

Issue

Date

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Huawei Technologies Co., Ltd.

Issue ()

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1 Library Information

About This Chapter

1.1 Library Changes

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

1.2 About HedEx Lite

HedEx Lite is the latest product documentation management system released by Huawei. HedEx Lite is installation-free, lightweight, and provides the global search feature.

1.3 How to Obtain and Update Documentation

This chapter describes how to obtain and update the documentation.

1.4 Feedback

This chapter describes how to feedback suggestions and comments of the Huawei documentation.

Notice: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

MODIFICATION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the device.

This device should be installed and operated with a minimum distance of 20cm between the antenna and all persons.

1.1 Library Changes

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

Issue 01 (2017-11-22)

This issue is the first commercial release.

1.2 About HedEx Lite

HedEx Lite is the latest product documentation management system released by Huawei. HedEx Lite is installation-free, lightweight, and provides the global search feature.

HedEx Lite is the latest product documentation management system released by Huawei. HedEx Lite does not require installation. It is lightweight and provides the global search feature. It is compatible with HedEx V100R002.



NOTE

Huawei product documentation is delivered in HDX format. HDX is a compressed file format, which supports browsing of HTML and PDF files using HedEx.

How to Obtain

You can obtain HedEx Lite by means of:

- HedEx Lite download link provided at <http://support.huawei.com/enterprise>

Basic Functions

HedEx Lite manages electronic documentation for different Huawei products and software versions in a centralized manner. It provides the following functions: document browsing, searching, printing, bookmark, commenting, feedback, documentation package management, and automatic upgrade of documentation package and software. For details, see the online Help of HedEx Lite.

Features

- Secure and installation-free
HedEx Lite does not need to be installed. It requires only a small amount of disk space and memory.
- Integrated browse window
HedEx Lite enables you to browse documents of different products and software versions in one window.
- Easy access to latest documentation Using HedEx Lite, you can:
 - Download documentation of any version.
 - Update your local documentation package anytime.
 - Specify an interval for automatic update of your local documentation package.
- Highly compatible
HedEx Lite runs on mainstream Windows operating systems and supports browsers such as Internet Explorer, Mozilla Firefox, Apple Safari, and Google Chrome.

- Highly secure
 - Application-level access control: HedEx Lite accepts only connection requests from local loopback IP address (127.0.0.1). Connection requests from any other IP address will be rejected.
 - System-level network protection: HedEx Lite complies with firewall access control policies of customers. It can run behind the firewall provided by Windows or a third-party firewall.
 - Security protection for documentation package update: Strict approval process is applied to ensure that documents uploaded to <http://support.huawei.com/enterprise> do not contain any executable codes.
 - Security protection for software upgrade: Strict approval process is applied to ensure that the HedEx Lite software package uploaded to <http://support.huawei.com/enterprise> is complete and legitimate.

1.3 How to Obtain and Update Documentation

This chapter describes how to obtain and update the documentation.



NOTE

To use HedEx Lite or to log in to Huawei technical support website, you need a registered user account. You can apply for a user account at <http://support.huawei.com/enterprise> or apply for an account by contacting the service manager of your local Huawei office.

Obtaining Documentation

You can obtain CPI documents in the following ways:

- Use the online search function provided by HedEx Lite to find the documentation package you want and download it. This method is recommended because you can directly load the desired documentation package to HedEx Lite. For details about how to load a documentation package, see the online Help of HedEx Lite.
- Download the desired documentation package from <http://support.huawei.com/enterprise>.

Updating Documentation

You can update CPI documents in the following ways:

- Enable the library upgrade function provided by HedEx Lite. This method is recommended because HedEx Lite can automatically detect the latest version for your local documentation packages and prompt you to conduct an upgrade. For details about how to enable the library upgrade function, see the online Help of HedEx Lite.
- Download the latest documentation packages from <http://support.huawei.com/enterprise>.

1.4 Feedback

This chapter describes how to feedback suggestions and comments of the Huawei documentation.

Huawei welcomes your suggestions and comments. You can provide your feedback to us in any of the following ways:

- Call the service hotline of your local Huawei office.
- Send an email to support_e@huawei.com.
- Use the feedback function provided by HedEx Lite to send your suggestions to support_e@huawei.com. For details about how to use the feedback function, see the online Help of HedEx Lite.

2 Safety

About This Chapter

This section provides the health and safety, equipment safety instructions that you must follow when installing, operating, and maintaining devices.

2.1 Health and Safety

This section provides the health and safety instructions that you must follow when installing, operating, and maintaining Huawei devices.

2.2 Equipment Safety

This section provides the safety instructions that you must follow when installing, operating, and maintaining Huawei devices.

2.1 Health and Safety

This section provides the health and safety instructions that you must follow when installing, operating, and maintaining Huawei devices.

2.1.1 General Instructions

This section describes the safety precautions you must take before installing or maintaining Huawei equipment.

All Safety Instructions

To ensure safety of humans and the equipment, pay attention to the safety symbols on the equipment and all the safety instructions in this document.

The "CAUTION", "WARNING", and "DANGER" are only supplements to the safety instructions.

Local Laws and Regulations

When operating the device, you must follow the local laws and regulations. The safety instructions in this document are only supplements to the local laws and regulations.

Basic Installation Requirements

- Only professional or qualified personnel are allowed to install, operate, and maintain the equipment.
- Only qualified and professional personnel are allowed to dismantle security facilities and troubleshoot the equipment.
- Only the personnel authenticated or authorized by Huawei are allowed to replace or change the device or the parts of the device (including the software).

- The operator must report the faults or errors that may cause safety problems to the person in charge of the device immediately.

Personal Safety

- Requirements for operations in thunderstorms are:
 - Do not operate the device or cables.
 - Disconnect the AC power connectors.
 - Do not use fixed terminals.
 - Do not touch terminal or antenna connectors.



NOTE

The preceding requirements apply to wireless fixed station terminals.

- To prevent electric shock, do not connect the connector of a safety extra-low voltage (SELV) circuit to the connector of a telecommunication network voltage (TNV) circuit.
- Do not look into the optical interfaces without eye protection. Otherwise, human eyes may be hurt by laser beams.
- Before operating the device, make sure that you:
 - Wear ESD clothes.
 - Wear ESD gloves and wrist strap.
 - Take off the conductive stuff such as watches, bracelets and rings to avoid being shocked.
- In case of fire, escape from the building or site where the device is located and press the fire alarm bell or dial the telephone number for fire alarms. Entering the burning building again is prohibited in any situation.

2.1.2 Electrical Safety

This section provides safety instructions for high voltage, high leakage current, and power cables.

High Voltage



DANGER

- The high voltage power supply provides power for device operations. Touching the high voltage power supply directly or indirectly through damp objects may cause fatal hazards.
- Operating the high voltage power supply incorrectly or irregularly may cause accidents such as fire or electric shock.

High Leakage Current



NOTICE

Before powering on a device, ground the device. Otherwise, the safety of humans cannot be ensured.

If a high leakage current mark is labelled near the power connector of the device, you must connect the protection grounding terminal on the device housing to the ground before connecting the device to an A/C input power supply. This is to prevent the electric shock caused by the leakage current of the device.

Power Cables



DANGER

Installing or removing power cables when the device is on is prohibited. This is because when the cores of power cables contact conductors, electric arcs or sparks are generated, which may cause fire or hurt human eyes.

- Before installing or removing power cables, you must power off the device.
- Before connecting a power cable, you must check that the label on the power cable is correct.

2.1.3 Inflammable Environment

This section provides safety instructions for operations in an air environment where devices are operating.



DANGER

Do not place the device in an environment that has inflammable and explosive air or gas. Do not perform any operation in this environment.

2.1.4 Working at Heights

This section provides safety instructions for working at heights.



CAUTION

Avoid object falling when you work at heights.

When working at heights, fulfill the following requirements:

- Only trained personnel can work at heights.
- Prevent the devices and tools that you carry from falling down.
- Take safety and protection measures, for example, wear a helmet and safety belt.
- Wear warm clothes when working at heights in a cold region.
- Before working at heights, check that all the lifting facilities are in good condition.

Hoisting heavy objects

This section provides safety instructions for hoisting heavy objects that you must follow when installing, operating, and maintaining Huawei devices.



CAUTION

Do not walk below the cantilever or hoisted objects when heavy objects are being hoisted.

- Only trained and qualified personnel can perform hoisting operations.
- Before hoisting heavy objects, check that the hoisting tools are complete and in good condition.
- Before hoisting heavy objects, ensure that the hoisting tools are fixed to a secure object or wall with good weight capacity.
- Issue orders with short and explicit words to avoid misoperations.
- Ensure that the angle formed by two cables is not larger than 90 degrees.

Using Ladders

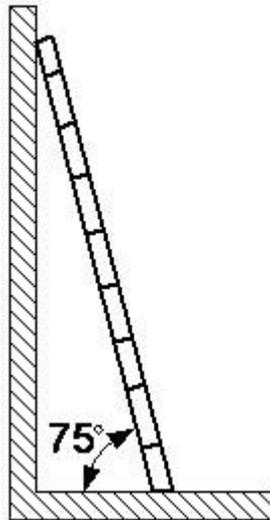
This section provides safety instructions for using ladders.

Checking Ladders

- Before using a ladder, check whether the ladder is damaged. Only the ladder in good condition can be used.
- Before using a ladder, you should know the maximum weight capacity of the ladder. Avoid overweighing the ladder.

Placing Ladders

The recommended gradient of the ladder is 75 degrees. You can measure the gradient of the ladder with a right angle or your arm. See [Figure 2-1](#). When using a ladder, ensure that the wider feet of the ladder are downward, or take protection measures for the ladder feet to prevent the ladder from sliding. Ensure that the ladder is placed securely. **Figure 2-1** Leaning a ladder



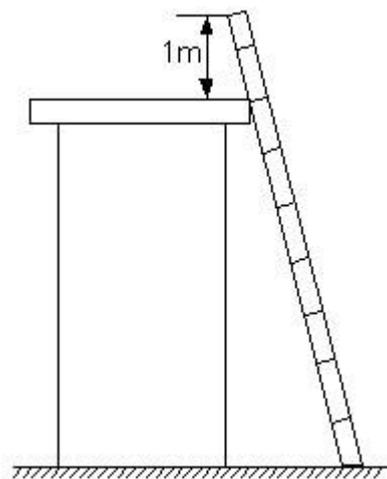
Climbing Up a Ladder

When climbing up a ladder, note the following :

- Ensure that the center of gravity of your body does not deviate from the edges of the two long sides.
- To minimize the risk of falling, hold your balance on the ladder before any operation. •
Do not climb higher than the fourth rung of the ladder (counted from up to down).

If you want to climb up a roof, ensure that the ladder top is at least one meter higher than the roof. See [Figure 2-2](#).

Figure 2-2 Ladder top being one meter higher than the roof



2.1.5 Mechanical Safety

This section provides safety instructions for drilling holes, handling sharp objects, operating fans, and carrying heavy objects.

Drilling Holes



NOTICE

Do not drill the cabinet at will. Drilling holes without complying with the requirements may affect the electromagnetic shielding performance of the cabinet and damage the cables inside the cabinet. In addition, if the scraps caused by drilling enter the cabinet, the printed circuit boards (PCBs) may be short circuited.

-
- Wear an eye protector when drilling holes. This is to prevent the operator's eyes from being injured by the splashing metal scraps.
 - Wear protection gloves when drilling holes.

Sharp Objects



CAUTION

Before you hold or carry a device, wear protective gloves to avoid getting injured by sharp edges of the device.

Fans

When replacing the parts near fans, do not insert your fingers or boards into the operating fans before the fans are switched off and stop running. Otherwise, the hands of the operator can get hurt.

Carrying Heavy Objects

Wear protection gloves when carrying heavy objects. This is to prevent the carrier's hands from being hurt.



CAUTION

- The carrier must be prepared for load bearing before carrying heavy objects. This is to prevent the carrier from being strained or pressed by the heavy objects.
 - When you pull a chassis out of the cabinet, pay attention to the unstable or heavy objects on the cabinet. This is to prevent the heavy objects on the cabinet top from falling down, which may hurt the operator.
-
- Generally, two persons are needed to carry a chassis. It is prohibited that only one person carries a heavy chassis. When carrying a chassis, the carriers should stretch their backs and move stably to avoid being strained.
 - When moving or lifting a chassis, hold the handles or bottom of the chassis. Do not hold the handles of the modules installed in the chassis, such as the power modules, fan modules, and boards.

2.2 Equipment Safety

This section provides the safety instructions that you must follow when installing, operating, and maintaining Huawei devices.

2.2.1 General Instructions

This section provides the general instructions for the installation, operation, and maintenance of Huawei devices.

All Safety Instructions

To ensure the safety of humans and the device, follow the marks on the device and all the safety instructions in this document.

The "CAUTION", "WARNING", and "DANGER" marks in this document are only supplements to the safety instructions.

Local Laws and Regulations

When operating the device, you must follow the local laws and regulations. The safety instructions in this document are only supplements to the local laws and regulations.

Basic Installation Requirements

- Only professional or qualified personnel are allowed to install, operate, and maintain the equipment.
- Only qualified and professional personnel are allowed to dismantle security facilities and troubleshoot the equipment.
- Only the personnel certified or authorized by Huawei are allowed to replace or change the device or the parts of the device (including the software).
- The operator must report the faults or errors that may cause safety problems to the person in charge of the device immediately.

Grounding Requirements

The following requirements only apply to the devices that need to be grounded.

- When you install a device, you must ground it first. When you remove a device, you must remove the ground cable at last.
- Damaging grounding conductors is prohibited.
- Operating a device before the grounding conductor is installed is prohibited.
- Devices must be connected to the grounding earth permanently. Before operating a device, check the electrical connection of the device and ensure that the device is properly grounded.

Device Safety

- Before operating the device, securely fix the device on the floor or another stable object, for example, a wall or an installation rack.
- Do not block the ventilation openings when the device is in operation.
- When installing panels, you must use a proper tool to tighten the screws.

- After installing the device, clear the package material from the site where the device is installed.

2.2.2 Electrical Safety

This section provides safety instructions for high voltage, high leakage current, power cables, fuses, and electrostatic discharge (ESD).

High Voltage



DANGER

Operating the high voltage power supply incorrectly or irregularly may cause accidents such as fire or electric shock.

High Electrical Leakage



NOTICE

Before powering on a device, ground the device. Otherwise, the safety of the device cannot be ensured.

Power Cables



DANGER

Installing or removing power cables when the device is on is prohibited. This is because when the cores of power cables contact conductors, electric arcs or sparks are generated, which may cause fire.

- Before installing or removing the power cable, turn off the power switch.
- Before connecting a power cable, check that the label on the power cable is correct.

Fuses



NOTICE

To ensure the safety of the device, when the fuse on the device is blown, you must replace the blown fuse with a fuse of the same type and specification.

ESD


NOTICE

The Static charge generated on human bodies may damage the electrostatic sensitive devices (ESDs) on boards, for example, large-scale integration (LSI) integrated circuits (ICs).

- Human body movement, friction between human bodies and clothes, friction between shoes and floors, or handling of plastic articles causes static electromagnetic fields on human bodies. These static electromagnetic fields cannot be eliminated until the static is discharged.
- To prevent electrostatic-sensitive components from being damaged by the static on human bodies, you must wear a well-grounded ESD wrist strap when touching the device or handling boards or application-specific integrated circuits (ASICs).

Figure 2-3 shows how to wear an ESD wrist strap.

Figure 2-3 Wearing an ESD wrist strap

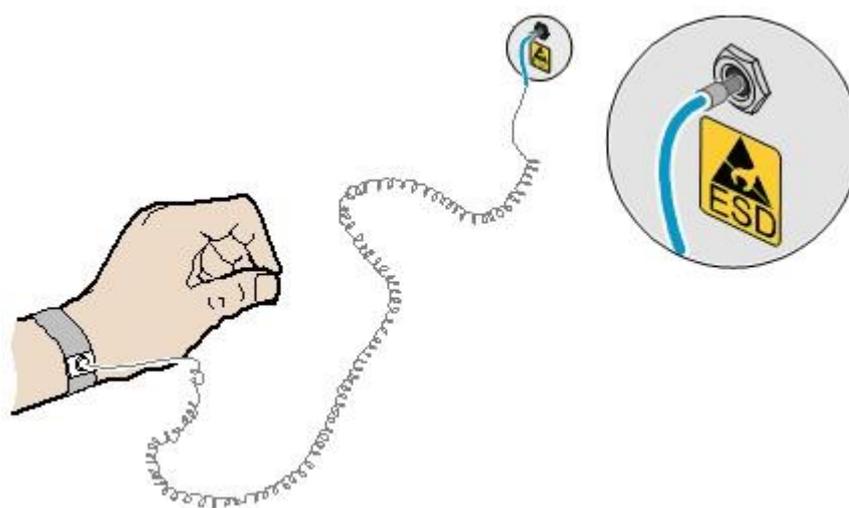


Table 2-1 lists the technical specifications of the ESD wrist strap.

Table 2-1 Technical specifications of the ESD wrist strap

Item	Specification
Grounding resistance of the wrist strap, expressed in ohms	The resistance should be not less than 0.75×10^6 ohms and not greater than 10×10^6 ohms.
Resistance between the internal surface of wrist strap and the wrist strap buckle, expressed in ohms	The resistance should be less than or equal to 20×10^3 ohms.

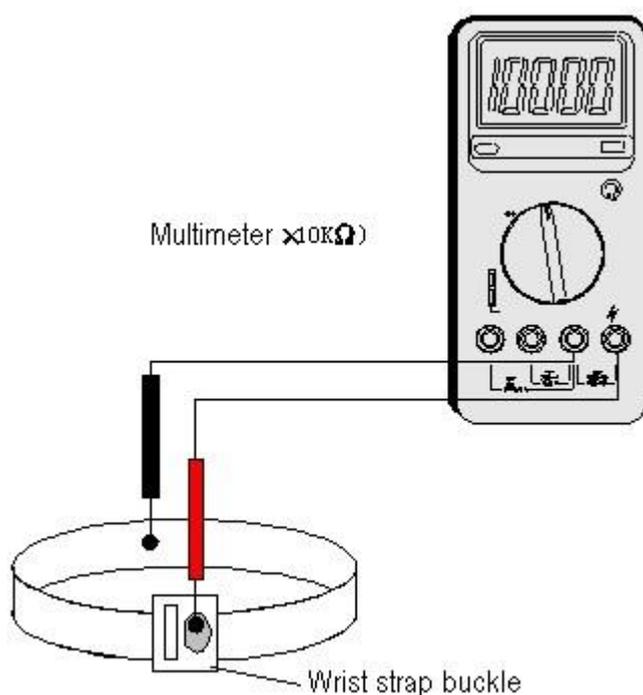
Resistance of the connecting cable of the wrist strap, expressed in ohms	The resistance should be greater than 0.8×10^6 and less than 1.2×10^6 ohms.
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Test the ESD wrist strap periodically to keep it in good and ready to use condition.

When an ESD wrist strap works normally, the resistance should be within the range of 1 ohm to 10 ohms.

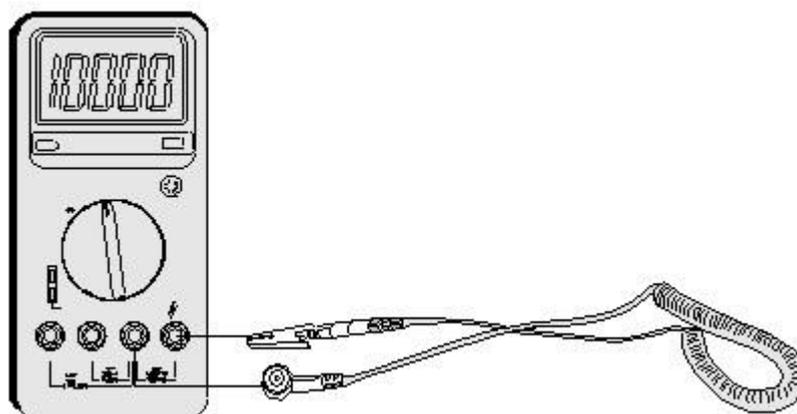
Measure the resistance between the internal surface of the ESD wrist strap and the wrist strap buckle using a multimeter. See [Figure 2-4](#).

Figure 2-4 Measuring the resistance between the internal surface and the wrist strap buckle using a multimeter



Measure the resistance of the connecting cable of the ESD wrist strap using a multimeter. See [Figure 2-5](#).

Figure 2-5 Measuring the resistance of the connecting cable using a multimeter



2.2.3 Inflammable Environment

This section provides safety instructions for operations in an air environment where devices are operating.



Do not place the device in an environment that has inflammable and explosive air or gas. Do not perform any operation in this environment.

Operating an electronic device in an environment of flammable air causes a severe hazard.

2.2.4 Battery

This section provides safety instructions for operations of storage batteries and lithium ion batteries.

Storage Battery

This section provides safety instructions for operations of storage batteries.

- Irregular operations of the storage battery cause hazards. When operating the storage battery, you must avoid short circuit and overflow or loss of the electrolyte.
- Overflow of the electrolyte brings potential hazards to the device because the overflowing electrolyte erodes the metals and boards and damages the boards.

Basic Precautions

To ensure safety, note the following points before installing or maintaining the storage battery:

- Use special insulation tools.
- When handling the storage battery, ensure that its electrodes are upward. Leaning or reversing the storage battery is prohibited.
- Before installing or maintaining the storage battery, ensure that the storage battery is disconnected from the power supply that charges the storage battery.

Short Circuit



CAUTION

Battery short circuit may cause human injuries. Although the voltage of ordinary batteries is low, the instantaneous high current caused by the short circuit releases a great deal of energy.

Avoid short circuit of batteries caused by metal objects. If possible, disconnect working batteries before the other operations.

Hazardous Gas



NOTICE

Using unsealed lead acid storage batteries is prohibited. Lead acid storage batteries must be placed horizontally and stably to prevent the batteries from releasing flammable gas, which may cause fire or erode the device.

Working lead acid storage batteries release flammable gas. Therefore, ventilation and fireproofing measures must be taken at the sites where lead acid storage batteries are placed.

Battery Temperature



NOTICE

If a battery overheats, the battery may be deformed or damaged, and the electrolyte may overflow.

When the temperature of the battery is higher than 60°C (140°F), you need to check whether the electrolyte overflows. If the electrolyte overflows, you can use [Battery Leakage](#) to absorb and counteract the leaking electrolyte.

Battery Leakage



CAUTION

When the electrolyte overflows, absorb and counteract the electrolyte immediately. When moving or handling a battery whose electrolyte leaks, note that the leaking electrolyte may hurt human bodies.

When you find the electrolyte leaks, Select a substance to absorb and counteract the leaking electrolyte according to the instructions of the battery manufacturer.

Lithium Battery

This section provides safety instructions for operations of lithium ion batteries.



CAUTION

Replacing a lithium ion battery with a lithium ion battery of another model may cause explosion.

-
- You can replace a lithium ion battery only with a lithium ion battery of a model recommended by the manufacturer.
 - Exhausted lithium ion batteries must be disposed of according to the instructions.
 - Do not throw lithium ion batteries into fire.

2.2.5 Mechanical Safety

This section provides safety instructions for hole drilling and fans.

Drilling Holes



NOTICE

Do not drill the cabinet at will. Drilling holes without complying with the requirements may affect the electromagnetic shielding performance of the cabinet and damage the cables inside the cabinet. In addition, if the scraps caused by drilling enter the cabinet, the printed circuit boards (PCBs) may be short circuited.

-
- Before drilling holes in a cabinet, move the cables inside the cabinet away from the drilling positions.
 - Prevent metal scraps from falling into the cabinet. After drilling holes, clear the metal scraps.

Fans

When replacing parts, place the objects such as the parts, screws, and tools properly. This is to prevent them from falling into the operating fans, which damages the fans or device.

2.2.6 Others

This section provides safety instructions for installing and removing boards, binding signal cables, and handling cables at low temperature.

Installing and Removing Boards

**NOTICE**

Before installing a board, you need to wear an electrostatic discharge (ESD) wrist strap and ESD gloves. When installing the board, use proper force to prevent the pins on the backplane from being leaned.

To ensure all the boards are running properly, Installing and Removing Boards must fulfill the following requirements:

- Install the board along the guide rails.
- Prevent the surface of a board from contacting the surface of another board. This is to prevent the boards from being short circuited or scratched.
- To prevent the electrostatic sensitive devices (ESSDs) from being damaged by the static charge on the human body, do not touch the circuits, components, connectors, or cable connection slots on the boards.

Binding Signal Cables

**NOTICE**

Do not bind signal cables with high current cables or high voltage cables.

Laying Out Cables

When the temperature is very low, violent strike or vibration may disturb the plastic coats of cables. To ensure safety, fulfill the following requirements:

- Cables can be laid or installed only when the temperature is higher than 0°C (32°F).
- Before laying out cables which have been stored in a temperature lower than 0°C (32°F), move the cables to an environment of the ambient temperature and store them in the ambient temperature for at least 24 hours.
- Handle cables with caution, especially in a low temperature. Irregular operations, such as pushing cables down from the vehicle, are prohibited.

3 Description

About This Chapter

[3.1 eAN9810A Product Description](#)

[3.2 eAN9810A Hardware Description](#)

3.1 eAN9810A Product Description

Overview

This document describes the eAN9810A in term of product features, network position and functions, logical structure, transport network topologies, operation and maintenance, technical specifications, and reliability. It aims to help user better understand the eAN9810A.

Product Version

The following table lists the product name and product version.

Product Name	Product Version
eAN9810A	V100R001C10

Intended Audience

This document is intended for:

- Network planners
- System engineers

Organization

3.1.1 Introduction

Positioning

OneAir is an Huawei wireless communications solution launched based on the principle of "innovation based on customer requirements." This solution uses technologies over the LTE air interface on the unlicensed frequency bands to meet the requirements of enterprise data communications.

The eAN9810A is a base station that provides communications services in Huawei eLTE-U solution. This new product is developed based on unlicensed frequency bands, integrates multi-

functional modules, combines various technologies, and complies with the development trend of the mobile network.

Benefits

The eAN9810A is compact and light, which enables plug-and-play deployment and offers self-configuration features without the need for shelter or equipment room facilities, significantly simplifying site acquisition and network deployment. The eAN9810A provides a fast and convenient solution for enterprise customers.

Compact Structure and Fast Network Deployment

The eAN9810A is small and light, with a highly integrated design. It is easy to install and maintain. The eAN9810A can be installed on a wall or pole instead of in an equipment room.

Its flexible installation locations and small size facilitate site acquisition, increasing network flexibility and saving network deployment costs and time.

Large Capacity and Wide Coverage

The eAN9810A has a large capacity. The LTE technologies and coverage enhancement significantly improve the coverage, providing customers with stable and reliable connections.

Comprehensive and Cost-Effective Transmission Modes

The eAN9810A supports all-IP transmission and can be deployed in star topologies.

3.1.2 Architecture

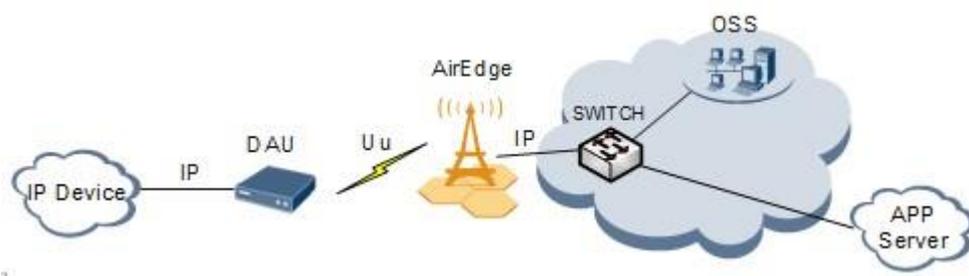
Network Architecture and Topologies

This section describes the network architecture and topologies for AirEdge.

Network Architecture

Figure 3-1 shows the position of an AirEdge on a eLTE-U solution network.

Figure 3-1 eLTE-U solution network



DAU: Data Access Unit	OSS: Operations Support System
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As shown in Figure 3-1, the AirEdge is the access equipment of the LTE system. It communicates with the DAU over the Uu interface, and communicates with the OSS and the user APP application server over the IP interface.

Topologies

In the eLTE-U network, only a single AirEdge is deployed. This single-AirEdge networking mode is unique in the Enterprise Wireless eLTE-U solution. This networking mode is designed for eLTE-U wireless backhaul scenarios, such as video backhaul services. The core network equipment is not deployed on the eLTE-U network side. Terminals can complete network registration after connecting to the AirEdge, and then interconnects to the APP server for uplink and downlink data services.

Figure 3-2 shows the typical networking mode. One or multiple IP devices and a DAU form a local area network (LAN). The DAU connects to the AirEdge over the Uu interface and the AirEdge connects to the APP server over the IP interface. To expand the coverage distance of a single AirEdge, the AirEdge can perform the self-backhaul between its two cells (Cell_A and Cell_B), as shown in Figure 3-3. Cell_A transmits the service data of DAU_1 and DAU_2 to the AirEdge. Then, the AirEdge uses Cell_B to transmit these data to the DAU_3, which connects to the upper-layer application server.

Figure 3-2 Single-AirEdge networking (1)

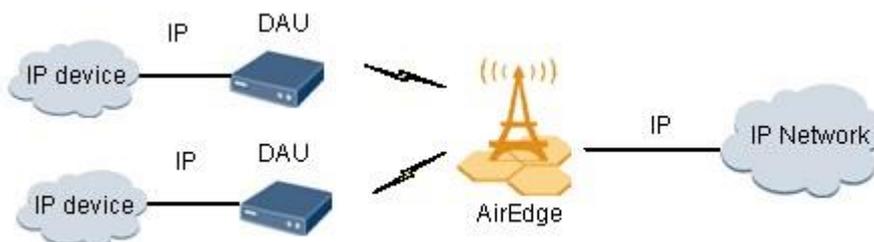
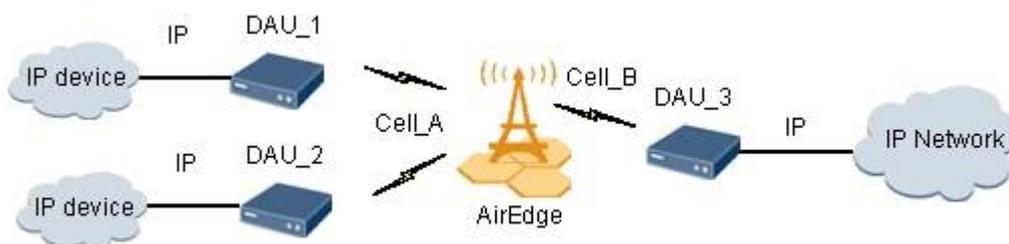


Figure 3-3 Single-AirEdge networking (2)



The single-AirEdge networking mode is more simple and more cost-effective: The AirEdge directly connects to the IP network over the transmission network. The core network equipment is not required.

The single-AirEdge networking mode does not support inter-AirEdge handover compared with the traditional networking mode.

Hardware Exterior

This section describes the exterior of a eAN9810A.

Figure 3-4 shows the exterior of a eAN9810A.

Figure 3-4 eAN9810A exterior

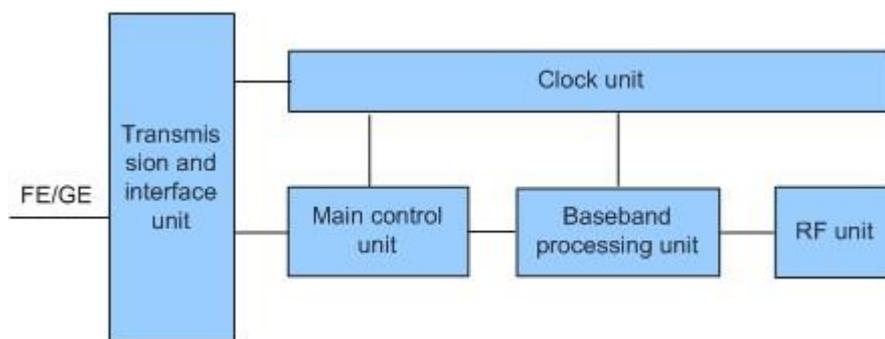


Logical Structure

The eAN9810A consists of a transmission and interface unit, main control unit, baseband processing unit, clock unit, and radio frequency (RF) unit.

Figure 3-5 shows the logical structure of the eAN9810A.

Figure 3-5 Logical structure of the eAN9810A



The following describes the functions of the eAN9810A modules:

- Transmission and interface unit: forwards data between a transport network and the base station. This unit provides physical ports between the base station and the transport network, and the user-plane interface between the base station and other NEs.
- Main control unit: controls and manages resources in the base station. This unit provides the management-plane interface between the base station and the network management, the control-plane interface between the base station and other NEs.
- Clock unit: provides clock synchronization. Provides the interface between the base station and the external clock source, The clock synchronization modes supported by the AirEdge

are RGPS, IEEE 1588v2 (Only frequency synchronization is supported) and synchronous Ethernet.

- Baseband processing unit: processes uplink and downlink baseband data.
- RF unit: Complete the wireless signal transceiver function. Provides the interface between the base station and the antenna system.

3.1.3 Operation and Maintenance

O&M Modes

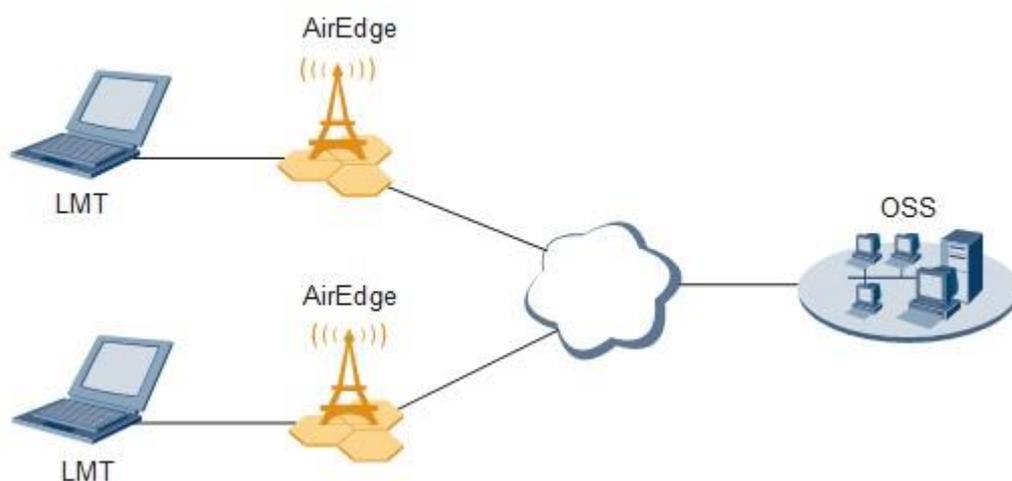
This section describes the O&M modes and O&M system for the AirEdge.

The AirEdge supports the following O&M modes:

- Remote maintenance: O&M personnel use the network management system (NMS) to maintain multiple AirEdges in a central maintenance center.
- Local maintenance: When the transmission link between the AirEdge and the NMS is interrupted, O&M personnel use the local maintenance terminal (LMT) to maintain single AirEdge.

Figure 3-6 shows the O&M system for the AirEdge.

Figure 3-6 O&M system for the AirEdge



An O&M system of the AirEdge includes the following elements:

- LMT: maintains a single AirEdge locally.
- OSS: maintains multiple AirEdge remotely.

O&M Functions

The O&M functions include subscription management, configuration management, fault management, performance management, security management, software management, deployment management, device management, and inventory management.

Subscription Management

Terminal network access parameters are set on the AirEdge, enabling the AirEdge to automatically generate subscription data of the terminal. Users use the subscription data to create the user service identity module (USIM) card of the terminal. On a traditional network, the core network equipment must be deployed to enable terminals to access the network. Terminals managed by the AirEdge, however, can directly access the network without the core network equipment. You can query information about the terminals accessing the network on the AirEdge.

Configuration Management

Configuration management allows operators to configure network resources by using configuration data in network devices, thereby controlling the running status of network devices. Configuration management is required on the entire network O&M cycle.

- During network deployment, configuration management allows operators to initialize configuration data, and install and set up network devices. AirEdge support regional deployment and site deployment.
- During network adjustment, optimization, or routine O&M, configuration management allows operators to configure parameters for new features, and modify parameter settings for scenarios such as network capacity expansion, transmission adjustment, and wireless network performance optimization. Configuration management also allows operators to monitor and modify network parameters.

Fault Management

Fault management involves fault detection, fault isolation, self-healing, alarm reporting, and alarm correlation. The AirEdge can manage faults in hardware, environment, software, transmission, cells, and services.

- Users view faults on the device panel and perform simple operations.
- Fault isolation prevents faults from affecting the operational continuity of the AirEdge. Self-healing minimizes the impact of faults on services by lowering performance or reestablishing cells.
- Alarm correlation enables the AirEdge to report only the root fault and the ultimate impact on services. Alarm correlation helps engineers quickly pinpoint the root fault, analyze severity, and take measures to rectify the root fault instead of rectifying the associated faults.

Performance Management

Performance management involves periodic performance measurement on the AirEdge and the collection, storage, and reporting of measurement results.

Tracing Management

Tracing management facilitates routine maintenance, commissioning, and troubleshooting by tracing internal messages as well as messages related to interfaces, signaling links, and UEs.

Signaling messages are traced either on the OSS or on the LMT.

Security Management

Security management implements user authentication and access control. It includes user account management, rights management, login management, identity authentication, and operation authentication.

Security control on the transmission channels between the AirEdge and the OSS supports Secure Socket Layer (SSL), Public Key Infrastructure (PKI).

Security management provides network- and user-specific security services. It provides the following functions:

- Encryption: encrypts important user information.
- Authentication: manages and authenticates user accounts.
- Access control: controls user operations.
- Security protocol: support SSL security protocol.

Software Management

Software management involves the following functions:

- Software version management: Software versions can be queried, and restored.
- Software version upgrade: AirEdge can be remotely upgraded in batches. With the one-click remote upgrade wizard provided by the OSS,
- Patch management involves patch query, download, loading, activation, deactivation, rollback, confirmation, and removal.

Inventory Management

Inventory management involves the collection and reporting of inventory information about the AirEdge. With inventory management, you can manage network equipment assets at the OMC.

3.1.4 Technical Specifications

This section provides eAN9810A technical specifications, including RF specifications, capacity specifications, output power, equipment specifications, reliability specifications, environment specifications, and protocols and standards compliance.

RF Specifications

Table 3-1 RF specifications of eAN9810A

Frequency Band	RAT	Frequency RangeS	Receiving Sensitivity
5 GHz	LTE(TDD)	5.470 GHz to 5.725 GHz 5.725 GHz to 5.850 GHz	-100 dBm

Note: This certification only test 5725 ~ 5850mhz band, the rest of the band is shielded by software.

Capacity Specifications

Table 3-2 Capacity specifications of eAN9810A

Item	Specifications
Maximum number of cells of a single site	2
Bandwidth supported by each cell	20 MHz
Maximum number of users	64 RRC connected UEs per cell
Maximum number of concurrent users	64 UEs per cell

Output Power

Table 3-3 Output power of eAN9810A

Number of Cells	Number of TX and RX Channels Per Cell	Frequency Band	Maximum TOC Power of single Channel
2	2T2R	5 GHz	≤ 21 dBm (125 mW)

Equipment Specifications

Table 3-4 Equipment specifications of eAN9810A

Item	Specifications		
Dimensions	Height (mm)	Width (mm)	Depth (mm)
	290	210	85
Weight	≤ 5 kg		
Input voltage	PoE power supply: -48 V DC		
Transmission port	One FE/GE electrical port, providing 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s (automatically negotiated)		
Power consumption	≤ 55 W		

Reliability specifications

Table 3-5 Reliability specifications of eAN9810A

Item	Specifications
System availability	$\geq 99.999\%$

Mean time between failures(MTBF)	$\geq 684,900$ hours
Mean time to repair(MTTR)	≤ 1 hour

Environment Specifications

Table 3-6 Environment specifications of eAN9810A

Item	Specifications
Operating temperature	-40°C to +50°C (with solar radiation) -40°C to +55°C (without solar radiation) NOTE At -40°C to -20°C, the AirEdge can start up, but its performance cannot meet requirements. At -20°C to +50°C, the performance of the AirEdge meets requirements.
Storage temperature	-40°C to +70°C
Relative humidity	5% RH to 95% RH
Absolute humidity	1 g/m ³ to 30 g/m ³
Item	Specifications
Atmospheric pressure	70 kPa to 106 kPa
Protection class	IP65

Protocols and Standards Compliance

Table 3-7 Standards compliance of eAN9810A

Item	Specifications
Radio standards	<ul style="list-style-type: none"> • ETSI EN 301 893(5.4 GHz) • ETSI EN 302 502(5.8 GHz) • FCC Part 15(5.8 GHz) • China's SRRC document [2002] No. 227(5.8 GHz)

EMC	The AirEdge meets the electromagnetic compatibility (EMC) requirements and complies with the following standards: <ul style="list-style-type: none"> • GB9254 Class B • IEC 61000-4-2 • IEC 61000-4-6
Environment protection	RoHS
Surge protection	IEC61000-4-5 surge immunity
Protection rating	YD 5098-2001 IEC 61000-4-5 ETSI EN301 489 ITU-T K.20
Security	IEC60950
Environment	ETSI EN 300 019-2-1 ETSI EN 300 019-2-2 ETSI EN 300 019-2-3 IEC 60068-2

3.2 eAN9810A Hardware Description

Overview

This section describes the exterior, ports, indicators and cables of eAN9810A.

Product Version

The following table lists the product name and product version.

Product Name	Product Version
eAN9810A	V100R001C10

Intended Audience

This document is intended for:

- Installation engineers
- Site maintenance engineers
- System engineers

Organization

3.2.1 eAN9810A Equipment

This section describes the exterior, ports and indicators of eAN9810A.

eAN9810A Exterior

This section describes the exterior and dimensions of a eAN9810A.

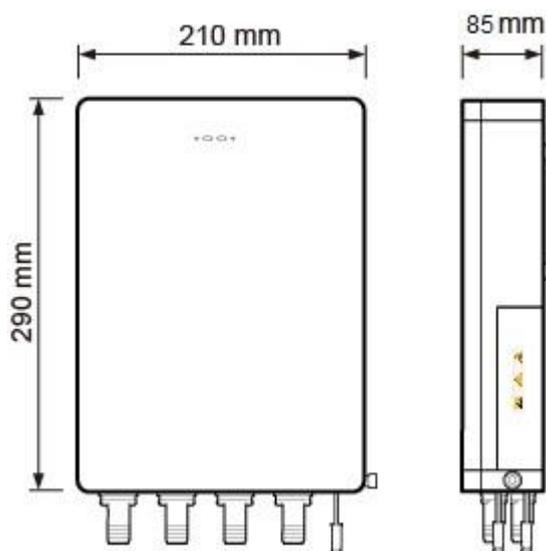
Figure 3-7 shows the exteriors of the eAN9810A.

Figure 3-7 eAN9810A exterior



Figure 3-8 shows the dimensions of eAN9810A.

Figure 3-8 eAN9810A dimensions



eAN9810A Ports

This section describes ports on the eAN9810A panels. An eAN9810A has a bottom panel, and cabling cavity panel.

Figure 3-9 shows the ports on the eAN9810A panels.

Figure 3-9 Ports on the eAN9810A panels

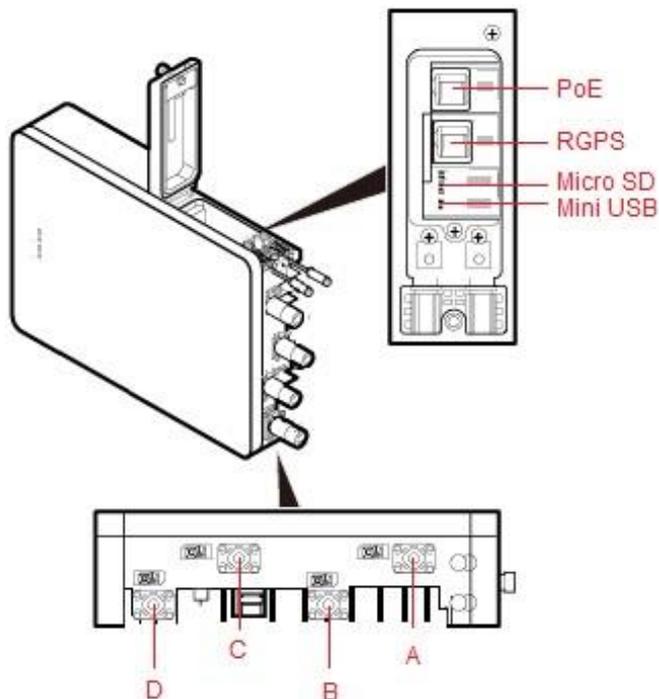


Table 3-8 describes ports on the eAN9810A cabling cavity panels.

Table 3-8 Ports on the eAN9810A cabling cavity panels

Port/Slot	Description
PoE	Used for power supply and data transmission.
RGPS	Used for clock synchronization.
Micro SD	Used for housing a micro SD card. This slot is used in the case of deployment.
Mini USB	Used for testing a port.

There are four RF ports on an eAN9810A bottom panel, Table 3-9 lists the TX/RX frequency band supported by the RF ports.

Table 3-9 TX/RX frequency band supported by the RF ports

RF ports	TX/RX frequency band
A/B/C/D	5470 MHz to 5850 MHz

eAN9810A Indicators

This section describes the eAN9810A indicators.

Figure 3-10 shows the position of the eAN9810A indicators.

Figure 3-10 Position of the eAN9810A indicators

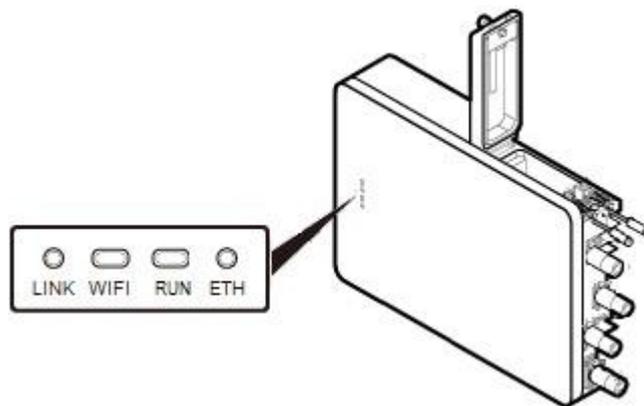


Table 3-10 describes the eAN9810A indicators.

Table 3-10 eAN9810A indicators

Indicators	Meaning	Status	Description
RUN	Cellular processing	Blinking white (on	High-level software

Indicators	Meaning	Status	Description
	unit status	for 0.125s and off for 0.125s)	of the cellular processing unit is being loaded.
		Blinking white (on for 1s and off for 1s)	The cellular processing unit cell is starting up.
		Steady white	The cellular processing unit cell has been set up and the O link is functional.

		White steady off	The base board is not powered on.
		Blinking orange (on for 0.125s and off for 0.125s)	The onsite upgrade using a micro SD card has failed. Reserved.
		Blinking orange (on for 1s and off for 1s)	IKE negotiation has failed.
		Steady orange	The base board hardware is faulty. Replace the hardware.
		Alternating orange and white (on for 0.125s and off for 0.125s)	The onsite upgrade using a micro SD card is in progress. Reserved.
		Orange steady off	No alarm is generated for the base board.
ETH	ETH status	Blinking white	Data transmission over the Ethernet port is normal.
		Steady white	An Ethernet cable is correctly connected to the Ethernet port.
		Steady off	An Ethernet cable is incorrectly connected to the Ethernet port.
WIFI	This feature is not supported and is not available	N/A	N/A
Indicators	Meaning	Status	Description
LINK	This feature is not supported and is not available	N/A	N/A

**NOTE**

While the eAN9810A is being powered on, the RUN indicator is steady orange or steady white for a short period of time.

3.2.2 Auxiliary Devices

The PSE or Dock supplies power to a eAN9810A through an Ethernet cable in PoE mode.

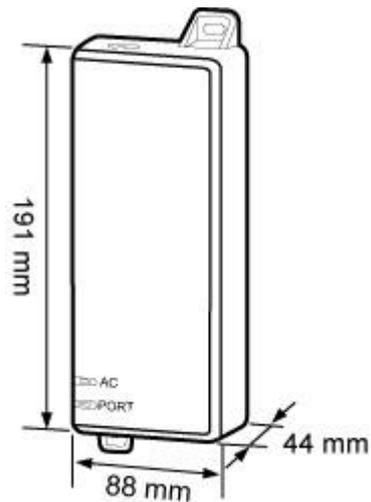
PSE

This section describes the appearance, dimensions, ports, and indicators of the PSE, and the PSE specifications.

Appearance and Dimensions

Figure 3-11 shows the appearance and dimensions of the PSE. **Figure**

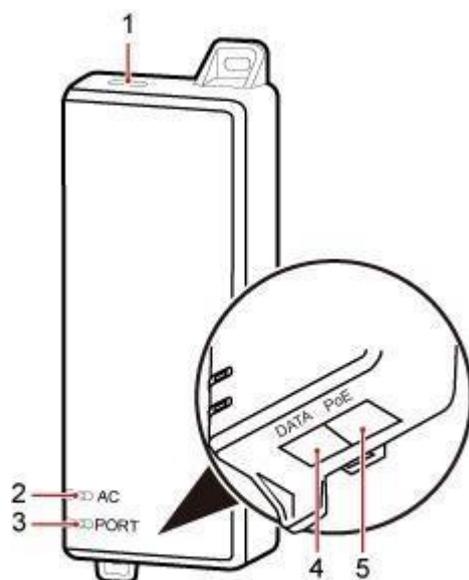
3-11 Appearance and dimensions of the PSE



Ports and Indicators

Figure 3-12 shows the ports and indicators on the PSE.

-12 PSE ports and indicators



PAP08C0011

Table 3-11 describes PSE ports.

Table 3-11 PSE ports

No.	Label	Meaning
1	-	Power supply port used for PSE power supply
4	DATA	Data input port connecting to a transmission device
5	PoE	PoE output port connecting to the eAN9810A

Table 3-12 describes PSE indicators.

Table 3-12 PSE indicators

No.	Label	Status	Description
2	AC	Steady green	The power supply is normal.
		Steady off	There is no power input or the PSE is faulty.

Figure 3

3	PORT	Steady green	The connection to the eAN9810A is
No.	Label	Status	Description
			normal.
		Steady off	The connection to the eAN3810A is abnormal or the PSE is faulty.

Specifications

[Table 3-13](#) lists PSE specifications.

Table 3-13 PSE specifications

Item	Specifications
Input voltage	90 V AC to 264 V AC
Input voltage frequency	47 Hz to 63 Hz
Output voltage	56 V DC

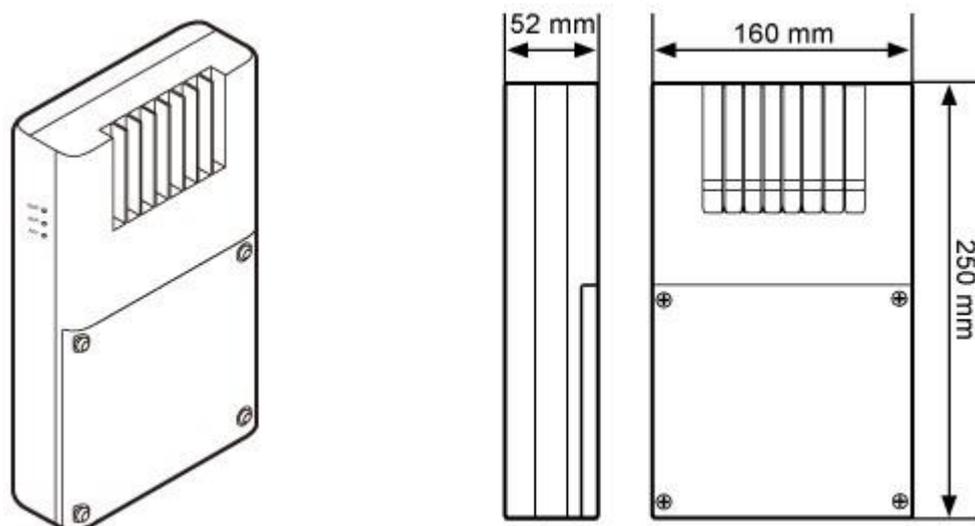
Dock

The Dock supplies power and transfer transmission to a eAN9810A through an Ethernet cable in PoE mode.

Exterior

The Dock uses the modular structure. [Figure 3-13](#) shows the exterior and dimensions of a Dock.

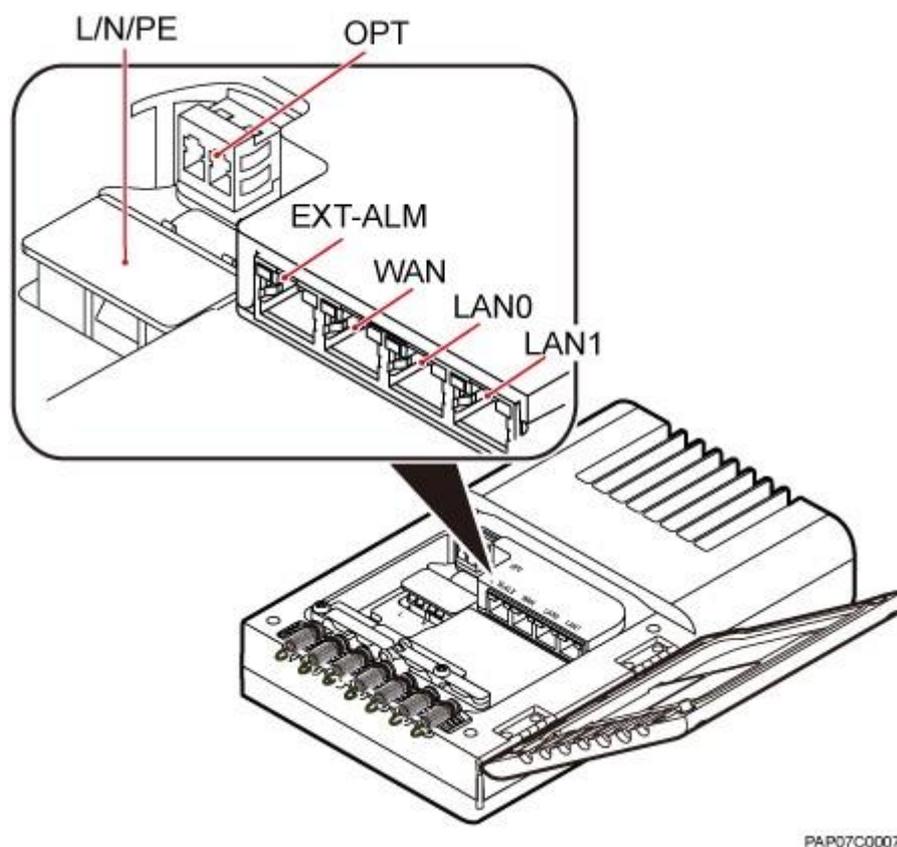
-13 Exterior and dimensions of a Dock



Ports

The ports are inside the Dock. [Figure 3-14](#) shows the positions of ports on the Dock. **Figure**

3-14 Ports on the Dock



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[Table 3-14](#) describes ports on the Dock.

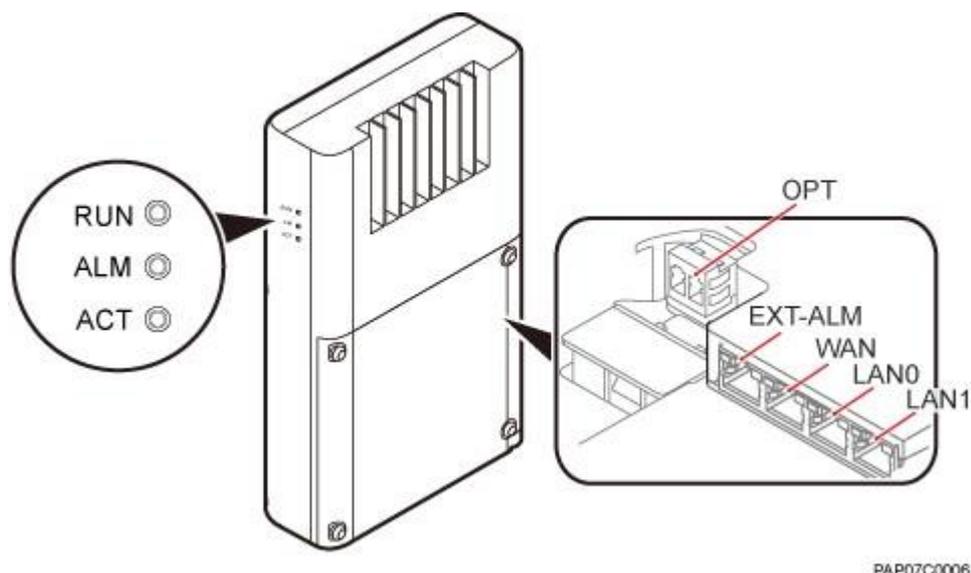
Figure 3
Table 3-14 Meanings of ports on the Dock

Label	Description
OPT	FE/GE optical port, used for connecting an external transmission device.
L/N/PE	AC power port, used for connecting an external power supply device.
EXT-ALM	Environment monitoring port that provides four dry contacts, used for connecting external devices and monitoring alarms.
WAN	P&E transmission and power supply port, used for connecting an external transmission device.
LAN0	P&E transmission and power supply port, used for connecting a BTS3205E. A Dock supplies power to only one eAN9810A.
LAN1	P&E transmission and power supply port. Used to connect to commissioning devices, backhaul devices, or cascaded devices.

Indicators

The Dock has three external indicators: RUN, ALM, and ACT. The internal RJ45 connector has two indicators showing the connection status and data transmission status respectively. The internal OPT connector has one indicator showing the connection status and data transmission status. [Figure 3-15](#) shows positions of external indicators on the Dock.

-15 Positions of external indicators on the Dock



PAP07C0006

Table 3-15 describes indicators on the Dock external indicators.

Table 3-15 Dock external indicators

Indicator	Meaning
RUN	Operating status
ALM	Alarm status
ACT	Service status

Table 3-16 describe indicators on the Dock internal indicators.

Table 3-16 Internal indicators on the Dock

Indicator	Meaning
WAN/LAN0/LAN1	Green indicator: connection status Orange indicator: Data transmission
OPT	Optical status Steady green: normal connection, no data transmission. Fast blinking green (0.125s interval): in the process of data transmission. Off: faulty connection.

Dock specifications

Table 3-17 lists Dock specifications.

Figure 3

Table 3-17 Dock specifications

Item	Specifications
Input voltage	90 V AC to 290 V AC, and the frequency scope is from 45 Hz to 65 Hz
Output voltage	Voltage: -57 V DC The dock module provides three electrical ports for power output: <ul style="list-style-type: none"> • LAN0 port: The maximum power is 150 W. • WAN and LAN1 port: The combined power cannot exceed 60 W.

3.2.3 Mounting Kits

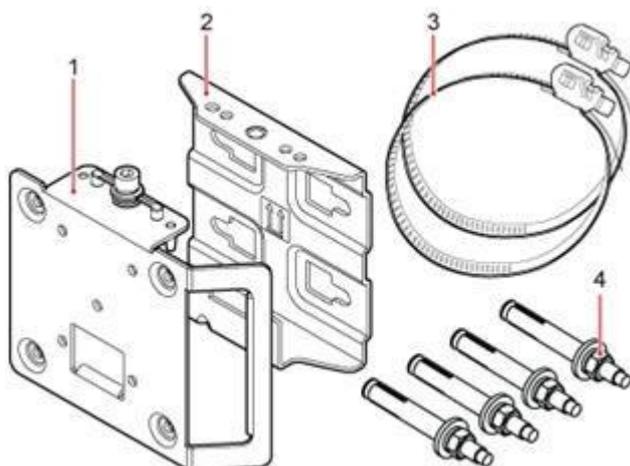
This section describes the mounting brackets for installing a eAN9810A.

eAN9810A Mounting Kits

This section describes mounting kits and attachment plates for installing eAN9810A.

Figure 3-16 shows a mounting bracket and a attachment plate.

Figure 3-16 Mounting bracket and common attachment plate for eAN9810A



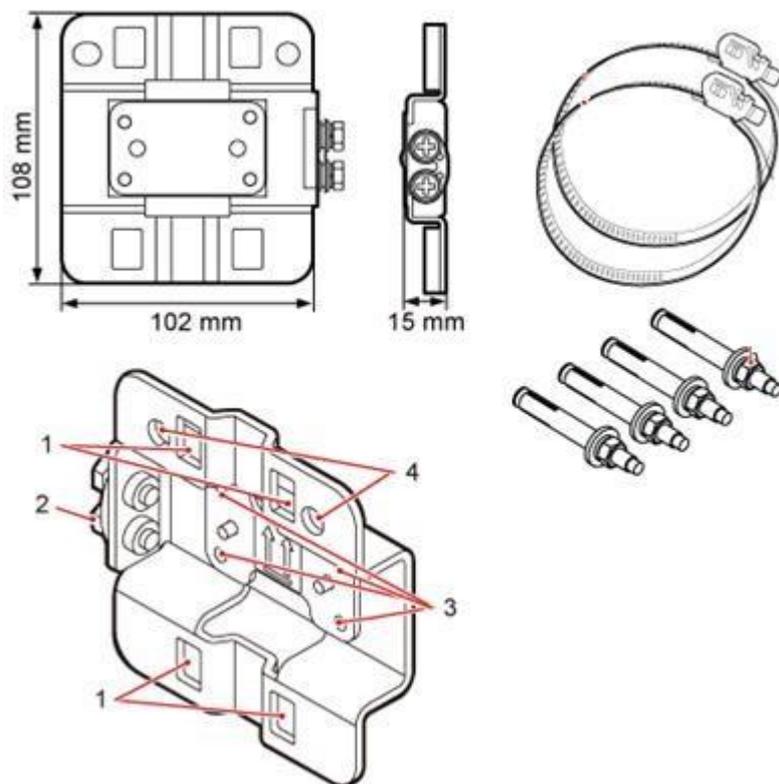
(1) Attachment plate	(2) Mounting bracket	(3) Hose clamp	(4) Expansion bolt
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Dock Mounting Kits

This section describes the mounting brackets for installing a Dock.

Figure 3-17 shows a separate Dock mounting bracket.

Figure 3-17 Appearance of a separate Dock mounting bracket



(1) Hole for routing a hose clamp	(2) Ground terminal	(3) Hole for a captive screw	(4) Hole for inserting an expansion bolt
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3.2.4 Cables

This section describes eAN9810A cables.

Cable List

This section describes eAN9810A cable connections.

Table 3-18 lists eAN9810A cables.

Table 3-18 List of eAN9810A cables

Cable	One End		The Other End	
	Connector	Connected to ...	Connector	Connected to ...
Cable	One End		The Other End	

Figure 3

	Connector	Connected to ...	Connector	Connected to ...
Ethernet Cable	RJ45 connector	eAN9810A/PoE port	RJ45 connector	If connected to PSE/PoE port If connected to Dock/LAN0 port
PGND cable	OT terminal (M6)	Ground terminal on the eAN9810A	OT terminal (M8)	Ground terminal on the ground bar
	OT terminal (M6)	Ground terminal on the Dock	OT terminal (M8)	Ground terminal on the ground bar
RF Jumper	Type N male connector	External antenna TX/RX RF port on eAN9810A	Based on the port model of the antenna system.	Antenna system
RGPS Signal Cable	RJ45 connector	eAN9810A/RGPS port	Round 12-pin connector	RGPS device

Ethernet Cable

This section describes the appearance, pin assignment, and installation position for an Ethernet cable connecting an auxiliary device and an eAN9810A.



NOTE

- The Ethernet cable must be of Category 5e (enhanced) or higher. In addition, its cross-sectional area must be 24 AWG or larger and frame spread rating must be CM or higher.
- With the internal PoE module providing power, the maximum length of an Ethernet cable is 100 m.
- Both the cable and the RJ45 connectors are delivered, and they must be assembled onsite.

Both ends of the Ethernet cable are RJ45 connectors, as shown in [Figure 3-18](#).

-18 Ethernet cable exterior



(1) RJ45 connector

Table 3-19 shows the pin assignment for wires of the Ethernet cable. **Table 3-19** Pin assignment for wires of the Ethernet cable

Pin of the RJ45 Connector	Color	Core Wire	Pin of the RJ45 Connector
X1.2	Orange	Twisted pair cable	X2.2
X1.1	White/Orange		X2.1
X1.6	Green	Twisted pair cable	X2.6
X1.3	White/green		X2.3
X1.4	Blue	Twisted pair cable	X2.4
X1.5	White/Blue		X2.5
X1.8	Brown	Twisted pair cable	X2.8
X1.7	White/brown		X2.7

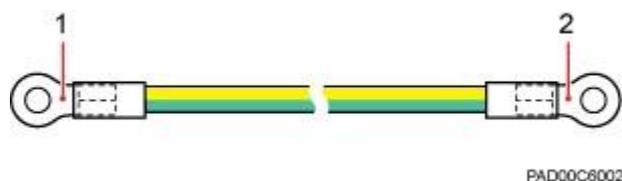
PGND cable

An eAN9810A PGND cable connects an eAN9810A and a ground bar, ensuring the proper grounding of the eAN9810A. The maximum length of an eAN9810A PGND cable is 8 m (26.25 ft).

Exterior

The yellow and green or green PGND cable is a single cable. The cross-sectional area of the PGND cable is 6 mm² (0.009 in.²). Both ends of the cable are OT terminals, as shown in [Figure 3-19](#).

Figure 3
-19 Exterior of a PGND cable



(1) OT terminal (M6)

(2) OT terminal (M8)

NOTE

- If the PGND cable is provided by the customer, a copper-core cable with a minimum cross-sectional area of 6 mm² (0.009 in.²) or 10 AWG is recommended.
- The OT terminals at both ends of the PGND cable are assembled at the site.
- The M6 OT terminal has the default size. You can replace it with another OT terminal of the expected size based on the site requirement.

Installation Position

The M6 OT terminal of the PGND cable is connected to the ground screw on the eAN9810A, and the M8 OT terminal of the PGND cable is connected to the ground bar at the site.

RF Jumper

The eAN9810A RF jumper transmits and receives RF signals.

NOTE

If the customer prepares the RF jumper, the length of the RF jumper should be as short as possible and not exceed 2 m (6.56 ft.).

Both end of the outdoor RF jumper is the type N male connector. [Figure 3-20](#) shows the RF jumper.

Figure 3-20 RF jumper



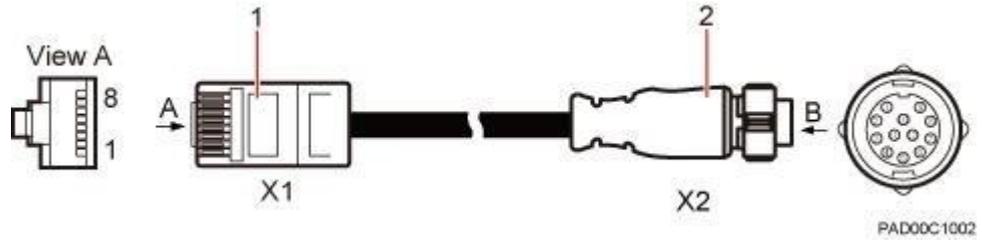
(1) Type N male connector

RGPS Signal Cable

The RGPS signal cable between the eAN9810A and RGPS device is used for clock synchronization. This cable is optional for the eAN9810A.

An RGPS signal cable has an RJ45 connector at one end and a round 12-pin connector at the other end, as shown in [Figure 3-21](#).

-21 Appearance of an RGPS signal cable



(1) RJ45 connector

(2) Round 12-pin connector

Figure 3

4 Installation and commissioning

About This Chapter

[4.1 eAN9810A Hardware Installation Guide](#)

[4.2 eAN9810A Deployment Guide](#)

4.1 eAN9810A Hardware Installation Guide

Overview

This document describes the process of installing eAN9810A.

Product Version

The following table lists the product name and product version.

Product Name	Product Version
eAN9810A	V100R001C10

Intended Audience

This document is intended for installation engineers.

Organization

4.1.1 Installation Preparations

Before starting the installation, you must obtain the required reference documents, tools, and instruments, and familiarize yourself with the skills required.

Reference Documents

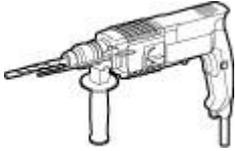
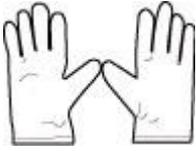
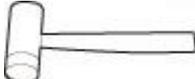
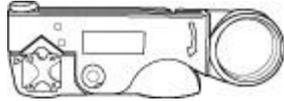
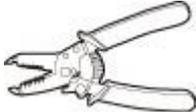
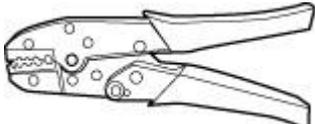
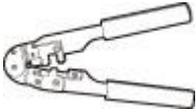
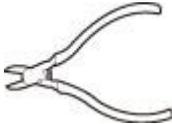
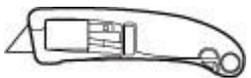
Before the installation, you must be familiar with reference documents.

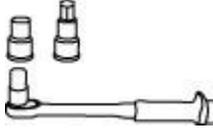
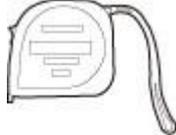
The following reference documents are required during eAN9810A installation:

- [2.1 Health and Safety](#)
- [2.2 Equipment Safety](#)
- [3.2 eAN9810A Hardware Description](#)

Tools and Instruments

You must prepare the following tools and instruments before the installation.

Hammer drill (a $\phi 12$ bit) 	ESD gloves 	Vacuum cleaner 
Heat gun 	Phillips screwdriver (M3 to M6) 	Flat-head screwdriver (M3 to M6) 
Rubber mallet 	COAX crimping tool 	Wire stripper 
Power cable crimping tool 	RJ45 crimping tool 	Diagonal plier 
Utility knife 	Level 	Network cable tester 

Adjustable wrench (size ≥ 32 mm [1.26 in.])  Torque wrench  Size: 16 mm (0.63 in.) and 22 mm (0.87 in.)	Torque screwdriver   3mm or 5mm 	Marker (diameter ≤ 10 mm [0.39 in.]) 
Combination wrench  Size: 16 mm (0.63 in.) and 22 mm (0.87 in.)	(M3 to M6)  (M3 to M6)	
Torque socket (M6 or M10) 	Multimeter 	Measuring tape 
Fixed pulley (weight-bearing capacity > 500 kg or 1102.5 lb) 	Lifting sling 	Ladder 

Requirements for Installation Personnel

This section describes requirements for installation engineers. They must be qualified and trained, and familiar with correct operation methods and safety precautions before performing any operations.

Before the installation, pay attention to the following items:

- Technical engineers must take Huawei training and be familiar with proper installation and operation methods.
- The number of installation personnel depends on the engineering schedule and installation environment. Generally, two to three persons are required. Generally, only three to five onsite personnel are necessary.

4.1.2 Information About the Installation

This section describes the information that you must be familiar with before installing a eAN9810A, including the eAN9810A hardware information, installation scenarios, installation space and environment requirements.

Hardware Device Information

This section describes the hardware information you should know before installing the eAN9810A.

eAN9810A hardware includes eAN9810A main equipment, auxiliary devices, mounting kits, and cables. For details, see sections in *eAN9810A Hardware Description*, which are listed in [Table 4-1](#).

Table 4-1 Hardware information

Category	Sections in <i>eAN9810A Hardware Description</i>
eAN9810A main equipment	eAN9810A Exterior
	eAN9810A Ports
	eAN9810A Indicators
Auxiliary device	PSE
	Dock
Mounting kits	eAN9810A Mounting Kits
	Dock Mounting Kits
Cables	Cable List

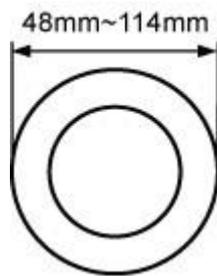
Installation Options and Restrictions

The eAN9810A can be installed on a wall or pole. Installation scenarios must meet heat-dissipation and waterproofing requirements of the eAN9810A.

Installation on a Pole

[Figure 4-1](#) shows the diameter of a pole for installing an eAN9810A.

Figure 4-1 Diameter of a pole for installing a eAN9810A

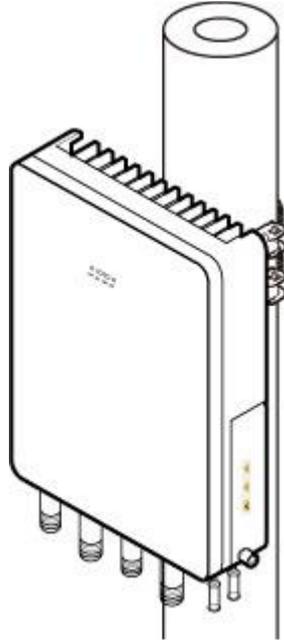


NOTICE

- The diameter of a pole for installing a eAN9810A ranges from 48 mm (1.89 in.) to 114 mm (4.49 in.). The recommended diameter is 60 mm (2.36 in.).
 - The recommended thickness of the pole wall is 3.5 mm (0.14 in.) or above.
-

Figure 4-2 shows the eAN9810A installed on a pole.

Figure 4
-2 A eAN9810A installed on a pole



Installation on a Wall

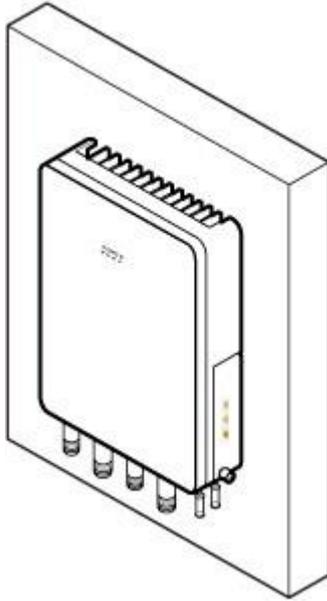
The wall for installing eAN9810A must meet the following requirements:

- The wall can bear a load at least four times the weight of a eAN9810A.
- The screws must be tightened with a torque of 30 N·m. This ensures the screws work properly and the wall remains intact without cracks in it.

Figure 4-3 shows the eAN9810A installed on a pole.

-3 A eAN9810A installed on a wall

Figure 4



Installation Clearance and Space Requirements

This section describes the recommended and minimum clearances for a eAN9810A.

Clearance for a eAN9810A

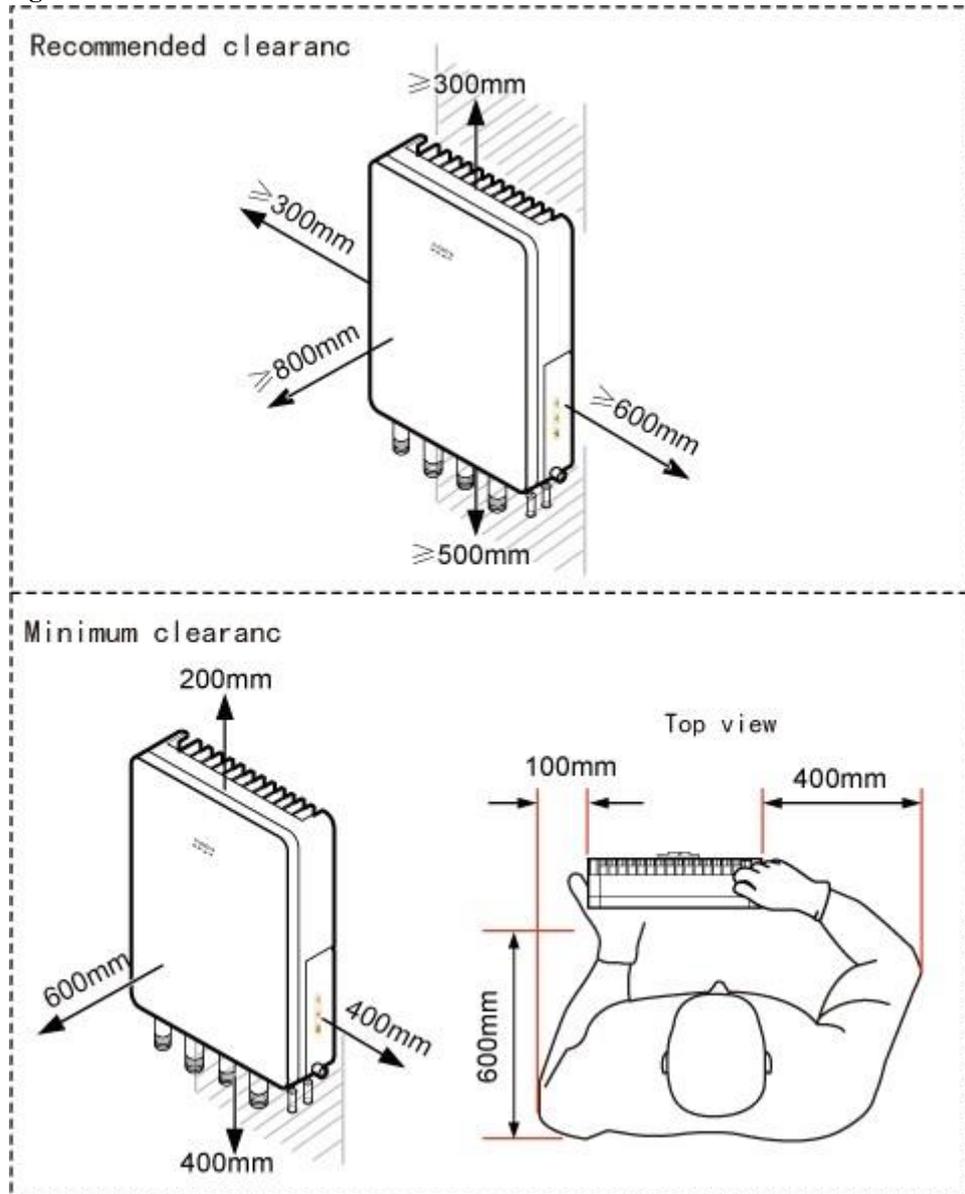
When the eAN9810A is installed on a wall or pole, the minimum clearance is required for easy cabling and operation and maintenance (O&M). Based on the engineering practice, the recommendation for the installation clearance is provided.

- The recommended clearances are for customers, ensuring normal running and providing appropriate space for O&M. If installation space is sufficient, leave the recommended clearances after installing equipment.
- The minimum clearance ensures normal operation and heat dissipation, but O&M activities such as checking indicator status and opening the cover plate of a cabling cavity cannot be properly conducted. If installation space is restricted, leave the minimum clearance after installing equipment.

Figure 4-4 show the clearances for installing a eAN9810A.

-4 Clearances for installing a eAN9810A

Figure 4



Installation Spacing Between eAN9810A

Figure 4-5 lists the horizontal spacing between eAN9810A.

-5 Clearances for installing a eAN9810A

Figure 4

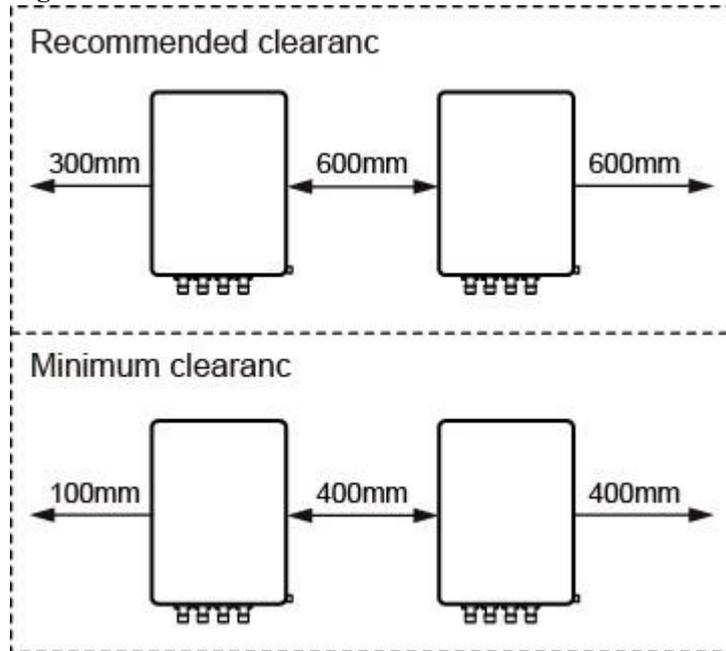
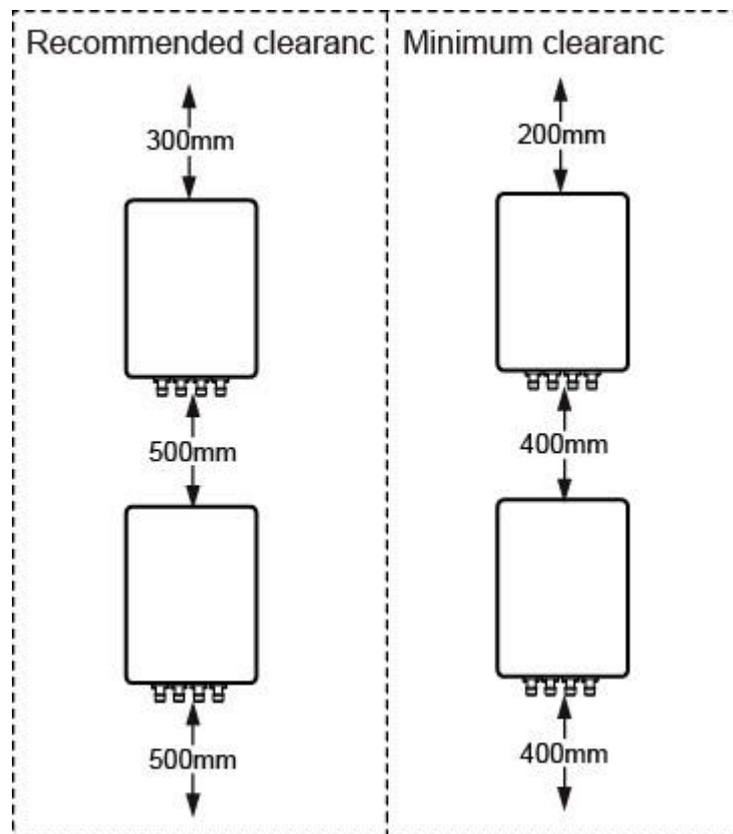


Figure 4-6 lists the vertical spacing between eAN9810A.

Figure 4-6 Clearances for installing a eAN9810A

Installation Environment Requirements

The installation environment of a eAN9810A involves the running environment specifications for the eAN3810A.

Running Environment Specifications

Table 4-2 shows the environment specifications for the eAN9810A.

Table 4-2 Environment specifications of eAN9810A

Item	Specifications
Operating temperature	-40°C to +50°C (with solar radiation) -40°C to +55°C (without solar radiation) NOTE At -40°C to -20°C, the AirEdge can start up, but its performance cannot meet requirements. At -20°C to +55°C, the performance of the AirEdge meets requirements.

Storage temperature	-40°C to +70°C
Relative humidity	5% RH to 95% RH
Item	Specifications
Absolute humidity	1 g/m ³ to 30 g/m ³
Atmospheric pressure	70 kPa to 106 kPa
Protection class	IP65

Requirements for the Installation Scenarios

To ensure proper heat dissipation of the eAN9810A, the following requirements must be met:

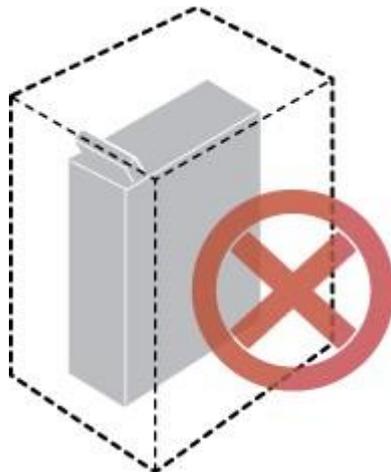
- The eAN9810A cannot be installed in an enclosed cabinet without a cooling system.
- The eAN9810A cannot be installed in an enclosed camouflage box.
- The eAN9810A cannot be installed in an enclosed equipment room without a cooling system.



NOTICE

If the eAN9810A is inappropriately installed, heat dissipation of the eAN9810A deteriorates and the eAN9810A may not work properly, as shown in [Figure 4-7](#).

Figure 4-7 Inappropriately installed eAN9810A

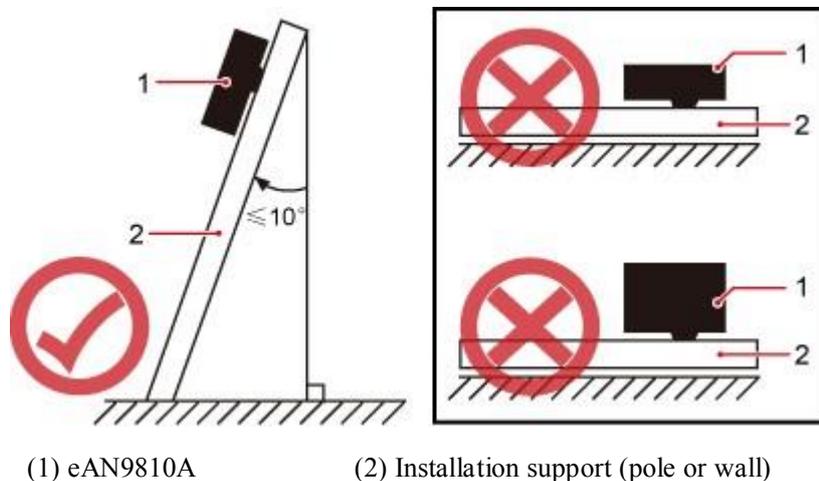


Requirements for the Installation methods

Figure 4

To ensure the heat dissipation of the eAN9810A and waterproofing of the ports at the bottom of the eAN9810A, the vertical deviation angle of a eAN9810A must be less than or equal to 10°, as shown in Figure 4-8.

-8 Requirements for the vertical deviation angle of a eAN9810A



4.1.3 Unpacking the Equipment

This section describes how to unpack and check the delivered equipment to ensure that all the materials are included and intact.

Context



NOTE

When transporting, moving, or installing the equipment, components, or parts, you must:

- Prevent them from colliding with doors, walls, shelves, or other objects.
- Wear clean gloves, and avoid touching the equipment, components, or parts with bare hands, sweat-soaked gloves, or dirty gloves.



NOTICE

Power on an eAN9810A within 24 hours after unpacking it. If you power off an eAN9810A for maintenance, restore power to the eAN9810A within 24 hours.

Procedure

Step 1 Count the total number of the shipments.

If...	Then...

The total number of the components is consistent with that recorded in the packing lists on all packing boxes	Go to Step 2 .
The total number of the components is inconsistent with that recorded in the packing lists on all packing boxes	Report the problems and causes to the local Huawei office.

Step 2 Check the exterior of each packing box.

If...	Then...
The exterior of each packing box is intact	Go to Step 3 .
It is damaged or soaked	Report the problems and causes to the local Huawei office.

Step 3 Check the type and quantity of the equipment in the boxes according to the packing list.

If...	Then...
The type and number are consistent with the packing list on each packing list	Sign the <i>Packing List</i> with the operator.
There is any shortage, wrong delivery, or damaged equipment	Report the problems and causes to the local Huawei office.



CAUTION

To protect the equipment from damage, keep the unpacked equipment and packing materials indoors. To help find out the cause of any damage in the future, take photos of the storeroom, rusted or eroded equipment, packing cases, and packing materials, and then file the photos.

----End

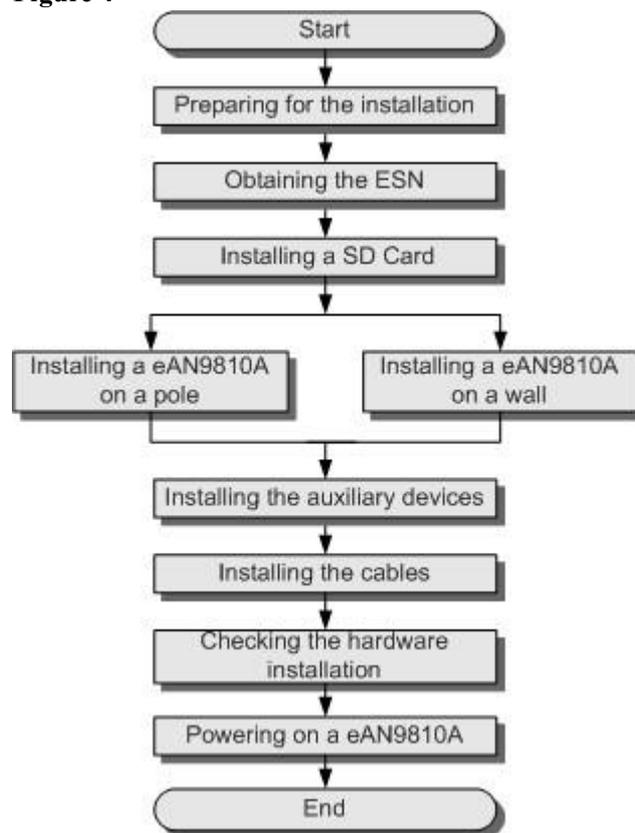
4.1.4 Installation Process

This section describes the eAN9810A installation process.

[Figure 4-9](#) shows the eAN9810A installation process.

-9 eAN9810A installation process

Figure 4



4.1.5 Obtaining the ESN

Before installing the eAN9810A, record its electronic serial number (ESN) for future use during commissioning.

Context

The ESN uniquely identifies a device and is required during commissioning.

Procedure

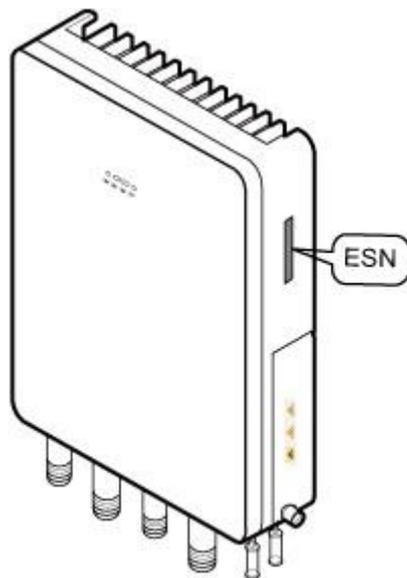
Step 1 Remove the backup ESN label from the surface of the eAN9810A, as shown in [Figure 4-10](#).



NOTE

Before removing the backup SN label, photograph it.

Figure 4
-10 Removing the ESN label



Step 2 Record the ESN by using the template described in section [ESN Collection Template](#), and report it to the eAN9810A commissioning personnel. ----**End**

4.1.6 (Optional) Installing a Micro SD Card

This section describes how to install a micro SD card in the eAN9810A .

Prerequisites

Software and configuration data files need to be prepared for the micro SD card to be installed. For detailed operations, see *eAN9810A Deployment Guide*.

Procedure

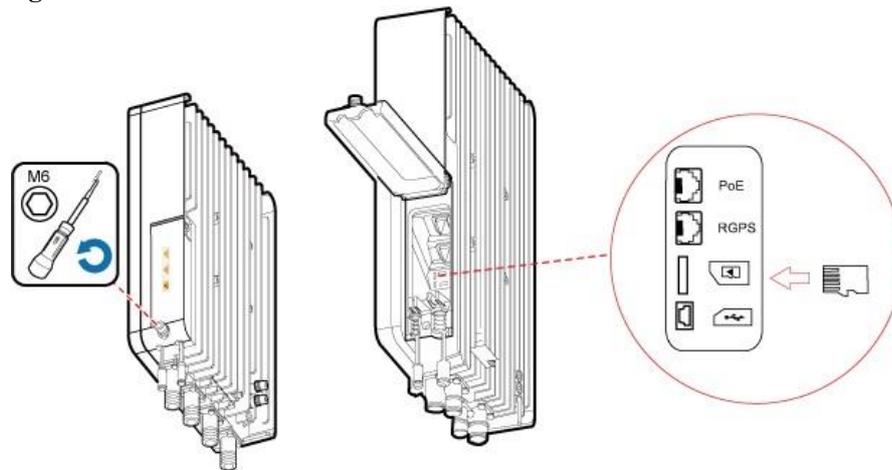
Step 1 Wear ESD gloves.

Step 2 Use an M6 inner hexagon screwdriver to loosen a screw on the cabling cavity panel and open the cabling cavity on the side.

Step 3 Install a micro SD card in the micro SD card slot, as shown in [Figure 4-11](#).

-11 Installing a micro SD card

Figure 4



Step 4 Cover the plate for the cabling cavity and use the screwdriver to tighten the screw. ----**End**

4.1.7 Installing the eAN9810A

This section describes the eAN9810A installation process.

Installing eAN9810A on a Pole

This section describes the procedure and precautions for installing an eAN3810A on a pole.

Context

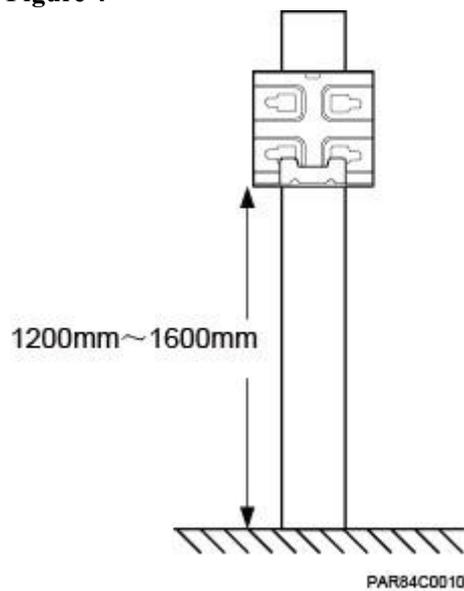
- Do not stand an eAN9810A upright because the RF ports cannot support the weight of the eAN9810A.
- Place a foam pad or cardboard under an eAN9810A to protect the eAN9810A housing from damage during the installation.

Procedure

Step 1 Determine a position for installing the separate mounting kit, as shown in [Figure 4-12](#).

-12 Distance between the separate mounting kit and the ground

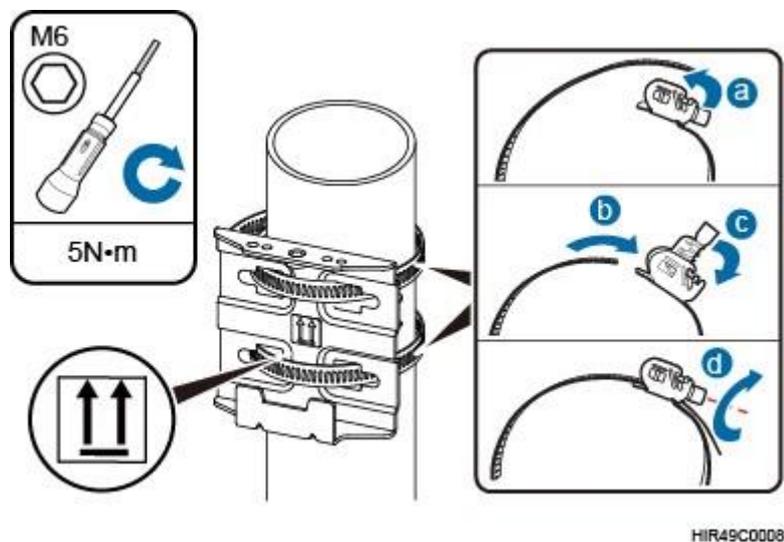
Figure 4

**NOTE**

It is recommended that the mounting kits be installed at a position 1200 mm (47.24 in.) to 1600 mm (59.06 in.) high above the ground.

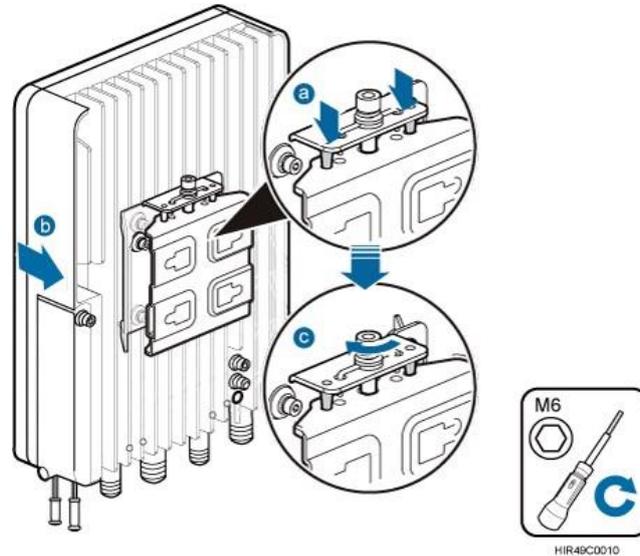
Step 2 Install the mounting kit, as shown in [Figure 4-13](#).

Figure 4-13 Installing the eAN9810A mounting kit



1. Determine a position for installing the eAN9810A. Then, place the separate mounting kit onto the pole, thread the hose clamp through the mounting kit, and encircle the pole with the hose clamp, as shown by illustrations a, b, and c in [Figure 4-13](#).
2. Use an M6 inner hexagon screwdriver to tighten the bolt on each hose clamp to 7 N·m (61.96 lbf·in.) to secure the mounting kit, as shown by illustration d in [Figure 4-13](#).

Step 3 Secure the eAN9810A onto the separate mounting kit, as shown in [Figure 4-14](#).

Figure 4-14 Securing the eAN9810A onto the mounting kit

1. Hang the two dowels on the top of the eAN9810A attachment plate onto the mounting kit, and push the eAN9810A until it snaps into place, as shown by illustrations a and b in [Figure 4-14](#).
2. Use the M6 inner hexagon screwdriver to tighten the screw on the top of the attachment plate to 5 N·m (44.25 lbf·in.), as shown by illustration c in [Figure 4-14](#). ---End

Installing eAN9810A on a Wall

This section describes the procedure and precautions for installing an eAN9810A on a wall.

Context

The wall for installing eAN9810As must meet the following requirements:

- The wall must be able to bear a weight four times heavier than the eAN9810A's weight.
- Expansion bolts must be tightened to 30 N·m (265.52 lbf·in.) to ensure that the bolt assemblies work properly and the wall remains intact.



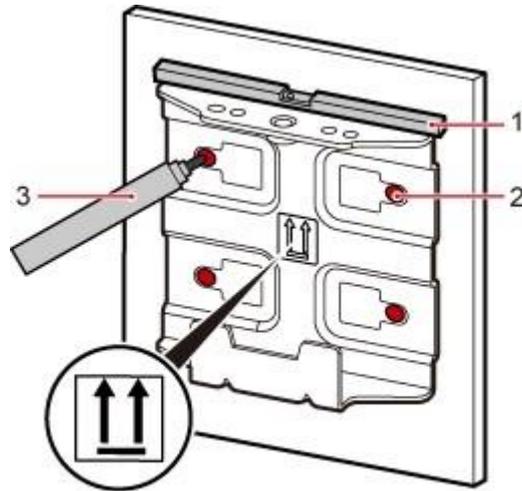
NOTICE

- Do not stand an eAN9810A upright because the RF ports cannot support the weight of the eAN9810A.
- Place a foam pad or cardboard under an eAN9810A to protect the eAN9810A housing from damage during the installation.

Procedure

Step 1 Determine a position for installing the eAN9810A on a wall, use a level to verify that the marking-off template is placed horizontally, and then use a marker to mark anchor points, as shown in Figure 4-15.

Figure 4-15 Marking anchor points



HIU01C0002

(1) Level

(2) Tapped hole

(3) Marker

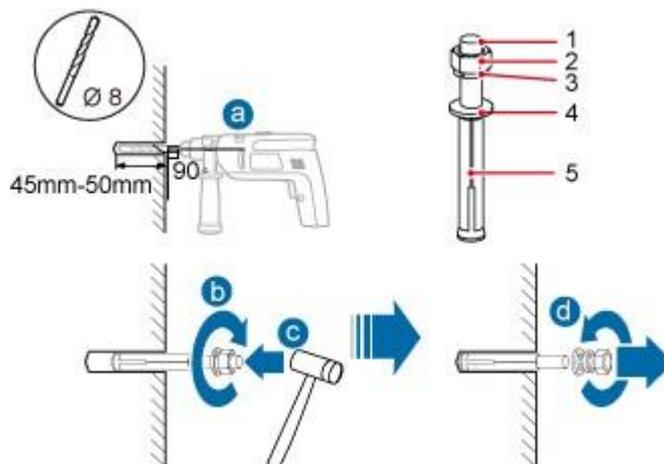


NOTE

It is recommended that the separate mounting kit be 1200 mm (47.24 in.) to 1600 mm (62.99 in.) above the ground.

Step 2 Drill holes at the anchor points and install expansion bolts in the holes, as shown in Figure 4-16.

Figure 4-16 Drilling a hole and inserting an expansion bolt assembly



HI000C0011

(1) M6x60 bolt

(2) Nut

(3) Spring washer

(4) Flat washer

(5) Expansion tube

1. Use a hammer drill with a $\phi 8$ bit to drill holes vertically at the marked anchor points. Ensure that the depth of each hole ranges from 45 mm (1.77 in.) to 50 mm (1.97 in.).

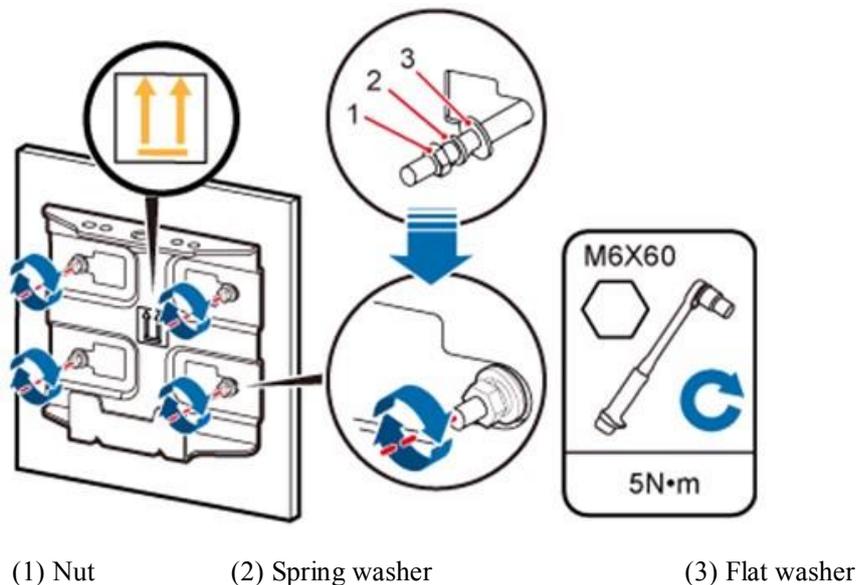
**CAUTION**

Take proper safety measures to protect your eyes and respiratory tract against the dust before drilling holes.

2. Use a vacuum cleaner to clear the dust out from inside and around the holes, and measure the distances between holes. If any of the holes is beyond the acceptable range, mark a new anchor point and drill a new hole.
3. Tighten the expansion bolts slightly, and place each expansion bolt vertically into each hole.
4. Use a rubber mallet to pound each expansion bolt until the corresponding expansion tube completely enters the hole. Leave 20 mm (0.79 in.) of the expansion bolt outside the wall.
5. Remove the M6x60 bolt, nut, spring washer, and flat washer in sequence.

Step 3 Place the mounting kit onto the wall, insert four M6x60 bolts into the tapped holes on the mounting kit, and tighten each bolt to 5 N·m (44.25 lbf·in.) to secure the mounting kit, as shown in [Figure 4-17](#).

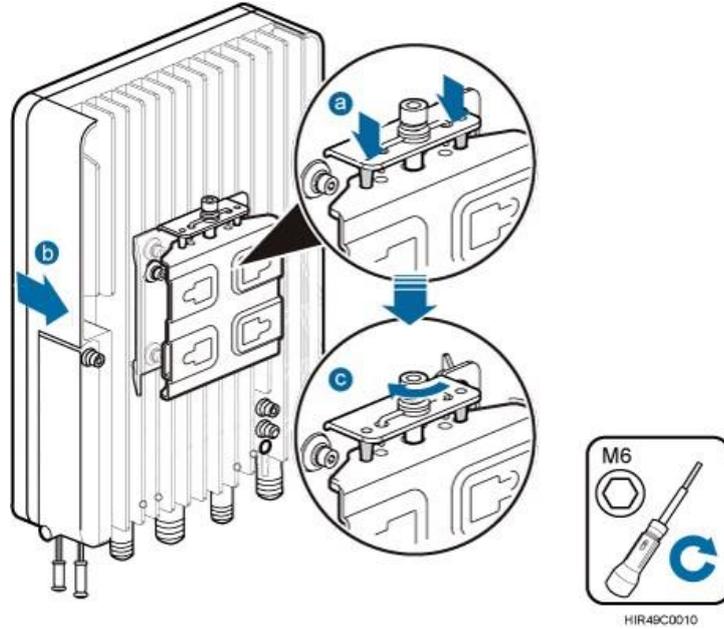
Figure 4-17 Securing the separate mounting kit



Step 4 Hold the eAN9810A, hang the two dowels on the top of the eAN9810A attachment plate onto the separate mounting kit, and push the eAN9810A until it snaps into place, as shown by illustrations a and b in [Figure 4-18](#).

Step 5 Use the M6 inner hexagon screwdriver to tighten the screw on the top of the separate attachment plate to 5 N·m (61.96 lbf·in.), as shown by illustration c in [Figure 4-18](#).

Figure 4-18 Securing the eAN9810A onto the mounting kit



----End

4.1.8 Installing the Auxiliary Devices

This section describes the procedure and precautions for installing the auxiliary devices.

(Optional) Installing a Dock

This section describes the procedure and precautions for installing a dock.

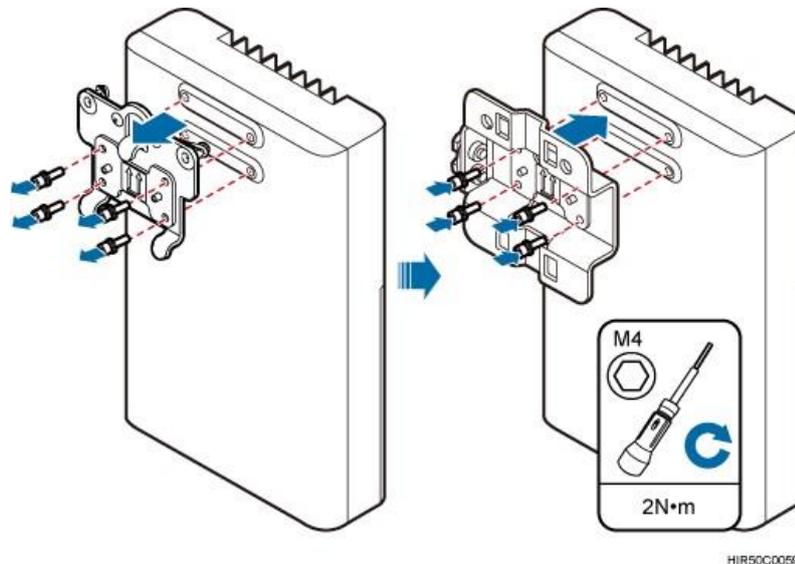
Installing a Dock on a Pole

This section describes the procedure and precautions for installing the Dock on a pole.

Procedure

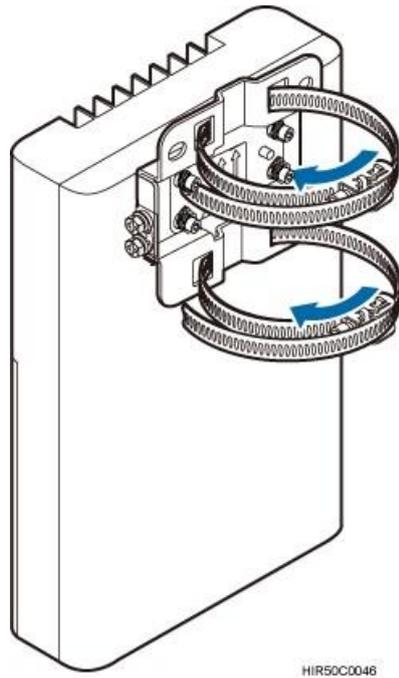
- Step 1** Use an M4 inner hexagon screwdriver to remove the Dock integrated mounting bracket, install the Dock separated mounting bracket instead, and tighten the four screws to 2 N·m (17.70 lbf·in.), as shown in [Figure 4-19](#).

Figure 4-19 Replacing the Dock mounting bracket



- Step 2** Route two hose clamps through the up and down mounting holes on the Dock separate mounting bracket, but do not route the steel belts through the locks, as shown in [Figure 4-20](#).

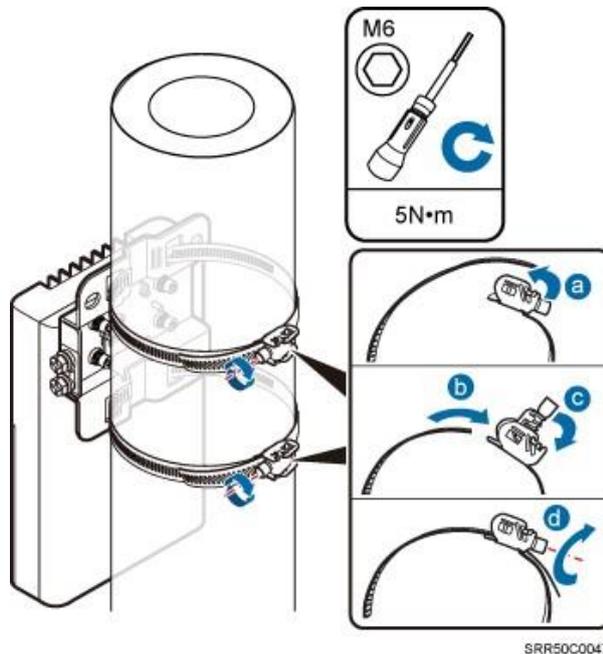
Figure 4-20 Routing hose clamps through the Dock separate mounting bracket



Step 3 Put the Dock in the installation position, route two hose clamps through the pole and the steel belts through the locking connectors, partially tighten the screws, and use an M6 inner hexagon torque screwdriver to tighten the screws to 5 N·m (44.25 lbf·in.), as shown in [Figure 4-21](#).

Ensure that your body is close to the module when tightening hose clamps.

Figure 4-21 Tightening hose clamps



---End

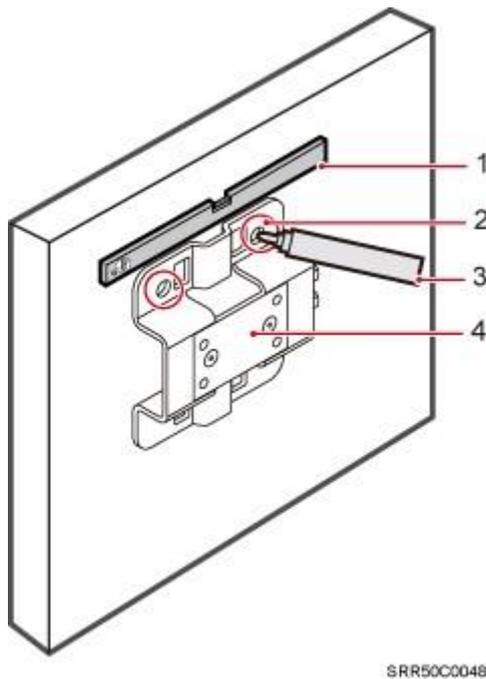
Installing a Dock on a Wall

This section describes the procedure and precautions for installing the Dock on a wall.

Procedure

Step 1 Place the Dock separate mounting bracket against the wall, use a level to verify that the mounting bracket is horizontally placed, and use a marker to mark anchor points, as shown in [Figure 4-22](#).

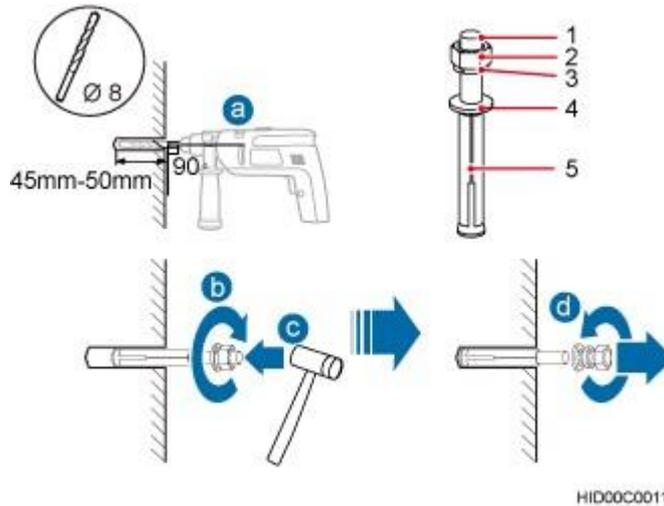
Figure 4-22 Marking anchor points



SRR50C0048

(1) Level (2) Mounting hole (3) Marker (4) Dock separate mounting bracket

Step 2 Drill holes at the anchor points, and install expansion bolt assemblies, as shown in [Figure 4-23](#).

Figure 4-23 Drilling holes and installing expansion bolt assemblies

(1) M6x60 bolt (2) Nut (3) Spring washer (4) Flat washer (5) Expansion tube

1. Use a hammer drill with a $\Phi 8$ drill bit to drill holes perpendicularly with the wall at the marked anchor points. Ensure that the depth of each hole ranges from 45 mm to 50 mm (1.77 in. to 1.97 in.) and each hole is of the same depth.



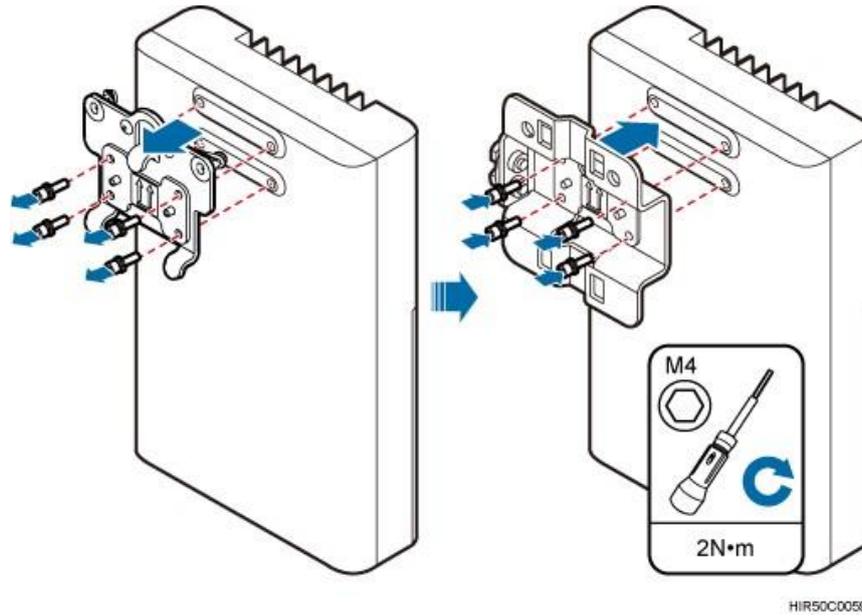
CAUTION

To prevent inhalation or eye contact with dust, take adequate preventive measures when drilling holes.

2. Use a vacuum cleaner to clear dust inside and around the holes, and then measure the inter-hole spacing. If the spacing is too wide or too narrow, drill holes again.
3. Tighten each expansion bolt slightly and place them perpendicularly into each hole.
4. Hit each expansion bolt using a rubber mallet to enable the expansion tube to enter the hole completely.
5. Remove the M6x60 bolt, nut, spring washer, and flat washer from each expansion bolt assembly in sequence.

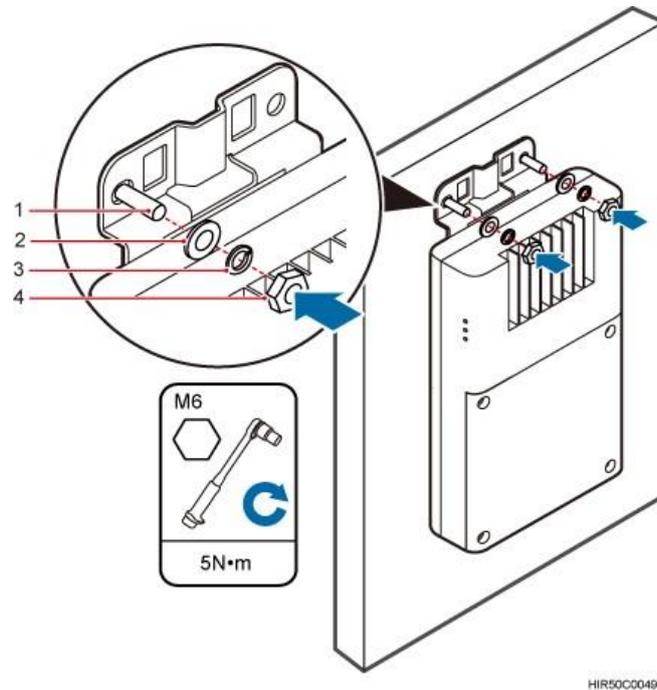
Step 3 Use an M4 inner hexagon screwdriver to remove the Dock integrated mounting bracket, install the Dock separated mounting bracket instead, and tighten the four screws to 2 N·m (17.70 lbf·in.), as shown in [Figure 4-24](#).

Figure 4-24 Replacing the Dock mounting bracket



Step 4 Put the Dock to the installation position, install the separate mounting bracket on the expansion bolts, and use an M6 socket wrench to tighten the expansion bolts to 5 N·m (44.25 lbf·in.), as shown in [Figure 4-25](#).

Figure 4-25 Fitting the Dock onto the wall



(1) Bolt	(2) Flat washer	(3) Spring washer	(4) Nut
----------	-----------------	-------------------	---------

----End

(Optional) Installing the PSE

This section describes the procedure and precautions for installing the PSE on a wall.

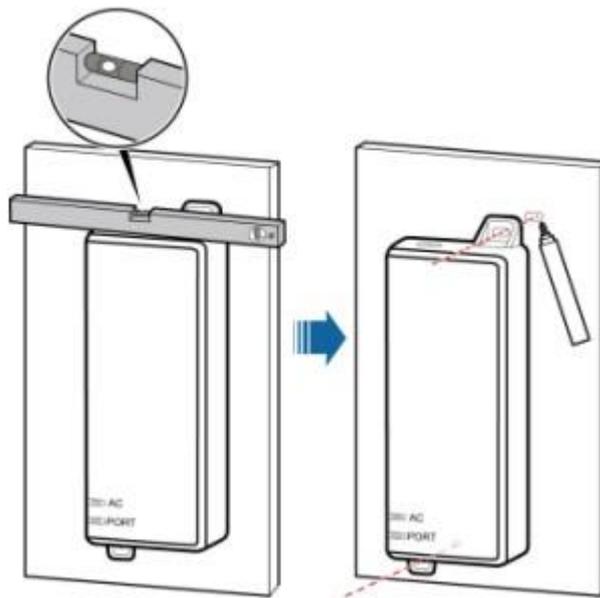
Context

The PSE can be installed only on an indoor wall.

Procedure

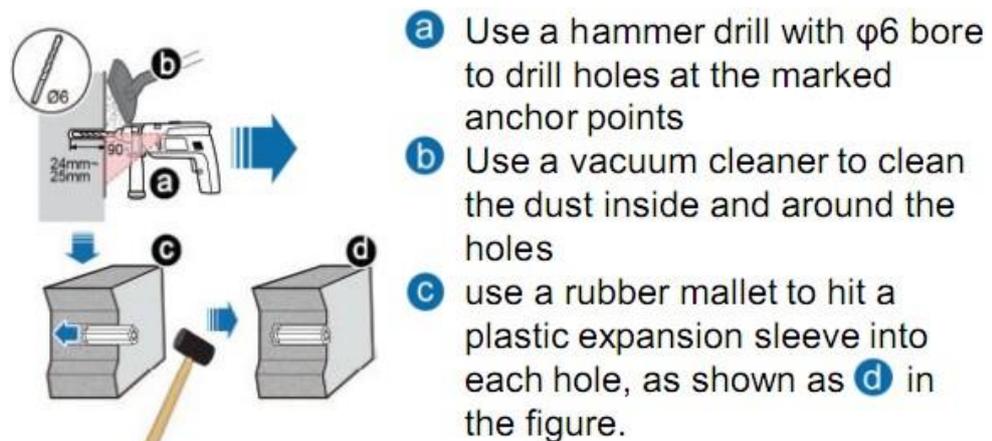
Step 1 Place the PSE against the wall, level it in the installation position, and mark anchor points.

Figure 4-26 Marking anchor points



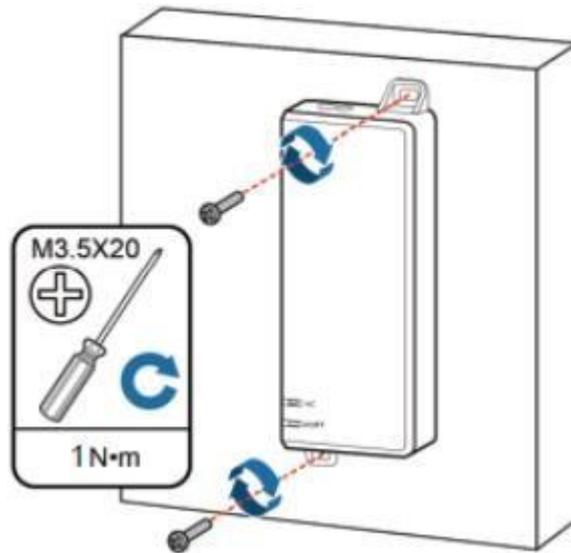
Step 2 Drill holes and install expansion bolts.

Figure 4-27 Drill holes and install expansion bolts



Step 3 Install the PSE

Figure 4-28 Install the PSE



----End

4.1.9 Installing Cables

This section describes the procedures for installing eAN9810A cables and auxiliary devices cables.

Cabling Requirements

Cables must be laid out according to the specified cabling requirements to prevent signal interference.



NOTE

If a cable listed below is not required, skip the cabling requirements of the cable.

General Cabling Requirements

Bending radius requirements

- The bending radius of a 7/8" feeder must be greater than 250 mm (9.84 in.), and the bending radius of a 5/4" feeder must be greater than 380 mm (14.96 in.).
- The bending radius of a 1/4" jumper must be greater than 35 mm (1.38 in.). The bending radius of a super-flexible 1/2" jumper must be greater than 50 mm (1.97 in.), and the bending radius of an ordinary 1/2" jumper must be greater than 127 mm (5.00 in.).
- The bending radius of a PGND cable must be at least three times its diameter. • The bending radius of a signal cable must be at least five times its diameter.

Cable binding requirements

- Cables of the same type must be bound together.
- Different types of cables must be separately laid out and bound, with a minimum distance of 30 mm (1.18 in.) from each other.
- Cables must be bound tightly and neatly. The sheaths of cables must not be damaged.
- Cable ties must face the same direction, and those at the same horizontal line must be in a straight line.

- The excess of indoor cable ties must be cut off. The excess of 5 mm (0.197 in.) of outdoor cable ties should be reserved, and the cut surfaces must be smooth without sharp edges.
- After cables are installed, labels or nameplates must be attached to the cables at their ends, curves, and interconnection positions.

Security requirements

- When laying out cables, avoid sharp objects, for example sharp edges on the wall. If necessary, use tubes to protect the cables.
- When laying out cables, keep cables away from heat sources, or use heat insulation materials to insulate the cables from the heat sources.
- Reserve a proper distance (0.1 m [3.937 in.] is recommended) between equipment and cables especially at the cable curves to protect the cables and equipment.

Indoor cabling requirements

- Route each cable into the room through the feeder window.
- Reserve drip loops for all cables outside the feeder window before routing them into the room. Ensure that the radiuses of the drip loops are greater than or equal to the minimum bending radiuses of the cables.
- When routing a cable into the room, ensure that a person is assisting you in the room.
- Apply waterproof treatment to the feeder window.

Outdoor Cabling Requirements

- Protect outdoor cables against potential damage. For example, thread the cables through tubes.
- Cables to be protected include AC power cables, transmission cables, and cables laid out underground.
- Use cable clips to secure cables outdoors.
- Arrange cables neatly along the routing direction and use cable clips to secure the cables.
- Determine the positions where the clips are installed according to the actual situation. For example, 7/8" feeders are secured with clips at an interval of 1.5 m (4.92 ft) to 2 m (6.56 ft), and CPRI fiber optic cables and power cables are secured with clips at an interval of 1 m (3.28 ft) to 1.5 m (4.92 ft). Ensure that the clips are evenly spaced and in the same direction.
- When fastening cables with a clip, ensure that the cables are aligned neatly and are routed through the holes in the clip. Do not stretch the cables too tightly.
- When using clips to secure cables, tighten the screws on the clips after all cables are arranged and laid out.

Special Cabling Requirements

Cabling of PGND cables

- PGND cables for a base station must be connected to the same ground bar.
- PGND cables must be buried in the ground or routed indoors.
- The external conductor of the coaxial wire and the shield layer of the shielded cable must have proper electrical contact with the metal surface of the equipment which they are connected to.

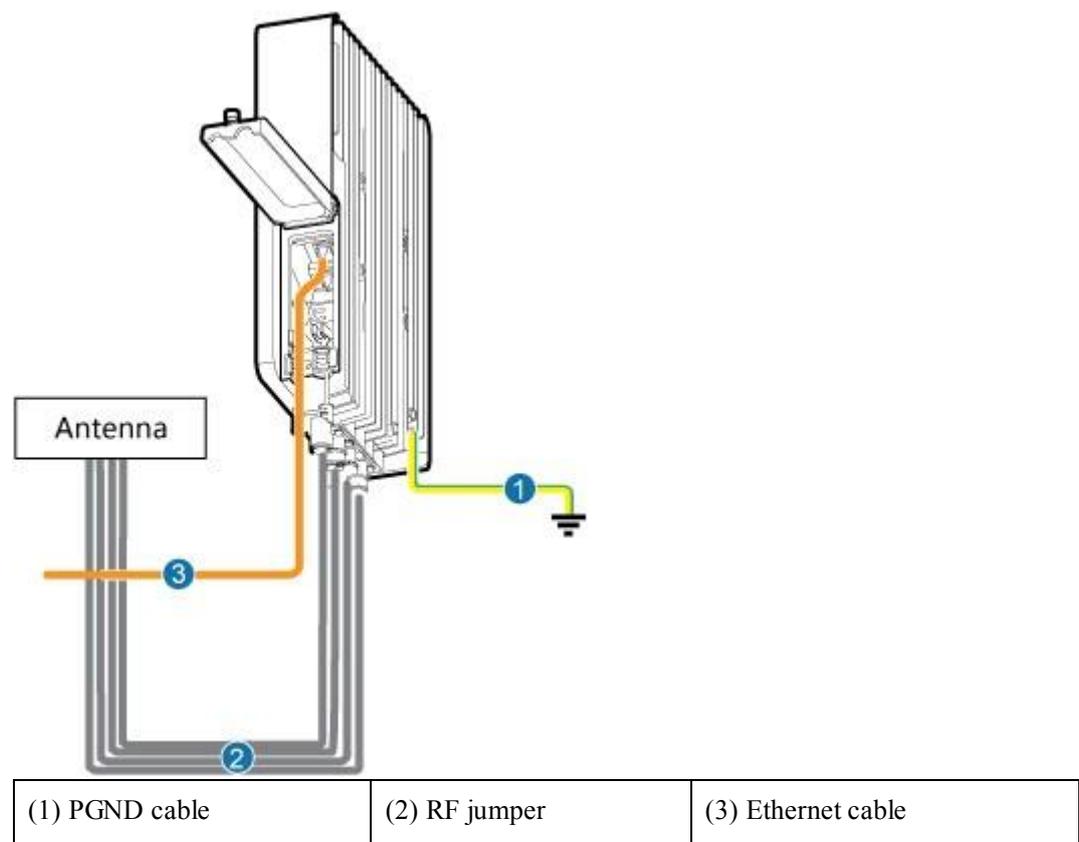
- PGND cables and signal cables must be installed separately. A certain distance must be reserved between them to prevent interference from each other.
- Switches or fuses must not be installed on the PGND cables.
- Other devices must not be used for electrical connections of the PGND cables.
- All the metal parts in the housing of the equipment must be reliably connected to the ground terminal.

Cable Connections

This section describes eAN9810A cable connections.

Figure 4-29 shows the cable connections when an eAN9810A is installed.

Figure 4-29 Cable connections when an eAN9810A is installed



Installing a PGND Cable

This section describes the procedure for installing a PGND cable.

Procedure

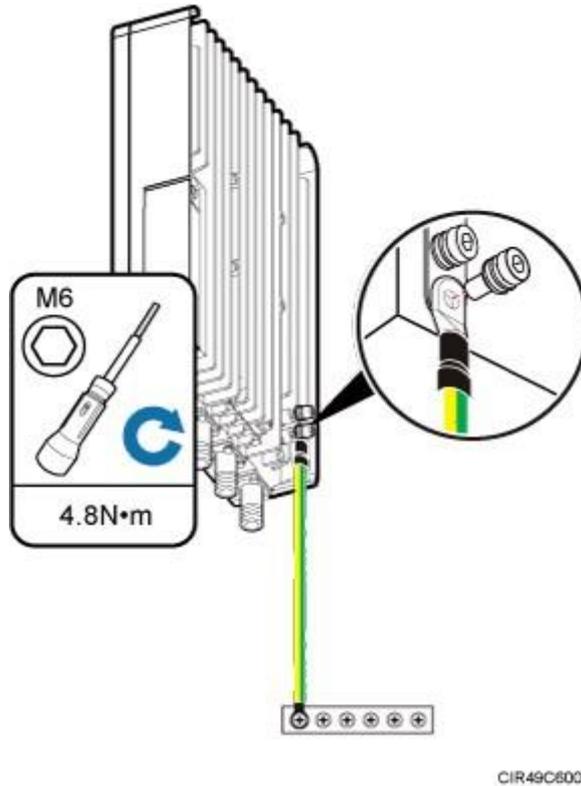
Step 1 Prepare a eAN9810A PGND cable.

1. Cut the cable to a length suitable for the actual cable route.
2. Add OT terminals to both ends of the cable.

Step 2 Install the eAN9810A PGND cable.

Connect one end of the PGND cable with an M6 OT terminal to the ground terminal at the eAN9810A bottom and the other end of the cable with an M8 OT terminal to the external ground bar, as shown in [Figure 4-30](#).

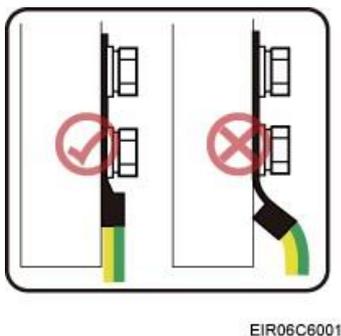
Figure 4-30 Installing a eAN9810A PGND cable



NOTE

Crimp OT terminals in correct directions, as shown in [Figure 4-31](#).

Figure 4-31 Correct direction for crimping an OT terminal



Step 3 Label the installed cable.



NOTE

Follow the same procedure when installing a Dock PGND cable.

----End

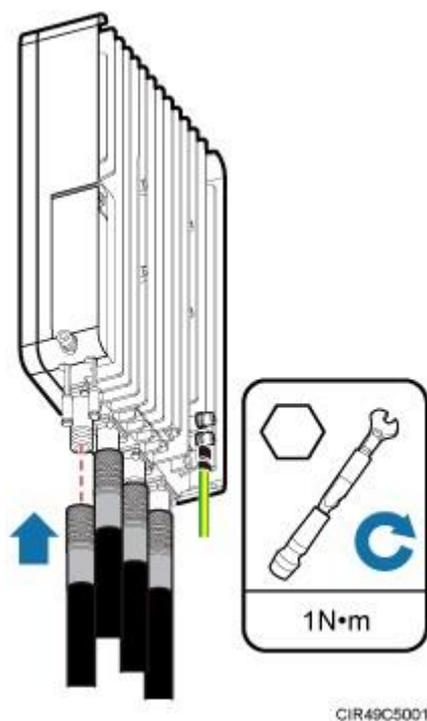
Installing a RF Jumper

This section describes the procedure for installing an RF jumper.

Procedure

Step 1 Remove the dustproof cap from the ANT port to be used on the eAN9810A.

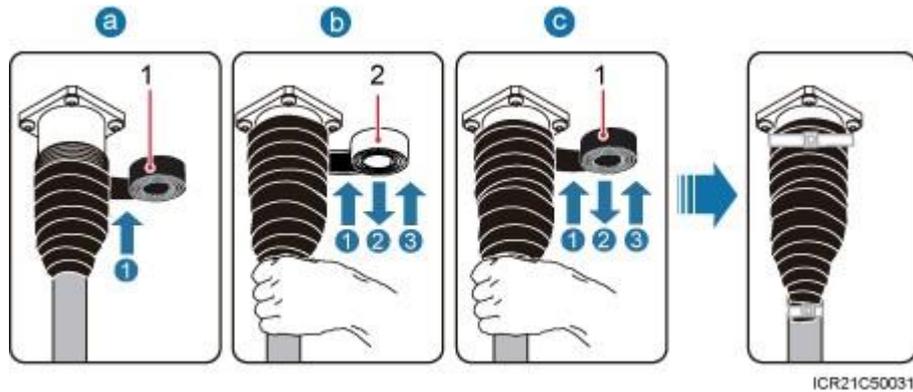
Step 2 Connect the type N male connector at one end of the eAN9810A RF jumper to the ANT port at the bottom of the eAN9810A in sequence, and use a torque wrench to tighten the connector to 1 N·m (8.85 lbf·in.), as shown in [Figure1](#). **Figure 4-32** Installing an RF jumper



Step 3 Connect the other end of the eAN9810A RF jumper to the external antenna system.

Step 4 Waterproof the connector of the RF jumper by Waterproof tape, as shown in [Figure2](#).

Figure 4-33 Waterproof the connector of the RF jumper by waterproof tape



(1) PVC insulation tape	(2) Waterproof tape
-------------------------	---------------------

1. Wrap each connector with one layer of PVC insulation tape from bottom up.
2. Wrap each connector with three layers of waterproof tape, first from bottom up, then from top down, and finally from bottom up. Wrap each layer of tape around the connector tightly.
3. Wrap each connector with three layers of PVC insulation tape, first from bottom up, then from top down, and finally from bottom up. Wrap each layer of tape around the connector tightly.

**NOTE**

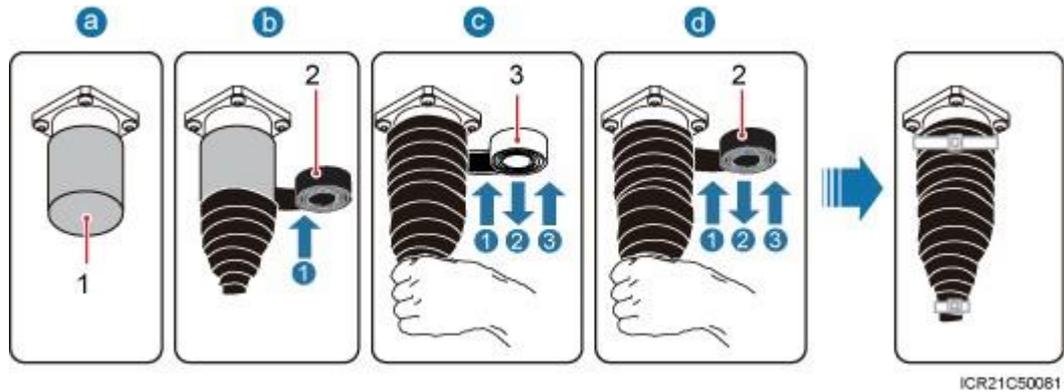
- Before wrapping waterproof tape, stretch the tape evenly until the length of the tape is twice of its original length. Do not stretch the PVC insulation tape before wrapping.
- Wrap each layer of tape around the connector tightly and neatly, and ensure that each layer of tape overlaps more than 50% of the preceding layer. Ensure that neighboring layers are stuck to each other.
- Ensure that the adhesive surface of the tape overlaps the lower layer.
- Leave an extra length of 3 mm to 5 mm (0.12 in. to 0.20 in.) when cutting the extra part of the cable ties.

Step 5 Check the dustproof caps on antenna connectors. In outdoor scenarios, dustproof caps must be waterproofed, as shown in [Figure 3](#).

**NOTICE**

Do not remove dustproof caps from vacant antenna connectors.

Figure 4-34 Waterproofing a dustproof cap



(1) Dustproof cap

(2) PVC insulation tape

(3) Waterproof tape

1. Verify that dustproof caps are not removed.
2. Wrap one layer of PVC insulation tape on each connector from bottom up.
3. Wrap three layers of waterproof tape on each connector, first from bottom up, then from top down, and finally from bottom up. Wrap each layer of the tape around the connector tightly.
4. Wrap three layers of PVC insulation tape on each connector, first from bottom up, then from top down, and finally from bottom up. Wrap each layer of the tape around the connector tightly.

**NOTE**

- Before wrapping waterproof tape, stretch the tape evenly until the length of the tape is twice of its original length. Do not stretch the PVC insulation tape before wrapping.
- Wrap each layer of tape around the connector tightly and neatly, and ensure that each layer of tape overlaps more than 50% of the preceding layer. Ensure that neighboring layers are stuck to each other.
- Ensure that the adhesive surface of the tape overlaps the lower layer.
- Leave an extra length of 3 mm to 5 mm (0.12 in. to 0.20 in.) when cutting the extra part of the cable ties.

----End

Follow-up Procedure

1. Route the cable by following the instructions in section cabling requirements and use cable ties to bind the cable.
2. Label the installed cable.

Installing an Ethernet Cable

This section describes how to install an Ethernet cable.

Context

- The Ethernet cable must be of Category 5e (enhanced) or higher. In addition, its cross-sectional area must be 24 AWG or larger and frame spread rating must be CM or higher.

- Both the cable and the RJ45 connectors are delivered, and they must be assembled onsite.

You need to use a network cable tester to test the Ethernet cable connection.

- With the internal PoE module providing power, the maximum length of an Ethernet cable is 100 m.

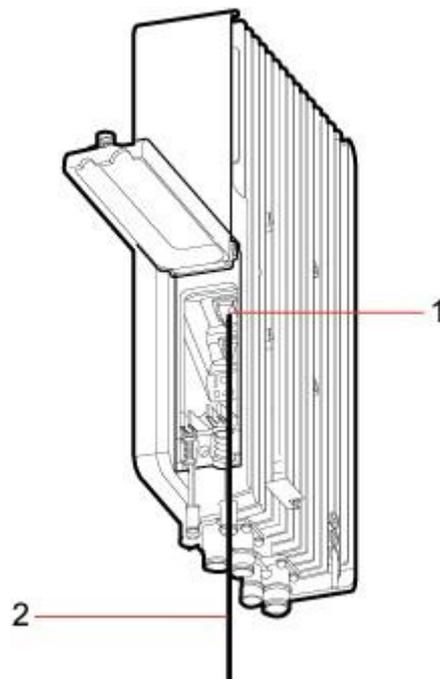
Procedure

Step 1 Make the Ethernet cables.

1. Assemble an RJ45 connector and an Ethernet cable.
2. Check whether the made RJ45 connector is qualified.
3. To complete the assembly of the other end, repeat [Step 1.1](#) and [Step 1.2](#).
4. Check whether the touch points on the connectors at both ends are normally conducted and well contacted and whether the connections are correct.

Step 2 Connect the RJ45 connector at one end of the Ethernet cable to the PoE port on the eAN9810A panel, and push the cables into the cable clips, as shown in [Figure 4-35](#).

Figure 4-35 Installing an eAN9810A Ethernet cable



(1) PoE port on the eAN9810A panel	(2) Ethernet cable
------------------------------------	--------------------

Step 3 Connect the RJ45 connector at the other end of the Ethernet cable to auxiliary devices port. ---

End

Follow-up Procedure

1. Route the cable, and then use a cable tie to bind the cable.

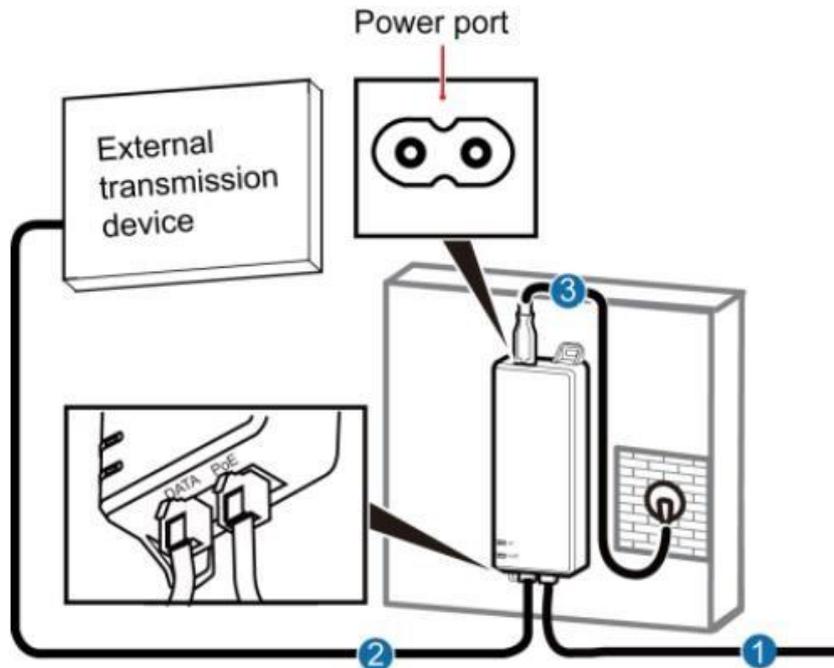
2. Label the installed cable.

(Optional) Installing the PSE Cable

This section describes the procedure and precautions for installing the PSE cables.

Figure 4-36 shows the cable connections when the PSE is installed.

Figure 4-36 Installing the PSE Cable



(1) Ethernet cable between eAN9810A and PSE	(2) Ethernet cable between PSE and External transmission device	(3) PSE Power cable (2m)
---	---	--------------------------



NOTE

The total length of cables connected between the eAN9810A, PSE, and external transmission device does not exceed 100 m.

(Optional) Installing the Dock Ethernet Cable

This section describes procedure and precautions for installing a Dock Ethernet cable.

Context

- The Ethernet cable must be of Category 5e (enhanced) or higher. In addition, its cross-sectional area must be 24 AWG or larger and frame spread rating must be CM or higher.
- Ethernet cables are not delivered, and they must be prepared onsite. You need to use a network cable tester to test the Ethernet cable connection.
- With the internal PoE module providing power, the maximum length of an Ethernet cable is 100 m.

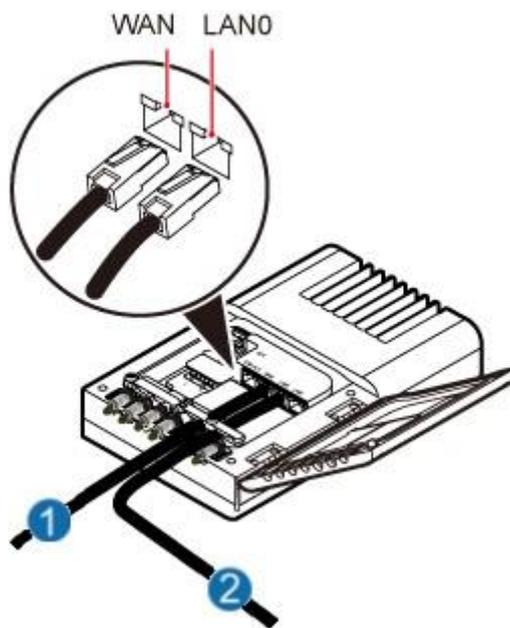
Procedure

Step 1 Make the Ethernet cables.

1. Assemble an RJ45 connector and an Ethernet cable.
2. Check whether the made RJ45 connector is qualified.
3. To complete the assembly of the other end, repeat [Step 1.1](#) and [Step 1.2](#).
4. Check whether the touch points on the connectors at both ends are normally conducted and well contacted and whether the connections are correct.

Step 2 Installing the Dock Ethernet cable, as shown in [Figure 4-37](#). **Figure**

4-37 Installing the Dock Ethernet cable



(1) Ethernet cable between Dock and external transmission device	(2) Ethernet cable between eAN9810A and Dock
--	--

1. Connect one end of the assembled Ethernet cable to the **WAN** port in the cabling cavity of the Dock and the other end to the external transmission device.
2. Connect the other end of the Ethernet cable, which is connected to the **PoE** port on the eAN9810A, to the **LAN0** port in the cabling cavity of the Dock.

**NOTICE**

The eAN9810A must be connected to the LAN0 port on the Dock. Otherwise, you are not able to maintain the eAN9810A remotely.

----End

(Optional) Installing the Dock Power Cable

This section describes the procedure and precautions for installing a power cable. A Dock input power cable connects the Dock and an external power supply device to lead external power into the Dock. A Dock cascading power cable is used for power supply cascading between two Docks.

Context

Table 4-3 lists the specifications of the two power cables.

Table 4-3 Power cable specifications

Cable		Color	One End	The Other End
Dock input power cable	L	Brown	Cord end terminal (1.5 mm ²)	Depends on the external power device
	N	Blue	Cord end terminal (1.5 mm ²)	Depends on the external power device
	PE	Yellow and green	Cord end terminal (1.5 mm ²)	Depends on the external power device
Dock cascading power cable	L	Brown	Cord end terminal (1.5 mm ²)	Cord end terminal (1.5 mm ²)
	N	Blue	Cord end terminal (1.5 mm ²)	Cord end terminal (1.5 mm ²)
	PE	Yellow and green	Cord end terminal (1.5 mm ²)	Cord end terminal (1.5 mm ²)



NOTE

The color and structure of the power cables differ in different countries and regions. The power cables purchased locally must conform to the local standards.

Procedure

Step 1 Make power cables.

1. Cut the cable to a length suitable for the actual cable route.
2. Add an OT terminal to one end of the cable, and add the corresponding power terminal to the other end according to external power supply device.
3. **Optional:** Add an OT terminal to each end of the Dock cascading power cable.

Step 2 Install power cables, as shown in Figure 4-38.

1. Open the protective cover of the power supply terminal.

2. Install Dock input power cables.

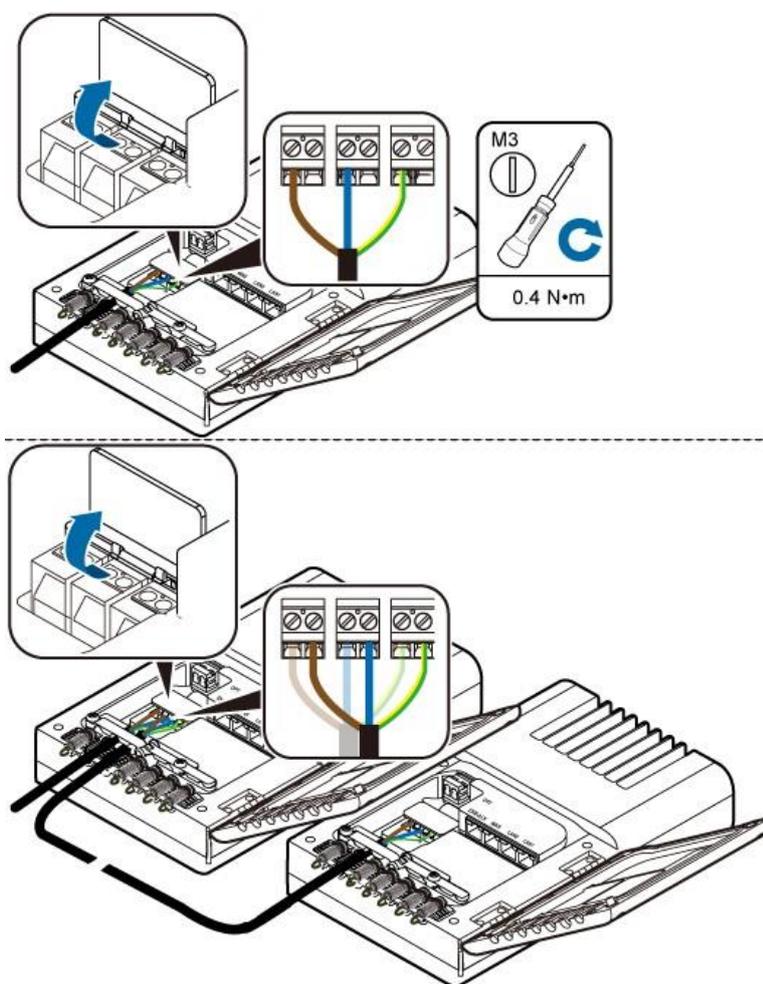
Use a flat-head screwdriver to loosen the left ports on the **L**, **N**, and **PE** wiring posts inside the Dock. Connect one end of each cable to the corresponding port on the left side and tighten the wiring posts. Connect the other end to external devices.

3. **Optional:** Install Dock cascading power cables.

Use a flat-head screwdriver to loosen the right ports on the **L**, **N**, and **PE** wiring posts inside one Dock. Connect one end of each cable to the corresponding port on the right side and tighten the wiring posts. Connect the other end of cables to corresponding ports on the **L**, **N**, or **PE** wiring posts inside the lower-level cascaded Dock.

4. Restore the protective cover of the power supply terminal.

Figure 4-38 Installing power cables



NOTICE

The protective cover of the power supply terminal is automatically secured. After the procedure is complete, tap the protective cover to restore it.

----End

4.1.10 Checking Hardware Installation

eAN9810A hardware installation checking includes hardware and cable installation checking.

Table 4-4 lists the hardware installation checking items.

Table 4-4 Hardware installation checking list

No.	Item
1	The installation position of each device strictly complies with the engineering design and meets clearance requirements. Sufficient space is reserved for equipment maintenance.
2	The eAN9810A is securely installed.
3	The cover plate is securely installed on the eAN9810A cabling cavity.
4	Waterproof blocks are securely installed in vacant cable troughs of the eAN9810A cabling cavity, and the cover plate of the cabling cavity is securely installed. In addition, vacant RF ports are covered with dustproof caps and the caps are tightened.
5	Labels are correct, legible, and complete at both ends of each cable, feeder, and jumper.

Table 4-5 lists the check items of the signal cable connection.

Table 4-5 Checklist for the signal cable connection

No.	Item
1	The connectors of the signal cables must securely connected.
2	The connectors of the signal cables are intact.
3	The signal cables are intact.
4	The cable ties are evenly spaced. The signal cables are bound neatly with cable ties to proper tightness, and arranged at even intervals in the same direction.
5	The extra length of the cable ties is cut and removed. The cut surfaces of the indoor cables are smooth and have no sharp edges.

6	The cable layout facilitates maintenance and expansion.
7	Correct and clear labels are attached to both ends of the signal cables.

Table 4-6 lists the checking items for other cable connections.

Table 4-6 Checklist for other cable connections

No.	Item
1	The connectors of the other cables must securely connected.
2	Labels on the cables are legible and bound based on the engineering requirements. The cables must be bound tightly and neatly. The sheaths of the cables must not be damaged.
3	Positions for routing the cables must meet requirements of the engineering design.
4	There are no connectors or joints on each PGND cable. None of PGND cables can be short-circuited or reversely connected. In addition, these cables are not damaged or broken.
5	PGND cables are separately bound from other cables.
6	The protection grounding of the eAN9810A and the surge protection grounding of the building share one group of ground conductors.

4.1.11 Power-On Check on the eAN9810A

This section describes the procedure for performing a power-on check on the eAN9810A.

eAN9810A Power-On Check Procedure

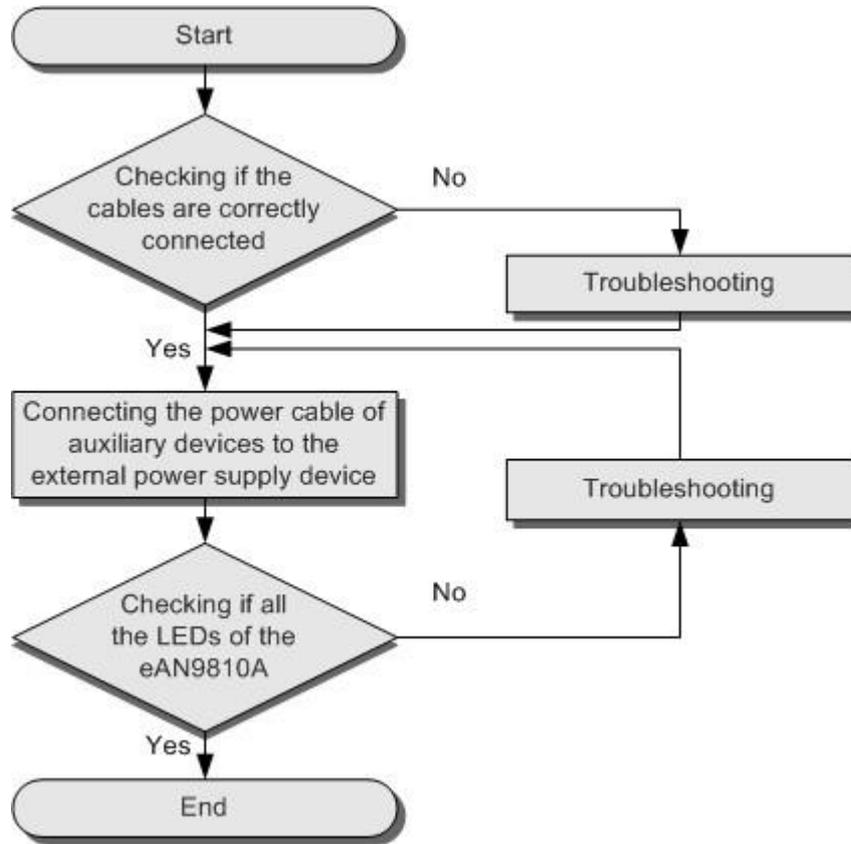


NOTICE

After you unpack a eAN9810A, you must power on it within 24 hours. If you power off the eAN9810A for maintenance, you must restore power to it within 24 hours.

Figure 4-39 shows the eAN9810A power-on check procedure.

Figure 4-39 Power-on check procedure



Checking the Indicator Status

Table 4-7 Checking the indicator status

If...		then...
RUN	Steady white	The eAN9810A is running correctly.
ETH	Blinking white	

NOTE

- During the eAN9810A startup, there is no need to observe the indicator status.
- During a start, the eAN9810A reads and writes the flash and therefore the indicators blinking quickly may blink irregularly for 1-2 seconds, which does not affect services.

4.1.12 Appendix

This section describes reference information during installation.

ESN Collection Template

This section describes the eAN9810A ESN collection template.

The ESN collection template is used to record the installation position, and ESN of the site at the initial installation stage to facilitate subsequent commissioning and maintenance. Table 4-8 shows the ESN collection template.

Table 4-8 ESN collection template

No.	Site Number	Site Name	Base Station ESN	Location Information
<i>Sample</i>	<i>xx</i>	<i>eAN_1</i>		<i>xx floor, xx building, xx mansion</i>
<p>Note: The ESN collection template is essential to the engineering stage and subsequent maintenance, especially when multiple devices are installed at a short distance. This is because the template defines the radio network to access. Please maintain this template with caution.</p>				

Antenna Installation

This section describes the reference documents for installing the antenna system.

Related Document	Description
Antenna System (on Tower) Quick Installation Guide	This document describes the installation procedure and manhour requirements of the antenna system.
Antenna System (on Roof Pole) Quick Installation Guide	This document describes the installation procedures and methods of the antenna system on roof pole.
RGPS Satellite Antenna System Quick Installation Guide	This document describes the installation procedures and methods of the RGPS antenna system.

4.2 eAN9810A Deployment Guide

Overview

This document describes how to use the CME and U2000 to configure data for eAN9810A and to commission and verify configured eAN9810A based on design requirements. This document applies to the initial stage of cellular network deployment.

Product Version

The following table lists the product name and product version.

Product Name	Product Version
eAN9810A	V100R001C10

Intended Audience

This document is intended for:

- Network planning engineers
- Network operators
- System engineers

Organization

4.2.1 Site Deployment Overview

With site deployment, data is planned, delivered, and activated on a per eAN9810A, MicroSD card and MML command commissioning can be used.

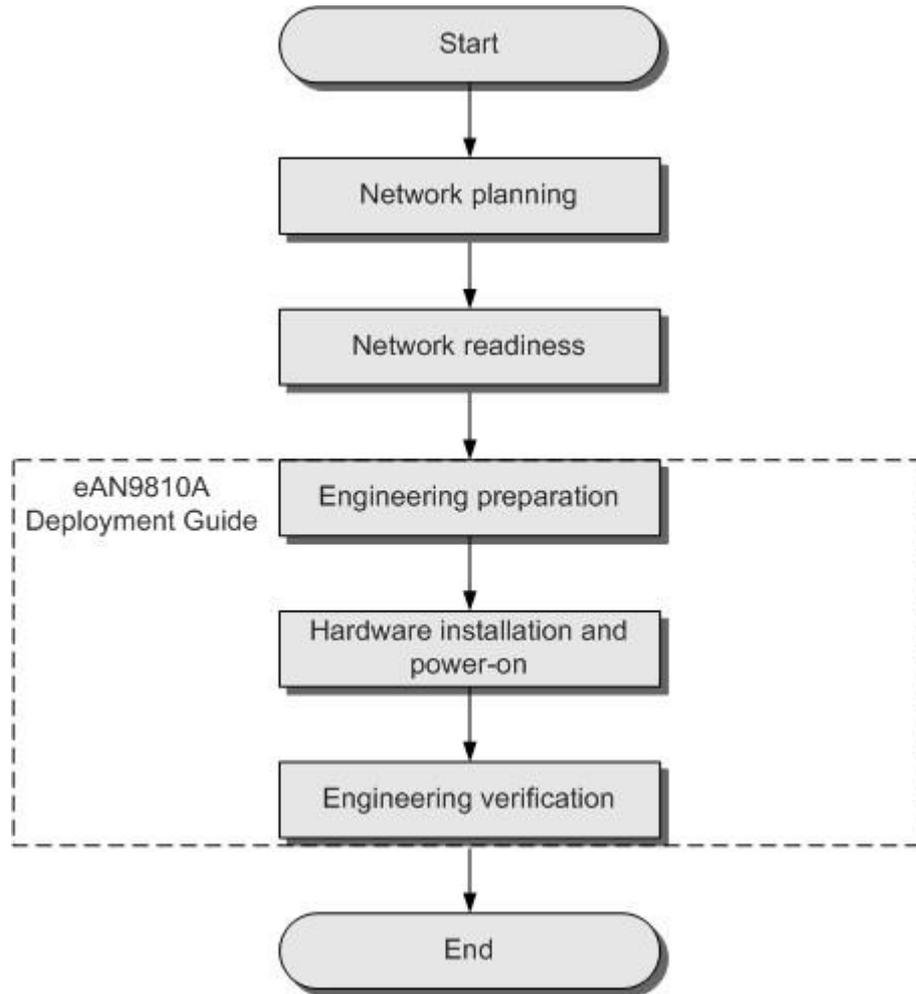
Application Scenarios and Deployment Principles

Site deployment applies to outdoor coverage scenarios where operator-provided private transport networks are used.

Scope

[Figure 4-40](#) shows the procedures for site deployment in this document.

Figure 4-40 Site deployment in this document



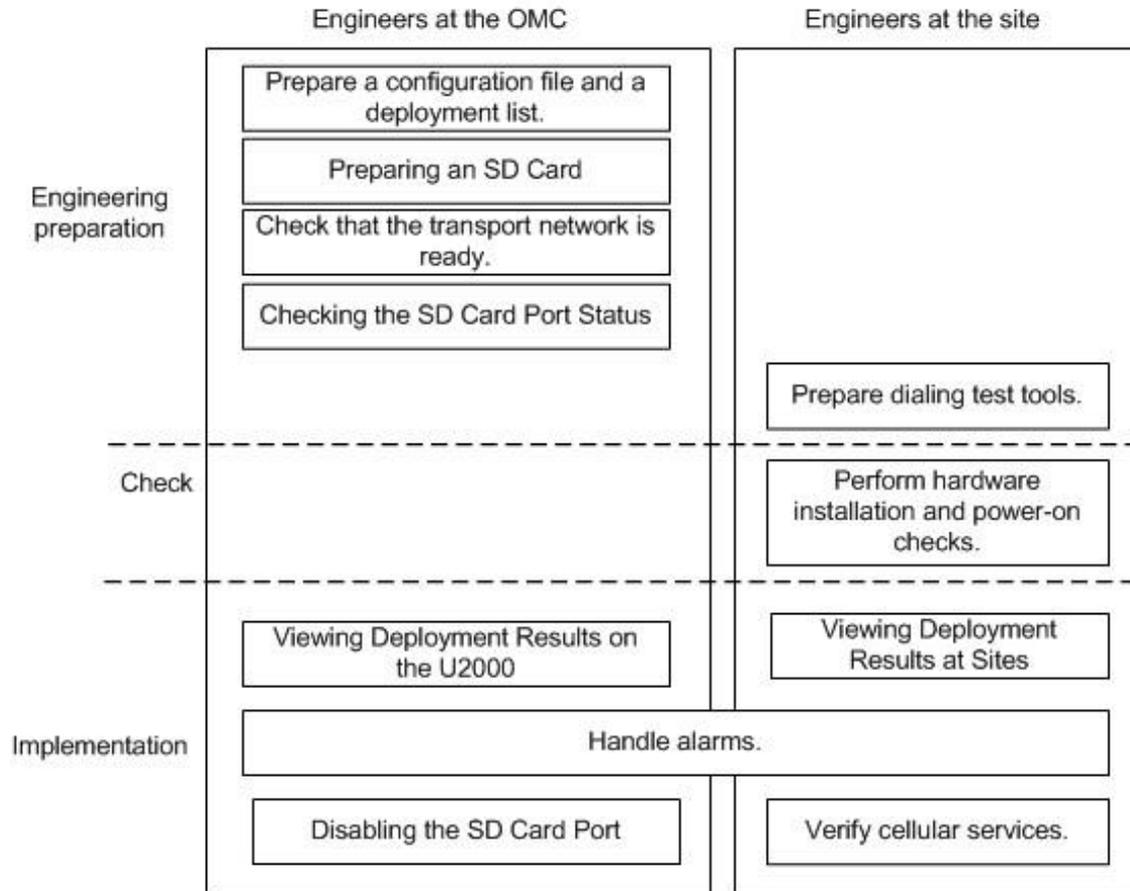
1. Network planning: Plan deployment solutions based on network conditions. These include: Networking solution, Transmission solution and Parameter planning.
2. Network readiness: This is a prerequisite to Pico deployment. Specifically, network readiness indicates that the core network, RNC, eSight, SeGW, CA server, and clock server have been deployed and configured, and the transport network is working properly.
3. Engineering preparation: Use the U2000 to prepare configuration data, software packages, and commissioning licenses based on the network plan. At the site, get ready service dialing tools.
4. Hardware installation and power-on: At the site, install and power on the Pico and perform checks.
5. Engineering verification: Query deployment results, and verify services.

4.2.2 MicroSD Card Site Deployment

Micro SD Card Deployment Process

This section describes the eAN9810A site deployment process.

Site deployment requires cooperation of engineers at sites and the OMC, who must master the deployment process shown in [Figure 4-41](#) in advance of the deployment. **Figure 4-41** Site deployment process



Deployment Preparation

This section describes the data and files to be prepared for eAN9810A deployment.

Preparing Common Base Station Deployment Data Files on the CME

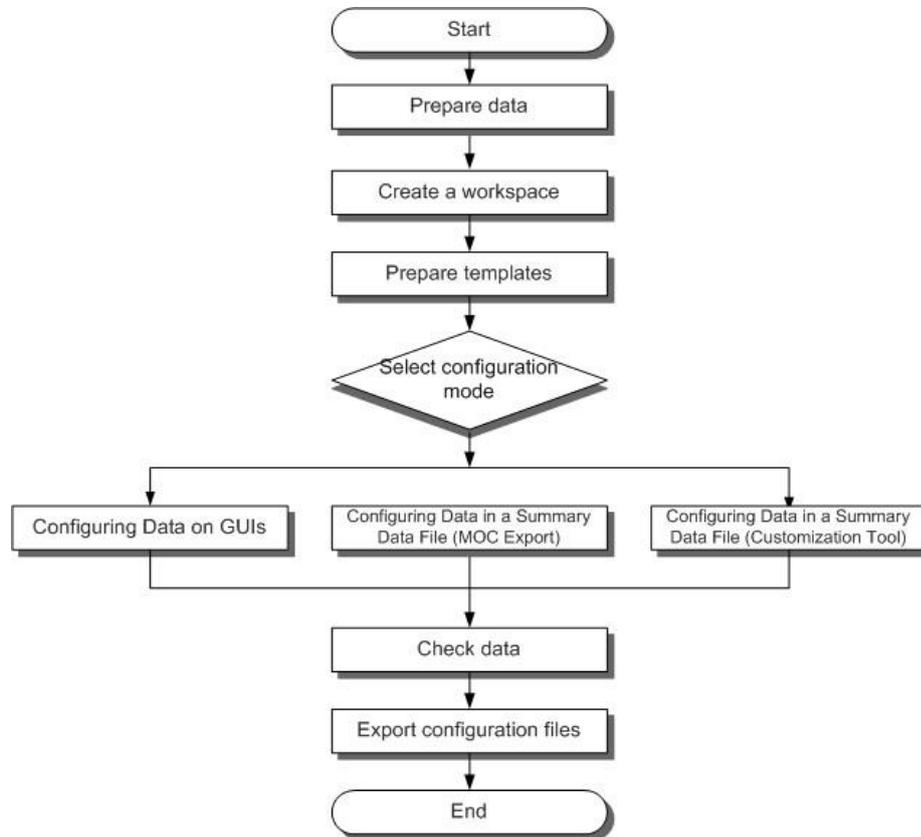
This section describes how to prepare, verify, and export common base station deployment data files on the CME.

?1.Data Configuration Process

This section describes the data configuration process. Before configuring data, you are advised to learn the initial base station configuration process on the CME.

[Figure 4-42](#) shows the data configuration process.

Figure 4-42 Data configuration process



Configuration methods are described as follows.

Base Station Creation Method	Scenario	Remarks
Wizard-based single base station creation	No base station has been deployed on the live network or only a small number of base stations need to be deployed.	You can create base stations using the base station creation wizard on the CME.
Batch base station creation using the tool for customizing a summary data file	A large number of base stations need to be deployed, and their planned data differs greatly from data of existing base stations.	You can obtain ranges of MOs and parameters in the summary data file by specifying MOCs in the MOC list.

Batch base station creation using the MOC Export function to generate a summary data file	A large number of base stations need to be deployed, and their planned data is similar to data of existing base stations.	You can obtain ranges of MOs and parameters in the summary data file by customizing MOs and parameters using the tool for customizing a summary data file.
---	---	--

?2.Data Preparation

Before starting configuration, prepare data for each eAN9810A based on the network plan. The data to be prepared includes basic data, device data, transport data, and radio data.

Select data preparation tables by scenario and prepare the data in the tables. [Table 4-9](#) describes scenario-specific data preparation tables .

Table 4-9 Scenario-specific data preparation tables

Scenario	Data Preparation Table (on the eAN9810A Side)
Non-secure transmission networking	Click Data Preparation in Non-secure Transmission Networking to download the table. Data to be prepared on the eAN9810A side for enabling cellular services includes device data, common transport data, LTE radio data.

?3.Creating a Work Area

The CME provides one current data area and allows users to create multiple planned data areas. The current data area is used for synchronizing and saving configuration data on the live network, and you can only view data in the current data area. A planned data area is used for configuring data. Therefore, you need to create a planned data area before configuring data.

Context

CME functions can be started in the following modes. [Table 4-10](#) describes the modes. The navigation paths for starting CME functions are different in CME client mode and U2000 client mode. For example, to enable the function of customizing a summary data file on the CME, choose **Advanced > Customize Summary Data File (CME client mode)** or **CME > Advanced > Customize Summary Data File (U2000 client mode)** on the menu bar.

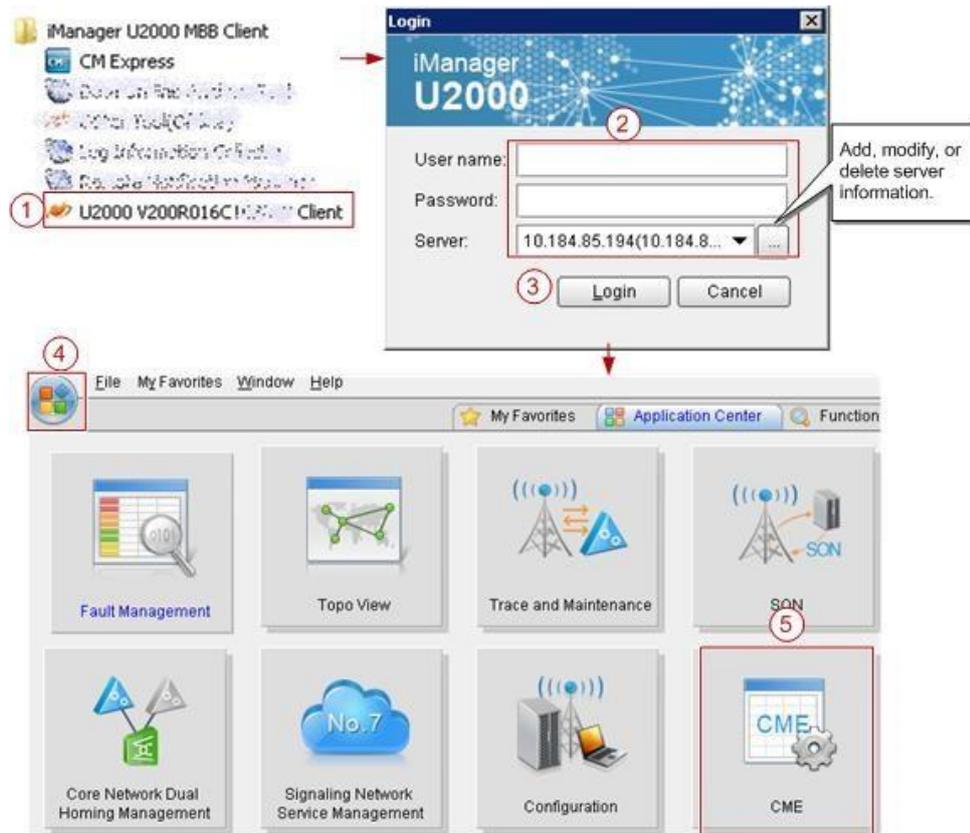
Table 4-10 Startup modes

Startup Mode	Description
--------------	-------------

CME client mode	<p>This mode applies when the CME functions are used. In this mode, only the CME functions are started, and the U2000 functions are not started, such as fault management, topology management, and performance management.</p> <p>In this mode, the CME functions can be started using either of the following methods:</p> <ul style="list-style-type: none"> • Start CME functions on the U2000 client in application mode. • Start the CME client directly.
Startup Mode	Description
Standalone CME client mode	This mode applies when the CME functions are used. For detailed operations, see Started Standalone CME .
U2000 client mode	This mode applies when both the CME and U2000 functions are used. In this mode, both the CME functions and U2000 functions (such as fault management, topology management, and performance management) are started. For detailed operations, see Start CME functions on the U2000 client in traditional mode .

Procedure

1. Start the CME.
 - Start CME functions on the U2000 client in application mode.
On the Windows desktop, choose **Start > All Programs > iManager U2000 MBB Client**.



- Start the CME client directly.

On the Windows desktop, choose **Start > All Programs > iManager U2000 MBB Client**.



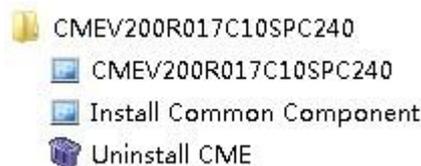
- Start CME functions on the U2000 client in traditional mode.

On the Windows desktop, choose **Start > All Programs > iManager U2000 MBB Client**.



After logging in to the U2000 client, choose **CME** on the menu bar of the U2000 main window and then choose a submenu item to start the related CME function.

On the Windows desktop, choose **Start > All Programs > CMEV200R017C10SPC240**



2. Create a planned data area.
 - a. On the menu bar, choose **Area Management > Planned Area > Create Planned Area** (CME client mode) or **CME > Planned Area > Create Planned Area** (U2000 client mode). A dialog box is displayed for you to create a planned data area.
 - b. Set related information.
 - i. Enter the name of the planned data area.
 - ii. Select a user group.
 - c. Click **OK**. The CME starts to create the planned data area.

After successfully creating the planned data area, the CME automatically opens it.

NOTE

- If a multimode base station capable of working in LTE mode is to be created, add the controller associated to the base station to the planned area when you create a planned area.
- For details about how to create a planned data area, press **F1** to obtain the online help.

?4.Configuring Data on GUIs

This section describes how to initially configure a single base station on GUIs using a default or user-defined template.

?1.Creating Base Stations

This section describes how to create base stations. To create base stations, you need to start the wizard provided by the CME for creating base stations, set basic base station data, and select a required template. After the base stations are created, configure global data and maintenance modes for the base stations in the general configuration window of the CME.

Procedure

1. On the menu bar of the planned data area, choose **CME > OneAir Application > Create Base Station (U2000 client mode)** or **OneAir Application > Create Base Station (CME client mode)**. A dialog box is displayed for you to create base stations.
2. Set site information.
 - a. Select **eAN9810A** from the **Product type** drop-down list.
 - b. Set basic base station information, including the base station name, ID, version. The CME provides two types of base station templates:
 - Base Station template
 - Radio template
3. Click **Next** and set basic information and radio template for each RAT.

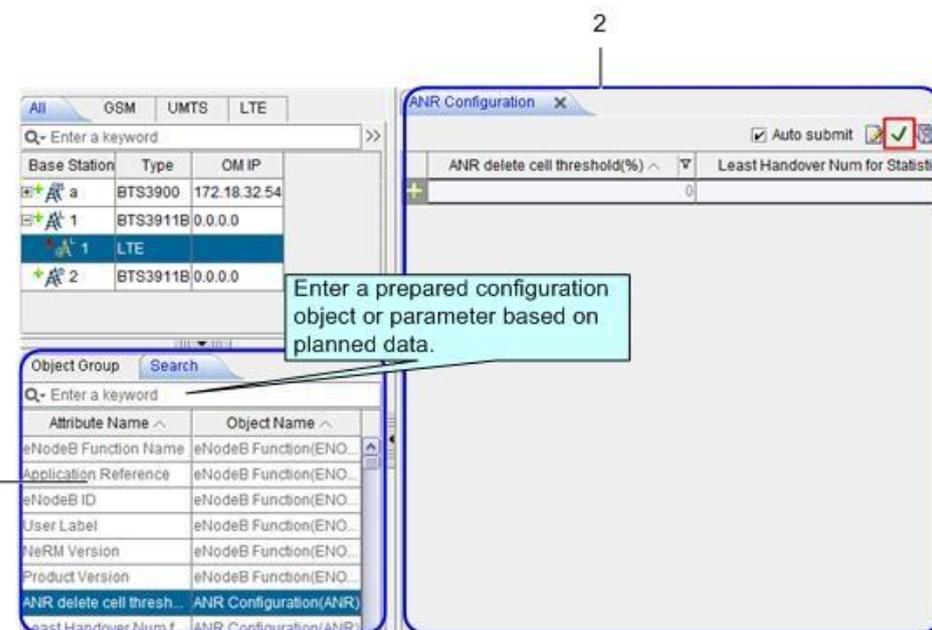
The eNodeB ID can be set to any valid value. After the configuration takes effect, the base station name is automatically changed to ESN, and the eNodeB ID is automatically changed to the value allocated on the eSight.
4. After the configuration is complete, click **Next**. The CME starts to create a base station.
5. Click **Finish** to exit the wizard.

?2.Configuring eAN9810A Data

This section describes how to configure device data, transport data, and radio data for the eAN9810A by using the CME.

Procedure

1. Click the required tab (Controller/Base Station/Cell) in the left pane of the planned data area. On the displayed tab page, select an item. The navigation tree of involved configuration objects is displayed in the lower part of the left pane. See [Figure 4-43](#).



- In area 1, select or search the MO to be configured based on the planned data and double-click the MO. On the displayed page as shown in area 2, set parameters as required, and click  to save the parameter configuration.

**NOTE**

- To add a record, click  in area 2 and set parameters as required.
- After selecting a base station root node, you can search for the common configuration objects in area 1. After selecting a RAT node, you can search for configuration objects specific to the RAT in area 1. Therefore, you must select a node correctly. Otherwise, target configuration objects may fail to be found in area 1.

?5.Verifying Data

This section describes how to verify the validity and integrity of base station configuration data before you export the data. Validity verification is to check whether base station configuration data meets NE configuration rules. If the data does not meet the rules, it is not sent to NEs. Integrity verification is to check whether base station configuration data is complete. If the data is incomplete, services cannot be provided. For example, a base station without cell data cannot provide radio services.

Prerequisites

You have configured base station data.

Procedure

- In the left pane of the planned data area, right-click a base station whose data you want to verify and choose **Check Data** from the shortcut menu. The CME starts to verify the data validity and integrity of the base station.
- View the verification results and modify incorrect data until the validity and integrity of the data are successfully verified.

?6.Exporting the Deployment Lists and Configuration Files of Base Stations

This section describes how to export the deployment lists and configuration files of base stations. After base stations are initially configured on the CME, you need to export the deployment lists and configuration files of the base stations, and then use the automatic deployment function on the U2000 client or use a USB flash drive locally to load the data to the base stations for the data to take effect.

Specifications and Restrictions

- Deployment list: The naming convention is **Auto_Deployment_List_ID of the planned data area_time stamp.xml**. If multiple NEs are selected at a time, the NE data is exported to one deployment list.
- Data configuration script: The script is in XML format. Each site has one configuration script.

Procedure

- On the menu bar, choose **Advanced Export Auto Deployment Data** (CME client mode) or **CME Advanced Export Auto Deployment Data** (U2000 client mode). A dialog box is displayed for you to export auto-deployment data.
- Select Site **creation expansion** and click **Next**.

3. Select the base stations whose auto-deployment data you want to export, and click **Next**.
4. Select a save path for the exported file and a method for processing data, and click **Next**.
5. View data in the base station deployment list, and click **Next**. The CME starts to verify data correctness and exports the data.

**NOTE**

- You are advised to set the connection type to **Common**.
 - The ESN is optional. If it is not set, you need to manually associate the ESN with the related base station during the subsequent deployment commissioning.
 - You can only set the first-level subnet in the subnet information. To specify a subnet of another level, you can adjust the subnet information in the U2000 topology after the base station commissioning. If the user-specified subnet information does not exist on the U2000, the U2000 automatically generates the subnet during the import of automatic deployment data in the subsequent commissioning.
6. If the export is successful in U2000 client mode, set the following options:
 - Select **Do not open the Auto Deployment window** to close the wizard.
 - Select **Open the Auto Deployment window**. The CME automatically switches to the auto-deployment window and creates a commissioning task.
 - Select **Open the Auto Deployment window and start Auto Deployment task**. The CME automatically switches to the auto-deployment window and starts a commissioning task.
 7. Click **Finish**.

**NOTE**

The save paths for the exported data configuration scripts and deployment lists are as follows:

- Data configuration scripts: **export directory\CfgData\base station name**
- Deployment lists: **export directory\ADList**

You can use the script executor to check and edit the exported data configuration scripts.

Preparing an SD Card

This section describes how to prepare an SD card before loading the software package and data configuration file onto a eAN9810A.

Prerequisites

- The data copy rights have been obtained for the computer used to make the SD card. •

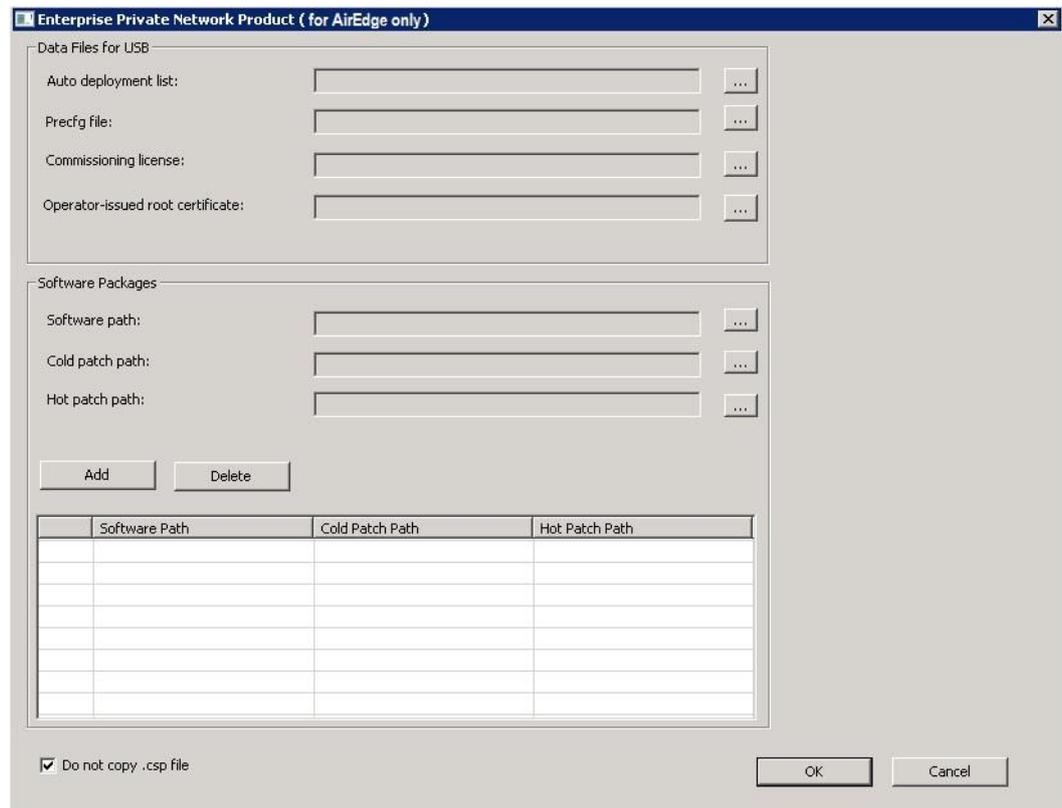
Item	Description
SD card	The SD card must be the one delivered with Huawei eAN9810A.
USB making and protection tool	The tool is saved in U2000 installation directory\client\client\USBProtector on the computer where the U2000 is installed.

For details about the save path of each type of file in the SD card, see [Directory Structure on a MicroSD Card](#). the tool will automatically generate \MBTS path, do not manually add the path.

Procedure

1. Choose **Start > Programs > iManager U2000 MBB Client > USB Making and Protection Tool** to start the tool.

Figure 4-44 USB making and protection tool



- a. Click  to the right of **Auto deployment list** to specify the directory where the *Auto_Deployment_List_[Date].xml* file exported from the CME is stored.
 - b. Click  to the right of **Precfg file** to specify the directory where the preconfiguration file *Precfg.ini* is stored.
 - c. Click  to the right of **Software path** to specify the directory where the software package is stored.
Click **Add** to add the software package path.
 - d. Deselect the **Do not copy .csp file** option according to the site deployment scenario.
3. Set the local save paths for the software package and data files based on the type of SD card directory. Then, click **OK**. And then according to the number of open station number (One USB for One Site or One USB for Multiple Sites) and the output directory, click **Start**.

**NOTE**

When making different types of directories on an SD card, specify items listed in the Information to Set column only and do not set items that are not listed in this column.

Option	Information to Set
Directory for upgrading the software and updating configuration	<ul style="list-style-type: none"> • Software path: mandatory, save path of the files decompressed from a specified version software package • Cold patch path: optional, save path of the files
Option	Information to Set

files	<p>decompressed from a specified cold patch package</p> <ul style="list-style-type: none"> • Hot patch path: optional, save path of the files decompressed from a specified hot patch package <p>Based on different version combinations of NEs to be deployed in the deployment list, specify Software path, Cold patch path, or Hot patch path. Then, click Add to add the path to the software version list. Based on the target version information in the deployment list, the USB making and protection tool copies different versions to the corresponding directories of the NEs to be deployed. If an unnecessary software version is added, you can click Delete to remove this software version.</p> <p>NOTE The software version of the original and target versions must be eAN9810A V100R001C00SPC200 and later.</p>
	<p>Auto deployment list: mandatory. Select the deployment list exported from the CME.</p> <p>The exported deployment list is saved in export path/ADList/ by default. Engineers must select the only .xml file in this directory.</p>
	<p>Do not copy .csp file: It is good practice to deselect this option. In this case, all files and integrity protection information except the .csp files are saved in the directories and you can send them through emails. Then, copy the SD card directories to the SD card containing the intact software package. Use this SD card to upgrade the software and update configuration files.</p>
Directory for updating configuration files only	<p>Auto deployment list: mandatory. Select the deployment list exported from the CME. The exported deployment list is saved in export path/ADList/ by default. Engineers must select the only .xml file in this directory.</p>
	<p>NE Type and Service Mode: mandatory. Select LTE based on the working mode of the NE.</p>
	<p>Do not copy .csp file: selected by default.</p>

- The USB making and protection tool automatically parses and displays the information of the target NE on the USB Making and Protection Tool window. Select the NE that requires an SD card. After all NE information is correctly specified, select a deployment mode in the USB Flash Drive Type area.

Option	Description
One USB for One Site	Save the information about each NE to an independent SD card.
One USB for Multiple Sites	<ul style="list-style-type: none"> • Save the information about all NEs to an SD card.

Option	Description
	<ul style="list-style-type: none"> This mode requires that each NE be configured with a unique ESN.

5. In the **Protection Mechanism** area, select algorithms as required from the **Encryption Algorithm** and **Integrity Algorithm** drop-down lists.
 - **Encryption Algorithm** is optional. It is selected by default and can be cleared. **Encryption Algorithm** can be set to **DES3_CBC**, **AES192_CBC**, or **AES256_CBC**. The default value **DES3_CBC** is recommended.
 - **Integrity Algorithm** is mandatory. It is selected forcibly and cannot be cleared. **Integrity Algorithm** can be set to **HMAC_SHA1** or **HMAC_SHA256**. The default value **HMAC_SHA1** is recommended.
6. In the **Output Path** area, specify a save path.

Option	Description
USB Flash Drive Path	<p>Save all the information to an SD card. All the directories of one SD card are prepared at a time.</p> <ul style="list-style-type: none"> One USB for One Site: In this mode, select only one NE and save this NE's information to the SD card. One USB for Multiple Sites: In this mode, save the information about all NEs to an SD card. The software package is shared by all NEs and the data configuration files are distinguished by directories named after ESN.
Local Path	<p>Save all the information to the specified directory on a local computer.</p> <ul style="list-style-type: none"> One USB for One Site: In this mode, a folder is created in a specified directory for this NE and named after NE name. In addition, NE information is saved in this folder. One USB for Multiple Sites: In this mode, save the information about all NEs to a specified directory. The software package is shared by all NEs and the data configuration files are distinguished by directories named after ESN.

**NOTE**

The existing data configuration files may be damaged when being copied, encrypted, or integrity protected. To prevent any damages, ensure that USB Flash Drive Path and Local Path do not contain any files or directories.

7. Click **Start**.

During the procedure, the USB making and protection tool automatically performs the following operations:

- Applies integrity protection and encryption protection to files in the SD card directories according to manual settings.
 - Copies the configuration files to the SD card directories of corresponding NEs according to the save path of configuration files in the deployment list.
 - Copies all files under the directory specified by Software path to the SD card directories of corresponding NEs according to the directory structure of the SD card.
8. Click OK in the dialog box displayed after the SD card is prepared.
 9. **Optional:** If Output Path is set to Local Path, copy the files to the SD card. If Local Path is set to Computer/DataCenter(D:)/SD in step 6:
 - One USB for One Site: Choose Computer > DataCenter(D:) > SD. If the NE to be deployed is site 1, copy the MBTS folder from the Site1 folder to the SD card. See [Figure 4-46](#).
 - One USB for Multiple Sites: Choose Computer > DataCenter(D:) > SD. Copy the MBTS folder from the SD folder to the SD card. See [Figure 4-47](#).

NOTICE

- After a file is copied from a computer to an SD card, the file may change due to faults on hardware or the Windows OS, but this seldom occurs. If the problem occurs, you can copy the file from another computer, to another SD card, or restart the OS and copy the file again.
- To remove an SD card from the computer after the files are copied to the SD card, eject or safely remove the SD card from the Windows OS. If the SD card is forcibly ejected, the files in the SD card may be damaged. As a result, software and data configuration files cannot be loaded by using the SD card.
- When transferring files for an SD card, do not copy the .xml files from a remote desktop to a local computer. Otherwise, deployment will fail. You are advised to compress the required files into a .rar or .zip file for file transfer.

Figure 4-46 File copy procedure in One USB for One Site mode

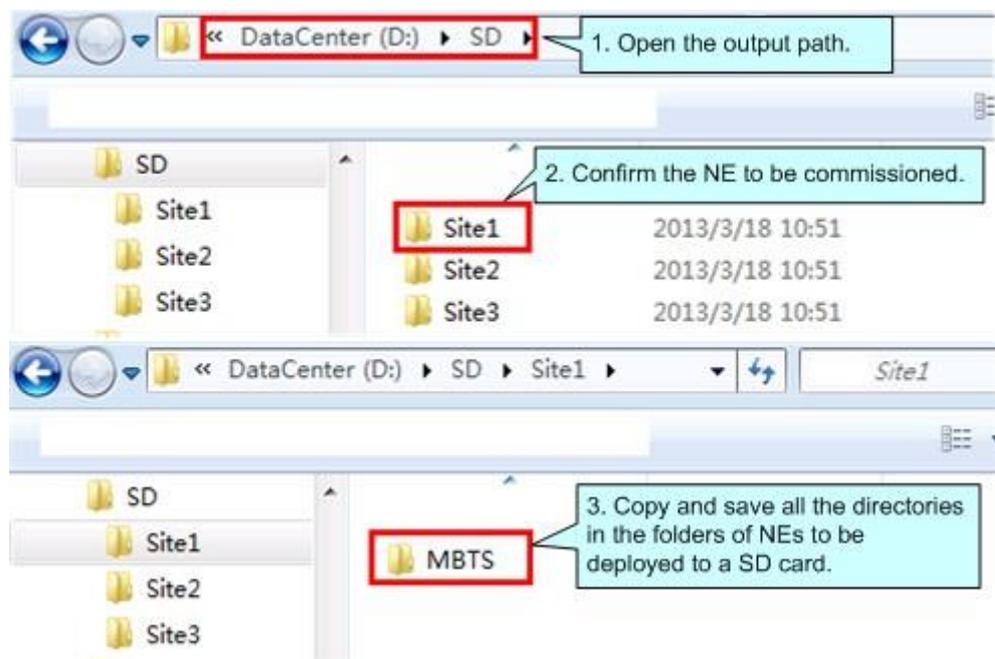
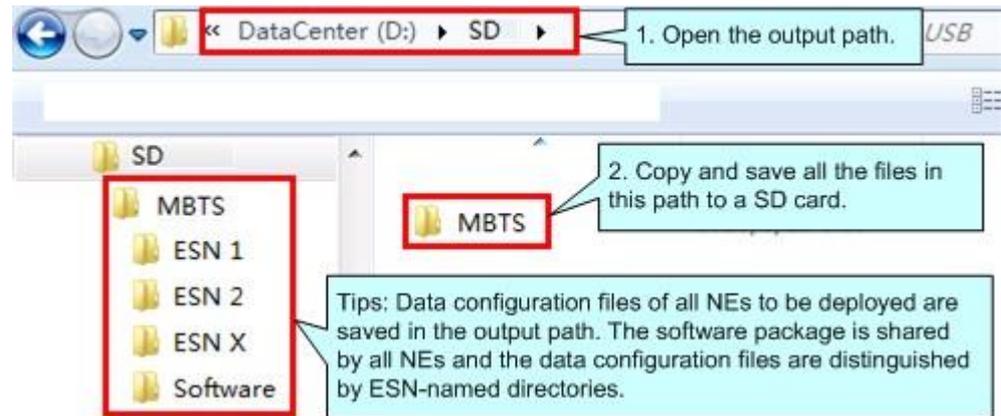


Figure 4-47 File copy procedure in One USB for Multiple Sites mode



10. **Optional:** If you need to preset the operator's root certificate in the SD card, you can manually copy the root certificate file provided by the carrier to the SD card: \ MBTS directory.

Checking a Transport Network

This section describes how to check a transport network. The transport network affects the Automatic OMCH Establishment feature. Therefore, before commissioning an eAN9810A, O&M engineers must check whether the OMCH networking and the network equipment meet the configuration requirements of the corresponding scenario.

Check Methods

O&M engineers can check whether the transport network meets the configuration requirements of the Automatic OMCH Establishment feature by using either of the following methods:

Method 1: Confirm with the department in charge of the transport network whether the transport network meets the requirements.

Method 2:

- Check the network connectivity. If nodes in the transport network can be pinged, Ping the port corresponding to each node to check whether the transmission channel at each node is ready.
- Check whether the network equipment at each node is configured as required to ensure that an eAN9810A can automatically establish the OMCH.

Checking the SD Card Port Status

This section describes how to check the SD card port status with MML commands.

Prerequisites

- The transmission network is ready.
- The eAN9810A is connected to the U2000 or Web LMT.

Procedure

Step 1 Run the **LST MICROSDCARDPORT;;** command to verify that the **Port Switch** parameter is **On**.

Step 2 Log in to the U2000 or Web LMT. Run the **SET MICROSDCARDPORT** command with the **Port Switch** parameter set to **On**.



NOTE

The default value of **Port Switch** parameter is **On** upon factory delivery. ---**End**

Preparing Dialing Test Tools

Dialing tests are performed by using test terminals to check whether deployed eAN9810A can provide services properly. Prepare test terminals and ensure that the test subscriber identity module (USIM) cards have registered with the base station.

Hardware Installation and Power-on Check

This section describes how to perform hardware installation and power-on checks at the site after eAN9810A hardware is installed. If a MicroSD card is used for local deployment, engineers at the site need to insert the MicroSD card to the eAN9810A to load software and the configuration file.

Prerequisites

- The SD card has been prepared.
- The eAN9810A is working correctly.

Context

The port for housing a MicroSD card is enabled by default on the eAN9810A. Insert a MicroSD card into the powered on eAN9810A and then restart the eAN9810A to read data from the MicroSD card. Alternatively, insert the MicroSD card into the powered off eAN9810A and then power on the eAN9810A.

Table 4-11 Precautions for using an SD card

Deployment Mode	Precautions
-----------------	-------------

Site deployment	<p>The eAN9810A automatically detects the MicroSD card and installs the driver for the card after a MicroSD card is inserted into the eAN9810A. Then, the eAN9810A automatically reads the files in the fixed directories on the MicroSD card and checks the file names and formats. The eAN9810A compares the software version and configuration data on the MicroSD card with those on the eAN9810A. If consistent, it does not load the software or configuration file on the MicroSD card. If inconsistent, it loads the software and configuration file on the MicroSD card.</p> <p>Note the following points about loading:</p>
Deployment Mode	Precautions
	<ul style="list-style-type: none"> • If the MicroSD card only stores software, the eAN9810A loads only the software. • If the MicroSD card only stores configuration files, the eAN9810A loads only the target configuration file. • The eAN9810A does not load the software or configuration file on the MicroSD card and its RUN indicator indicates a loading failure (steady on) in any of the following conditions: <ul style="list-style-type: none"> – The MicroSD card is not intended for it. – The expected directories or files are not present. – The directories or file formats are not correct. – Data in the MicroSD card is not encrypted or integrity protected.

Procedure

- U2000-based commissioning
 - a. Ensure that the eAN9810A hardware has been installed and has passed the installation check. For details about how to perform the hardware installation check, see section "[4.1.10 Checking Hardware Installation](#)" in *eAN9810A Installation Guide*.
 - b. Perform the power-on check. For details about how to perform the power-on check, see section "[4.1.11 Power-On Check on the eAN9810A](#)" in *eAN9810A Installation Guide*.
- SD card+U2000-based commissioning
 - a. Ensure that the eAN9810A hardware has been installed and has passed the installation check. For details about how to perform the hardware installation check, see section "[4.1.10 Checking Hardware Installation](#)" in *eAN9810A Installation Guide*.
 - b. Determine whether to restart the eAN9810A after a MicroSD card is inserted based on the power-on status of the eAN9810A.

If...	Then...
--------------	----------------

The eAN9810A has been powered on.	Insert the MicroSD card into the related port on the eAN9810A. Remove and reinsert the Ethernet cable for power supply, and then go to c .
The eAN9810A has not been powered on.	Insert the MicroSD card into the related port on the eAN9810A. Connect the eAN9810A to a PSE over an Ethernet cable. Power on the eAN9810A, and then go to c .

- c. Perform the power-on check. For details about how to perform the power-on check, see section "[4.1.11 Power-On Check on the eAN9810A](#)" in *eAN9810A* Hardware Installation Guide.

Check the RUN indicator for hardware faults on the MicroSD card. The RUN indicator blinks orange (on for 0.125s and off for 0.125s), if the eAN9810A fails to read files on the MicroSD card or fails to be deployed. The MicroSD card may be faulty and cannot be detected, if the RUN indicator status does not change.

- d. In configuration-free deployment scenarios, wait until the eAN9810A automatically downloads the preconfiguration file and reads the preconfigured information. In site deployment scenarios, wait until the eAN9810A completes the following procedure: automatically loads and activates the software and data configuration files, and restarts itself to make them take effect.

Table 4-12 Mapping between the RUN indicator status and loading status

Loading Status	RUN Indicator Status
The loading succeeds	Slowly blinking (on for 1s and off for 1s) for more than 1 minute
Loading...	Blinking orange and white alternately (on for 0.125s and off for 0.125s)
The loading fails.	Blinking orange (on for 0.125s and off for 0.125s)



NOTE

- In MicroSD card deployment scenarios, the eAN9810A automatically activates the downloaded software and configuration file and then restarts for them to take effect. The activation and restart take about 30 minutes, during which the indicator status is negligible.
 - During loading, do not remove the MicroSD card.
- e. Remove the MicroSD card only after you have confirmed that the loading succeeds.

Follow-up Procedure

If the software version is incorrect after the loading process is completed, perform the following operations:

1. Insert a MicroSD card storing the correct software version to the eAN9810A.

2. Remove the MicroSD card after the eAN9810A loads the software package and successfully completes the upgrade.

Engineering Verification

This section describes how to complete the eAN9810A commissioning task, view deployment results, and verify services.

Viewing Deployment Results at Sites

This section describes how to view deployment results at sites based on indicator status.

Check the status of indicators on a newly deployed eAN9810A.

The following table shows the indicator status if an eAN9810A is deployed successfully and working properly. See [Table 4-13](#)

Table 4-13 Indicator status of a functional eAN3810A

Indicator	Status
RUN	Steady white
ETH	Slow blinking white (on for 1s and off for 1s)

If the indicator status of an eAN9810A differs from that in the preceding table, contact Huawei technical support engineers.

Viewing Deployment Results on the U2000

This section describes how to view deployment results after an eAN9810A is powered on.

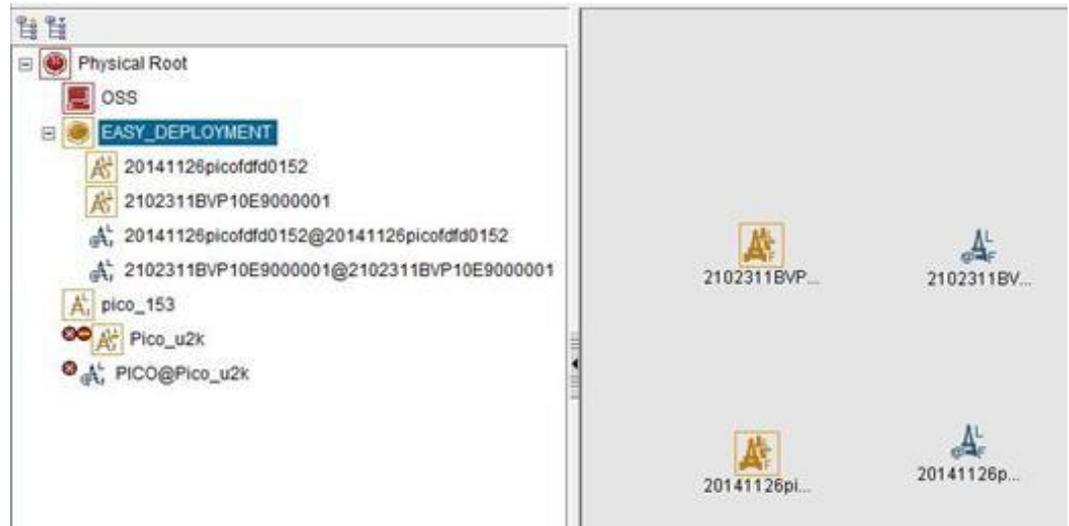
Context

After site deployment is completed, you need to log in to the Web LMT or connect the eAN9810A to the U2000 within 30 minutes. Otherwise, the eAN9810A will be rolled back to the source version upon timer expiry.

Procedure

1. Wait 3 to 4 minutes after an eAN9810A is powered on. Then, on the U2000, choose Topology > Main Topology (traditional style), or double-click Topo View in Application Center and then choose Topology > Main Topology (application style). On the displayed Main Topology window, check whether the eAN9810A topology is created. See the following [Figure 4-48](#).

Figure 4-48 Main topology view



- If the eAN9810A is displayed as  in the main topology, the deployment task is successful. No further action is required.
- If no icon or another icon is displayed for the eAN9810A, the deployment task fails. Proceed to the next step.

Viewing Deployment Results on the eSight

This section describes how to view deployment results after an eAN9810A is powered on.

Context

After site deployment is completed, you need to log in to the Web LMT or connect the eAN9810A to the eSight within 30 minutes. Otherwise, the eAN9810A will be rolled back to the source version upon timer expiry.

Procedure

1. On the network element (NE) list page, check **Connection Status** of NEs, as shown in [Figure 4-49](#).

Figure 4-49 Main topology

Name	Connection Status	IP Address	Subnet	Device Type	Software Version	Location	Operation
xdw	Offline	172.253.254.2...	Root	eAN9810			
3810	Offline	172.253.254.2...	Root	eAN9810			

NOTE

-  : Offline,
-  : Online,
-  : No corresponding mediation version

- When an NE is in offline state, the eSight cannot connect to the NE. This is because the NE cannot communicate with the eSight due to reasons such as equipment power off, network communication fault, or manually-enabled equipment isolation. When this occurs, contact Huawei technical support.

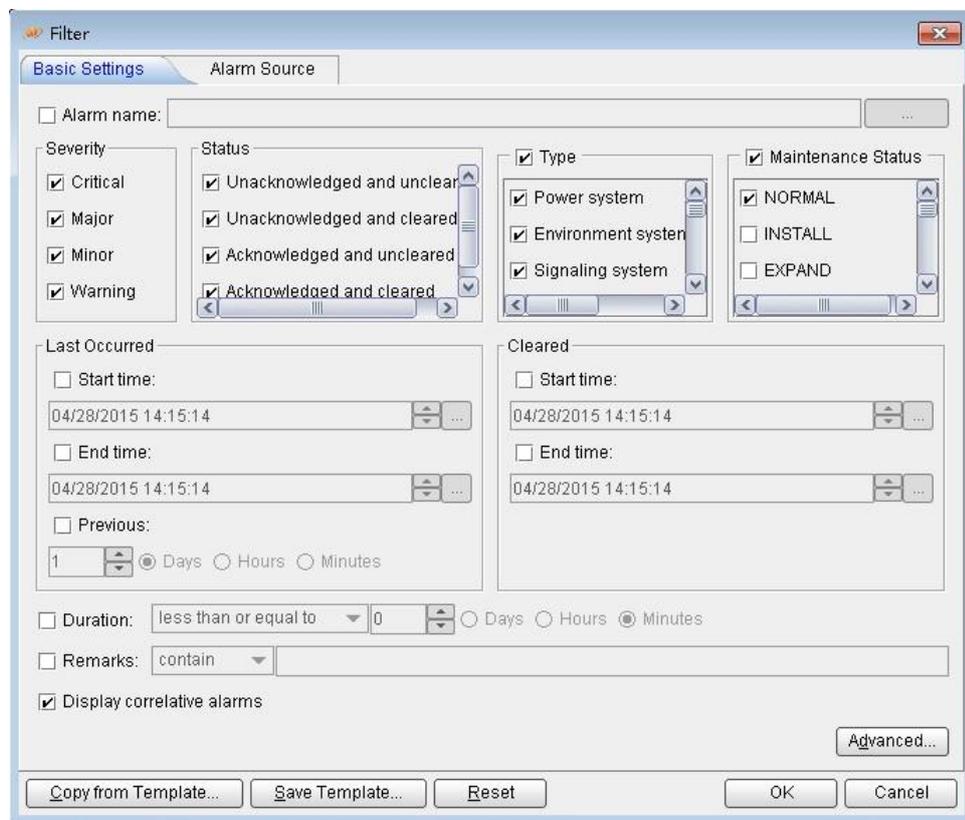
Handling Alarms(U2000)

This section describes how to handle alarms generated by a newly deployed eAN9810A. All active alarms must be cleared during the commissioning.

Procedure

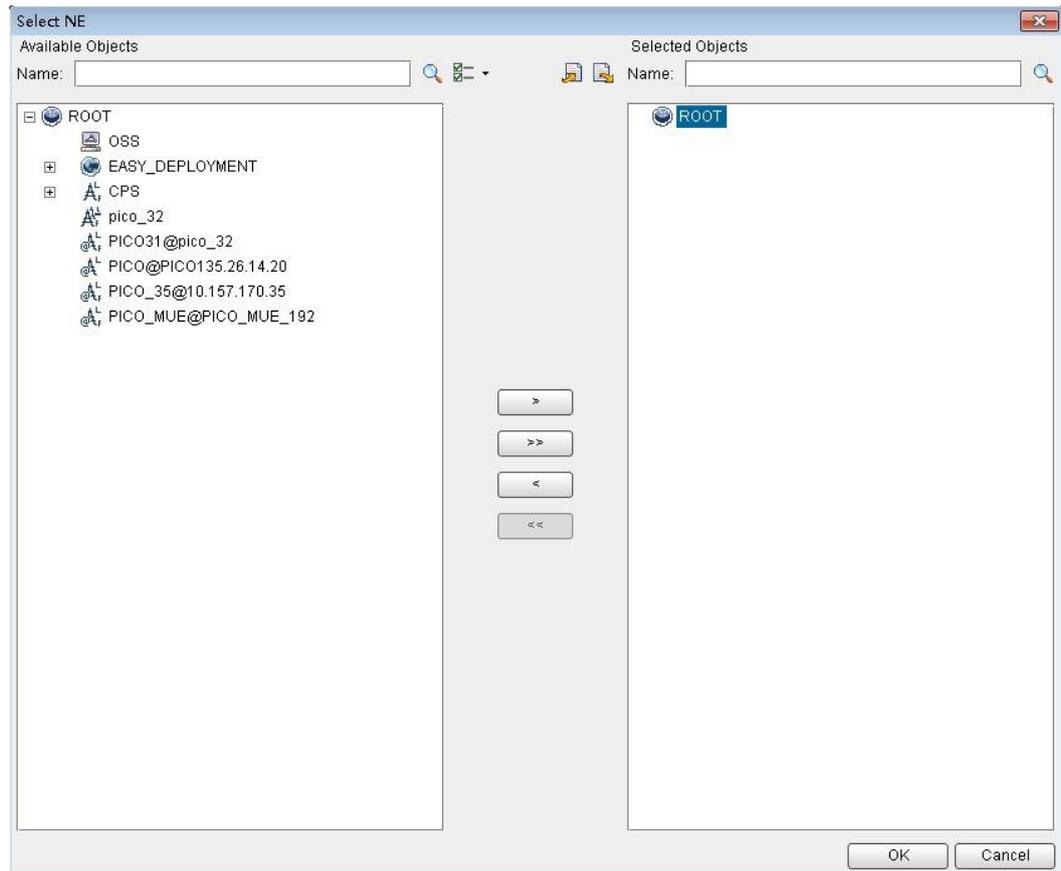
1. On the U2000, choose **Monitor > Browse Current Alarms** (traditional style), or double-click **Fault Management in Application Center** and then choose **Browse Alarms > Browse Current Alarms** (application style). On the displayed **Browse Current Alarm** window, click **Filter**. The **Filter** dialog box is displayed.

Figure 4-50 Filter dialog box



2. Click the Alarm Source tab and click the Custom option button. Then, click Add and choose NE from the shortcut menu. The NE dialog box is displayed.

Figure 4-51 NE dialog box



3. In the **Available Objects** area on the left, select NEs in the navigation tree. Click  to add the selected NEs to the **Selected Objects** area on the right. Then, click **OK**.
4. In the **Filter** dialog box, click **OK**. All alarms reported by the selected NEs are displayed on the **Browse Current Alarm** window.
5. Check the alarms one by one to determine whether they are related to the new eAN9810A deployment. If related, handle the alarms. For details about how to handle the alarms, see the alarm reference.

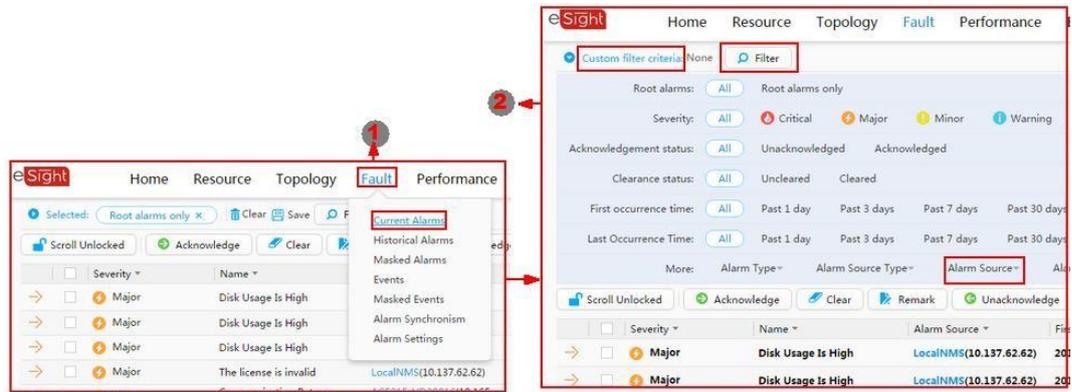
Handling Alarms (eSight)

This section describes how to handle alarms generated by a newly deployed eAN9810A. All active alarms must be cleared during the commissioning.

Procedure

1. On the LMT client, choose **Fault > Current Alarms > Custom filter criteria > Alarm Source**. Click **Filter** to query alarms of a specified alarm source.

Figure 4-52 "Filter" window



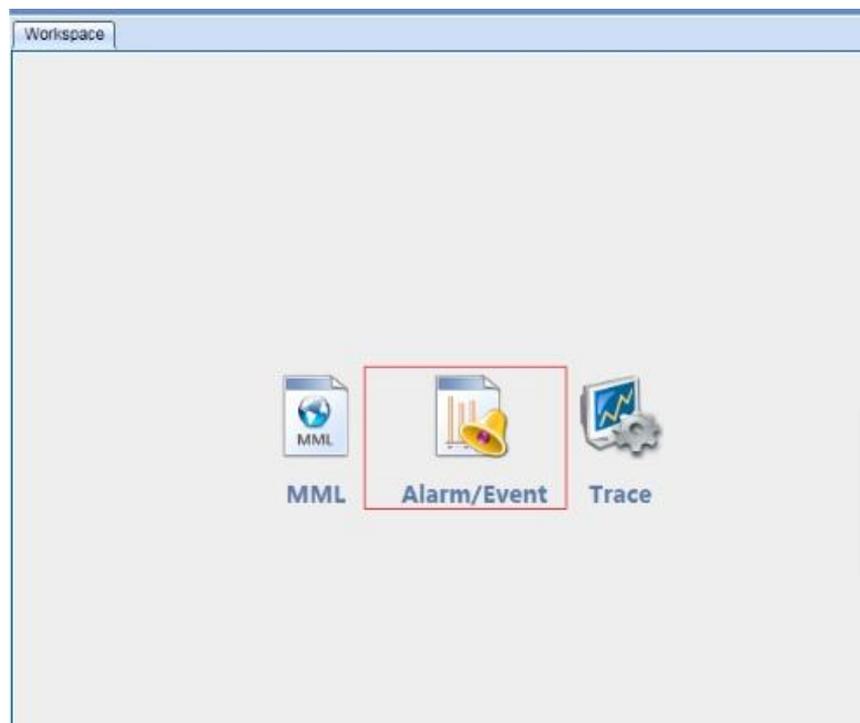
2. Check all the alarms to see whether they are related with the newly deployed NE. If yes, handle all the active alarms with reference to *Alarm Reference*.

Handling Alarms (LMT)

This section describes how to handle alarms generated by a newly deployed eAN9810A. All active alarms must be cleared during the commissioning.

Procedure

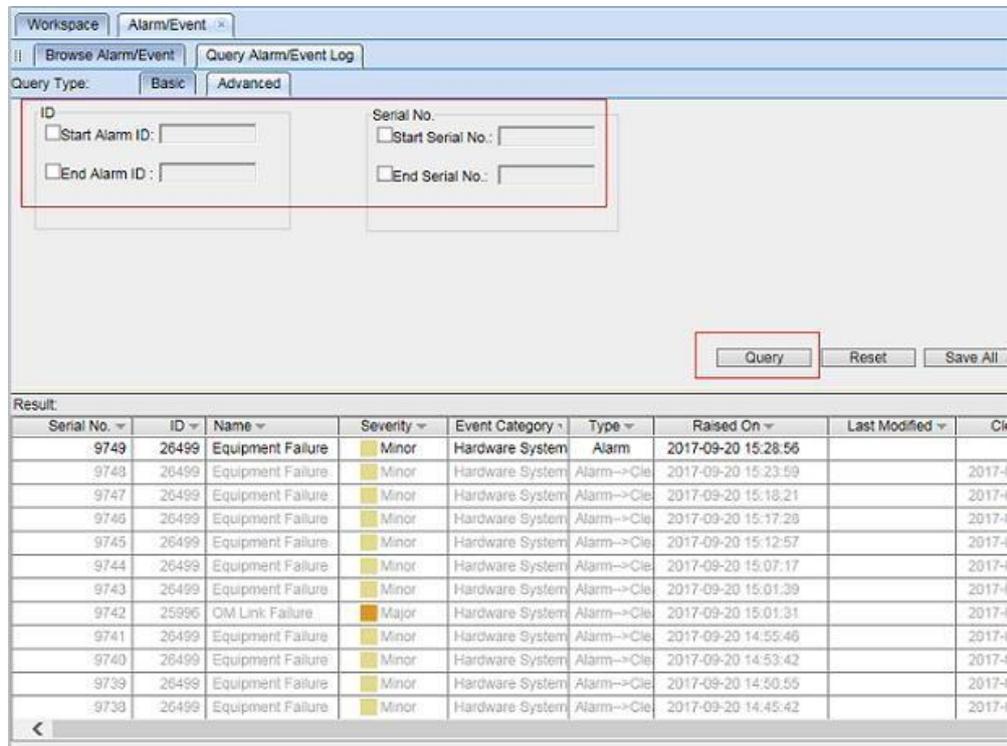
1. On the LMT client, choose **Alarm/Event > Query Alarm/Event Log**.



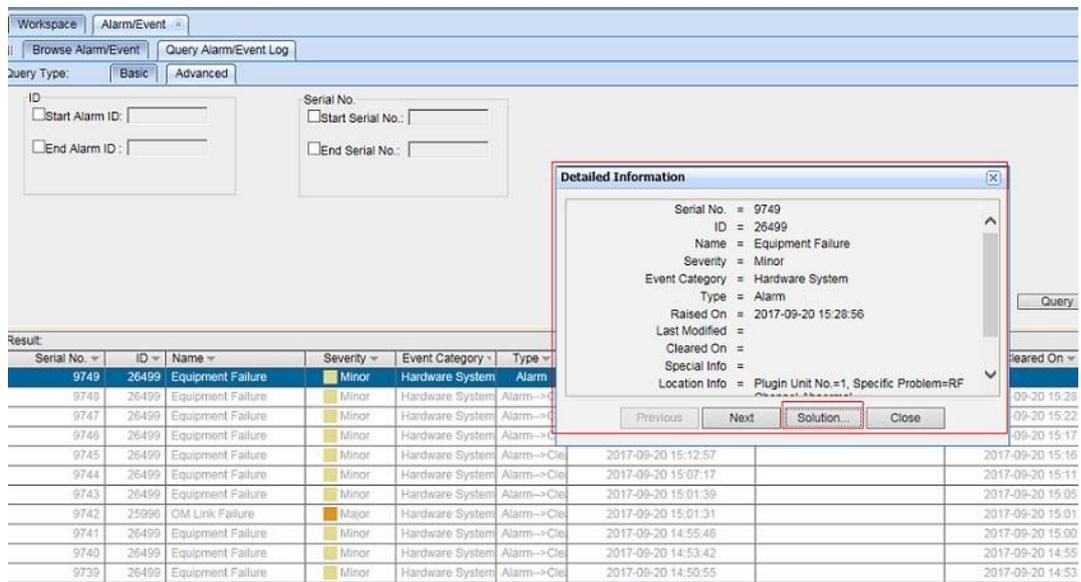
2. On the **Query Alarm/Event Log** window, set query criteria and click **Query**.

Alarms are displayed on the **Query Alarm/Event Log** window.

3. Double-click an alarm and



check detailed alarm information on the displayed dialog box.



NOTE

On the **Detailed Information** dialog box, click **Solution** to obtain the solution for handling this alarm.

- Contact engineers specified in the alarm handling process to clear the alarms and analyze automatically cleared alarms.
- Repeat steps from 3 to 4 to handle each alarm until all the alarms are cleared.

Disabling the SD Card Port

Prerequisites

- The transmission network is ready.
- The eAN9810A is connected to the U2000 or Web LMT.

Procedure

Step 1 Run the **SET MICROSDCARDPORT** command with the **Port Switch** parameter set to **Off**. --

--End

Verifying Services

This section describes how to verify that UEs can attach to the eAN9810A and perform ping services.

Prerequisites

- Cells are activated.
- UEs have been defined on the base station.

Procedure

1. Check whether UEs can successfully attach to the eAN9810A and perform Ping services.

FAQ

This section describes the graphical user interfaces (GUIs) involved in deployment and troubleshooting methods for common problems.

How Do I Set the U2000 Client Display Style?

The U2000 client has two display styles: application style and traditional style. You can set the display style as required.

Context

Switching between styles changes the overall usability of the U2000 client and the way the U2000 client is launched. The U2000 client supports two display styles:

- Application style
- Traditional style

[Table 4-14](#) describes the differences between the two styles.

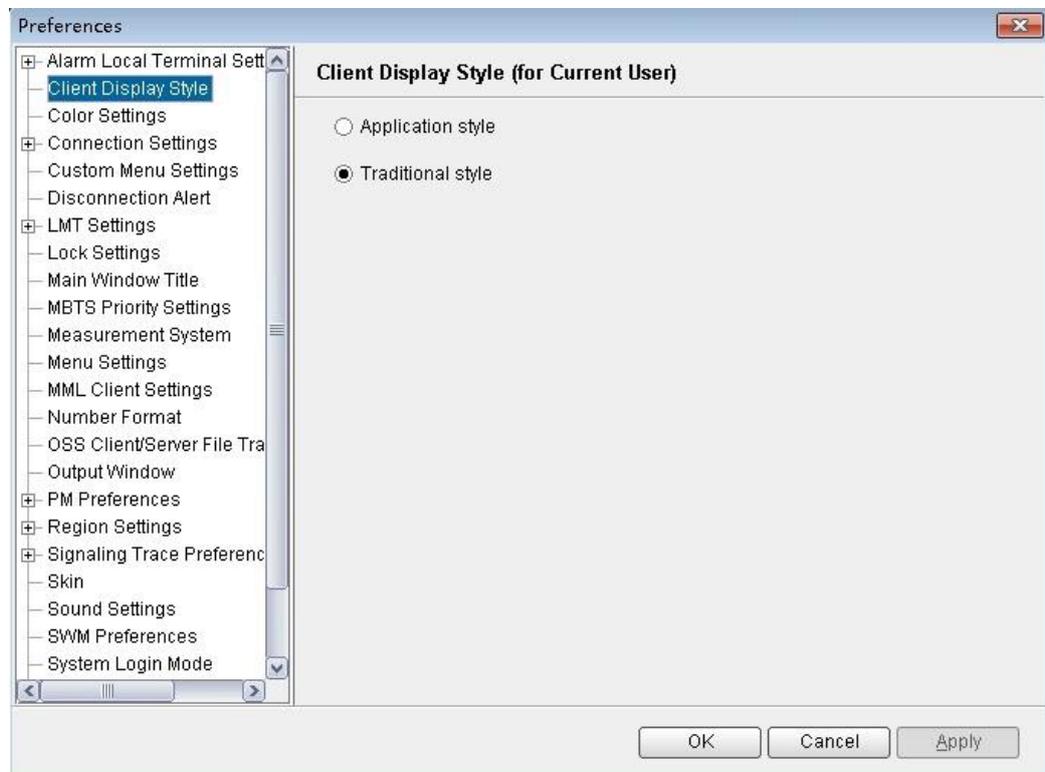
Table 4-14 Differences between the traditional style and application style

Traditional Style	Application Style
The client is launched with all the supported functions and applications.	The client is launched only with the applications required by a user.
Traditional Style	Application Style

Menu items cannot be searched for.	You can search for menu items.
The Favorites feature is not supported.	You can add functions and menu items that are frequently used to the Favorites tab.
Traditional welcome page features are supported.	The welcome page features are not supported.

Procedure

1. On the U2000, choose **System Preferences**(traditional style) or **File Preferences**(application style) from the main menu.
2. In the **Preferences** dialog box, click **Client Display Style** Client Display Style.



3. Select the **Application style** or **Traditional style** option button.
4. Click **OK**.

Follow-up Procedure

Restart the U2000 client for the settings to take effect.

How Do I Prepare a Precfg.ini File?

This section describes how to prepare a Precfg.ini file. This file specifies the software to be loaded during local deployment by a MicroSD card.

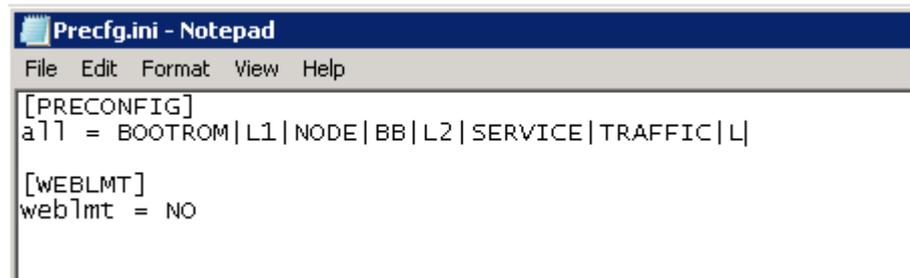
Context

The `Precfg.ini` file is contained in the software package and can be used only after the target RAT is added.

Procedure

1. Open the **Precfg.ini** file using the Notepad in the Windows OS.
2. Add the target RAT at the end of the **ALL** record in the **Precfg.ini** file.
 - Add |L if the target RAT is LTE.

Retain the other settings in the file.



```
Precfg.ini - Notepad
File Edit Format View Help
[PRECONFIG]
all = BOOTROM|L1|NODE|BB|L2|SERVICE|TRAFFIC|L|
[WEBLMT]
weblmt = NO
```

3. Save the file and retain the name **Precfg.ini**.

Directory Structure on a MicroSD Card

This section provides the save paths and names for files in a MicroSD card and describes file usage.

Table 4-15 Directory structure on a MicroSD card

Deployment Mode	File	Usage	How to Obtain	Save Path in the MicroSD Card
Local deployment by a MicroSD card	Configuration file	<ul style="list-style-type: none"> • It specifies the deployment mode and target version. • It provides save paths and check codes for: <ul style="list-style-type: none"> - Software packages - Configuration files - Certificates - Commissioning 	The MicroSD card making and protection tool generates the file based on the data in the deployment list.	MBTS\DeployCfg.xml

Deployment Mode	File	Usage	How to Obtain	Save Path in the MicroSD Card
		licenses		
	Version software package	Software upgrade	Obtain the software package from http://support.huawei.com/enterprise/ .	<ul style="list-style-type: none"> • MBTS\Software \ • MBTS\Software \software version <p>NOTE When a MicroSD card stores software of different versions, the save paths are named by software version.</p>
	Cold patch package	It is used to apply a cold patch.	Obtain the software package from http://support.huawei.com/enterprise/ .	<ul style="list-style-type: none"> • MBTS\ColdPatch\ • MBTS\ColdPatch\cold patch version <p>NOTE When a MicroSD card stores cold patches of different versions, the save paths are named by cold patch version.</p>
	Hot patch package	It is used to apply a hot patch.	Obtain the software package from http://support.huawei.com/enterprise/ .	<ul style="list-style-type: none"> • MBTS\HotPatch \ • MBTS\HotPatch \hot patch version <p>NOTE When a MicroSD card stores hot patches of different versions, the save paths are named by hot patch version.</p>
	Precfg.ini	It specifies the software to be loaded.	It is manually prepared.	MBTS\Precfg.ini NOTE For details about how to prepare the Precfg.ini file.

	Configuration file	Configuration data update	It is generated by the CME and exported with the deployment	The USB making and protection tool copies the file to a MicroSD card directory based on the parameter
Deployment Mode	File	Usage	How to Obtain	Save Path in the MicroSD Card
			list.	settings in the tool. <ul style="list-style-type: none"> • One SD card for a single site: MBTS\CFGDATA.XML • One SD card for multiple sites: SD card:\MBTS\ESN\SlotNo.\CFGDATA.XML

Integrity and Encryption Protection on Files in MicroSD Cards

This section describes how to use the USB making and protection tool to apply integrity and encryption protection to files in MicroSD cards. This prevents malicious modification, unauthorized possession, and information disclosure.

?1.Applying Integrity and Encryption Protection to Files in a Single MicroSD Card

This section describes how to apply integrity and encryption protection to files in a single MicroSD card.

Prerequisites

- The USB making and protection tool is ready. The tool is saved in ***U2000 installation directory*** \client\client\USBProtector on the computer where the U2000 client is installed.
- You have scanned the MicroSD card for viruses by using antivirus tools before applying protection. This can prevent files on the computer from infections.
- Files to be protected are ready.

Context

- Integrity protection
 - The digital signatures in the software and patch packages are used to verify integrity. Do not use the USB making and protection tool to apply integrity protection to these files. Otherwise, deployments or upgrades using a MicroSD card will fail.
 - Integrity protection must be applied to all other files.
- Encryption protection

- **Do not** apply encryption protection to any files in the SD card if the target version of a base station upgrade does not support SD card-based encryption. Otherwise, deployments or upgrades using an SD card will fail.
- If the target version of a base station upgrade supports SD card-based encryption,

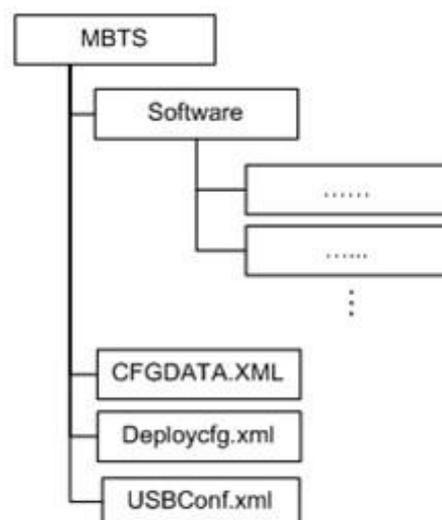
- **Do not** apply encryption to the version, BootROM, and patch software packages. Otherwise, deployments or upgrades using an SD card will fail.
- You **must** apply encryption to the **CFGDATA.XML** file for eAN9810A.
- After you use the USB making and protection tool to apply integrity and encryption protection to files, the **USBConf.xml** file is generated and the file name cannot be changed. When loading files in the MicroSD card, the Pico checks file integrity and decrypts the files based on the data in the **USBConf.xml** file.

Procedure

1. Prepare the directory for files to be protected.

The directory structure is fixed. It cannot be modified, or deployments or upgrades using a MicroSD card will fail. The following figure shows an example with the CA server deployed in the secure domain.

Figure 4-53 Directory structure for files to be protected (single MicroSD card)



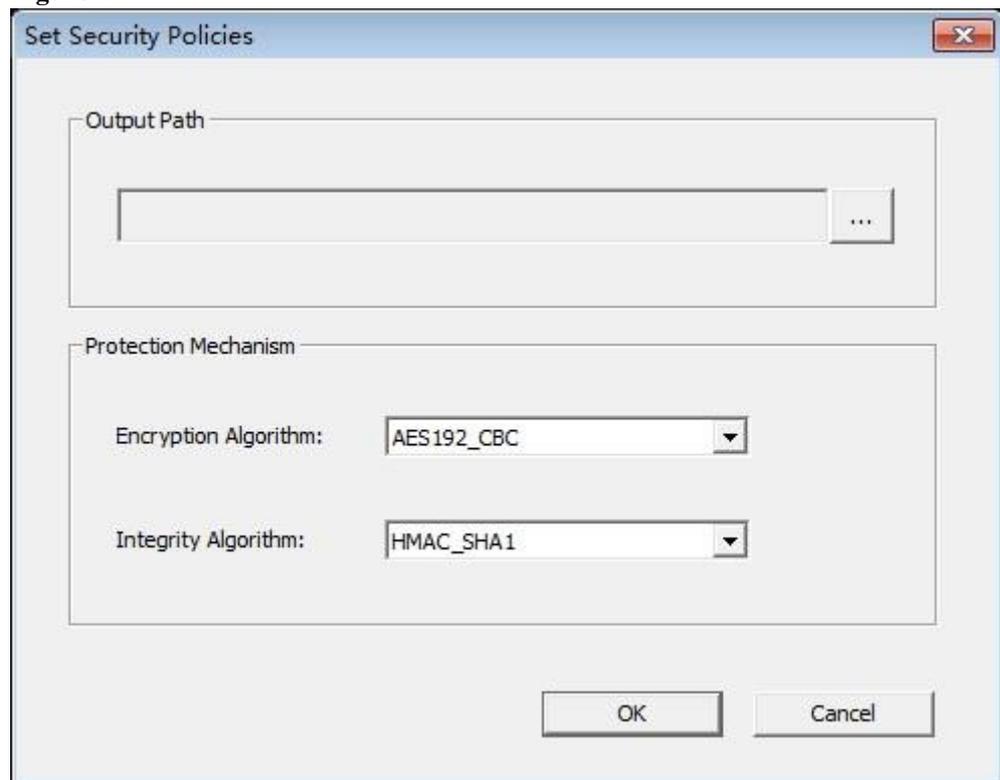
NOTE

The USB making and protection tool applies integrity and encryption protection to files but it cannot decrypt files. Back up the files to be protected before applying integrity and encryption protection.

2. Choose **Start > Programs > iManager U2000 MBB Client > USB Making and Protection Tool** to start the tool.
3. Choose **USB Protection > USB Protection Settings**. The **USB Protection Settings** dialog box is displayed. See [Figure 4-54](#)

-54 USB Protection Settings

Figure 4



- a. In the **Output Path** area, click  to specify a save path for the **USBConf.xml** file and then click **OK**.
- b. In the **Protection Mechanism** area, select algorithms as required from the **Encryption Algorithm** and **Integrity Algorithm** drop-down lists.

Encryption Algorithm can be set to:

- DES3_CBC
- AES192_CBC
- AES256_CBC

Integrity Algorithm can be set to:

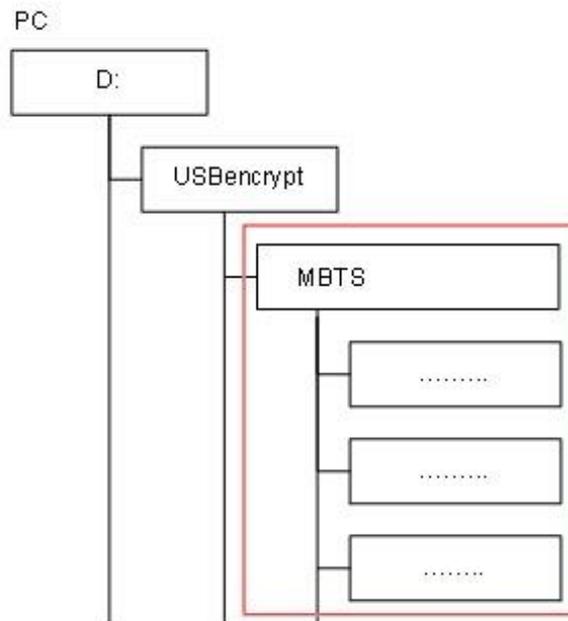
- HMAC_SHA1
- HMAC_SHA256

You can choose any encryption and integrity algorithms but the defaults are recommended.

- c. Click **OK**.
5. Choose **One USB Settings Set USB Path** to specify the root path on the local computer for the folder storing files to be protected and click **OK**. The path information will be displayed in the USB Path area after the setting succeeds. In the example shown in the following figure, the path must be set to **D:\USBencrypt\nodeB**, **D:\USBencrypt\NodeB**, or **D:\USBencrypt\MBTS**.

-56 Directory structure example

Figure 4



6. Add files to be protected, and select the **IsEncrypted:Index** check box. The system applies only integrity protection to added files by default. If encryption must be applied to, select the **IsEncrypted:Index** check box.

Option	Description
Adding a single file	Click Add Files to select the file to be protected specified in 5.
Adding multiple files	Click Open Path and select the path specified in 5. The tool automatically adds all the files in the indicated directory. NOTE The tool automatically adds the .csp file in the folder but will not apply integrity protection to it.



NOTICE

describes the files for which integrity and encryption protection must be applied. You must follow these rules; otherwise, deployments or upgrades using a MicroSD card will fail. • Integrity protection and encryption must not be applied to software and patch packages.

- Integrity protection must be applied to the **Prefg.ini** file. However, encryption must not be applied to the file.
- Integrity protection must be applied to other files. Encryption can be applied to them based on customers' security requirements.

7. Click **Execute Protect**

- The system applies the selected encryption protection to files, and applies integrity protection to all files in the file list area based on the specified integrity algorithm.
 - Sizes of files remain the same after encryption is completed because the system uses a symmetrical encryption algorithm.
8. Click **OK**, when a dialog box is displayed indicating the completion of integrity and encryption protection.

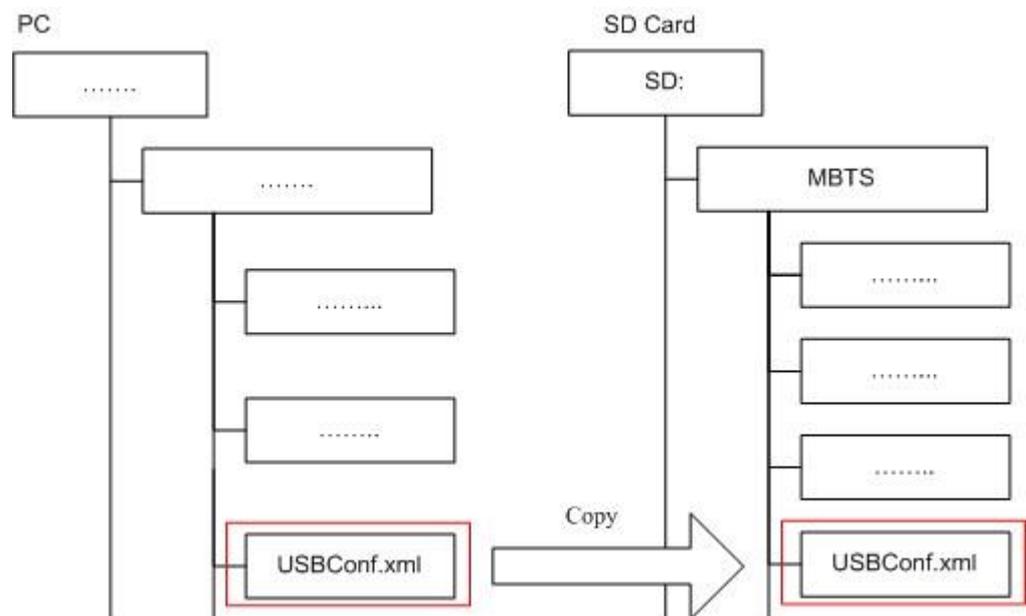
Integrity protection codes of files are displayed in the MAC address list. The **USBConf.xml** file generated by the tool is saved in the path specified in 4.1.

**NOTE**

Ensure that the path for configuration files in the **USBConf.xml** file is consistent with the save path in the MicroSD card.

9. Delete existing files on the MicroSD card. Copy the folder containing the files that have been protected by using the tool from the computer to the MicroSD card. All the files in the folder must be copied. See [Figure 4-57](#)

Figure 4-57 Copying the **USBConf.xml** file

**NOTICE**

Do not change the directory structure in the folder when files are being copied. Otherwise, deployments or upgrades using a MicroSD card will fail.

**NOTE**

If software needs to be upgraded but no software package is contained in the MicroSD card, manually copy the software package to the fixed directory. For details about the save path for the software package in the MicroSD card.

10. (Optional) If the **USBConf.xml** file has not been saved in the **NodeB eNodeB**, or **MBTS** folder when you perform step 4.1 you **must** copy the **USBConf.xml** file to the fixed path in the MicroSD card, in accordance with the following table. Otherwise, the files in the MicroSD card cannot be downloaded.

Option	Description
eAN9810A	MicroSD card:\MBTS\USBConf.xml

?2.Applying Integrity and Encryption Protection to Files in Multiple SD Cards

This section describes how to apply integrity and encryption protection to files in multiple SD cards.

Prerequisites

- You have obtained the USB making and protection tool (tool for preparing and protecting an SD card) on the PC where the U2000 is installed. The save path of this tool on the PC is U2000 installation directory\client\client\USBProtector.
- You have scanned viruses for the SD cards by using the anti-virus tool before applying protection to files. This can prevent files on the PC from infections.
- Files in the SD cards are ready for integrity and encryption protection.

Context

- Integrity protection
 - The digital signatures in the version, and patch software packages are verified for integrity verification. Do not use the USB making and protection tool to apply integrity protection to them. Otherwise, deployments or upgrades using an SD card will fail.
 - You must apply integrity protection to all files except for the version and patch software packages.
- Encryption protection
 - Do not apply encryption to the version and patch software packages and the Precfg.ini file. Otherwise, deployments or upgrades using an SD card will fail. – You must apply encryption to the VERCFG.XML file.
- After you use the USB making and protection tool to apply integrity and encryption protection to files in the SD card, the USBConf.xml file is generated and the file name cannot be changed. When loading files in the SD card, the base station performs integrity check and decryption by using data in the USBConf.xml file.

Procedure

1. Prepare the directory for files to be protected.



NOTE

The USB making and protection tool directly applies integrity and encryption protection to files but it cannot decrypt files. Back up the files before applying integrity and encryption protection to those files.

2. Choose **StartProgramsiManager U2000 MBB ClientUSB Making and Protection Tool** to start the tool.
3. Choose **USB ProtectionUSB Protection Settings**. The USB Protection Settings dialog box is displayed. See the following [Figure 4-58](#).

Figure 4-58 USB Protection Settings dialog box

- Encryption cannot be applied to version and patch software packages and the Precfg.ini file.
- Whether to apply encryption to other files depends on customers' security requirements and whether the target version of a base station to be upgraded supports SD card-based encryption.

8. Click **Execute Protect**.

- The system applies encryption protection to files based on the specified encryption algorithm and applies integrity protection to all files in the current file list area based on the specified integrity algorithm.
- Sizes of files remain the same before and after encryption because the system uses a symmetrical encryption algorithm.

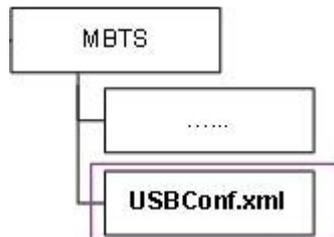
9. Click **OK** when a dialog box is displayed indicating that the integrity and encryption protection is completed.



NOTE

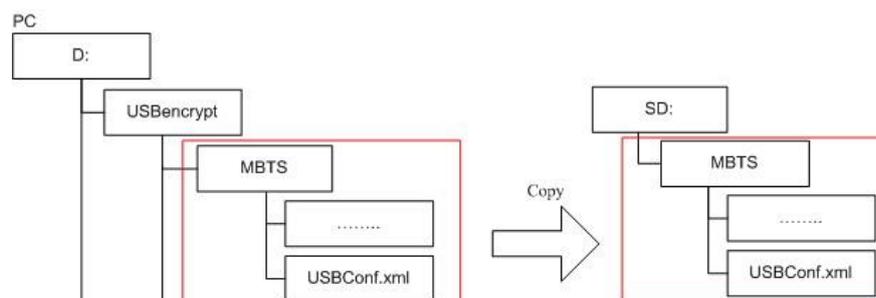
- Do not delete or move the USBConf.xml file which has been automatically saved to a fixed path. Otherwise, the base station cannot download files from the SD cards.
- Ensure that the path of data configuration files in the USBConf.xml file is consistent with the save path in the SD cards.

Figure 4-60 Save path for the USBConf.xml file



10. Delete source files on the SD cards. Copy the folder on the PC containing the files that have been protected by using the tool to the SD cards. Note that all the files in this folder must be copied.

Figure 4-61 Copying files from the PC to the SD cards



**NOTICE**

Do not change the directory structure in the folder when files are being copied. Otherwise, deployments or upgrades using an SD card will fail.

**NOTE**

If the base station software needs to be upgraded but no software package is contained in the SD cards, manually copy the software package to the fixed directory.

Saving Alarms/Events

This section describes how to save alarms and events to acquire system operating status in real time.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Procedure

- Step 1** On the menu bar of the LMT, click the **Browse Alarm/Event** or **Query Alarm/Event Log** tab on the **Alarm/Event** tab page.
- Step 2** Right-click an alarm/event record to be saved and choose **Save Selected** to save the record. Choose **Save All** to save all the alarm/event records.
- Step 3** You can also save all the records by clicking the **Save All** button on the lower part of the **Alarm/Event** tab page.

**NOTE**

You can click one record and drag the mouse to select multiple alarms/events. ---**End**

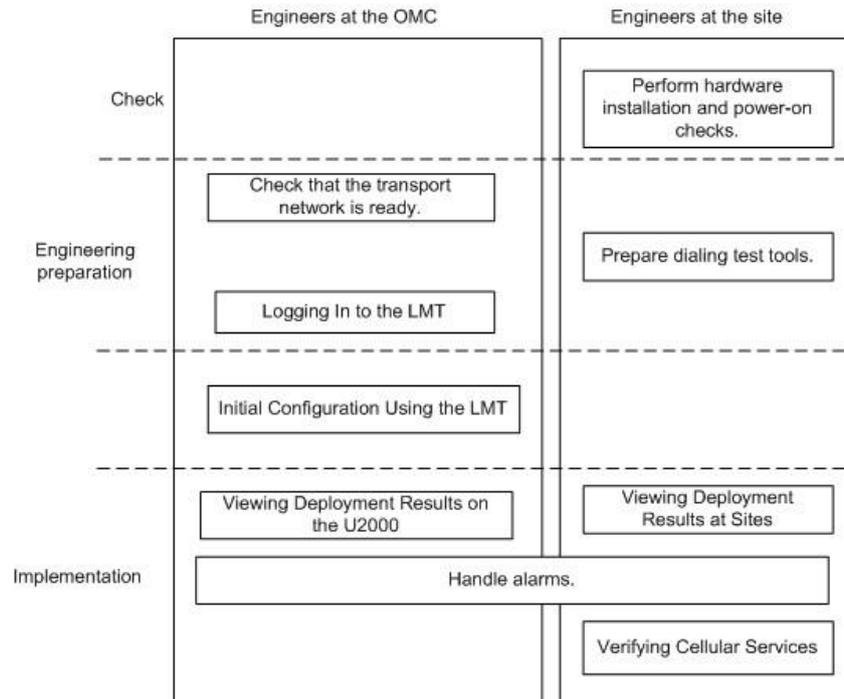
4.2.3 MML Site Deployment

MML Site Deployment Process

This section describes the eAN9810A site deployment process.

Site deployment requires cooperation of engineers at sites and the OMC, who must master the deployment process shown in [Figure 4-62](#) in advance of the deployment.

Figure 4-62 Site deployment process



Hardware Installation and Power-on Check

This section describes how to perform hardware installation and power-on checks at the site after eAN9810A hardware is installed. If a MicroSD card is used for local deployment, engineers at the site need to insert the MicroSD card to the eAN9810A to load software and the configuration file.

Prerequisites

- The SD card has been prepared.
- The eAN9810A is working correctly.

Context

The port for housing a MicroSD card is enabled by default on the eAN9810A. Insert a MicroSD card into the powered on eAN9810A and then restart the eAN9810A to read data from the MicroSD card. Alternatively, insert the MicroSD card into the powered off eAN9810A and then power on the eAN9810A.

Table 4-16 Precautions for using an SD card

Deployment Mode	Precautions
Site deployment	The eAN9810A automatically detects the MicroSD card and installs the driver for the card after a MicroSD card is inserted into the eAN9810A. Then, the eAN9810A automatically reads the files in the fixed directories on the MicroSD card and checks the file names and formats. The eAN9810A compares the software version and
Deployment Mode	Precautions

	<p>configuration data on the MicroSD card with those on the eAN9810A. If consistent, it does not load the software or configuration file on the MicroSD card. If inconsistent, it loads the software and configuration file on the MicroSD card.</p> <p>Note the following points about loading:</p> <ul style="list-style-type: none"> • If the MicroSD card only stores software, the eAN9810A loads only the software. • If the MicroSD card only stores configuration files, the eAN9810A loads only the target configuration file. • The eAN9810A does not load the software or configuration file on the MicroSD card and its RUN indicator indicates a loading failure (steady on) in any of the following conditions: <ul style="list-style-type: none"> – The MicroSD card is not intended for it. – The expected directories or files are not present. – The directories or file formats are not correct. – Data in the MicroSD card is not encrypted or integrity protected.
--	---

Procedure

- U2000-based commissioning
 - a. Ensure that the eAN9810A hardware has been installed and has passed the installation check. For details about how to perform the hardware installation check, see section "[Checking Hardware Installation](#)" in *eAN9810A Installation Guide*.
 - b. Perform the power-on check. For details about how to perform the power-on check, see section "[Power-On Check on the eAN9810A](#)" in *eAN9810A Installation Guide*.
- SD card+U2000-based commissioning
 - a. Ensure that the eAN9810A hardware has been installed and has passed the installation check. For details about how to perform the hardware installation check, see section "[Checking Hardware Installation](#)" in *eAN9810A Installation Guide*.
 - b. Determine whether to restart the eAN9810A after a MicroSD card is inserted based on the power-on status of the eAN9810A.

If...	Then...
The eAN9810A has been powered on.	Insert the MicroSD card into the related port on the eAN9810A. Remove and reinsert the Ethernet cable for power supply, and then go to c .
The eAN9810A has not been powered on.	Insert the MicroSD card into the related port on the eAN9810A. Connect the eAN9810A to a PSE over an Ethernet cable. Power on the eAN9810A, and then go to c .

- c. Perform the power-on check. For details about how to perform the power-on check, see section "[Power-On Check on the eAN9810A](#)" in *eAN9810A* Hardware Installation Guide.

Check the RUN indicator for hardware faults on the MicroSD card. The RUN indicator blinks orange (on for 0.125s and off for 0.125s), if the eAN9810A fails to read files on the MicroSD card or fails to be deployed. The MicroSD card may be faulty and cannot be detected, if the RUN indicator status does not change.

- d. In configuration-free deployment scenarios, wait until the eAN9810A automatically downloads the preconfiguration file and reads the preconfigured information. In site deployment scenarios, wait until the eAN9810A completes the following procedure: automatically loads and activates the software and data configuration files, and restarts itself to make them take effect.

Table 4-17 Mapping between the RUN indicator status and loading status

Loading Status	RUN Indicator Status
The loading succeeds	Slowly blinking (on for 1s and off for 1s) for more than 1 minute
Loading...	Blinking orange and white alternately (on for 0.125s and off for 0.125s)
The loading fails.	Blinking orange (on for 0.125s and off for 0.125s)



NOTE

- In MicroSD card deployment scenarios, the eAN9810A automatically activates the downloaded software and configuration file and then restarts for them to take effect. The activation and restart take about 30 minutes, during which the indicator status is negligible.
- During loading, do not remove the MicroSD card.

- e. Remove the MicroSD card only after you have confirmed that the loading succeeds.

Follow-up Procedure

If the software version is incorrect after the loading process is completed, perform the following operations:

1. Insert a MicroSD card storing the correct software version to the eAN9810A.
2. Remove the MicroSD card after the eAN9810A loads the software package and successfully completes the upgrade.

Checking Hardware Installation

eAN9810A hardware installation checking includes hardware and cable installation checking.

[Table 4-18](#) lists the hardware installation checking items.

Table 4-18 Hardware installation checking list

No.	Item
-----	------

1	The installation position of each device strictly complies with the
No.	Item
	engineering design and meets clearance requirements. Sufficient space is reserved for equipment maintenance.
2	The eAN9810A is securely installed.
3	The cover plate is securely installed on the eAN9810A cabling cavity.
4	Waterproof blocks are securely installed in vacant cable troughs of the eAN9810A cabling cavity, and the cover plate of the cabling cavity is securely installed. In addition, vacant RF ports are covered with dustproof caps and the caps are tightened.
5	Labels are correct, legible, and complete at both ends of each cable, feeder, and jumper.

Table 4-19 lists the check items of the signal cable connection.

Table 4-19 Checklist for the signal cable connection

No.	Item
1	The connectors of the signal cables must securely connected.
2	The connectors of the signal cables are intact.
3	The signal cables are intact.
4	The cable ties are evenly spaced. The signal cables are bound neatly with cable ties to proper tightness, and arranged at even intervals in the same direction.
5	The extra length of the cable ties is cut and removed. The cut surfaces of the indoor cables are smooth and have no sharp edges.
6	The cable layout facilitates maintenance and expansion.
7	Correct and clear labels are attached to both ends of the signal cables.

Table 4-20 lists the checking items for other cable connections.

Table 4-20 Checklist for other cable connections

No.	Item
1	The connectors of the other cables must securely connected.

2	Labels on the cables are legible and bound based on the engineering requirements. The cables must be bound tightly and neatly. The sheaths of the cables must not be damaged.
3	Positions for routing the cables must meet requirements of the
No.	Item
	engineering design.
4	There are no connectors or joints on each PGND cable. None of PGND cables can be short-circuited or reversely connected. In addition, these cables are not damaged or broken.
5	PGND cables are separately bound from other cables.
6	The protection grounding of the eAN9810A and the surge protection grounding of the building share one group of ground conductors.

Power-On Check on the eAN9810A

This section describes the procedure for performing a power-on check on the eAN9810A.

eAN9810A Power-On Check Procedure

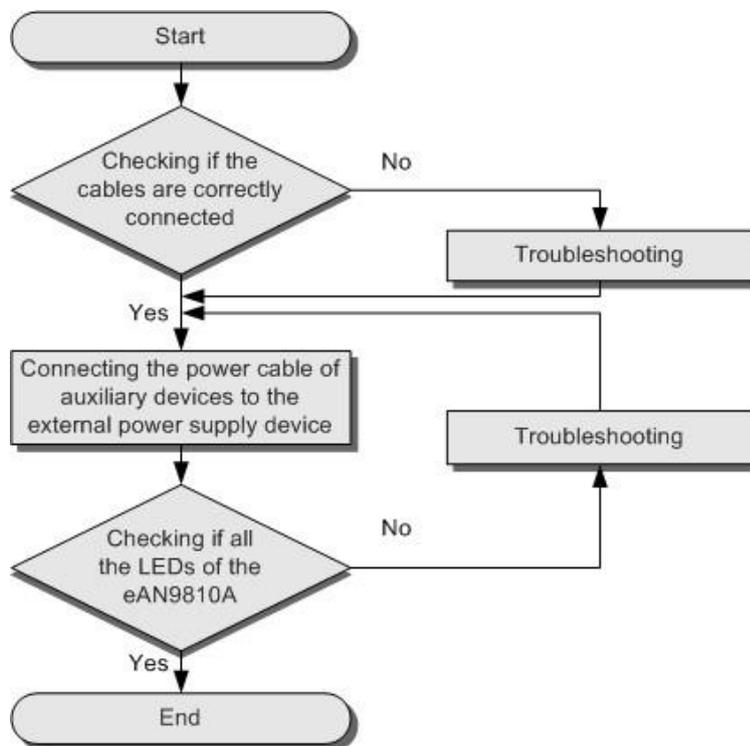


NOTICE

After you unpack a eAN9810A, you must power on it within 24 hours. If you power off the eAN9810A for maintenance, you must restore power to it within 24 hours.

[Figure 4-63](#) shows the eAN9810A power-on check procedure.

Figure 4-63 Power-on check procedure



Checking the Indicator Status

Table 4-21 Checking the indicator status

If...		then...
RUN	Steady white	The eAN9810A is running correctly.
ETH	Blinking white	

NOTE

- During the eAN9810A startup, there is no need to observe the indicator status.
- During a start, the eAN9810A reads and writes the flash and therefore the indicators blinking quickly may blink irregularly for 1-2 seconds, which does not affect services.

Deployment Preparation

This section describes the data and files to be prepared for eAN9810A deployment.

Checking a Transport Network

This section describes how to check a transport network. The transport network affects the Automatic OMCH Establishment feature. Therefore, before commissioning an

eAN9810A, O&M engineers must check whether the OMCH networking and the network equipment meet the configuration requirements of the corresponding scenario.

Check Methods

O&M engineers can check whether the transport network meets the configuration requirements of the Automatic OMCH Establishment feature by using either of the following methods:

Method 1: Confirm with the department in charge of the transport network whether the transport network meets the requirements.

Method 2:

- Check the network connectivity. If nodes in the transport network can be pinged, Ping the port corresponding to each node to check whether the transmission channel at each node is ready.
- Check whether the network equipment at each node is configured as required to ensure that an eAN9810A can automatically establish the OMCH.

Preparing Dialing Test Tools

Dialing tests are performed by using test terminals to check whether deployed eAN9810A can provide services properly. Prepare test terminals and ensure that the test subscriber identity module (USIM) cards have registered with the base station.

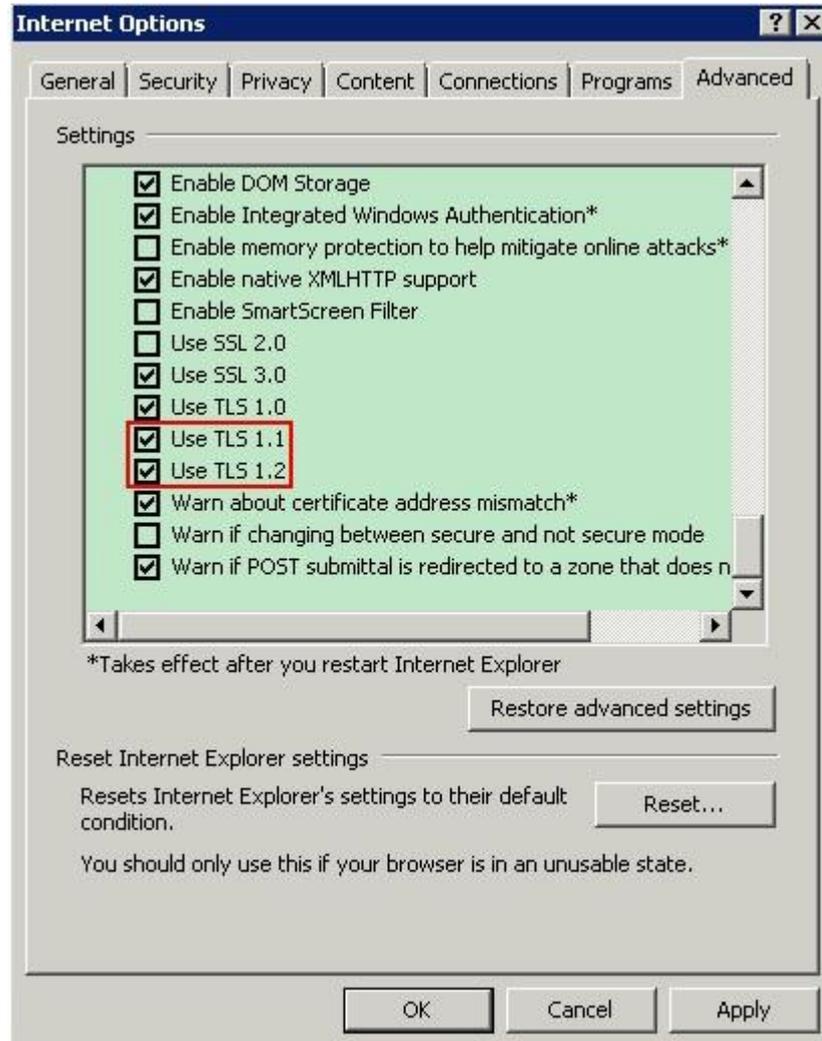
Logging In to the LMT

This section describes how to log in to the LMT.

Prerequisites

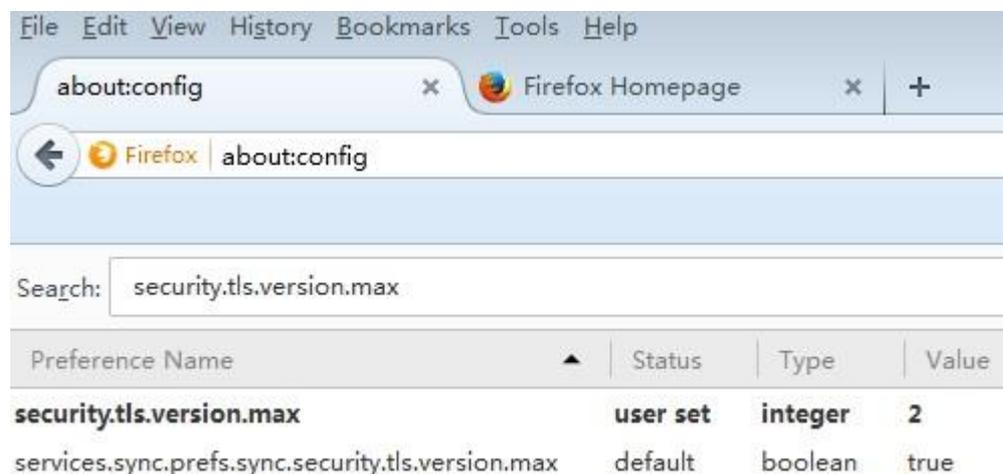
- The network connection between the LMT and eAN3810A server has been established.
- When the IE is used for LMT login, first set IE's Internet Options before logging, check the "TLS1.1" and "TLS1.2" in the "Advanced" , as shown in [Figure 4-64](#).

Figure 4-64 IE's Internet Options



- When the Firefox is used for LMT login, first set Firefox's encryption method before logging, enter "about:config" and return, then find the item "security.tls.version.max" and change its value to "2" or "3", as shown in [Figure 4-65](#).

Figure 4-65 Firefox encryption method



Context

- There is two types of LMT users: Local User and Domain User.
- A maximum of 15 local users can log in to the LMT at the same time.
- By default, the LMT is accessed using the HTTPS policy. If HTTP is entered in a web browser, the HTTP is automatically changed into HTTPS before logging in to the LMT.
- If the colors of the LMT main page cannot be displayed when the Internet Explorer is used, perform operations according to instructions in [LMT Colors Cannot Be Displayed](#).
- After the O&M channel between the NE and eSight server is established, you can log in to the NE using the eSight server. The network connection between the LMT and eAN3810A server has been established.



CAUTION

Do not change the system time or time zone of the LMT PC when the LMT is running. Otherwise, a critical fault may occur in the system. If the system time or time zone has to be changed, you must perform the operation after logging out of the LMT.



NOTICE

- If the pop-up blocker is enabled when the Firefox browser is used for LMT login, the LMT cannot be logged in. To avoid this problem, choose Settings. In the displayed Options dialog box, clear the Block pop-up windows check box on the Content tab page.
 - The refresh function of the browser cannot be used on the LMT. If you use the refresh function in the LMT main page, the LMT main page is closed. If you use the refresh function on the monitoring page, a script error occurs.
 - When the Internet Explorer is used for LMT login, do not change the properties of the cache file folders. Otherwise, the Internet Explorer is automatically refreshed, resulting in an error in the LMT main page.
 - If you use Internet Explorer to log in to the LMT and choose StartRun to start File Transfer Protocol (FTP) services, the LMT main window is replaced with the login dialog box of the FTP server. To prevent this problem, set Internet Explorer as follows: In Internet Explorer, choose **Tools Internet Options**, and deselect Reuse windows for launching shortcuts under Browse on the Advanced tab page.
 - Before you use the web LMT to upgrade or roll back an eAN3810A, clear the browser's buffer and cookies.
 - If you press **ALT+←**, the LMT main window may experience an error. In this case, press **ALT + →** to restore the window settings. If the window settings cannot be restored, close the browser and log in to the web LMT again.
-

Procedure

Step 1 Connect the web LMT to the eAN3810A.

Step 2 In the address box of the browser, enter the IP address of the base station for local maintenance. The default maintenance IP address of the base station is 192.168.0.100.

**NOTE**

IP address of the PC machine and maintenance IP in the same network segment.

Step 3 Click **Go**. The **Local Maintenance Terminal** login window is displayed. [Figure 4-66](#)

Figure 4-66 Local Maintenance Terminal login window

Local Maintenance Terminal

**NOTE**

During the login, the system checks the compatibility view settings of the browser. To use the optimum LMT configurations, perform operations as prompted.

Step 4 Enter the user name and password. Set User type to Local.

**NOTE**

By default, the user name is **admin** and the password is **hwbs@com**. Both are case-sensitive. Change the password after you log in to the LMT.

Step 5 Click **Login**

**NOTE**

If the login fails, click **Reset**. Enter the user name and password again to log in. If the login fails again, check whether the connection between the LMT and eAN3810A is normal. ---**End**

Initial Configuration Using the LMT

This section describes the procedure for initial configuration of the eAN9810A using the LMT.

Prerequisites

- You have installed the hardware and connected the cables.
- You have logged in to the eAN9810A LMT. For detailed operations, see [Logging In to the LMT](#).

Context

[Table 4-22](#) lists the data that needs to be planned and collected before the initial configuration.

Table 4-22 Parameter preparation

Category	Related Command	Parameter Name	Value Sample	Description
eNodeB IP	ADD IPINTERFACE	IP Address	193.168.100.59	Used for connection to the PDN interface.
		IP Address	172.253.254.59	Used for connection to the U2000.
IP for the operation maintenance channels	MOD IPOAM	Peer IPv4 Address	10.145.35.15	Indicates the first SCTP peer IPv4 address for signaling channel setup. This IP address serves as the first peer IPv4 address for automatic SCTP link setup.
PLMN	ADD CNOOPERATOR	Mobile country code	460	Indicates the mobile country code (MCC) of the operator.
		Mobile network code	90	Indicates the mobile network code (MNC) of the operator.
Cell Parameters	ADD CELL	Frequency band	60	Indicates the frequency band in which the cell operates.
		Uplink bandwidth	CELL_BW_N100(20M)	
		Downlink bandwidth	CELL_BW_N100(20M)	

		Cell FDD TDD indication	CELL_TDD	Indicates the duplex mode of the cell. CELL_FDD indicates the FDD mode, and CELL_TDD indicates the TDD mode.
		SubframeAssign	SA0	

Category	Related Command	Parameter Name	Value Sample	Description
		ment		
		SpecialSubframePatterns	SSP7	
AM System Parameters	ADD AMSYSPARA	OP Value	111111111111 111111111111 111111	Indicates the OP value.
		UE Network Section Address	66.66.66.0	Indicates the UE PDN IP address.
		QOS Classification ID	6	Indicates the ID of a QoS class.
User Routing	ADD HRTBEHINDMS	UE Number	1	Specifies a user. NOTE The last three digits of the terminal's USIM card number must be the same as the UE number in the route that use the routing behind MS technology.
		Network Section Address	192.168.2.0	Indicates the network segment address of a route that uses the routing behind MS technology.

Procedure

Step 1 Add NE applications.

1. Run the **ADD APP** command to add an NE application. Set the **Application Type** parameter to **LTE(LTE)**.

Step 2 Add IP addresses and routes (used for connection to the PDN interface and the U2000).

1. Run the **ADD IPINTERFACE** command to add a device IP address used for connection to the PDN interface.
 - Set the **Interface Reference Type** parameter to **ETHERNET(Ethernet)**.
 - Set the **IP Address** parameter to the eNodeB IP address used for connection to the PDN interface.
2. Run the **ADD IPINTERFACE** command to add a device IP address used for connection to the U2000.
 - Set the **Interface Reference Type** parameter to **ETHERNET(Ethernet)**.
 - Set the **IP Address** parameter to the eNodeB IP address used for connection to the U2000.
3. Run the **ADD ROUTE** command to add a static IP route.

Step 3 Add local and peer information of the data-plane and control-plane of the PDN interface.

1. Run the **ADD LOGICALPORT** command to add a transmission logical port.
Before running the **ADD LOGICALPORT** command, run the **LST LOGICALPORT** command to query whether an **ADD LOGICALPORT** record already exists. If so, skip the previous substep.
2. Run the **ADD TRANSPORTDEVICE** command to add a transport device.
3. Run the **ADD SCTPHOST** command to add an SCTP host.
4. Run the **ADD USERPLANEHOST** command to add a user-plane host.
5. Run the **ADD SCTPPEER** command to add an SCTP peer.
6. Run the **ADD USERPLANEPEER** command to add a user-plane peer.

Step 4 Add mapping relations required by the S1 interface.

1. Run the **ADD LOGICALPORT2TRPDEV** command to add a logical port to a transport device.
2. Run the **ADD SCTPHOST2TRPDEV** command to add an SCTP host to a transport device.
3. Run the **ADD SCTPPEER2TRPDEV** command to add an SCTP peer to a transport device.
4. Run the **ADD UPHOST2TRPDEV** command to add a user-plane host to a transport device.
5. Run the **ADD UPPEER2TRPDEV** command to add a user-plane peer to a transport device.

Step 5 Add the ENODEB function

Run the **ADD ENODEBFUNCTION** command.

Step 6 Add configurations of operators and tracing areas (TAs).

1. Run the **ADD CNOOPERATOR** command to add an operator.
 - Set the **Mobile country code** parameter to **460**.
 - Set the **Mobile network code** parameter to **90**.
2. Run the **ADD CNOOPERATORTA** command to add TA configuration information.

Step 7 Add an S1 object.

1. Run the **ADD S1** command to add an S1 object.

Step 8 Add cell and set sectors and operators for the cells.

1. Run the **ADD CELL** command to add a cell.
 - Set the **Frequency band** parameter to **60**.
 - Set the **Uplink bandwidth** parameter to **CELL_BW_N100(20M)**.
 - Set the **Downlink bandwidth** parameter to **CELL_BW_N100(20M)**.
 - Set the **Cell FDD TDD indication** parameter to **CELL_TDD**.
 - Set the **UL-DL subframe configurations** parameter to **SA0**.
 - Set the **Special subframe configurations** parameter to **SSP7**.
2. Run the **ADD EUCELLSECTOREQM** command to add a set of sector equipment for a cell.
3. Run the **ADD CELLOP** command to add a cell operator.

Step 9 Activate cells.

1. Run the **ACT CELL** command to activate a cell.

Step 10 Connect to the U2000.

1. Run the **MOD IPOAM** command to modify the configuration of an IP maintenance channel.
Set the **Peer IPv4 Address** parameter to **10.145.35.15**.

Step 11 Configure AM system parameters.

1. Run the **ADD AMSYSPARA** command to configure AM system parameters.

Step 12 Configure routing behind MS.

1. Run the **ADD HRTBEHINDMS** command to add the information about routing behind MS.

Step 13 Set encryption and integrity protection algorithms.

1. Run the **MOD ENODEBCIPHERCAP** command to set **Primary cipher algorithm** to **Snow3G**.
2. Run the **MOD ENODEBINTEGRITYCAP** command to set **Primary integrity algorithm** to **Snow3G**.

Step 14 Modify UE control timer configurations.

Run the **MOD RRCONNSTATETIMER** command to set **Ue inactive timer** to **0**. ---End

Script

```
//Adding NE applications. If there is an LTE application, do not run the following
command.
ADD APP:applicationNo=2,applicationType=LTE;

//Adding IP addresses and routes (used for connection to the PDN interface and the
U2000)  ADD
IPINTERFACE:IPINTERFACENO=1,INTERFACEREFTYPE=ETHERNET,INTERFACEREF=0,IPADDRESS="19
3.168.100.59",IPMASK="255.255.255.0";
ADD
IPINTERFACE:IPINTERFACENO=2,INTERFACEREFTYPE=ETHERNET,INTERFACEREF=0,IPADDRESS="17
2.253.254.59",IPMASK="255.255.255.0";
```

```
ADD
ROUTE:ROUTENO=1,DESTIPADDR="10.145.35.0",DESTIPMASK="255.255.255.0",NEXTHOPIP="172
.253.254.254";

//Adding local and peer information of the data-plane and control-plane of the S1
interface
```

```

ADD LOGICALPORT: LOGICALPORTNO=0, INTERFACENO=0;
ADD TRANSPORTDEVICE:TRANSPORTDEVICENO=0;
ADD SCTPHOST:SCTPHOSTNO=0, IPINTERFACEREF=1, LOCALPORT=1024;
ADD USERPLANEHOST:USERPLANEHOSTNO=0, IPINTERFACEREF=1;
ADD SCTPPEER:SCTPPEERNO=0, PEERIPV4ADDR="200.100.109.100", PEERPORT=36412;
ADD USERPLANEPEER:USERPLANEPEERNO=0, PEERIPV4ADDR="200.100.109.109", REMOTEID="1";
//Adding mapping relations required by the PDN interface
ADD LOGICALPORT2TRPDEV:TRANSPORTDEVICENO=0, REFNO=0;
ADD SCTPHOST2TRPDEV:TRANSPORTDEVICENO=0, REFNO=0;
ADD SCTPPEER2TRPDEV:TRANSPORTDEVICENO=0, REFNO=0;
ADD UPHOST2TRPDEV:TRANSPORTDEVICENO=0, REFNO=0;
ADD UPPEER2TRPDEV:TRANSPORTDEVICENO=0, REFNO=0;

//Adding operators and TAs
ADD
CNOOPERATOR:CNOOPERATORID=0, CNOOPERATORNAME="CMCC", CNOOPERATORTYPE=CNOOPERATOR_PRIMARY,
MCC="460", MNC="90";
ADD CNOOPERATORTA:TRACKINGAREAID=0, CNOOPERATORID=0, TAC=1;
//Adding an S1 object
ADD
S1:S1ID=0, CNOOPERATORID=0, TRANSPORTDEVICECFGFLAG=CP_UP_CFG, CPTRANSPORTDEVICENO=0, UP
TRANSPORTDEVICENO=0;

//Adding sectors and cell antennas
ADD SECTOREQM:sectorEqmNo=0;
ADD TXSECTORANTENNA:TXSECTORANTENNANO=0, SECTOREQMNO=0, TXBRANCHREF=0;
ADD RXSECTORANTENNA:RXSECTORANTENNANO=0, SECTOREQMNO=0, RXBRANCHREF=0;
ADD TXSECTORANTENNA:TXSECTORANTENNANO=1, SECTOREQMNO=0, TXBRANCHREF=1;
ADD RXSECTORANTENNA:RXSECTORANTENNANO=1, SECTOREQMNO=0, RXBRANCHREF=1;
//Adding cells and set sectors and operators for the cells
ADD
CELL:LOCALCELLID=0, CELLNAME="Cell0", FREQBAND=60, ULEARFCNCFGIND=NOT_CFG, DLEARFCN=61
336, ULBANDWIDTH=CELL_BW_N100, DLBANDWIDTH=CELL_BW_N100, CELLID=0, PHYCELLID=115, FDDTD
DIND=CELL_TDD, ROOTSEQUENCEIDX=0, EMERGENCYAREAIDCFGIND=NOT_CFG, UEPOWERMAXCFGIND=NOT
_CFG, SubframeAssignment=SA0, SpecialSubframePatterns=SSP7;
ADD EUCELLSECTOREQM:LOCALCELLID=0, SECTOREQMID=0;
ADD CELLOP:LOCALCELLID=0, TRACKINGAREAID=0, MMECFGNUM=CELL_MME_CFG_NUM_0;

//Activating cells
ACT CELL:LOCALCELLID=0;

//Connecting to the eSight
MOD IPOAM:IPOAMNO=0, IPINTERFACEREF=2,
PEERIPV4ADDR="10.145.35.15", PEERIPV4MASK="255.255.255.0";
// AM System parameter configuration
ADD AMSYSPARA:OPVALUE="*****", UESECTIONADDR="66.66.66.0", QOSCLASSID=6;
//Configure the route after configuration
ADD
HRTBEHINDMS:HRTBEHINDID=0, UENUMBER=1, SECTIONADDR="192.168.2.0", SECTIONMASK="255.25
5.255.0", RTBEHINDMSDESC="1st route";

```

```
//Setting encryption and integrity protection algorithms
MOD ENODEBCIPHERCAP:PRIMARYCIPHERALGO=SNOW3G,SECONDCIPHERALGO=AES;
MOD ENODEBINTEGRITYCAP:PRIMARYINTEGRITYALGO=SNOW3G,SECONDINTEGRITYALGO=AES;
//Modifying UE control timer configurations
MOD RRCONNSTATETIMER:UEINACTIVETIMER=0;
```

Engineering Verification

This section describes how to complete the eAN9810A commissioning task, view deployment results, and verify services.

Viewing Deployment Results at Sites

This section describes how to view deployment results at sites based on indicator status.

Check the status of indicators on a newly deployed eAN9810A.

The following table shows the indicator status if an eAN9810A is deployed successfully and working properly. See [Table 4-23](#)

Table 4-23 Indicator status of a functional eAN3810A

Indicator	Status
RUN	Steady white
ETH	Slow blinking white (on for 1s and off for 1s)

If the indicator status of an eAN9810A differs from that in the preceding table, contact Huawei technical support engineers.

Checking Deployment Results Remotely

This section describes how to check deployment results remotely after the AirNode is powered on.

For details, see [Viewing Deployment Results on the U2000](#) and [Viewing Deployment Results on the eSight](#).

Handling Alarms

This section describes how to handle alarms generated by a newly deployed eAN9810A. All active alarms must be cleared during the commissioning.

For details, see [Handling Alarms\(U2000\)](#), [Handling Alarms \(eSight\)](#), and [Handling Alarms \(LMT\)](#).

Verifying Services

This section describes how to verify that UEs can attach to the eAN9810A and perform ping services.

Prerequisites

- Cells are activated.
- UEs have been defined on the base station.

Procedure

1. Check whether UEs can successfully attach to the eAN9810A and perform Ping services.

5 Operation and Maintenance

About This Chapter

5.1 General

5.1 General

5.1.1 Base station LMT User Guide

Overview

This document describes the functions and relevant components of the Base station Local Maintenance Terminal (LMT). It also provides instructions for performing basic operation and maintenance (OM) tasks of the Base station.

Product Version

The following table lists the product name and product version.

Product Name	Product Version
eAN3810A	V100R001C10
eAN9810A	V100R001C10

Intended Audience

This document is intended for:

- Network engineers
- System engineers
- Field engineers

Organization

Introduction to the LMT

This chapter describes the definitions, functions, system requirements, and main window of the local maintenance terminal (LMT).

Definitions of the LMT

This section provides definitions of the LMT, LMT PC.

LMT

The LMT is a logical concept. It refers to an operation and maintenance O&M terminal that has the Huawei Local Maintenance Terminal software installed and connects to the O&M network for an NE. You can operate and maintain NEs using the LMT.

LMT PC

The LMT PC is a hardware concept. It refers to a computer where the Huawei Local Maintenance Terminal software is installed.

Functions of the LMT

The LMT is mainly used to locally locate and fix faults.

Use the LMT to operate and maintain an eAN3810A in the following scenarios:

- Use the LMT to locally maintain the eAN3810A.
- When alarms are generated on the eAN3810A, use the LMT to locate and fix the faults.

The LMT provides a Graphical User Interface (GUI), which helps users operate and maintain the eAN3810A on the Web. The LMT implements the following local OM functions:

- Executes man-machine language (MML) commands
- Manages alarms and events
- Trace

System Requirements for LMT Installation

This section describes the system requirements for the local maintenance terminal (LMT) installation.

Hardware Configuration Requirements

[Table 5-1](#) lists the hardware configuration requirements for the LMT PC.

Table 5-1 Hardware configuration requirements

Item	Recommended Configuration	Minimum Configuration
CPU	2.8 GHz or higher	866 MHz

Operation and Maintenance

Item	Recommended Configuration	Minimum Configuration
RAM	1 GB	512 MB
Hard disk	80 GB	10 GB
Video card resolution	1024 x 768 or higher	1024 × 768
CD-ROM drive	-	-
Network interface card	10 Mbit/s or 100 Mbit/s	10 Mbit/s
Accessories	A keyboard, a mouse, a modem, an audio adapter, and a sound box	A keyboard and a mouse

Software Configuration Requirements

Table 5-2 describes the software configuration requirements for the LMT PC. Table 5-2 Software configuration requirements

Item	Recommended Configuration
Operating system	<ul style="list-style-type: none"> • Microsoft Windows 2003 with patch KB938397 • Microsoft Windows 2008 • Microsoft Windows Vista • Microsoft Windows 7 <p>NOTE The LMT supports web browsers and 32-bit or 64-bit operating systems.</p>
Default language of the operating system	English (United States)

Web browse	<ul style="list-style-type: none"> • Internet Explorer 9 (recommended) • Internet Explorer 10 (recommended) • Internet Explorer 11 (recommended) • Firefox 30.X or later (X indicates a digit, recommended) <p>NOTE</p> <ul style="list-style-type: none"> • Set the security level of the web browser to medium or low. Otherwise, the LMT menus cannot be viewed. • Only support IE9 and later version. • Only support Firefox 30.X and later version. • On the Advanced tab page in the Internet Options dialog box, select all check boxes under HTTP1.1 settings.
------------	---

Port Requirements

Use the Web to access the eAN3810A for OM. If a firewall exists between the eAN3810A and the LMT PC, ports 20, 21, and 80 must be enabled on the firewall. If Hypertext Transfer Protocol Secure (HTTPS) needs to be used, ports 20, 21, and 443 must be enabled on the firewall.



NOTE

- Ports 20 and 21 are used for the File Transfer Protocol (FTP). They need to be enabled when files are transferred using the FTP.
- Port 80 is used for the Hypertext Transfer Protocol (HTTP) by default. That is, the port is used for a web server by default.
- Port 443 is used for the HTTPS by default.
- HTTP cannot ensure secure access. In HTTP-based connection mode, the data exchanged between the LMT and the eAN3810A is vulnerable to interception. Therefore, the LMT can use only HTTPS to access the eAN3810A.

Communication Capability Requirements

The LMT PC must support TCP/IP protocols.

The minimum effective network bandwidth for the LMT is 512 kbit/s. The recommended bandwidth is 2 Mbit/s or higher.



NOTE

- The network bandwidth limits the web page opening speed. If the recommended effective bandwidth is provided, the LMT runs quickly. If the minimum effective bandwidth is provided, all the functions can be performed, but the LMT runs slowly.
- The effective bandwidth is the bandwidth occupied by the LMT. If multiple applications compete for this bandwidth, the LMT may run slowly even if a 2 Mbit/s bandwidth is provided.

Components of the LMT Main Window

This section describes the components of the local maintenance terminal (LMT) main window and the functions of each component.

Main Window

Figure 5-1 shows the LMT main window.

Figure 5-1 LMT main window

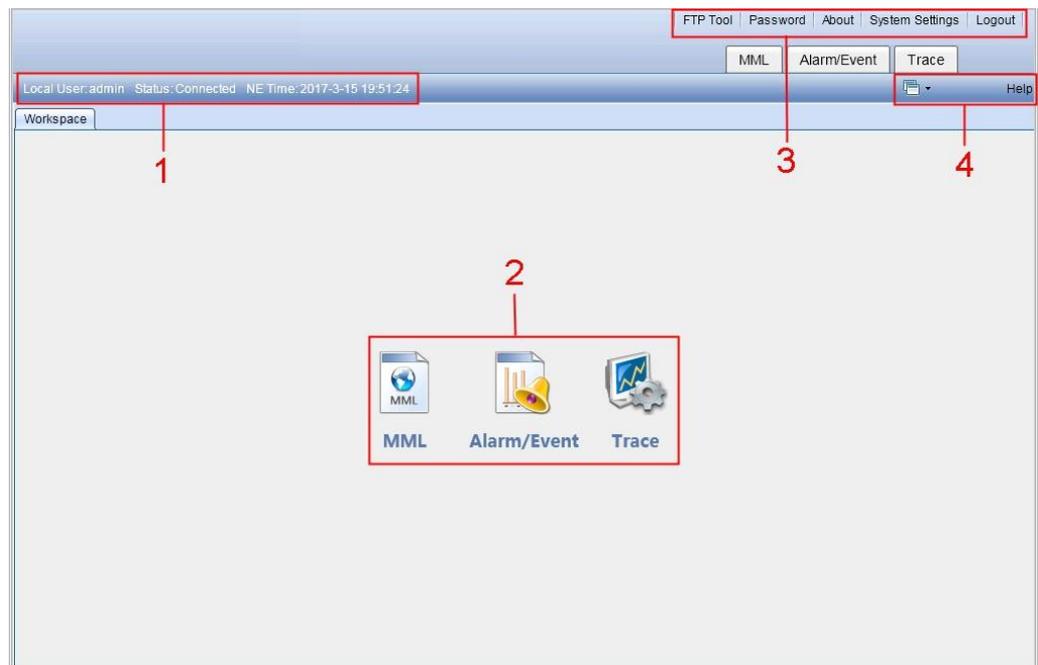


Table 5-3 describes the components of the LMT main window.

Table 5-3 Components of the LMT main window

No.	Component	Field	Description
1	Status bar	-	Displays the user type, user name, connection status, and NE time.
2	Functions	MML	Used to run man-machine language (MML) commands. For details, see Basic Concepts Related to MML Commands .
		Alarm/Event	Used to query active alarms or events, and alarm or event logs.
		Trace	Used to trace messages, see Managing Message Tracing .

		FTP Tool	Download the FTP tool.
--	--	----------	------------------------

No.	Component	Field	Description
			<ol style="list-style-type: none"> 1. Click FTP Tool. A File Download - Security Warning dialog box is displayed. 2. Click Save to save the FTP server software SFTPServer.exe to the computer where the LMT is installed. <p>NOTE The default user name is admin, and the default password is hwbs@com.</p>
		Password	<p>Used to change the password.</p> <ol style="list-style-type: none"> 1. Click Password. A Password dialog box is displayed. 2. Set Old Password, New Password, and Confirm Password. 3. Click OK. The password is changed.
		About	Displays the version information.

		System Settings	Settings Used to set the automatic logout time. 1. Click System Settings . A System Settings dialog box is displayed. 2. Set Auto logout if no operation within (s). 3. Click Submit . The system setting is complete.
No.	Component	Field	Description
		Logout	Used to log out of the LMT.
4	Others	Help	Used to open online help files.
		Layout	Used to indicate the layout management function. Four window layouts are available: cascade, tile horizontal, tile vertical, and dock window.

**NOTE**

- If the LMT detects a change in the base station application, you will be prompted with a message. If this happens, log in to the LMT again.
- **NE Time** displayed in the status bar may deviate from the actual NE time, but the deviation does not affect services.
- The Firefox browser does not support window layouts.

Online Help

The LMT provides two types of online help:

- LMT help
- MML help

[Table 5-4](#) describes the online help of the LMT.

Table 5-4 Online help of the LMT

Name	Description	Startup Operation
------	-------------	-------------------

LMT help	Provides the following information: <ul style="list-style-type: none"> • LMT user guide • Alarm details • Event details 	If you are using Internet Explorer: <ul style="list-style-type: none"> • Press F1 or click Help in the LMT main window to display LMT help topics. • Press F1 in a displayed dialog box to display the help topics about the dialog box. If you are using a Firefox browser, click Help in the LMT main window to display the help information.
MML help	Provides the following	Enter an MML command in
Name	Description	Startup Operation
	information about an MML command: <ul style="list-style-type: none"> • Function • Notes • Parameter ID • Example • Output of a query command 	the Command Input text box. Press Enter or click Assist , and then click the Help tab. The help information about the command is displayed on the tab page.

Getting Started with the LMT

This section describes how to log in to and exit the LMT.



NOTE

A minimum of 1 GB free space is required to ensure that the LMT runs correctly.

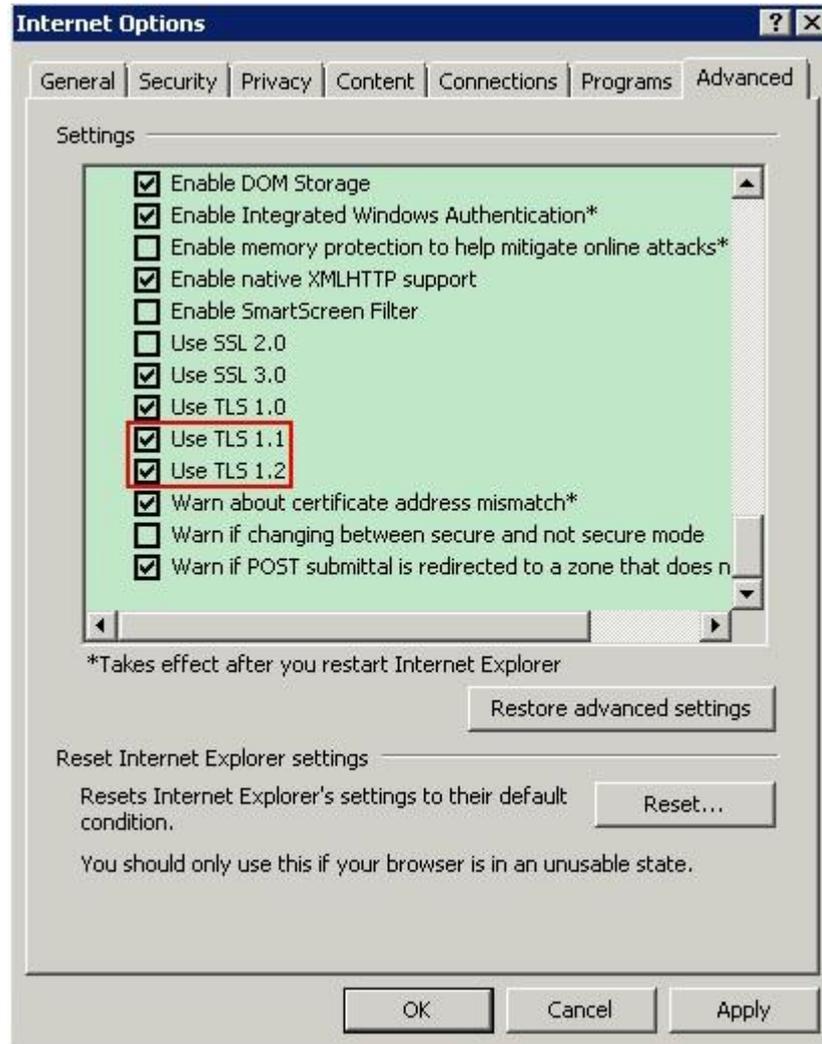
Logging In to the LMT

This section describes how to log in to the LMT.

Prerequisites

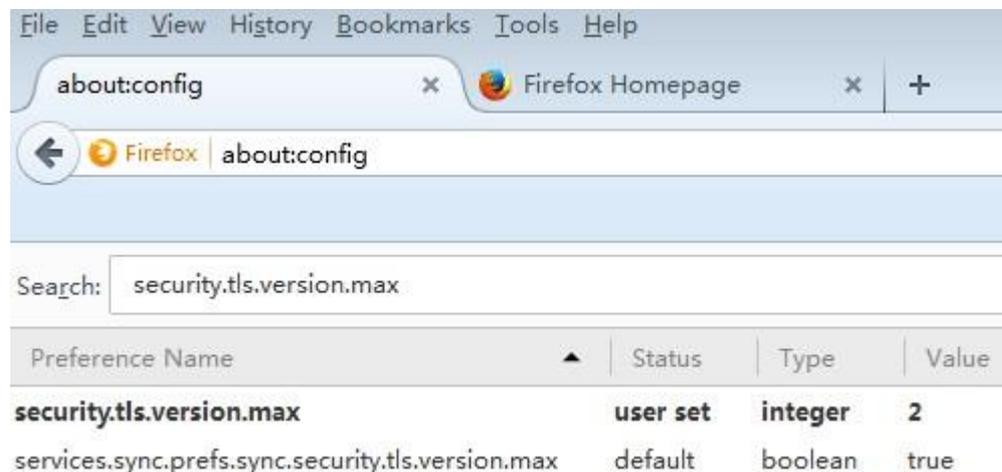
- The network connection between the LMT and eAN3810A server has been established.
- When the IE is used for LMT login, first set IE's Internet Options before logging, check the "TLS1.1" and "TLS1.2" in the "Advanced" , as shown in [Figure 5-2](#).

Figure 5-2 IE's Internet Options



- When the Firefox is used for LMT login, first set Firefox's encryption method before logging, enter "about:config" and return, then find the item "security.tls.version.max" and change its value to "2" or "3", as shown in [Figure 5-3](#).

Figure 5-3 Firefox encryption method



Context

- There is two types of LMT users: Local User and Domain User.
- A maximum of 15 local users can log in to the LMT at the same time.
- By default, the LMT is accessed using the HTTPS policy. If HTTP is entered in a web browser, the HTTP is automatically changed into HTTPS before logging in to the LMT.
- If the colors of the LMT main page cannot be displayed when the Internet Explorer is used, perform operations according to instructions in [LMT Colors Cannot Be Displayed](#).
- After the O&M channel between the NE and eSight server is established, you can log in to the NE using the eSight server. The network connection between the LMT and eAN3810A server has been established.



CAUTION

Do not change the system time or time zone of the LMT PC when the LMT is running. Otherwise, a critical fault may occur in the system. If the system time or time zone has to be changed, you must perform the operation after logging out of the LMT.



NOTICE

- If the pop-up blocker is enabled when the Firefox browser is used for LMT login, the LMT cannot be logged in. To avoid this problem, choose Settings. In the displayed Options dialog box, clear the Block pop-up windows check box on the Content tab page.
 - The refresh function of the browser cannot be used on the LMT. If you use the refresh function in the LMT main page, the LMT main page is closed. If you use the refresh function on the monitoring page, a script error occurs.
 - When the Internet Explorer is used for LMT login, do not change the properties of the cache file folders. Otherwise, the Internet Explorer is automatically refreshed, resulting in an error in the LMT main page.
 - If you use Internet Explorer to log in to the LMT and choose StartRun to start File Transfer Protocol (FTP) services, the LMT main window is replaced with the login dialog box of the FTP server. To prevent this problem, set Internet Explorer as follows: In Internet Explorer, choose **Tools Internet Options**, and deselect Reuse windows for launching shortcuts under Browse on the Advanced tab page.
 - Before you use the web LMT to upgrade or roll back an eAN3810A, clear the browser's buffer and cookies.
 - If you press **ALT+←**, the LMT main window may experience an error. In this case, press **ALT + →** to restore the window settings. If the window settings cannot be restored, close the browser and log in to the web LMT again.
-

Procedure

Step 1 Connect the web LMT to the eAN3810A.

Step 2 In the address box of the browser, enter the IP address of the base station for local maintenance. The default maintenance IP address of the base station is 192.168.0.100.

**NOTE**

IP address of the PC machine and maintenance IP in the same network segment.

Step 3 Click **Go**. The **Local Maintenance Terminal** login window is displayed. [Figure 5-4](#)

Figure 5-4 Local Maintenance Terminal login window

Local Maintenance Terminal

**NOTE**

During the login, the system checks the compatibility view settings of the browser. To use the optimum LMT configurations, perform operations as prompted.

Step 4 Enter the user name and password. Set User type to Local.

**NOTE**

By default, the user name is **admin** and the password is **hwbs@com**. Both are case-sensitive. Change the password after you log in to the LMT.

Step 5 Click **Login**

**NOTE**

If the login fails, click **Reset**. Enter the user name and password again to log in. If the login fails again, check whether the connection between the LMT and eAN3810A is normal. **---End**

Logging Out of the LMT

This section describes how to log out of the LMT.

Procedure

Step 1 Click **Logout** on the upper right corner of the LMT main page. **The Confirm dialog box** is displayed.

Step 2 Click **Yes**. The LMT is disconnected from the current NE and the login window is displayed.

Step 3 Close the Internet Explorer browser to log out of the LMT. **----End**

Managing User Accounts

Managing user accounts involves managing the accounts and passwords of users.

Managing Accounts

Table 5-5 describes the concepts related to user accounts.

Table 5-5 Concepts related to user accounts

Name	Description
User type	LMT users are local users, which are managed by the LMT. The default user is admin .
User account	The LMT user account is a default system account with the user name being admin and the default password being hwbs@com.
Login password	<p>Login password involves the password policies, initial password, and password change permissions, which are described as follows:</p> <ul style="list-style-type: none"> • A user must enter the correct user name and password when logging in to the LMT. The user can operate the base station only after being verified. • The login password of admin user is set when the base station application software is installed.

Managing Login Passwords

Managing login passwords involves setting and viewing password policies and changing the passwords of accounts.

Table 5-6 describes the tasks involved in managing login passwords.

Table 5-6 Tasks involved in managing login passwords

Task	Description
------	-------------

Setting password policies	Function	<p>Password policies define how to set login passwords.</p> <p>NOTE</p> <ul style="list-style-type: none"> • Password policies define the minimum password length and complexity. If a password does not meet the required minimum password length or complexity, this password cannot take effect. • Password policies define the maximum number of times an incorrect password can be entered.
Task	Description	
		The default number of attempts is five. If this threshold is exceeded, the LMT will be locked and then unlocked five minutes later. You can specify the length of this duration in the password policies.
	Procedure	Run the MOD PASSWORDPOLICY command to set login password policies.
Viewing password policies	Function	Users can view password policies before setting correct login passwords.
	Procedure	Run the LST PASSWORDPOLICY command to view password policies.
Changing the password of a current user account	Function	The current user can change its own password after login. The new password takes effect upon the next login.
	Procedure	<ul style="list-style-type: none"> • Click Password on the upper right side of the toolbar in the LMT main window. A Password dialog box is displayed. • Fill in the Old Password, New Password, and Confirm Password text boxes, and click OK.

**NOTE**

Exercise caution when changing the password of the admin user. If you forget the password, contact Huawei technical support.

Running MML Commands

This section describes how to run man-machine language (MML) commands on the local maintenance terminal (LMT) to operate and maintain the eAN3810A.

Basic Concepts Related to MML Commands

This following describes MML command functions and formats, and types of operations performed using MML commands.

Functions of MML Commands

You can operate and maintain the entire NE using MML commands. The MML commands enable you to perform the following operations:

- Equipment Management
- System Management
- Transmission Management
- eNodeB Function Object Management
- Global Object Management
- SRS Adaptive Configuration
- Cell Management
- ECO Interface Management
- SO Interface Management
- S1 And X2 Interface Management
- Neighboring Cell Management
- RAN Sharing Management
- Inside_AN Management

Formats of MML Commands

The format of an MML command can be "Command Word: Parameter Name=Value;".

The command word is mandatory, whereas the parameter name and value are optional.

- MML command with a command word and parameters: **ADD CELLRESELUTRAN: LocalCellId=0, TReselUtran=4;**
- MML command with only a command word: **DSP VER::;**

**NOTE**

The value of a string or password parameter must not contain +++ (start characters of an MML command output), --END (end characters of an MML command output), or the following characters:

<>! ? \ / ; , = + % * " ' |

Types of Operations Performed Using MML Commands

The MML command word format is denoted as Action + Object. [Table 5-7](#) describes the most commonly used MML commands.

Table 5-7 Most commonly used MML commands

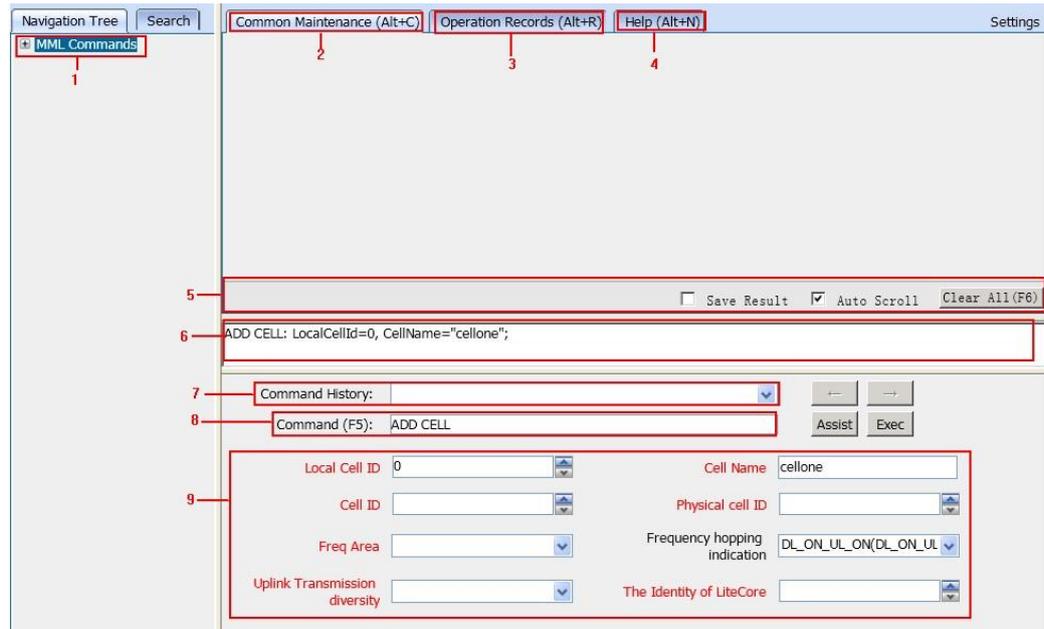
Action	Meaning
ACT	Activate
ADD	Add
BKP	Back up
DLD	Download
DSP	Display (used to query dynamic information)
Action	Meaning
LST	List (used to query static information)
MOD	Modify
RMV	Remove
RST	Reset
SET	Set
STP	Stop or close
STR	Start or open
ULD	Upload

Components of the MML Command Window

This section describes the components of the MML command window.

In the LMT main window, click the MML tab. [Figure 5-5](#) shows the MML command window.

Figure 5-5 MML command window

**NOTE**

For details about MML commands and their related parameters, see the MML command help.

Table 5-8 describes the components of the MML command window.

Table 5-8 Components of the MML command window

No.	Field	Description
1	MML navigation tree	You can choose a command group from the navigation tree.
2	Common Maintenance tab	Displays the output of an MML command.
3	Operation Records tab	Displays information about all the commands that have been executed by the user.
4	Help tab	Displays the help topics for an MML command.
5	Command output handling options	You can click Auto Scroll, and Clear All.
6	Pane for manual input of an MML command	Displays the manually entered command and parameter values.
7	Command History text box	Records all the commands and parameters a user enters during one session.
8	Command text box	Displays all the MML commands of the system. You can select an MML command from the drop-down list or enter the command directly.

9	Area for setting parameters of an MML command	Displays all parameters that can be set in an MML command entered in the Command text box. The parameters in red are mandatory and the parameters in black are optional, as shown in Figure 5-5 .
---	---	---

Running a Single MML Command

You can run man-machine language (MML) commands one at a time to perform routine operation and maintenance.

Prerequisites

You have logged in to the web local maintenance terminal (LMT) by using an account with the required operation rights.

Context

You can use one of the following four methods to run a single MML command:

- Enter an MML command in the **Command** text box.
- Select an MML command from the **Command History** drop-down list box.
- Choose an MML command in the **MML Commands** navigation tree.
- To manually input an MML command, enter or copy it into the pane for manual input of commands.

Procedure

- Enter an MML command in the **Command** text box.
 - a. Enter an MML command in the **Command** text box. When typing an MML command, you can select the command from the drop-down list.
 - b. Press **Enter** or click **Assist**. The parameters related to the command are displayed in the area for setting the parameters of the command.
 - c. Set the related parameters.
 - d. Press **F9** or click **Exec** to run the command. The MML command output is displayed on the **Common Maintenance** tab page.
- Select an MML command from the **Command History** drop-down list box.
 - a. Select a historical command from the Command History drop-down list box. Press **F7** or click  to select the previous command, and press **F8** or click  to select the next command. The parameters related to the command are displayed in the area for setting the parameters of an MML command.
 - b. Set the related parameters.
 - c. Press **F9** or click **Exec** to run the command. The MML command output is displayed on the **Common Maintenance** tab page.
- Choose an MML command in the **MML Commands** navigation tree.
 - a. Choose and double-click an **MML command** in the MML Commands navigation tree.
 - b. Set the related parameters.

- c. Press **F9** or click **Exec** to run the command. The MML command output is displayed on the **Common Maintenance** tab page.
- To manually input an MML command, enter or copy it into the pane for manual input of commands.
 - a. Manually enter or copy an MML command with complete parameter settings into the pane.
 - b. Press **F9** or click **Exec** to run the command. The MML command output is displayed on the **Common Maintenance** tab page.

**NOTE**

- The parameters in red are mandatory, and those in black are optional.
- To obtain information about a parameter, move the cursor to the input box of the parameter.
- When you run an MML command with a time parameter, the default value of the time parameter is the time of the eAN3810A required, you can change the value.
- If an MML command fails to be executed, the execution result is displayed in red on the **Common Maintenance** tab page.
- The recommended zoom ratio for the web page is 100%. ----**End**

Setting Parameters

You can set parameters in the MML Settings dialog box.

Prerequisites

You have logged in to the LMT using an account with the required operation rights.

Procedure

Step 1 At the upper right corner of the **MML** tab page, click **Settings**.

The **Settings** dialog box is displayed.

Step 2 Set parameters in the **System Settings** and **Settings** areas.

**NOTE**

The parameter settings in the **System Settings** and **Settings** are stored at the server end and client end, respectively. Therefore, after the base station restarts, the parameter settings in **System Settings** resumes to the default value but the parameter settings in **Settings** remain unchanged.

Step 3 Click **OK**. The settings are complete.

----**End**

Managing Alarms/Events

This section describes how to manage alarms or events on the local maintenance terminal (LMT) to analyze, locate, and clear faults.

Basic Concepts Related to Alarms/Events

Before managing eAN3810A alarms or events, you must understand the basic concepts related to eAN3810A alarms or events, including Alarm or Event Categories, Severity, Network Management Alarm Type and Alarm Flags.

Alarm or Event Categories

This section describes the basic concepts related to alarms and events.

Alarm

An alarm is generated if the hardware (for example, a VM) is faulty or a major function fails. An alarm has a higher severity than an event. Based on the status of the faults, alarms can be categorized into active alarms and clear alarms.

- If a fault is cleared, the status of the alarm changes to clear. This type of alarm is called a clear alarm.
- If a fault is not cleared, the status of the alarm remains active. This type of alarm is called an active alarm.



NOTE

- You can search a database for clear alarms.
- If an alarm is cleared after you switch from the alarm query page to another page, the information about this alarm is not displayed on the alarm query page when you switch back to the alarm query page. This is because the alarms are queried again when you switch back to the alarm query page and cleared alarms are not displayed on the page.

Event

An event notifies users of important information when the system is operating correctly. Users do not need to handle an event.

Severity

The alarm severity indicates the degree to which an alarm affects system performance. Based on the degree, all alarms can be categorized into four types: Critical, Major, Minor, and Warning.

[Table 5-9](#) describes alarm severities and provides handling suggestions for each. **Table 5-9** Alarm severities and handling suggestions

Severity	Definition	Handling Suggestion
Critical	Service-affecting condition. Critical alarms require immediate attention, and must be cleared immediately. For example, faulty devices need to be immediately repaired or unavailable resources need to be immediately restored.	These alarms must be cleared immediately. Otherwise, the system may fail.
Major	Degradation of service, but not a complete loss of service. Major alarms must be cleared during working hours. For example, faults that affect device performance or resource performance must be fixed during working hours, and their alarms must be cleared.	These alarms must be cleared in a timely manner. Otherwise, some important functions cannot be implemented.
Minor	Non-service-affecting condition. Minor alarms must be handled within a certain time period to avoid severer problems.	These alarms help maintenance personnel locate and clear potential faults before they become problems.
Warning	Potential service-affecting condition. Warning alarms must be handled based on the problems causing the alarms.	These alarms help maintenance personnel determine the operating status of the system.

Network Management Alarm Type

This section describes alarm types from the perspective of the network management.

Based on network management standards, alarms are categorized as follows:

- Power alarm: related to the power system.
- Environment alarm: related to environment of the equipment room.(such as, temperature, humidity and entrance guard)
- Signaling alarm: related to service signaling.

- Trunk alarm: related to the transport subsystem.
- Hardware alarm: related to VM.(such as, clock, CPU)
- Software alarm: related to software.
- Running alarm: related to the running of the system.
- Communication alarm: related to the communication system.(Communications between the host and OMU)
- Quality of service (QoS) alarm: related to QoS.
- Integrity violation alarm: a type of security alarm, which indicates that information may be modified, added, or removed without permission.
- Operation violation alarm: a type of security alarm, which indicates that services are unavailable or unreachable due to factors such as incorrect operations or faults.
- Physical violation alarm: a type of security alarm, which indicates that physical resources are unavailable due to possible attacks.
- Security violation alarm: a type of security alarm, which indicates that the security service or security mechanism detects that the system is experiencing attacks.
- Time domain violation alarm: a type of security alarm, which indicates that unexpected events have occurred.
- Processing error alarm: related to processing errors.

Alarm Flags

Four alarm flags are provided: flag indicating whether an alarm is to be reported to the alarm box, alarm masking flag, alarm modification flag, and alarm clearance flag.

Flag Indicating Whether an Alarm Is to Be Reported to the Alarm Box

This flag controls whether an alarm is to be reported to the alarm box. The flag status is as follows:

- Report
In this status, the local maintenance terminal (LMT) instructs the alarm box to generate audible and visual alarms.
- Not report
In this status, the web LMT does not instruct the alarm box to generate audible and visual alarms when alarms are reported or the alarm status is changed.



NOTE

This flag applies only to fault alarms, but not to event alarms.

An alarm can be reported to the alarm box only if this flag is set to Report for the alarm and the alarm severity is greater than or equal to the severity specified for alarm reporting to the alarm box.

Alarm Masking Flag

This flag controls whether an alarm is to be masked. The flag status is as follows:

- Mask
A VM does not report an alarm for which this flag is set to Mask to the network management system (NMS) or the alarm box. The server does not record the alarm log.
- Not mask

A VM reports an alarm for which this flag is set to Not mask to the NMS and the alarm box. The server records the alarm log.

Alarm Modification Flag

This flag indicates whether the alarm configuration has been modified, which facilitates the query and restoration of the configuration. The flag status is as follows:

- **Modified**
After an MML command is executed to modify the alarm configuration, this flag is set to Modified.
- **Not modified**
If the default alarm configuration is used or an MML command is executed to restore the default alarm configuration, this flag is set to Not modified.

Alarm Clearance Flag

This flag indicates whether a fault alarm has been cleared. The flag status is as follows:

- **Not cleared**
The fault alarm has not been cleared yet.
- **Cleared**
A clear alarm has been reported, indicating that the fault alarm has been cleared.

Handling Alarms/Events

Handling alarms or events involves the following actions: browsing active alarms or events, querying alarm or event logs, querying alarm or event configurations, manually clearing alarms or events, and querying alarm or event handling suggestions.

?1.Setting Alarm/Event Query Properties

Setting alarm or event query properties specifies the settings in an alarm or event display dialog box. You can customize a color for each alarm or event severity and set alarm or event display columns.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Procedure

- Step 1** In the LMT main window, click **Alarm/Event**. The **Alarm/Event** window is displayed.
- Step 2** Click **Settings** in the upper right corner of the **Alarm/Event** window. The **Settings** dialog box is displayed.
- Step 3** Set the properties of the Alarm/Event window as required.



NOTE

- To restore the default settings, click **Restore Defaults**.
- If **Enable** is selected from the **Tips** drop-down list, detailed information about an alarm or event is displayed when you move your cursor over the alarm or event record on the **Browse Alarm/Event** and **Query Alarm/Event** Log tab pages.

Step 4 Click **OK**.

----End

?2.Browsing Active Alarms/Events

Normal alarms and events reported to the local maintenance terminal (LMT) are displayed on the **Browse Alarm/Event** tab page in real time. You can view the detailed information about alarms and events to determine the real-time running status of the system.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights

Procedure

Step 1 In the LMT main window, click **Alarm/Event**. In the displayed **Alarm/Event** window, click the **Browse Alarm/Event** tab. The **Browse Alarm/Event** tab page contains **Normal Alarm** and **Event** tab pages.

Step 2 View the alarm or event information on the **Browse Alarm/Event** tab page.

Step 3 To view the detailed information about an alarm, double-click the alarm. The **Detailed Information** dialog box is displayed.

Step 4 In the **Detailed Information** dialog box, click **Solution** to query the description, parameters, attribute, impact on the system, possible causes, and procedure.



NOTE

You can drag the mouse to change the column sequence. After the sequence is changed, the sequence remains the same when you browse alarms and events again within the cookie validity period. ----End

?3.Querying Alarm/Event Logs

You can query the historical alarms or events from the alarm or event logs to determine the previous running status of the equipment.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Procedure

Step 1 In the LMT main window, click **Alarm/Event**. In the displayed **Alarm/Event** window, click the **Query Alarm/Event Log** tab.

- To query the alarms or events generated and cleared within the specified time, click the **Basic** tab. [Table 5-10](#) describes the fields on the **Basic** tab page.

Table 5-10 Description of the fields on the Basic tab page

Field	Description
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Max. number of results	Number of records in the query result. A maximum of 1000 records can be displayed, and the default number is 64.
------------------------	--

- To query a type of alarm or event based on the event category and ID, click the **Advanced** tab. Table 5-11 describes the fields on the Advanced tab page. **Table 5-11** Description of the fields on the **Advanced** tab page

Field	Description
ID	IDs of the alarms or events to be selected
Serial No	The order of reporting alarms / events for the query.

Step 2 Set the search criteria as required.

Step 3 Click **Query**. The query results are displayed in the **Result** area.

Step 4 To view the detailed information about an alarm or event, double-click the alarm or event. The **Detailed Information** dialog box is displayed.

Step 5 In the **Detailed Information** dialog box, click **Solution** to query the description, parameters, attribute, impact on the system, possible causes, and procedure.

Step 6 Click **Close** to exit the dialog box.



NOTE

You can drag the mouse to change the column sequence. After the sequence is changed, the sequence remains the same when you browse alarms and events again within the cookie validity period. ---**End**

4.4. Saving Alarms/Events

You can save all or part of the alarm or event records displayed on the **Browse Alarm/Event** or **Query Alarm/Event Log** tab page as files in .csv format for future reference.

Prerequisites

You have logged in to the local maintenance terminal (LMT).

Procedure

Step 1 On the menu bar of the LMT, click the **Browse Alarm/Event** or **Query Alarm/Event Log** tab on the **Alarm/Event** tab page.

Step 2 Right-click an alarm/event record to be saved and choose **Save Selected** to save the record. Choose **Save All** to save all the alarm/event records.

Step 3 You can also save all the records by clicking the **Save All** button on the lower part of the **Alarm/Event** tab page.



NOTE

You can click one record and drag the mouse to select multiple alarms/events.

Step 4 Enter the file name, specify the save path, and click **Save**.

----**End**

?5. Querying Alarm/Event Handling Suggestions

You can query detailed help information about an alarm or event based on alarm or event handling suggestions.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Context

The detailed help information about an alarm involves the following:

- Alarm description
- Alarm attribute
- Alarm parameters
- Impact on the system
- System actions
- Possible causes
- Handling procedure

Procedure

Step 1 Double-click an alarm on the **Browse Alarm/Event** or **Query Alarm or Event Log** tab page.

The **Detailed Information** dialog box is displayed.

Step 2 In the displayed **Detailed Information** dialog box, click **Solution**. The online help of the alarm or event is displayed.



NOTE

You can also right-click an alarm or event and choose **Solution** to display the online help of the alarm or event.

Step 3 View the definition, parameters, impact on the system, system actions, possible causes, and handling procedure.

Step 4 Click the close button in the upper right corner of the online help to exit it. ----**End**

?6. Manually Refreshing Alarms/Events

When browsing or querying alarms or events, you can manually refresh the alarms or events displayed on the **Browse Alarm/Event** or **Query Alarm/Event Log** tab page.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Procedure

Step 1 Click **Refresh** or choose Refresh from the shortcut menu on the **Browse Alarm/Event**, or **Query Alarm/Event Log** tab page.



NOTE

- The alarms or events are displayed on the **Browse Alarm/Event** tab page in real time. Therefore, after you refresh the tab page, the cleared alarms are not displayed.

Note: The alarms can be cleared automatically, but the events can not.

- The alarms or events are not displayed in real time on the **Query Alarm/Event Log** tab page. Therefore, after you manually refresh the tab page, the alarms or events are updated and displayed based on the original search criteria.

----End

?7.Manually Clearing Alarms/Events

If the cause of an alarm or event is identified or the alarm or event can be ignored, you can manually clear the alarm or event.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Context

Manual alarm clearance applies only to automatically detected and manually cleared (ADMC) alarms but not to automatically detected and automatically cleared (ADAC) alarms.

Procedure

Step 1 Select an alarm or event to be manually cleared on the **Browse Alarm/Event** or **Query Alarm/Event Log** tab page.

Step 2 Right-click the alarm or event and choose **Clear** from the shortcut menu or click **Clear** in the lower right corner.

The **Confirm** dialog box is displayed.

Step 3 Click **Yes**. The selected alarm or event is cleared, and its color automatically changes to the color of a cleared alarm or event.

----End

?8.Deleting Cleared Alarms/Events

When browsing active alarms or events or querying alarm or event logs, you can delete the cleared alarms or events displayed on the **Browse Alarm/Event** or **Query Alarm/Event Log** tab page.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Procedure

Step 1 On the **Browse Alarm/Event** or **Query Alarm/Event Log** tab page, click **Delete All**, **Delete All Cleared Alarms**, or **Delete Selected Cleared Alarms** to clear alarms as required.

Table 5-12 describes the functions of these menu items.

Table 5-12 Menu item functions

Item	Description
Delete All	Deletes all the alarms on the Browse Alarm/Event or Query Alarm/Event Log tab page.
Delete All Cleared Alarms	Deletes all the cleared alarms on the Query Alarm/Event Log tab page or on the Normal Alarm tab page of the Browse Alarm/Event tab page.
Delete Selected Cleared Alarms	Deletes all the selected cleared alarms on the Query Alarm/Event Log tab page.

---End

Managing Message Tracing

By tracing messages, you can verify data and identify faults. After a message tracing task is created, the traced messages can be browsed and saved.



NOTE

Message Tracing is primarily used to monitor the network operating status, commission networks, and diagnose network faults. Information obtained using this function contains sensitive data and subscriber-related data. Therefore, enable this function only for legitimate purposes within a specific scope in compliance with applicable laws and regulations. In addition, before obtaining and storing communication contents, ensure that measures are taken to securely protect these contents.

Basic Concepts Related to Message Tracing

This section describes message tracing tasks and the internal process of message tracing.

Message Tracing Tasks

Message tracing traces interfaces, signaling links, and UEs. It applies to routine equipment maintenance and fault location.

Only when the LMT is successfully connected to the NE, the tracing task can be performed on the LMT.

The message tracing time displayed on the LMT is the NE time but not the LMT time.

Internal Process of Message Tracing

The internal process of message tracing involves creating a tracing task on the LMT and reporting results to the LMT.

1. Creating a tracing task on the LMT.

- After you create a tracing task on the LMT, the LMT sends a binary command to the NE to create the task.
 - The NE forwards the command to a specified tracing management module.
 - After receiving the command, the tracing management module records the tracing parameters contained in the command in the filter table and sends messages to the service processing module.
 - The service processing module updates the local filter table based on the messages from the tracing management module.
2. Reporting results to the LMT
- After receiving messages from the tracing management module, the service processing module matches the messages against the parameters in the local filter table. Then, it reports the messages meeting the filter criteria to the LMT based on the task IDs contained in the messages.
 - The LMT analyzes the messages and displays tracing results.

General Operations Related to Message Tracing

The general message tracing operations involve browsing, querying, and saving traced messages and closing a tracing task.

?1.Browsing Traced Messages Online

After a message tracing task is created, traced messages can be displayed in real time. You can browse the traced messages online.

Prerequisites

- Message tracing tasks have been successfully created.
- Traced messages are reported.

Procedure

Step 1 Browse traced messages in the message browsing window in real time.



NOTE

- A maximum of 500 messages can be displayed in the message browsing window. Newly traced messages will replace original ones if the number of displayed messages in the message browsing window reaches 500.
- If the number of the same type of tracing messages that are logged under the same timestamp is greater than the number of UEs, check whether the RSRP (the value of the Ant0RsrpRef field in the resolution of the trace message) of a message is greater than those of other messages by over 20 dB. If so, the tracing result is normal.

Step 2 To view details of a message, double-click it.

The **Msg Detail Info** dialog box is displayed, showing details of the message. ---End

?2.Viewing the Interpretation of Traced Messages

This section describes how to view the details about a traced message in the message browsing window after a tracing task is created.

Prerequisites

- Message tracing tasks have been successfully created.
- Traced messages are reported.

Procedure

Step 1 In the message browsing window, select and double-click a traced message.

Step 2 The **Msg Detail Info** dialog box is displayed, showing the details about the message. ---**End**

3.3.Saving Traced Messages

This section describes how to automatically and manually save traced messages. Traced messages can be automatically saved in files to a local folder after the task is created. All or some of the traced messages can also be manually saved when a tracing task is in process. A maximum of 2000 messages can be saved.

Prerequisites

- The message tracing task has been successfully created.
- Traced messages are reported.

Context

- The default file name is *Base Station IP address_Trace type_Year-Month-Day-Hour-Minute-Second_key parameters*.
- Traced messages are saved as files in .tmf format.
- If you clear the **Save File** check box when creating a tracing task, the messages displayed in the message browsing window are not saved.

Procedure

- Automatically Saving Traced Messages
 - a. When a tracing task is created, **Save File** is selected by default. All messages displayed in the message browsing window are saved automatically.



NOTE

The LMT saves every 5000 messages as a file. The messages from the 5001st are saved in other files whose names are added with a sequence number. For example, the 5001st to 10000th IP messages are saved in a file named *local maintenance IP address_IPTrace_Year-Month-Day-Hour-Minute-Second_1* by default.

- Manually Saving Traced Messages
 - a. Right-click in the message browsing window and choose **Save All Messages**, or right-click one or more messages to be saved and choose **Save Selected Messages**.



NOTE

- If traced messages are manually saved, all messages are displayed in the window. Currently, a maximum of 2000 messages can be displayed in the window.
 - A maximum of 2000 messages can be displayed in the window, that is, only the latest 2000 messages are displayed. Therefore, it is good practice to automatically save traced messages if there are a great number of messages.
 - To save all traced messages, do not select any message.
 - To save some of the traced messages, select the messages first. Otherwise, **Save Selected Messages** is unavailable after you right-click the selected messages.
- b. Enter the file name, specify the save path, and click **Save**. ---**End**

Interface Trace

This section describes how to create interface traces task.

3.1.MAC Trace

This section describes how to trace Media Access Control (MAC) layer messages to locate the problems of MAC layer protocol channels. Traced messages can be automatically or manually saved. You can browse the traced messages online.

Prerequisite

You have logged in to the LMT using an account with the required operation rights.

Context

- The protocol type, source MAC address, destination MAC address, VLAN tag, VLAN ID, and VLAN priority are used for identifying messages at the MAC layer.
- You can choose one or more items from the protocol type, source MAC address, destination MAC address, VLAN tag, VLAN ID, and VLAN priority to specify the scope of messages to be traced. This helps you to trace messages more specific to a fault.
- Currently, packet capture at the MAC layer supports the **IP**, **ARP**, **RARP**, and **SYNCE** protocol types. For details about how to choose the protocol type, contact Huawei technical support.
- The following operations cannot be started simultaneously on one board: the Mac trace, the IP trace, and the remote loopback that is either applied to all IP addresses or a specified address.

Procedure

Step 1 In the LMT main window, click the **Trace** tab.

Step 2 In the navigation tree, choose **Trace > Common Services**. Double-click **MAC Trace**.

The **MAC Trace** dialog box is displayed.

Step 3 Set related parameters in the **MAC Trace** dialog box. For details about parameter descriptions, see [Table 5-13](#).

Table 5-13 Parameters for MAC message tracing

Parameter	Description
Frame Flow Upper Threshold	Specifies the maximum number of packets to be reported per second. NOTE The packets are binary code streams.
Direction	Specifies the direction of MAC messages to be traced. This parameter

Parameter	Description
	can be set to Trace Receiver , Trace Sender , or Trace Both .

Minimum Frame Length	Specifies the minimum frame length.
Maximum Frame Length	Specifies the maximum frame length.
Local MAC Address	Specifies the local MAC address.
Peer MAC Address	Specifies the peer MAC address.
VLAN Tag	Specifies the VLAN tag. This parameter can be set to Tagged , All , or UnTagged .
VLAN Priority	Specifies the VLAN priority. This parameter is valid when VLAN Tag is set to Tagged .
VLAN ID	Specifies the VLAN ID. This parameter is valid when VLAN Tag is set to Tagged .
Frame Type	Specifies the frame type of the MAC messages to be traced. This parameter can be set to IP , ARP , RARP , SYNCEETH , or ALL .
Extend Switch	Specifies whether the filtering switch is turned on. This parameter can be set to ON , or OFF . The default value is OFF . When the Frame Type is set to IP , this parameter can be set.
Local IP Address	<p>Specifies the local IP address.</p> <p>Set this parameter to the source IP address of packets when Direction is set to Trace Sender, to the destination IP address when Direction is set to Trace Receiver, and to the source or destination IP address when Direction is set to Trace Both.</p> <p>NOTE This parameter is valid when Extend Switch is set to ON.</p>
Peer IP Address	<p>Specifies the peer IP address.</p> <p>Set this parameter to the destination IP address of packets when Direction is set to Trace Sender, to the source IP address when Direction is set to Trace Receiver, and to the source or destination IP address when Direction is set to Trace Both.</p> <p>NOTE This parameter is valid when Extend Switch is set to ON.</p>
DSCP	<p>Specifies the DSCP.</p> <p>NOTE This parameter is valid when Extend Switch is set to ON.</p>
Protocol Type	<p>Indicates the protocol type. This parameter can be set to ALL, ICMP, TCP, UDP, or SCTP.</p> <p>NOTE This parameter is valid when Extend Switch is set to ON.</p>
Parameter	Description

Local Port	Specifies the local port. NOTE This parameter is valid when Protocol Type is set to TCP , or UDP .
Peer Port	Specifies the peer port. NOTE This parameter is valid when Protocol Type is set to TCP , or UDP .
Save File	If you select the Save File check box, tracing results will be automatically saved. Click  to customize the folder, file name, and file type.

Step 4 Click Submit.

A message browsing window is displayed. [Table 5-14](#) describes the message tracing results.

Table 5-14 Results of MAC message tracing

Parameter	Description
Message Index	Indicates the message index.
Trace Direction	Indicates the trace direction.
Peer MAC Address	Indicates the destination MAC address.
Local MAC Address	Indicates the source MAC address.
VLAN Priority	Indicates the VLAN priority.
VLAN ID	Indicates the VLAN ID.
Protocol Type	Indicates the protocol type of the traced message. The value can be ICMP , TCP , UDP , SCTP , or ALL .
Protocol Timestamp	Indicates the message timestamp. Unit: 10 μ s.
Content	For details, see G.8264 protocols.

----End

?2.IP Layer Protocol Trace

This section describes how to trace IP layer protocol messages to locate the problems on IP layer protocol channels. Traced messages can be automatically or manually saved. You can browse the traced messages online.

Prerequisite

You have logged in to the LMT using an account with the required operation rights.

Context

- The source IP address, destination IP address, protocol type, IP DSCP, source port number, and destination port number are used for identifying packets at the IP layer. The source IP address, destination IP address, and protocol type are mandatory.
- You can specify the protocol type or source/destination port No. to limit the scope of packet capture.
- Either the protocol type or port No. must be specified for locating transmission problems. Otherwise, the packet capture is less useful for problem location.
- The TCP packets for LMT connection cannot be traced in the IP layer protocol message tracing task.
- The following operations cannot be started simultaneously on one board: the Mac trace, the IP trace, and the remote loopback that is either applied to all IP addresses or a specified address.

Procedure

Step 1 In the LMT main window, click **Trace** to open the **Trace** dialog box.

Step 2 In the navigation tree, choose **Trace > Common Services**. Double-click **IP Layer Protocol Trace**.

The **IP Layer Protocol Trace** dialog box is displayed.

Step 3 Set related parameters in the **IP Layer Protocol Trace** dialog box. For details about parameter descriptions, see [Table 5-15](#).

Table 5-15 Parameters for IP layer protocol message tracing

Parameter	Description
Frame Flow Upper Threshold	Specifies the maximum number of packets to be reported per second.
Direction	Specifies the transmission direction of packets to be captured.
Receive Report Length Option	Specifies the length of received packets. This parameter can be set to Same , Less , or No Report .
Max.Incoming IP Packets	Specifies the maximum length of a received packet. This parameter is valid when Receive Report Length Option is set to Same , or Less .
Transmit Report Length Option	Specifies the length of transmitted packets. This parameter can be set to Same , Less , or No Report .
Max.Outgoing IP Packets	Specifies the maximum length of transmitted packets. This parameter is valid when Transmit Report Length Option is set to Same , or Less .
Report Type	Specifies the type of packets to be captured. This parameter can be set to Plaintext .

Parameter	Description
IP Address Type	Specifies the IP address type. This parameter can be set to IPV4 .
VRF	Specifies the ID of the virtual routing and forwarding (VRF) instance.
Local IP Address	Specifies the local IP address. Set this parameter to the source IP address of packets when Direction is set to Trace Sender , to the destination IP address when Direction is set to Trace Receiver , and to the source or destination IP address when Direction is set to Trace Both .
Peer IP Address	Specifies the peer IP address. Set this parameter to the destination IP address of packets when Direction is set to Trace Sender , to the source IP address when Direction is set to Trace Receiver , and to the source or destination IP address when Direction is set to Trace Both .
DSCP	Specifies the DSCP.
Protocol Type	Specifies the protocol type of the packets to be captured. This parameter can be set to ICMP , UDP , SCTP , TCP , or ALL .
Save File	If you select the Save File check box, tracing results will be automatically saved. Click  to customize the folder, file name, and file type.

Step 4 Click **Submit**.

A message browsing window is displayed. [Table 5-16](#) describes the message tracing results.

Table 5-16 Results of IP message tracing

Parameter	Description
Message Index	Indicates the internal serial number of a traced message.
Trace Direction	Indicates the direction of a traced message.
Header Length	Indicates the IP header length.
Version	Indicates the IP version. The value 4 represents IPv4.
Type Of Service	Indicates the service type of a traced message.
Total Length	Indicates the IP packet length.
Identification	Indicates the tag of a traced message. For details, see the IP protocol.
Fragment Offset Field	Indicates the fragment offset of a traced message. For details, see the IP protocol.

Time To Live	Indicates the life time of a traced message. For details, see the IP protocol.
Protocol	Indicates the protocol type of a traced message. The value can be
Parameter	Description
	UDP, SCTP, TCP, ICMP, AH, or ESP.
Checksum	Indicates the IP checksum of a traced message. For details, see the IP protocol.
Source Address	Indicates the source IP address of a traced message.
Dest Address	Indicates the destination IP address of a traced message.
Port Timestamp	Indicates the timestamp (unit: 10 microseconds) of a traced message.
Packet Sent(Received) Sequence Number	<ul style="list-style-type: none"> • A packet has the same sequence number when it is sent or received in plaintext and ciphertext format. When packets in both plaintext and ciphertext formats are traced, this parameter specifies the sequence in which the packets in both plaintext and ciphertext formats are sent or received. • When only packets in plaintext format are traced, this parameter specifies the sequence in which the packets in plaintext format are sent or received.
Packet Type	Indicates the type of the packet that carries a traced message.
Packet Process Result	Indicates the packet processing result.
Source Port	Indicates the source port No. This parameter is valid for UDP, TCP, and SCTP packets.
Destination Port	Indicates the destination port No. This parameter is valid for UDP, TCP, and SCTP packets.
UDP Length	Indicates the Length of a UDP packet. This parameter is valid for UDP packets.
UDP Checksum	Indicates the checksum of a UDP packet. This parameter is valid for UDP packets. For details, see the UDP protocol.
GTPU TEID	Indicates the TEID of a GTPU packet. This parameter is valid for GTPU packets. GTPU packets are a type of UDP packets.
SCTP Verification Flag	Indicates the verification flag for SCTP packets. This parameter is valid for SCTP packets. For details, see the SCTP protocol.
SCTP Checksum	Indicates the checksum of an SCTP packet. This parameter is valid for SCTP packets. For details, see the SCTP protocol.
Content	For details, see the IP protocol.

----End

3.3.CMPV2 Trace

This section describes how to trace Certificate Management Protocol Version 2 (CMPV2) messages. Traced messages can be automatically or manually saved. You can browse the traced messages online.

Prerequisite

You have logged in to the LMT using an account with the required operation rights.

Context

A maximum of one CMPV2 message tracing task can be created at one time.

Procedure

Step 1 In the LMT main window, click the **Trace** tab.

Step 2 In the navigation tree, choose **Trace > Common Services**. Double-click **CMPV2 Trace**.

The **CMPV2 Trace** dialog box is displayed.

Step 3 Set related parameters in the **CMPV2 Trace** dialog box. For details about parameter descriptions, see [Table 5-17](#).

Table 5-17 Parameters for CMPV2 message tracing

Parameter	Description
Direction	Specifies the direction of CMPV2 messages to be traced. This parameter can be set to Trace Receiver , Trace Sender , or Trace Both .
Save File	If you select the Save File check box, tracing results will be automatically saved. Click  to customize the folder, file name, and file type.

Step 4 Click **Submit**.

A message browsing window is displayed. [Table 5-18](#) describes the message tracing results.

Table 5-18 Results of CMPV2 message tracing

Parameter	Description
Trace Direction	Indicates the direction of traced messages.
Trace Message Type	Indicates the protocol type of traced messages.
Content	Contains only CMPV2 messages. For details, see RFC protocols and 3GPP TS 33.310.

----End

4.4. IKE Trace

This section describes how to trace Internet Key Exchange (IKE) messages to locate IKE negotiation issues or observe the IKE negotiation process. Traced messages can be automatically or manually saved. You can browse the traced messages online.

Prerequisite

You have logged in to the LMT using an account with the required operation rights.

Context

- A maximum of one IKE message tracing task can be created at one time.
- In an IKE setup or rekey process, IKE negotiation may fail due to algorithm inconsistency or certificate errors, packets cannot be encrypted because IKE tunnels are not successfully established. As a result, packets are lost.
- Information such as the message type, request, and response about IKEv1 or IKEv2 message headers can be analyzed.

Procedure

Step 1 In the LMT main window, click the **Trace** tab.

Step 2 In the navigation tree, choose **Trace > Common Services**. Double-click **IKE Trace**.

The **IKE Trace** dialog box is displayed.

Step 3 Set related parameters in the **IKE Trace** dialog box. For details about parameter descriptions, see [Table 5-19](#).

Table 5-19 Parameters for IKE message tracing

Parameter	Description
Direction	Specifies the direction of IKE messages to be traced.
Save File	If you select the Save File check box, tracing results will be automatically saved. Click  to customize the folder, file name, and file type.

Step 4 Click **Submit**.

A message browsing window is displayed. [Table 5-20](#) describes the message tracing results.

Table 5-20 Results of IKE message tracing

Parameter	Description
Trace Direction	Indicates the direction of the traced message.

Content	For details, see the IKE protocol.
---------	------------------------------------

---End

5.5.PNP Trace

This section describes how to trace the site deployment process. Traced messages can be automatically or manually saved. You can browse the traced messages online.

Prerequisite

You have logged in to the LMT using an account with the required operation rights.

Context

- A maximum of one PNP message tracing task can be created at one time.
- The real-time tracing function for site deployment includes receiving, sending, checking, and handling of messages. In case of a failure, the failure cause is displayed.
- The real-time tracing function can be enabled only by the managing mode of a multimode base station, only partial deployment information is visible to the non-managing mode.

Procedure

Step 1 In the LMT main window, click the **Trace** tab.

Step 2 In the navigation tree, choose **Trace > PNP Trace**. Double-click **PNP Trace**.

The **PNP Trace** dialog box is displayed.

Step 3 Set related parameters in the **PNP Trace** dialog box. For details about parameter descriptions, see [Table 5-21](#).

Table 5-21 Parameters for PNP message tracing

Parameter	Description
Save File	If you select the Save File check box, tracing results will be automatically saved. Click  to customize the folder, file name, and file type.

Step 4 Click **Submit**.

A message browsing window is displayed. [Table 5-22](#) describes the message tracing results.

Table 5-22 Results of PNP message tracing

Parameter	Description
No.	Indicates the sequence of the traced message that received by the LMT.
Time	Indicates the time of the traced message.
Message Type	Indicates the type of a message, which can be binary or text.

Content	For details, see the site deployment records.
---------	---

---End

7.6. Creating a Uu Interface Tracing Task

This section describes how to create a Uu interface tracing task. With a Uu interface tracing task, you can trace all or some of the signaling messages over the Uu interface of either specified cells or all the cells under an eNodeB. Traced messages can be saved automatically or manually, and browsed online or offline.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Context

A maximum of three Uu interface tracing tasks are supported concurrently.

Procedure

Step 1 Click **Trace** in the LMT main window to enter the **Trace** window.

Step 2 Choose **Trace > Common Services** on the **Trace Navigation Tree** tab page, and double-click **Uu Interface Trace**.

The **Uu Interface Trace** dialog box is displayed.

Step 3 Set the corresponding parameters.

[Table 5-23](#) describes the parameters.

Table 5-23 Parameters for a Uu interface tracing task

Parameter Name	Description
TraceDirection	Indicates the direction of Uu interface messages to be traced. You can choose Bidirectional , From UE , and To UE .
TraceGoal	Indicates the cells to be traced. You can choose All cells or Special cells .
Local Cell ID	Indicates the ID of a local cell. Only messages related to the cell will be traced. NOTE This parameter is valid only when the TraceGoal is set to Special cells . Run the DSP CELL or LST CELL command to check the cell IDs of the current eNodeB. When the TraceGoal is set to Special cells , the NE will determine whether the special cells are configured. If not, the task fails.

Message Type	Indicates the type of Uu interface messages to be traced. You can choose all message types, or one or several message types. If Select All is chosen, all messages are
Parameter Name	Description
	traced. Otherwise, only the selected types of messages will be traced.
Trace Reason	(Mandatory) Indicates the reason for creating of a tracing task. You can enter the tracing reason in this text box. NOTE Entered trace reasons will be recorded in operation logs.
Save File	If this item is selected, test  data files are  automatically saved. Click  to modify the file save path, file name, and file type.

Step 4 Click **Submit** to browse the traced messages and view message flows over the interface. [Table 5-24](#) describes different tracing results.

Table 5-24 Parameters for a Uu interface tracing result

Parameter Name	Description
No.	Indicates the sequence number of traced messages received by the LMT.
Time	Indicates the generating time of traced messages.
Message Type	Indicates the type of messages.
Message Direction	Indicates the direction of Uu interface messages to be traced.
Local Cell ID	Indicates the local cell ID of messages.
CPU I	Indicates the ID of the CPU for the traced board. The value 0 is displayed on the Pico platform.
Call ID	Indicates the call ID, which uniquely identifies a call in an eNodeB.
CRNTI	Indicates the temporary identifier of a wireless network in a cell.

PLMN	Indicates the ID of an operator serving the UE in the event of user-level message tracing. N/A is displayed in the event of non-user-level message tracing.
Content	Indicates the message content. The protocol version of Uu interface tracing is 10Q1. Messages on the RRC layer are traced. For details, see 3GPP TS 36.331.

----End

7.7. Creating a S1 Interface Tracing Task

This section describes how to create a S1 interface tracing task. A S1 interface tracing task is used for collection of application layer protocol messages. The signaling messages over the S1 interface can be collected for single or multiple LiteCore networks. Traced messages can be saved automatically or manually, browsed online or offline, and parsed to display the information element (IE) contained in the messages.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Context

A maximum of three S1 interface tracing tasks are supported concurrently.

Procedure

- Step 1** Click **Trace** in the LMT main window to enter the **Trace** window.
- Step 2** Choose **Trace > Common Services** on the **Trace Navigation Tree** tab page, and double-click **S1 Interface Trace**.
- Step 3** Set the corresponding parameters. [Table 5-25](#) describes the parameters.

Table 5-25 Parameters for a S1 interface tracing task

Parameter Name	Description
TraceDirection	Indicates the direction of S1 interface messages to be traced. You can choose Bidirectional , To MME , and From MME .

S1MsgType	Indicates the type of S1 interface messages to be traced. You can choose all message types, or one or several message types. If Select All is chosen, all messages are traced. Otherwise, only the selected types of messages will be traced.
Trace Reason	(Mandatory) Indicates the reason for creating of a tracing task. You can enter the tracing reason in this text box. NOTE Entered trace reasons will be recorded in operation logs.
Save File	If this item is selected, test  data files are  automatically saved. Click  to modify the file save path, file name, and file type.

Step 4 Click **Submit** to browse the traced messages and view message flows over the interface. [Table 5-26](#) describes different tracing results.

Table 5-26 Parameters for a S1 interface tracing result

Parameter Name	Description
No.	Indicates the sequence number of traced messages received by the LMT.
Time	Indicates the generating time of traced messages.
Message Type	Indicates the type of messages.
Message Direction	Indicates the direction of S1 interface messages to be traced.
S1 Interface ID	Indicates the ID of the S1 interface to be interconnected.
Call ID	Indicates the call ID, which uniquely identifies a call in an AirNode.
PLMN	Indicates the ID of an operator serving the UE in the event of user-level message tracing. N/A is displayed in the event of non-user-level message tracing.
Local Cell ID	Indicates the ID of a local cell.

CPU ID	Indicates the ID of the CPU for the traced board. The value 0 is displayed on the Pico platform.
Content	Indicates the message content. The protocol layer of S1 interface tracing tasks is NOVEL. For details, see NOVEL & S1 Spec V1.1.

----End

8.8. Creating a X2 Interface Tracing Task

This section describes how to create a X2 interface tracing task. With a X2 interface tracing task, you can trace all or some of the signaling messages over the X2 interface of either specified cells or all the cells under an eNodeB. Traced messages can be saved automatically or manually, and browsed online or offline.

Prerequisites

You have logged in to the local maintenance terminal (LMT) by using an account with the required operation rights.

Context

A maximum of three X2 interface tracing tasks are supported concurrently.

Procedure

Step 1 Click **Trace** in the LMT main window to enter the **Trace** window.

Step 2 Choose **Trace > Common Services** on the **Trace Navigation Tree** tab page, and double-click **X2 Interface Trace**.

The **X2 Interface Trace** dialog box is displayed.

Step 3 Set the corresponding parameters.

[Table 5-27](#) describes the parameters.

Table 5-27 Parameters for a X2 interface tracing task

Parameter Name	Description
TraceDirection	Indicates the direction of X2 interface messages to be traced. You can choose Bidirectional , From eNodeB , and To eNodeB .
TraceGoal	Indicates the cells to be traced. You can choose All cells or Special cells .

Local Cell ID	<p>Indicates the ID of a local cell. Only messages related to the cell will be traced.</p> <p>NOTE</p> <p>This parameter is valid only when the TraceGoal is set to Special cells. Run the DSP CELL or LST CELL command to check the cell IDs of the current eNodeB. When the TraceGoal is set to Special cells, the NE will determine whether the special cells are configured. If not, the task fails.</p>
Message Type	<p>Indicates the type of X2 interface messages to be traced. You can choose all message types, or one or several message types. If Select All is chosen, all messages are traced. Otherwise, only the selected types of messages will be traced.</p>
Trace Reason	<p>(Mandatory) Indicates the reason for creating of a tracing task. You can enter the tracing reason in this text box.</p> <p>NOTE</p> <p>Entered trace reasons will be recorded in operation logs.</p>
Save File	<p>If this item is selected, test  data files are automatically saved. Click  to modify the file save path, file name, and file type.</p>

Step 4 Click **Submit** to browse the traced messages and view message flows over the interface. [Table 5-28](#) describes different tracing results.

Table 5-28 Parameters for a X2 interface tracing result

Parameter Name	Description
No.	Indicates the sequence number of traced messages received by the LMT.
Time	Indicates the generating time of traced messages.
Message Type	Indicates the type of messages.
Message Direction	Indicates the direction of X2 interface messages to be traced.
eNodeB ID	Indicates the ID of the eNodeB to be interconnected.

Call ID	Indicates the call ID, which uniquely identifies a call in an AirNode.
PLMN	Indicates the ID of an operator serving the UE in the event of user-level message tracing. N/A is displayed in the event of non-user-level message tracing.
Local Cell ID	Indicates the ID of a local cell.
CPU ID	Indicates the ID of the CPU for the traced board. The value 0 is displayed on the Pico platform.
Content	Indicates the message content. The protocol version of X2 interface tracing is 10Q1. Messages on the RRC layer are traced. For details, see 3GPP TS 36.331.

----End

FAQ

This section describes the common issues and solutions during the equipment commissioning.

Functions of the LMT Becoming Abnormal After an LMT Version Upgrade or Rollback

The displayed version is not the target version. A message indicating that the MML configuration file fails to be analyzed. The **Trace** or **Monitor** tab page can be normally opened after successful LMT login, but the corresponding functions are abnormal. For example, the reported messages are not displayed, the reported messages are not complete or disordered, messages cannot be saved, or only part of the messages can be saved. The device panel fails to be opened for the first time after the upgrade.

To clear the cache and cookies in the browser, perform operations described in the following table.

Table 5-29 To clear the cache and cookies in the browser, perform operations described in the following table.

Browser Type	Handling Procedure
Firefox browser	<ol style="list-style-type: none"> 1. Open the Firefox browser, and choose Tools Clear Private Data from the menu bar. 2. In the displayed Clear Private Data dialog box, select Cache, Cookies, and Offline Website Data and then click Clear Private Data Now.

Internet Explorer 9	<ol style="list-style-type: none"> 1. Start the IE browser, and choose Tools> Internet Options Internet Options from the menu bar. The Internet Options dialog box is displayed. 2. On the General tab page, click Delete. The Delete Browsing History dialog box is displayed. 3. Clear the Preserve Favorites website data check box and select Cookies and Temporary Internet files . Then click Delete and close the Internet Options dialog box.
Internet Explorer 10 or 11	<ol style="list-style-type: none"> 1. Start the IE browser, and choose Tools> Internet Options Internet Options from the menu bar. The Internet Options dialog box is displayed. 2. On the General tab page, click Delete. The Delete Browsing History dialog box is displayed. 3. Clear the Preserve Favorites website data check box and select Cookies and website data and Temporary Internet files and website files. Then click Delete and close the Internet Options dialog box.

Slow Responses in the Firefox Browser

When the Firefox browser is used on the local maintenance terminal (LMT), the LMT response is slow. For example, after you click **Monitor**, it takes about 30 seconds to maximize the window. In this case, check that the add-on extension Live Margins is installed.

Procedure

Step 1 Open the Firefox browser, and choose **Tools > Add-ons**, from the menu bar. The **Add-ons** window is displayed.

Step 2 On the **Extensions** tab page, select **Live Margins**, , and click **Disable** A message is displayed, indicating that the changes will take effect after the Firefox browser is restarted.

Step 3 Click **Restart Firefox** to make the changes take effect.

----End

LMT Colors Cannot Be Displayed

When the LMT uses Internet Explorer, the colors of the LMT main window are not correctly displayed. For example, the colors indicating the status of boards and alarms are not displayed, or the background color of the LMT main window is the same as that of Internet Explorer. In this case, check the color settings of the browser.

Procedure

- Step 1** Open Internet Explorer, and choose **Tools > Internet Options** from the menu bar. The **Internet Options** dialog box is displayed.
- Step 2** On the **General** tab page, click **Accessibility**, The **Accessibility** dialog box is displayed.
- Step 3** In the **Formatting** area, select **Ignore colors specified on Web pages**, and click **OK**.
- Step 4** In the **Internet Options** dialog box, click **OK** to exit the dialog box. ----End

No Response When Clicking the Menu Bar on the LMT

When you use the browse for LMT log in, there is no response or a script error dialog box is displayed. To be specific, when you click the menu bar or buttons, or right-click the web page, there is no response or a dialog box is displayed, indicating a script error, for example, **Permission Denied** or **Access Denied**. In this case, check the proxy settings of the browser.

Context

Do not change the settings of Internet Explorer when the LMT is in use. Set the proxy server before you log in to the LMT.

Procedure

- Step 1** Open Internet Explorer, and choose **Tools > Internet Options** from the menu bar. The **Internet Options** dialog box is displayed.
- Step 2** On the **Connections** tab page, click **LAN Settings**. The **LAN Settings** dialog box is displayed.
- Step 3** In the **Proxy server** area, select **Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections)**. Enter the IP address and port number of the proxy server in the corresponding boxes, and then click **Advanced**. The **Proxy settings** dialog box is displayed.
- Step 4** In the **Exceptions** area, enter the IP address of the vUSN for local maintenance in the text box. The default IP address is 192.168.0.49. Then, click **OK** and close the **Internet Options** dialog box.
----End

How to Rectify Errors That Occur While Saving a File

If the function of saving operation results is configured when you first log in to the LMT, the system may display an error message during result file saving. In this case, the file size is zero bytes.

Procedure

Step 1 Choose **Start > Control Panel**. In **Control Panel**, click **Java**. The **JAVA Control Panel** is displayed.



NOTE

If you do not see the **Java** item in **Control Panel**, switch to another view.

Step 2 In **Java Control Panel**, click the **Advanced** tab. On the displayed tab page, choose **Java Plug-in > Enable the next-generation Java Plug-in (requires browser restart)** in the **Settings** navigation tree, and then click **OK**.

Step 3 Restart the LMT.

----End

What Do I Do to Avoid the Failure to Log In to the LMT Due to a High Default Internet Explorer Security Level

In Windows Server 2003 or Windows Server 2008, Internet Explorer blocks Web programs on sites that are not in the trusted site list to improve system security. As a result, you may fail to log in to the LMT.

Context

According to acceptable Internet Explorer security levels, there are the following two solutions:

- If lowering Internet Explorer security level on the Windows server is unacceptable, you can add the LMT site to the trusted site list of Internet Explorer using a configuration startup script. The system automatically loads the script and configures Internet Explorer after a user logs in.
- If lowering Internet Explorer security level on the Windows server is acceptable, you can remove Internet Explorer Enhanced Security Configuration, a Windows component.

Procedure

- To set a configuration startup script, perform the following steps:
 - a. Create a configuration startup script.
Enter the following script contents in a notepad and save it as an **IE-unset.bat** file.

```

@echo off setlocal
ENABLEDELAYEDEXPANSION set
uu="HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Internet Settings" reg add %uu% /v EnableHttp1_1 /t REG_DWORD /d "1"
/f >nul reg add %uu% /v ProxyHttp1.1 /t REG_DWORD /d "1" /f >nul
setlocal ENABLEDELAYEDEXPANSION set
uu="HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Internet Settings\ZoneMap\EscRanges\Trust" reg add %uu% /v :Range /t REG_SZ /d "10.141.149.193" /f >nul reg add %uu% /v http /t REG_DWORD /d "2" /f >nul reg add %uu% /v https /t REG_DWORD /d "2" /f >nul

```

**NOTE**

- The IE-unset.bat script file enables the system to automatically add a site to the trusted site list of Internet Explorer.
- You can modify the file when required, for example, change **10.141.149.193** in **reg add %uu% /v :Range REG_SZ /d "10.141.149.193" /f >nul** to the IP address of the network element to be visited. The Trust field in
- The **Trust** field in **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Internet Settings\ZoneMap\EscRanges\Trust** can be named as required.

b. Load the startup script.

- If the LMT runs on a Windows server, perform the following steps to set the script:
 - 1) Log in to the Windows server with an administrator account, and choose **Start Run**.
 - 2) Enter **gpedit.msc** in the displayed dialog box, and click **OK**. The **Group Policy Object Editor** dialog box is displayed.
 - 3) In the displayed dialog box, choose **User Configuration Windows Settings Scripts(Logon/Logoff)**, and double-click **Logon**.
 - 4) Click **Show Files** and copy the created script to the displayed folder. Then, close the dialog box displaying the folder.
 - 5) Click **Add**. The **Add a Script** dialog box is displayed.
 - 6) Click **Browse** to select the created script and click **OK**.
 - 7) Click **Apply** and verify that the script is loaded successfully
- If the LMT runs on a Citrix Farm network, perform the following steps to set the script:
 - a. Log in to the primary or secondary Citrix domain control server with an administrator account, and choose **StartProgramsAdministrative ToolsActive Directory Users and Computer**. Select an organization unit such as OSS and right-click Properties. Click the **Group Policy** tab in the displayed dialog box, and click **New** on the displayed tab page to create a group policy object.

**NOTE**

You can rename the group policy object as required.

- b. Select the created group policy object and click **Edit**. In the displayed dialog box, choose **User Configuration Windows Settings Scripts(Logon/Logoff)**, and double-click **Logon**. The **Logon Properties** dialog box is displayed.
- c. Click **Show Files** and copy the created script to the displayed folder. Then, close the dialog box displaying the folder.

- d. Click **Add**. The **Add a Script** dialog box is displayed.
 - e. Click **Browse** to select the created script and click **OK**.
 - f. Click **Apply** and verify that the script is loaded successfully.
- To remove Internet Explorer Enhanced Security Configuration, perform the following steps:
 - a. Choose **Start Control Panel Add or Remove Programs**. In the displayed dialog box, select **Internet Explorer Enhanced Security Configuration**.
 - b. Click **Details**. In the displayed dialog box, clear **For administrator groups** and **For all other user groups**.
 - c. Click **OK** and then **Next** to remove Internet Explorer Enhanced Security Configuration. After the removal is completed, click **Finish**.
 - d. Restart Internet Explorer to make the settings take effect.

----End

What Do I Do to Handle the Slow Redirection When Logging in to the LMT

When the LMT uses Internet Explorer, the redirection is slow when you log in to the LMT, that is, the explorer remains blank for more than 15 seconds after you enter the vUSN IP address in the address box of Internet Explorer and before the explorer displays a security warning. This section describes how to solve the problem.

Prerequisites

- The LMT directly communicates with the eAN3810A.
- You log in to the LMT in HTTPS mode.
- The operating system is Microsoft Windows 2003.

Context

In HTTPS mode, the interface will be redirected to HTTP after you enter the IP address in the address box of Internet Explorer. After you log in to the LMT in HTTPS mode, Windows visits the Microsoft website and updates the trusted root certification list until the update succeeds or expires. In this period, the certification authentication in HTTPS mode is slow. Generally, when you use the LMT to visit the eSE, you are on the Intranet but not the Internet. You can accelerate the visit to the LMT by disabling this function.

Procedure

Step 1 Click **Start Control Panel**. The **Control Panel** is displayed.

Step 2 In **Control Panel**, click **Add or Remove Programs**. The **Add or Remove Programs** window is displayed.

Step 3 In the **Add or Remove Programs** window, click **Add/Remove Windows Components**. The **Windows Components Wizard** window is displayed.

Step 4 In the **Components** area of the **Windows Components Wizard** window, clear the **Update Root Certificates** check box.

Step 5 Click **Next**. The system automatically performs the configuration.

Step 6 After the configuration is complete, click **Finish**. ----End

What Do I Do to Handle the LMT Interface Disorder

When the LMT uses Internet Explorer 8 or 9, the LMT interface may be displayed in disorder. In this case, manually set the compatibility views of Internet Explorer before logging in to the LMT. This section describes the setting method.

Prerequisites

- Internet Explorer 8 or 9 is used.
- The LMT interface is displayed in disorder.

Procedure

- Step 1** Open Internet Explorer. Choose **Tools Compatibility View Settings**. The **Compatibility View Settings** dialog box is displayed.
- Step 2** In the **Add this website** text box, enter the IP address of the network element (NE), for example, 10.147.212.161. Click **Add**. Select the **Display all websites in compatibility view** check box and click **Close**.
- Step 3** The LMT interface is displayed in order after you log in to the LMT again. ----**End**

What Do I Do to Handle the Unknown Error Occurring on LMT Interface or the MML Command Execution Failure After a Browser Upgrade

After Internet Explorer 6 is upgraded to Internet Explorer 8 or 9, some cached files cannot be cleared, an unknown error occurs on the LMT main window, or the system displays a message indicating an MML configuration file parsing failure when an MML command is executed. To solve the problem, manually clear the cache and cookies in Internet Explorer.

Procedure

- Step 1** Open Internet Explorer 8 or 9, and choose **Tools Internet Options** from the menu bar. The **Internet Options** dialog box is displayed.
- Step 2** On the **General** tab page, click **Delete** in the **Browsing history** area. The **Delete Browsing History** dialog box is displayed.
- Step 3** Clear the **Preserve Favorites website data** check box, select the **Cookie** and **Temporary Internet files** check boxes, and click **Delete**.
- Step 4** Close the **Delete Browsing History** dialog box.
- Step 5** On the **General** tab page, click **Settings** in the **Browsing history** area. The **Temporary Internet Files and History Settings** dialog box is displayed.
- Step 6** Click **View objects** and delete all displayed files.
- Step 7** Close the displayed window and the **Internet Options** dialog box. ----**End**

What Do I Do to Handle the Interface Display Failure or Error Message Displayed on the LMT

An exception occurs in the login dialog box, a page cannot be properly displayed, or an error message indicating that an error on the web page may cause the LMT to malfunction is displayed in Internet Explorer.

Context

If Internet Explorer is upgraded or the buffer of Internet Explorer is insufficient, Internet Explorer cannot obtain new files from the eAN3810A after the eAN3810A is upgraded. The Internet Explorer obtains files about the eAN3810A in the original version from the buffer, causing information inconsistency.

Procedure

- Internet Explorer
 - a. Open Internet Explorer, and choose **Tools Internet Options** from the menu bar. The **Internet Options** dialog box is displayed.
 - b. On the **General** tab page, click **Delete** in the **Browsing history** area. The **Delete Browsing History** dialog box is displayed.
 - c. Clear the **Preserve Favorites website data** check box, select the **Cookie** and **Temporary Internet files** check boxes, and click **Delete**.
 - d. Close the **Delete Browsing History** dialog box.
 - e. On the **General** tab page, click **Settings** in the **Browsing history** area. The **Temporary Internet Files and History Settings** dialog box is displayed.
 - f. Click **View objects** and delete all displayed files.
 - g. Close the displayed window and the **Internet Options** dialog box.
- Firefox
 - a. Open the Firefox browser, and choose **Tools Clear Private Data** from the menu bar.
 - b. In the displayed **Clear Private Data** dialog box, select the **Cache**, **Cookies**, and **Offline Website Data** check boxes, and click **Clear Private Data Now**. ----End

A "This user session already exists" Error Message Is Displayed During LMT Login

If a "xxx" message is displayed when you attempt to log in to the LMT, solve the problem by following the handling procedure described herein.

Context

To improve the system security, the browser on the LMT PC uses cookies to save session information about the users who have successfully logged in to the LMT. The mechanism of using cookies to save session information causes the following problems:

- When a user attempts to open another LMT for an NE after successfully logging in to an LMT for the same NE, a message indicating that the user session exists is displayed. This problem occurs because Internet Explorer 8 or 9 and Firefox browsers use the session sharing mechanism. All browser windows opened by the same user share a session. When the LMT for an NE is opened again, the browser regards the login as repeated login with the same user session. In Internet Explorer 6 or 7, each browser window uses an independent session, and the preceding problem does not occur.
- The message indicating that the user session exists is displayed although the user did not attempt to perform the operation described in the preceding problem. This problem occurs when the LMT is exited unexpectedly. After the unexpected exit, the cookie saving the login session information is still valid. As a result, when the user logs in to the LMT again, the browser regards the login as repeated login with the same user session.

The LMT may be unexpectedly exited if the browser becomes faulty whereas the LMT is being used or when the pop-up blocker of the browser is enabled.

Procedure

- To address the first problem:
 - a. In the menu bar of Internet Explorer, choose **FileNew Session** to open a new Internet Explorer window. Use this **newly opened window** to log in to the LMT.



NOTE

This method applies only to Internet Explorer 8 or 9. If the Firefox browser is used, only one LMT can be opened for an NE.

- To address the second problem:
 - a. Close all browser windows so that all session information becomes invalid.
 - b. If the pop-up blocker is enabled in the browser, disable it.
 - c. Restart the browser, and log in to the LMT again. ----End

How to Install OS Patches

If the LMT runs the Microsoft Windows 2003 operating system (OS), the security patch KB938397 must be installed.

Context

Patch KB938397 rectifies the problem that the Windows operating system does not support SHA256.

Procedure

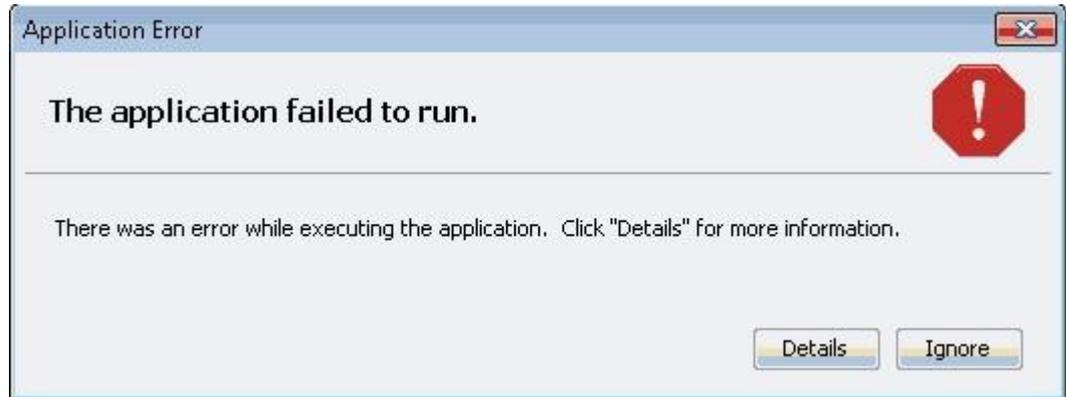
- Step 1** Choose **Start > Control Panel**. The **Control Panel** is displayed. Double-click **Add or Remove Programs** in the displayed window. The **Add or Remove Programs** dialog box is displayed.
- Step 2** In the displayed **Add or Remove Programs** dialog box, select **Show updates**. Check whether patch KB938397 is present in the list of **Currently installed programs**.
- If the patch is present in the list, contact Huawei technical support.
 - If the patch is not present in the list, go to [Step 3](#).
- Step 3** Download the security patch.
- End

What Do I Do if Tracing Function Cannot Be Used?

Tracing function cannot be used after a successful login to the LMT, and an error message is displayed.

Context

The error message is shown in [Figure 5-6](#). After clicking **Details**, detailed error information is displayed. You need to correct the error based on the error type.

Figure 5-6 The error message dialog box

- If the `java.lang.ClassNotFoundException` error is displayed, perform steps 1 and 2.

Figure 5-7 `java.lang.ClassNotFoundException` error

```

java.lang.ClassNotFoundException: com.swimap.lmt.monitor.view.MonitorViewApplet
  at sun.applet.AppletClassLoader.findClass(Unknown Source)
  at java.lang.ClassLoader.loadClass(Unknown Source)
  at sun.applet.AppletClassLoader.loadClass(Unknown Source)
  at java.lang.ClassLoader.loadClass(Unknown Source)
  at sun.applet.AppletClassLoader.loadCode(Unknown Source)
  at sun.applet.AppletPanel.createApplet(Unknown Source)
  at sun.plugin.AppletViewer.createApplet(Unknown Source)
  at sun.applet.AppletPanel.runLoader(Unknown Source)
  at sun.applet.AppletPanel.run(Unknown Source)
  at java.lang.Thread.run(Unknown Source)

```

- If the `netscape.javascript.JSException` error is displayed, perform [Step 3](#).

Figure 5-8 `netscape.javascript.JSException` error

```

netscape.javascript.JSException: Failure to evaluate getIP()
  at sun.plugin2.main.client.MessagePassingJSObject.newJSException(Unknown Source)
  at sun.plugin2.main.client.MessagePassingJSObject.waitForReply(Unknown Source)
  at sun.plugin2.main.client.MessagePassingJSObject.eval(Unknown Source)
  at com.swimap.lmt.trace.view.TraceViewApplet.evalJS(TraceViewApplet.java:1425)
  at com.swimap.lmt.trace.view.TraceViewApplet.callJS_getIPAddr(TraceViewApplet.jav
  at com.swimap.lmt.trace.view.TraceViewApplet.init(TraceViewApplet.java:174)
  at sun.plugin2.applet.Plugin2Manager$AppletExecutionRunnable.run(Unknown Source)
  at java.lang.Thread.run(Unknown Source)
Exception: netscape.javascript.JSException: Failure to evaluate getIP()

```

- If this problem occurs in Citrix Farm networking, you need to perform related steps on the Citrix Farm server rather than on the local PC. If you have no permission to log in to the Citrix Farm server, you cannot directly access Windows **Control Panel** on the Citrix Farm server. To access it, right-click the Java icon on Windows system tray on the local PC and choose **Open Control Panel** from the short-cut menu. The following figure shows the window:

Figure 5-9 Opening control panel

- This problem is caused by a Java defect. For details about this defect, visit http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6967414.

Procedure

Step 1 Enable the next-generation Java plug-in again.

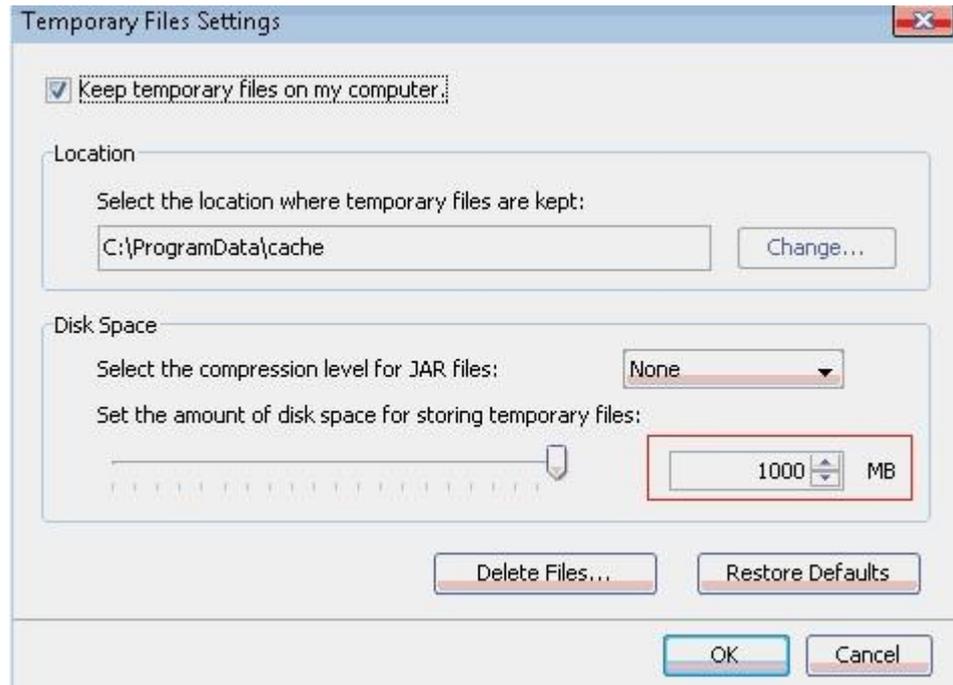
1. Open **Control Panel** in the Windows operating system and double-click **Java**. The **Java Control Panel** dialog box is displayed. In the **Java Control Panel** dialog box, click the **Advanced** tab, clear **Enable the next-generation Java Plug-in (requires browser restart)** under **Java Plug-in** and click **OK**.
2. Select **Enable the next-generation Java Plug-in (requires browser restart)** by referring to [Step 1.1](#) and click **OK**.
3. Restart the browser to enable the new setting to take effect.

Step 2 Delete temporary Java files.

If this problem persists after performing [Step 1](#), delete temporary Java files.

1. Open **Control Panel** in the Windows operating system and double-click **Java**. The **Java Control Panel** dialog box is displayed. In the displayed **Java Control Panel** dialog box, click **Setting**, as shown in [Figure 5-10](#).

Figure 5-10 Checking the amount of disk space set for storing temporary files



2. Check the amount of disk space used for storing temporary Java files in the directory where temporary Java files are saved. If this amount is greater than the preset one, delete folders in this directory manually or by clicking **Delete Files** shown in the figure above.

**NOTE**

Before deleting folders in this directory, close all running LMT clients.

3. Log in to the LMT again to check whether this problem is solved.

Step 3 Install Windows operating system patch KB960714, for more details please see [How to Install OS Patches](#).

If this problem cannot be solved by performing the above steps, uninstall and reinstall Java. ---

-End

What Do I Do If There Is No Response or Any Error Message After a Tracing Task Is Created

Some time after a successful login to the LMT, after a tracing task is created, the task page is not opened. There is no response or any error message. The NE task list shows that this task has been successfully created. Or right-click in the message browsing window and choose save messages, the **Save** dialog box is not displayed. If you open a new browser and log in to the LMT again, the task nevertheless can be successfully created. If either of the previous problems occurs, perform the following operations.

Procedure

Step 1 Open **Control Panel** in the Windows operating system and double-click **Java**. The **Java Control Panel** dialog box is displayed.

Step 2 In the displayed **Java Control Panel** dialog box, click the **Advanced** tab.

- If the Java plug-in of version 1.6 is installed, choose **Security > SecurityMixed code (sandboxed vs. trusted) security verification**, and select **Disable verification (not recommended)**.
- If the Java plug-in of version 1.7 or 1.8 is installed, choose **SecurityMixed code (sandboxed vs. trusted) security verification**, and select **Disable verification (not recommended)**.

Step 3 Close all browsers and log in to the LMT again. ----End

How to Handle the Problem That Only the Error Code Is Displayed in an Error Message After a Tracing Task Is Created

Messages related to base station errors have been configured. However, the local maintenance terminal (LMT) displays only the error code rather than the error message when a base station error occurs. If the previous problem occurs, perform the following operations:

Procedure

Step 1 Open **Control Panel** in the Windows operating system and double-click **Java**. The **Java Control Panel** dialog box is displayed.

Step 2 In the displayed **Java Control Panel** dialog box, click the **Advanced** tab, choose **SecurityMixed code (sandboxed vs. trusted) security verification**, and select **Disable verification (not recommended)**.

Step 3 Close all browsers and log in to the LMT again. ----End

Any Further Operation Performed When Some LMT Web Pages Fail to Update Causes the Web Pages to Turn Blank

Some LMT Web pages fail to update when executes man-machine language (MML) commands, manages alarms and events or traces messages is in use. Any further operation causes the Web pages to turn blank. If you restart the function, the Web page returns to normal. To prevent this problem, perform the following operations to add an environment variable.

Procedure

Step 1 On the LMT PC, select **My Computer** and right-click **Properties** from the shortcut menu. The **System Properties** dialog box is displayed.

Step 2 In the **System Properties** dialog box, click the **Advanced** tab and click **Environment Variables**. The **Environment Variables** dialog box is displayed.

Step 3 In the **Environment Variables** dialog box, click **New**. The **New User Variable** dialog box is displayed. In the **New User Variable** dialog box, set **Variable name** to **JPI_PLUGIN2_NO_HEARTBEAT** and **Variable value** to **1**. Then click **OK**.

Step 4 In the **Environment Variables** dialog box, click **OK**.

Step 5 In the **System Properties** dialog box, click **OK** to finish adding the environment variable.

----End

How to Handle the LMT Exit After Clicking Trace, Monitor, or Device Maintenance Tab in Window 7

When you have successfully logged in to the LMT, the interface is redirected to the other interface if you click the **MML**, **Alarms/Event**, or **Trace** tab. A few seconds after the redirection, the interface is automatically redirected to the login window of the LMT and a login failure message is prompted.

Context

The IERationalEnabler Class plug-in is installed in Internet Explorer when test tools, such as IBM Rational Functional Tester (RTF), are installed in the PC. The problem can be resolved by disabling the plug-in.

Procedure

Step 1 Choose **ToolsInternet** from the menu bar of Internet Explorer.

The **Internet** dialog box is displayed.

Step 2 Click **Manage Add-ons** on the **Programs** tab page.

The **Manage Add-ons** dialog box is displayed.

Step 3 Choose **Toolbars and Extensions** in the **Add-Ins** navigation tree. Click **IERationalEnabler Class** on the right of the dialog box and disable the plug-in.

Step 4 Close all the opened Internet Explorer and log in to the LMT again. ----**End**

How to Handle Exceptions in the LMT Due to Insufficient PC Memory

If the memory space for the local maintenance terminal (LMT) PC is insufficient, exceptions occur when the LMT runs on the PC.

Context

When a PC has been running for a long time or multiple programs occupying huge memory space are running on the PC, memory usage of the PC almost reaches 100%. In this case, if the LMT starts, the PC cannot allocate sufficient memory space to the LMT, and exceptions occur, such as slower user interface (UI) response and unavailability of tracing functions.

Mappings between the PC memory and the number of LMT clients that can simultaneously start on the PC are as follows:

- On a PC of 4 GHz memory, 32 LMT clients can simultaneously start.
- On a PC of 2 GHz memory, 16 LMT clients can simultaneously start.
- On a PC of 1 GHz memory, eight LMT clients can simultaneously start.
- On a PC of 512 MHz memory, four LMT clients can simultaneously start.



NOTE

The preceding mappings are obtained when no other software is running on the PC and only basic functions, such as MML, alarm, and device panel, are used on the LMT. When other functions are running on an LMT such as tracing, the LMT will consume over 50 MHz memory on the PC. Therefore, fewer LMT clients can simultaneously start on the PC.

Procedure

Step 1 Log off or restart the PC, or stop programs occupying huge memory space.

Step 2 Log in to the LMT again.

----End

Interfaces for Performing Tracing Task Blinking

Interfaces for performing tracing task blink.

Context

Java Applet in the IE browser is incompatible with HTML elements when they are stacked together. As a result, interfaces (stacked in the Java Applet) for performing tracing task blink. This problem does not affect the function but deteriorates user experience.

Procedure

- To avoid this problem, use the following methods:
 - a. This problem occurs only on the IE browser. Use the Firefox browser to avoid this problem.
 - b. This problem occurs only on Java later than the version of 1.6.21. Visit www.oracle.com and download Java SE Runtime Environment 6u21 or an earlier version to avoid this problem.

----End

How to Handle Shortcut Key Invalidation

Shortcut keys are defined on the LMT. When logging in to the LMT through a web page, you may fail to use the corresponding function by pressing a shortcut key. In this case, the shortcut key becomes invalid. For example, you cannot stop ping by pressing Ctrl+Q in the MML Command window. This is because the same shortcut key is preferentially used by another running program on the PC, which leads to a shortcut key conflict.

Procedure

Step 1 Check all running programs on the PC. Find the program using the same shortcut key settings as the LMT.

Step 2 Modify the program shortcut key settings which are the same as those on the LMT or stop the program when you use the LMT.

----End

What Do I Do If A Message "Stop running this script?" Is Displayed?

This section describes how to solve the problem that a message "Stop running this script?" is displayed during script execution on the LMT.

Context

When it takes a long time to execute certain scripts, you are prompted with the message "Stop running this script?", indicating whether to continue the script execution.

To solve this problem, download the file at

<http://download.microsoft.com/download/5/9/5/595D11B8-A0FD-4EA0-BF0D-F113258FC28A/MicrosoftFixit50403.msi>.

Procedure

Step 1 Install the downloaded file.

Step 2 Restart the computer, and then log in to the LMT to check whether this problem has been solved.

----End

The Internet Explorer Fails to Respond or the Login Window Is Displayed After the LMT Is Running for a While or Multiple Functions Are Concurrently Enabled on the LMT

The Internet Explorer fails to respond or the login window is displayed after the LMT is running for a while or multiple functions are concurrently enabled on the LMT. Solve the problem by using the method described in the procedure part.

Context

If the LMT installed with multiple network adapters, the problem mentioned above may occur. For Internet Explorer's failing to respond, the check result of the task manager shows that the virtual memory occupied by the Internet Explorer process exceeds 1 GHz. For the displayed login window, the check result of the task manager shows the Internet Explorer progress for the LMT window has been abnormally closed. In this case, the automatic recovery mechanism of the Internet Explorer displays the last access webpage when you open the Internet Explorer again.

Procedure

- Log in to the LMT through a Firefox browser. The Firefox browser versions 30.X or later are supported.
- If the LMT is running Windows 7, log in to the LMT through Internet Explorer 8.0 or later.

----End

A Message checking client environment... Is Displayed on the Login Window and the browser Does Not Respond

During the login to the WebLMT, a message "checking client environment..." is displayed on the login window and the browser does not respond and has to be forcibly closed. In this case, solve the problem by using the method described in the procedure part.

Context

After the WebLMT is started, the software environment of the client is checked, including the versions and basic settings of Java applications, Adobe Flash Player, and browser. If the browser does not respond, faults occur on the software.

Procedure

Step 1 If all the preceding software settings are correct, uninstall all Java applications on the client by performing the following steps:

1. Choose **Start > Control Panel**. The **Control Panel** is displayed. Double-click **Add or Remove Programs** in the displayed window. The **Add or Remove Programs** dialog box is displayed.
2. Right-click the Java application and choose **Uninstall**.
3. Remove the registry entry **HKEY_CURRENT_USER\Software\JavaSoft** and **HKEY_LOCAL_MACHINE\SOFTWARE\JavaSoft**.
4. Remove files under the **C:\Program Files\Java** directory.
5. Install the Java application of the recommended version that can be obtained from <http://java.com/>.

Step 2 After Java applications are successfully installed, log in to the WebLMT again.

Step 3 If the problem persists, download and then reinstall Adobe Flash Player of the latest version. --

--End

LMT Login Window Being Stopped by the Browser

The LMT login window is stopped by the browser, and the login stills fails even though the user selects Allow popups. To solve the problem, perform the following steps:

Procedure

- IE browser
 - a. Choose **Tool > Internet Options** on the tool bar of the IE browser. The **Internet Options** dialog box is displayed.
 - b. On the **Privacy** tab page, clear **Turn on Pop-up Blocker** in the **Pop-up Blocker** pane. Or, select **Turn on Pop-up Blocker**, and click **Settings** to add allowed websites.
 - c. Click **OK**. Close the browser and log in to the LMT again.
- FireFox browser
 - a. Choose **Tool > Options** on the tool bar of the FireFox browser. The **Options** dialog box is displayed.
 - b. On the **Content** tab page, clear **Block popup windows**. Or, select **Turn on Pop-up Blocker**, and click **Exceptions** to add allowed websites.
 - c. Click **OK**. Close the browser and log in to the LMT again. ----End

The Application Blocked by Security Settings Dialog Box Is Displayed When executes man-machine language (MML) commands, manages alarms and events, traces messages Is Enabled

After the JRE is installed or upgraded, the **Application Blocked by Security Settings** dialog box is displayed when the tab page related to executes man-machine language (MML) commands, manages alarms and events, traces messages is open. Click **OK**, and the **The application cannot be run** dialog box is displayed, indicating that the executes man-machine language (MML) commands, manages alarms and events, traces messages function is unavailable.

Context

A function is introduced to the JRE later than Java 1.7. 10 to control when and how to run untrusted Java applications contained in a web page. The untrusted Java application refers to an application with digital signature applied by an unknown issuer or without a certificate issued by a trusted certificate authority. The default security level is set to **High**, indicating that the untrusted Java applications will be blocked.

Procedure

Step 1 Reconfigure the Java security level or add **Exception Site List**.

- On the **Control Panel** page, click **Java**. In the displayed **Java Control Panel** dialog box, click **Security**. On the displayed **Security** tab page, select **Enable Java content in the browser**, set **Security Level** to **Medium**, and then click **Apply**.



NOTE

The step applies only to the JRE 1.7 or an earlier version.

- Alternatively, click **Edit Site List** on the **Security** tab page in the **Java Control Panel** dialog box to add the sites accessing the LMT to the site list. If this method is used, the Java security level does not need to be reconfigured. For the sites added in the site list, mark whether the access to the LMT through HTTPS or HTTP. For example, `https://10.20.198.33` or `http://10.30.192.60`.

Step 2 Specify **Enable the next-generation Java Plug-in(requires browser restart)**.

- In the **Java Control Panel** dialog box, click **Advanced**. On the displayed **Advanced** tab page, select **Java Plug-in**, clear **Enable the next-generation Java Plug-in(requires browser restart)**, and then click **OK**.
- Select **Enable the next-generation Java Plug-in(requires browser restart)** according to operations in step 2.a, and click **OK**.
- Restart the browser to make the settings take effect.

Step 3 Delete temporary Java files.

- In the **Java Control Panel** dialog box, click **General**. On the displayed **General** tab page, click **Settings**. The **Temporary Files Settings** dialog box is displayed.
- Close all running LMT windows and click **Delete Files**.

Step 4 Log in to the LMT again. When enabling any of the executes man-machine language (MML) commands, manages alarms and events, traces messages functions, select **I accept the risk and want run this application** on the displayed **Do you want run this application?** dialog box and click **Run**. If the **Allow access to the following application from this web site?** dialog box is displayed, click **Allow**.

----End

Help for Installing and Using the Java Plug-in

The Java plug-in used by LMT modules, including executes man-machine language (MML) commands, manages alarms and events, traces messages, is the Java runtime environment(JRE). You need to install the Java plug-in before using these modules. You can try the following methods to solve problems about installing or using Java plug-in.

Context

When a user logs in to the LMT, it checks the version of the installed java plug-in. The following problems may occur when a user logs in to or use the LMT:

1. A tooltip with the message "java plug-in is not found" is displayed on the login interface.
2. A tooltip with the message "please download and install the recommended Java plug-in" is displayed on the login interface.
3. LMT modules, including executes man-machine language (MML) commands, manages alarms and events, traces messages, cannot be used even after the java plug-in of a recommend version is installed.

Procedure

- For the first problem, perform the following steps to check whether the java plug-in is successfully installed:
 - a. On the windows system, click **StartRun**, enter CMD in the text box, and press the Enter key. Enter java -version in the run window and press the Enter key to view the current java plug-in version.



NOTE

You can log in to the LMT even if the Java plug-in is not installed, but LMT modules, including executes man-machine language (MML) commands, manages alarms and events, traces messages cannot be used. You can obtain the Java plug-in from the official website of Java.

- b. If Java plug-ins of multiple versions are installed on the computer, the current active Java plug-in version can be viewed on the Java control panel. Select **Control PanelJava**, and click the Java icon to display the Java control panel. Select the **Java** tab page, click **View**, and click the **User** tab page in the displayed window to view and select the Java plug-in version.



NOTE

You may view the Java plug-in version on the Java control panel even when this plug-in has been uninstalled. Therefore, ensure that the selected Java plug-in version is available.

When Java plug-ins of more than one version are installed on the computer, they may be incompatible. You are advised to uninstall the java plug-ins of versions that are not required and use the recommend version. You can install or uninstall Java plug-ins on the Windows control panel.

- c. If the Java plug-in is successfully installed and you are using the IE browser, you can ignore the tooltips and continue using the LMT. You can also try to clear the tooltips using the following methods:

- If you are using IE browser, choose **ToolsManage Add-ons**. In the displayed window, click **Toolbars and Extensions**, select **All add-ons** in the **Show** combo box and ensure that the plug-ins **Deployment Toolkit** and **isInstalled Class** are enabled.
- If you are using Firefox browser, open the **Add-ons** window, select the **Plugins** tab page, and ensure that the installed Java plug-in is enabled. ■
Restart the browser, and log in to the LMT again.

**NOTE**

If the Java plug-in is enabled in the IE browser and the tooltips still exist, choose **ToolsInternet Options**, select the **Advanced** tab page, and click **Reset**.

- The second problem indicates that you have installed a Java plug-in not supported by the LMT. You can continue using the LMT, but some modules, including executes man-machine language (MML) commands, manages alarms and events, traces messages, may become abnormal. You are advised to install the Java plug-in of a recommended version.

**NOTE**

The Java plug-in of version 1.8.0_65 is recommended for the OneAir LMT.

When a Java plug-in of a later version has been installed, a java plug-in of an earlier version installed afterward will not be activated. Tooltips with the message "please download and install the recommended Java plug-in" will also be displayed on the login interface even if the earlier version is supported by the LMT. If you need to activate the Java plug-in version of the earlier version, first uninstall the one of the later version.

- As for the third problem, the Java applet is forbidden by default because the security is enhanced in JRE 1.7. Some tooltips will also be displayed before the applet is executed. You can try the following methods to solve this problem:
 - Click the Java icon in the Windows control panel and select the **Security** tab page in the Java control panel. Set **Security Level** to **Medium** or add the current website to **Exception Site List**.
 - If JRE 1.6 and JRE 1.7 are installed simultaneously on the computer. A dialog box may be displayed for selecting the appropriate Java plug-in version to execute the applet.
 - If the **Application Blocked by Security Settings** dialog box is displayed, or an error message is displayed on the LMT interface, you can reconfigure **Java security level** or **Exception Site List**.
 - When other exceptions occur, you can try to delete temporary java files. Open the **Java Control Panel** dialog box, select the **General** tab page, and click **Settings**. The **Temporary Files Settings** dialog box is displayed. Close all running LMT windows and click **Delete Files**.

----End

What Do I Do If the Message Your Java version is out of date Is Displayed?

If you are prompted that **Your Java version is out of date** when logging in to the WebLMT, follow the instructions provided in this session.

Context

The JRE installed on the computer is not up-to-date and an update to the latest version is recommended by Java. To ensure that the WebLMT works properly, it is good practice to perform the procedure described below.

Procedure

Step 1 In the **Your Java version is out of date** dialog box, select the **Do not ask again until the next update is available** check box.

Step 2 Click **Later**.

----End

How to Configure Wireless NIC on a Computer

To connect a computer to a local wireless access point device, ensure that the computer is configured with a WLAN wireless network interface card (NIC). Before connecting the computer to a local wireless access point device, configure WLAN wireless NIC by following the instructions below.

Context

This section uses a laptop configured with a wireless NIC and running Window 7 as an example.

Procedure

Step 1 Click **Start**, select **Control Panel**.

Step 2 Perform the following operations according to the value of **View by**:

- If **Category** is selected, click **Network and Internet**. In the displayed window, click **Network and Sharing Center**.
- If **Large icons** or **Small icons** is selected, click **Network and Sharing Center**.

Step 3 Click **Change adapter settings**.

Step 4 In the display windows, right-click **wireless** and choose **Properties**.

A **wireless Properties** dialog box is displayed.

Step 5 On the **Networking** tab page, double-click **Internet Protocol Version 4(TCP/IPv4)**.

The **Internet Protocol Version 4(TCP/IPv4) Properties** dialog box is displayed.

Step 6 On the **General** tab page, choose **Use the following IP address**. In **IP address**, enter an IP address, which is in the same network segment together with the default maintenance IP address of the base station. For example, **192.168.1.2**. In **Subnet mask**, enter **255.255.255.0**, In **default gateway**, enter **192.168.1.1**.



NOTE

- For the purpose of security, the IP address of the wireless NIC must be manually configured in this step.

- The default maintenance IP address of the base station is **192.168.1.49**.
- **IP address** mentioned in step 5 cannot be set to **192.168.1.49**.

Step 7 On the **wireless** tab page, check for the SSID. If the SSID is not found, click  on the right side.

Step 8 Choose the SSID, such as **HID_9TAB198910**, and then click **Connect** on the bottom.

Operation and Maintenance



NOTE

The SSID of the local wireless access point device is in the format of *HID_XXXXXXXXXX*.

Step 9 If the status of the wireless network is **Connected**, and the **ping 192.168.1.49** command is successfully executed, the terminal successfully connects to the wireless network. ---**End**

Ghosting Occurring on the WebLMT Window That Is Opened Using an IE11 Web Browser

When an IE11 web browser is used for WebLMT access, ghosting occurs on the WebLMT window, causing overlapping contents. In this case, install the Microsoft official patch: IE11-Windows6.1-KB2929437-x64.msu.

Procedure

Step 1 Download the patch IE11-Windows6.1-KB2929437-x64.msu at the following website:

Step 2 Install the patch.

Step 3 Restart the computer and log in to the WebLMT again after the patch takes effect.

----**End**