describe system structure of USN9810.
- Describe cable connection of USN9810.
- Describe service flow of USN9810.
- Describe USN9810 LMT software.

- USN9810 LMT Introduction.
- Describe USN9810 software structure.
- Perform USN9810 LMT software Installation.
- Perform USN9810 host software installation.
- Describe power on and power off the USN9810.
- Describe hardware system status checking.
- Perform board replacement.
- Perform dust cleaning.
- Perform LMT account management.
- Perform FTP account management.
- Perform log management.
- Perform trace management.
- Describe configuration data backup and restore.
- Describe system data backup and restore.
- Describe patch management.
- Perform license checking.
- Describe license related alarms.
- Perform license applying.
- Perform license installation.
- Perform operation and maintenance of alarm system.
- Describe basic alarm handling procedure.
- Perform performance task setting.
- Perform performance result operation.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

## 1.2.59 OEB9B USN9810 (MME) Data Configuration Training (4G) (HC)



### Objectives

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

- Describe the functions of protocol stacks of different interfaces.
- Perform configuration of USN hardware, System Information, interworking with eNodeB, HSS, MME, S-GW, DNS and NTP.
- Perform configuration of mobility management and session management.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program USN ATCA platform Operation and Maintenance Training.

### Content

- Describe basic hardware configuration and commissioning on the ATCA.
- Describe process group configuration and commissioning on the ATCA.
- Describe port configuration and commissioning on the ATCA.
- Describe clock configuration and commissioning on the ATCA.
- Describe system information configuration and perform commissioning.
- Describe background knowledge about the S1-MME interface.

- Perform S1-MME interface configuration and commissioning.
- Describe background knowledge about the S6a interface.
- Perform S6a interface configuration and commissioning.
- Describe background knowledge about the S10/S11 interface.
- Perform S10/S11 interface configuration and commissioning.
- Perform EMM mobility management parameter data configuration.
- Perform ESM session management parameter data configuration.
- Describe multiple basic concepts of IP network.
- Perform IP interface – related configuration and commissioning.
- Configure and commission the static IP route and open shortest path first (OSPF) route.
- Describe the DNS data configuration of the MME.
- Complete simple DNS configuration of the MME.
- Describe the NTP principle.
- Perform the NTP configuration of the USN9810.
- Perform the NTP commissioning of the USN9810.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

3 working days

### Class Size

Min 6, max 12

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## 1.2.60 OEB21 UGW Routine Operation and Maintenance Training (HC)



### Objectives

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

- Describe system structure and hardware structure of UGW9811.
- Perform software related installation and upgrade procedure.
- Perform hardware operation and maintenance.
- Perform the Routine Operation and Maintenance including authorization management, system information management, alarm management, trace management, log management, license management, patch management, data backup and restore.

### Target Audience

Field Maintenance Engineer, First line  
Maintenance Engineer, Routine Maintenance  
Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program EPC Principle Training.

### Content

- Describe background knowledge of UGW9811.
- Describe function of UGW9811.

- Describe feature and specification of UGW9811.
- Describe system structure of UGW9811.
- Describe cable connection of UGW9811.
- Describe service flow of UGW9811.
- Describe software directory structure.
- Describe LMT software management.
- Describe host software management.
- Describe power on and power off the UGW9811.
- Describe hardware system status checking.
- Perform board replacement.
- Perform dust cleaning.
- Describe authorization management.
- Describe system information management.
- Describe alarm management.
- Describe trace management.
- Describe log management.
- Describe patch management.
- Describe license management.
- Describe data backup and restore.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

2 working days

### Class Size

Min 6, max 12

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## 1.2.61 OEB30 UGW (SGW/PGW) Data Configuration Training (HC)



### Objectives

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

- Perform data configuration of S1-U/S11, S5/S8 and SGI interfaces
- Describe basic concept of VPN, APN and charging.
- Perform configuration of VPN, APN and charging.
- Describe the SA principles and PCC concepts.
- Perform configuration of the SA function, service control function and PCC.

### Target Audience

Field Maintenance Engineer, Second line Maintenance Engineer, Routine Maintenance Engineer

### Prerequisites

- A general understanding of mobile communication and data communication.
- Successful completion of the program of UGW Routine Operation and Maintenance Training.

### Content

- Perform PLMN management.
- Perform user attribute management.
- Describe system time management.
- Describe S-GW/SGSN access control.

- Describe the method and solution of Single IP function.
- Perform the data configuration of all interfaces involved in Single IP solution.
- Perform APN configuration.
- Perform virtual APN configuration.
- Perform alias APN configuration.
- Describe VPN concept.
- Perform GRE VPN configuration.
- Perform L2TP VPN configuration.
- Perform IPsec VPN configuration.
- Perform interworking with AAA server.
- Perform interworking with internet.
- Perform interworking with enterprise network.
- Describe SA concept.
- Perform SA data configuration.
- Describe PCC concepts.
- Perform PCC configuration.
- Overview of security support on the UGW9811.
- Perform security configuration.

### Training Methods

Lecture, Hands-on Exercise, Demonstration

### Duration

4 working days

### Class Size

Min 6, max 12

