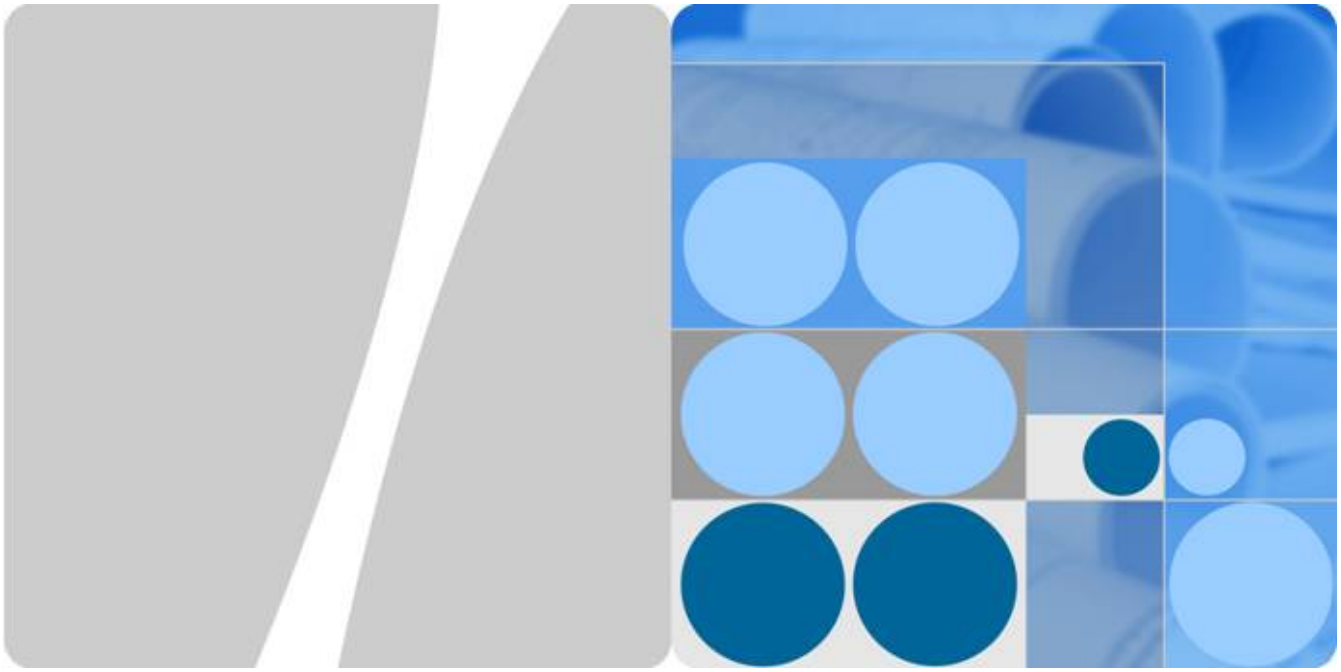

3900 Series Multi-Mode Base Station

V100R003

Commissioning Guide

Issue 02

Date 2010-07-30

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About This Document

Purpose

This document describes the commissioning and verification of the multi-mode base station. The commissioning ensures that the base station operates properly, as designed.

Version

The following table lists the product versions related to this document.

Product Name	Version
DBS3900	V100R003
BTS3900	V100R003
BTS3900A	V100R003
BTS3900L	V100R003

Intended Audience

This document is intended for:

- Field engineers
- Commissioning engineers

Contents

Figures

Tables

1 Changes in 3900 Series Multi-Mode Base Station Commissioning Guide

This chapter describes the changes in the 3900 Series Multi-Mode Base Station Commissioning Guide.

02 (2010-07-30)

This is the first commercial release of V100R003.

Compared with issue 01 (2010-05-04), this issue incorporates the following new topics:

- **3 Procedure for Commissioning the Base Station that Starts to Provide Services of One Mode**

Compared with issue 01 (2010-05-04), this issue incorporates the following changes:

Topic	Change Description
2 Introduction to MBTS Commissioning In Typical Scenarios	Commissioning scenarios are differentiated according to the mode of the MBTS to be commissioned, and several commissioning solutions for the commissioning scenarios are provided.
4 Commissioning the MBTS in GU Mode on the M2000	The description of the preparation and procedure for commissioning the MBTS using the MBTS plug-and-play commissioning function is optimized.
5 Commissioning the MBTS in GL or UL Mode on the M2000	The remote commissioning solution is optimized.
6 Commissioning the MBTS by Using USB and M2000	The commissioning procedure and operations using USB locally and M2000 remotely are optimized.
7 Commissioning the MBTS by Using Local Maintenance Terminal and M2000	The commissioning procedure and operations using local maintenance terminal locally and M2000 remotely are optimized.

Compared with issue 01 (2010-05-04), this issue excludes the following topics:

Topic	Deletion Description
Commissioning resources	The description of commissioning resources and prerequisites is integrated into the description of commissioning modes.
Commissioning prerequisites	

01 (2010-05-04)

This is the draft release of V100R003.

2 Introduction to MBTS Commissioning In Typical Scenarios

This section describes the solutions of MBTS commissioning in typical scenarios.

Introduction to Scenarios of MBTS Commissioning

The scenarios of MBTS commissioning increase with the expansion of the MBTS application scope.

- **The base station starts to provide services of only one mode.**

  In this scenario, the base station is physically an MBTS when it is deployed. However, the base station provides services of only one mode because of insufficient resources, and the base station does not provide services of the other mode until resources are sufficient.

- **The base station starts to provide services of two modes.**

  In this scenario, when a base station is deployed, it is physically an MBTS and does not provide services of the two modes. Now, the base station starts to provide services of two modes.

- **The base station has been providing services of one mode and now starts to provide services of the other mode.**

  In this scenario, when a base station is deployed, it is physically an MBTS and has been providing services of one mode. Therefore, the base station starts to provide services of the other mode.

NOTE

SRAN 5.0 supports three modes of an MBTS: GU, GL, and UL, and the UL mode supports only the co-cabinet solution.

Solutions of MBTS Commissioning

Table 2-1 describes solutions of MBTS commissioning in typical scenarios in terms of the feature and mode of MBTS commissioning.

Table 2-1 Recommended solutions of MBTS commissioning

No.	Commissioning Scenario		Commissioning Solution	
1	**The base station starts to provide services of only one mode.**	No co-transmission	Configure the data of the BBU subrack and main control board of the base station that does not provide services, and then commission the base station that provides services. For details, see **3 Procedure for Commissioning the Base Station that Starts to Provide Services of One Mode**.	
2		Co-transmission	Assume that the modes of an MBTS are categorized into mode A and mode B and that mode A shares its transmission routes with mode B. In this case, the solution of MBTS commissioning is as follows: ● If the base station starts to provide services of mode A, see the preceding commissioning solution without co-transmission. ● If the base station starts to provide services of mode B, configure the base station in mode A and then commission the base station in mode B. For details, see **3 Procedure for Commissioning the Base Station that Starts to Provide Services of One Mode**.	
3	One scenario: **The base station starts to provide services of two modes.** The other scenario: **The base station has been providing services of one mode and starts to provide services of the other mode.**		MBTS commissioning using the M2000	When the network transmission is normal, you can commission an MBTS by using the M2000 in a central equipment room. ● For a base station in GU mode: Use the **plug-and-play commissioning** function.

No.	Commissioning Scenario	Commissioning Solution	
4			For details, see **4 Commissioning the MBTS in GU Mode on the M2000**. ● For a base station in GL or UL mode: Commission the base station in each mode respectively on the M2000. For details, see **5 Commissioning the MBTS in GL or UL Mode on the M2000**.

No.	Commissioning Scenario	Commissioning Solution	
5		MBTS commissioning using the USB disk and M2000	When transmission is unavailable, upgrade the MBTS software and configure the MBTS data using a USB disk (no portable computer is required) locally at the MBTS. After the MBTS software is upgraded and the MBTS data is configured, detect faults according to the LED status and rectify the faults immediately. In this way, maintenance personnel do not need to go to the site twice. For details, see **6 Commissioning the MBTS by Using USB and M2000**.

No.	Commissioning Scenario	Commissioning Solution	
6		MBTS commissioning using local maintenance terminal and M2000	When transmission is unavailable, upgrade the MBTS software and configure the MBTS data using local maintenance terminal (for GBTS, the local maintenance terminal refers to SMT; for the NodeB or eNodeB, the local maintenance terminal refers to LMT) locally at the MBTS, to establish a remote OM link quickly. This commissioning mode requires a portable computer and has a high demand on the skill of commissioning personnel. In addition, the deployment cost is high in this commissioning mode. Therefore, this commissioning mode serves as an auxiliary solution. For details, see **7 Commissioning the MBTS by Using Local Maintenance Terminal and M2000**.

3 Procedure for Commissioning the Base Station that Starts to Provide Services of One Mode

This section describes the procedure for commissioning the base station that starts to provide services of one mode.

Prerequisites

Before commissioning the MBTS, the MBTS, MBSC, and M2000 must meet following requirements:

- The MBTS hardware such as the cabinets, cables, antenna system, and auxiliary devices, is installed and passes the installation check. In addition, check that the MBTS is powered on and passes the power-on check.
- The hardware of the MBSC is installed and commissioned, and the system works properly. The negotiation data of the MBTS to be commissioned is configured and recorded.
- The M2000 server is installed with an adaptation layer whose version matches the version of the MBTS to be commissioned.

Commissioning Procedure Without Co-transmission

Assume that the MBTS supports mode A and mode B, that co-transmission is unavailable to the two modes, and that services of only mode A starts to be provided.

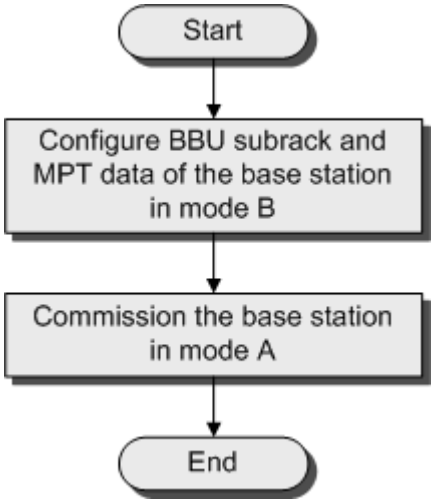
NOTE

The alarm **Inter-System Communication Failure** may be reported when the base station in mode A is commissioned, and the alarm **RRU Network Topology Type and Configuration Mismatch**， **Inter-System Control Rights Conflict** may be reported in a dual-mode scenario. These alarms do not affect the commissioning and services, and therefore you can shield them manually.

- **The MBTS works in GU or GL mode and GSM services are provided at first. Or, the MBTS works in UL mode and services of one mode are provided at first.**

  Figure 3-1 shows the commissioning procedure.

Figure 3-1 Procedure for commissioning the base station that starts to provide services of one mode



1. Create the data configuration file, which includes only the device configuration data of the BBU subrack and main control board, for mode B by using CME. Then, download the data configuration file to the main control board of mode B to validate the data configuration file.

   NOTE

   The data configuration file for mode B must not include the configuration data of the RF unit, PMU, FUN, or USCU. Otherwise, an alarm indicating configuration conflict will be reported when the base station that provides services of mode A is commissioned.

2. Commission the MBTS in mode A by following the procedure for commissioning a single-mode base station. For details, see the *GBTS Commissioning Guide*, *NodeB Commissioning Guide*, or *eNodeB Commissioning Guide* accordingly.

- **The MBTS works in GU mode and UMTS services are provided at first. Or, the MBTS works in GL mode and LTE services are provided at first.**

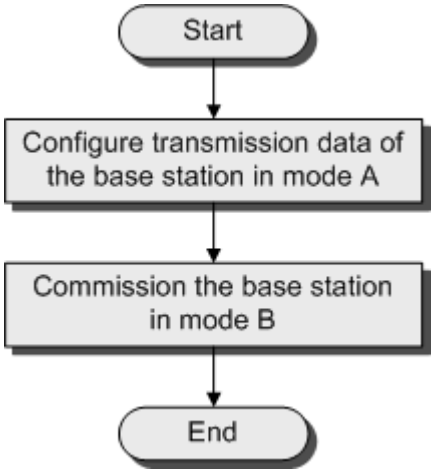
  Commission the MBTS in mode A by following the procedure for commissioning a single-mode base station. For details, see the *GBTS Commissioning Guide*, *NodeB Commissioning Guide*, or *eNodeB Commissioning Guide* accordingly.

Commissioning Procedure With Co-transmission

Assume that the MBTS supports mode A and mode B, that mode A provides transmission, and that mode B shares the transmission provided by mode A.

- The commissioning procedure with co-transmission is the same as that without co-transmission when services of mode A starts to be provided.
- **Figure 3-2** shows the procedure for commissioning the MBTS that starts to provide services of mode B.

Figure 3-2 Procedure for commissioning the base station that starts to provide services of one mode



1. Configure the transmission data of the MBTS in mode A. The transmission data includes but is not limited to E1, MP link, MP group, IP address, routing information, DHCP (used at the MBTS in mode B) relay information, and VLAN.

   (1) Configure the transmission data and export the data configuration file using the CME. For details, see the *GBTS Initial Configuration Guide*, *NodeB Initial Configuration Guide*, or *eNodeB Initial Configuration Guide* accordingly.

   (2) Load the data configuration file to the base station in mode A. You are advised to load the data configuration file locally using a USB disk. For details, see **6.3 Upgrading Software and Configuring Data by Using the USB Disk**.

   NOTE

   You can configure other data of the base station in mode A after it is planned. The data configuration of boards such as PMU and FUN in mode A must comply with mode B. Otherwise, alarm are reported because of configuration conflict.

2. Commission the MBTS in mode B by following the procedure for commissioning a single-mode base station. For details, see the *GBTS Commissioning Guide*, *NodeB Commissioning Guide*, or *eNodeB Commissioning Guide* accordingly.

4 Commissioning the MBTS in GU Mode on the M2000

About This Chapter

The M2000 provides the plug-and-play commissioing function for GU MBTSs. This function is applicable to GU MBTSs in the following three scenarios: Both a GBTS and a NodeB are deployed, a NodeB is newly deployed while a GBTS is running normally, and a GBTS is newly deployed while a NodeB is running normally. The M2000 commissions multiple GU MBTSs simultaneously in a central equipment room, including establishing OM channels, upgrading software and configuring data, and verifying alarms, services, and sites. In addition, the M2000 provides a fault diagnosis entrance to help users locate faults quickly.

4.7 Confirming the Completion of MBTS Commissioning

This chapter describes how to confirm an MBTS commissioning task. After the service verification of an MBTS is complete, the MBTS commissioning task changes to the status for confirmation. You need to manually confirm the completion of the MBTS commissioning.

4.8 Obtaining the MBTS Commissioning Report

A MBTS commissioning report records the task information about the commissioned MBTS and the information about the commissioning process. When a commissioning task is still in progress or is complete, you can obtain and analyze the commissioning report to learn the commissioning details, to view the exceptions that occur during the commissioning, or to determine whether to complete the commissioning.

4.9 References for the MBTS Commissioning Interface

This chapter describes the interfaces and parameters for MBTS commissioning, which help you to commission MBTSs.

4.1 Procedure for MBTS Commissioning in GU Mode on the M2000

When the network transmission is available and works normally, you can commission a GU MBTS using the plug-and-play commissioning function on the M2000 in a central equipment room.

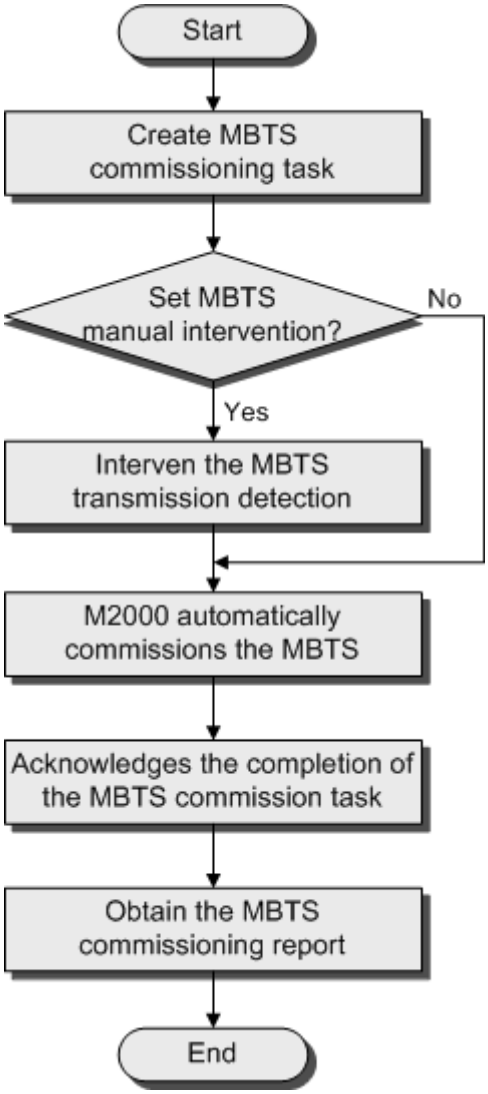
Prerequisite

Prepare for MBTS commissioning by referring to **4.2 Preparing for MBTS Commissioning**.

Commissioning Flowchart

Figure 4-1 shows the procedure for commissioning an MBTS (in GU mode).

Figure 4-1 Flowchart for MBTS commissioning (in GU mode on the M2000)



Procedure

Step 1 Create an MBTS commissioning task by referring to **4.3 Creating an MBTS Commissioning Task**.

Step 2 Perform operations according to whether **Intervene Transmission** is selected when a commissioning task is created.

If...	Then...
Intervene Transmission is selected when a commissioning task is created,	Go to **Step 3**.
Intervene Transmission is not selected when a commissioning task is created,	Go to **Step 4**.

Step 3 Check the transmission state and rectify faults (if any) manually. For details, see **4.4 Manually Intervening the MBTS Transmission Detection**.

Step 4 The M2000 automatically commissions the MBTS. For details on the commissioning process, see **4.5 Automatic Commissioning of the MBTS on the M2000**. During the commissioning process, view the commissioning progress, rectify faults (if any) to ensure that the commissioning is successful. For details, see **4.6 Monitoring the MBTS Commissioning**.

Step 5 After the MBTS service verification passes, the commissioning status is displayed  . Check that the MBTS commissioning is completed. For details, see **4.7 Confirming the Completion of MBTS Commissioning**.

Step 6 Obtain the MBTS commissioning report. For details, see **4.8 Obtaining the MBTS Commissioning Report**.

----End

4.2 Preparing for MBTS Commissioning

This section describes how to prepare for MBTS commissioning.

Prepare for MBTS commissioning by referring to **Table 4-1**.

Table 4-1 Preparing for MBTS commissioning (in case of new deployment of both GBTS and NodeB)

Step	Operation
1	Check that the MBTS hardware, such as the cabinets, cables, antenna system, and auxiliary devices, is installed and passes the installation check. In addition, check that the MBTS is powered on and passes the power-on check.
2	Check that the controller hardware is installed and commissioned successfully and the controller runs normally. In addition, check that the negotiation data of the base station to be commissioned is configured and recorded.
3	Check that the M2000 is commissioned, that the M2000 is connected to the corresponding controller, and that the configuration synchronization is completed.

Step	Operation
4	Prepare the data configuration file of the MBTS to be commissioned. This file can be created and exported using CME, and provided by configuration engineers.
5	Prepare the target version software package of the MBTS to be commissioned. You can download the package from the website http://support.huawei.com/.
6	Prepare the deployment list. For details on the parameters in the deployment list, see **4.9.2 Parameters for the MBTS Deployment List**.
7	Check that the network is normal.

Prepare for MBTS commissioning at GBTS by referring to **Table 4-2**.

NOTE

Before both a GBTS and a NodeB are newly deployed or before a GBTS is newly deployed while a NodeB is running normally, prepare for MBTS commissioning at GBTS by referring to **Table 4-2**.

Table 4-2 Preparing for MBTS commissioning at GBTS

Step	Operation
1	Run the **ACT BTS** command to activate the GBTS.
2	Upload the GBTS configuration data to the controller and validate it on the controller side.
3	Upload the GBTS target version software package to the controller.

Prepare for MBTS commissioning at NodeB by referring to **Table 4-3**.

NOTE

Before both a GBTS and a NodeB are newly deployed or before a NodeB is newly deployed while a GBTS is running normally, prepare for NodeB commissioning by referring to **Table 4-3**.

Table 4-3 Preparing for MBTS commissioning at NodeB

Step	Operation
1	Check that the M2000 is installed with an adaptation layer whose version matches the version of the NodeB to be commissioned.
2	Check that the NodeB relay server is set correctly. The NodeB relay server is usually set to the controller that controls the NodeB.

4.3 Creating an MBTS Commissioning Task

This chapter describes how to create an MBTS commissioning task. After completing MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

4.3.1 Creating an MBTS Commissioning Task (Deploying Both the GBTS and the NodeB)
This section describes how to create an MBTS commissioning task when you need to deploy both the GBTS and the NodeB. After making MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

4.3.2 Creating an MBTS Commissioning Task (Deploying a NodeB When the GBTS Is Normal)
This section describes how to create an MBTS commissioning task when the GBTS is normal and you need to deploy a NodeB. After making MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

4.3.3 Creating an MBTS Commissioning Task (Deploying a GBTS When the NodeB Is Normal)
This section describes how to create an MBTS commissioning task when the NodeB is normal and you need to deploy a GBTS. After making MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

4.3.1 Creating an MBTS Commissioning Task (Deploying Both the GBTS and the NodeB)

This section describes how to create an MBTS commissioning task when you need to deploy both the GBTS and the NodeB. After making MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

Prerequisite

- The M2000 client is started.
- MBTS commissioning preparations are complete.
- The controller to which the MBTS to be commissioned belongs is properly connected to the M2000.

Context

The M2000 can commission a maximum of 500 base stations at a time, where one MBTS is equal to two base stations (the NodeB and the GBTS are not differentiated).

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 Keep ready the NodeB deployment list.

Option	Description
Exporting the MBTS Deployment List from the CME	Obtain and open the exported MBTS deployment list, and then add the related data according to the planned data that is confirmed with the network planning engineers. For the data that needs to be added, see **4.9.2 Parameters for the MBTS Deployment List**.
Exporting the Template of MBTS Deployment List from the M2000 Client	1. Click  . The **Save** dialog box is displayed. 2. Specify the save path, enter the filename, and then click **Save**. 3. Add the related data according to the planned data that is confirmed with the network planning engineers. **NOTE** ● The exported template of MBTS deployment list is in .csv format. By default, the filename is **MBTS_GU_Auto_Deployment_List_Template.csv**. You can change the filename as required. ● The exported template of MBTS deployment list contains three records, which represent three deployment scenarios. Edit the records according to the actual situation of the template. ● If **Auto Deployment Type** is set to **MBTS**, it indicates that you need to create both the GBTS and the NodeB. ● If **Auto Deployment Type** is set to **NodeB**, it indicates that you need to add a NodeB when the GBTS is normal. ● If **Auto Deployment Type** is set to **GBTS**, it indicates that you need to add a GBTS when the NodeB is normal.

Step 3 Click  on the toolbar to import the MBTS deployment list.

Only GBTS deployment lists in .csv format can be imported to the M2000. After the MBTS deployment list is imported, the M2000 checks whether any mandatory parameter in the list is null and whether the MBTS is valid. In addition, the information indicating whether the import succeeded or failed is displayed on the **Operation Information** tab page.

- The import succeeded: M2000 automatically creates a commissioning task for each MBTS and displays the task in both the **GBTS List** area and the **NodeB List** area.
- The import failed: The **Operation Information** tab page displays the MBTS that failed to be imported and the causes for the failure. For details about failure symptoms and solutions, see What Should I Do When a Failure Message Is Displayed During the Import of the MBTS Deployment List?.

Step 4 Upload the target software package and configuration file of the NodeB.

NOTE

You need to upload only the target software package for the GBTS. For details, see **4.2 Preparing for MBTS Commissioning**.

1. Right-click a record in the **NodeB List** area, and then choose **Upload versions and config files** from the shortcut menu. The **Upload versions and config files** dialog box is displayed.
2. Select the file to be uploaded.
3. After the upload is complete, click **Close**.

Step 5 In **MBTS List**, select an MBTS to be commissioned, and then click  on the toolbar. The **Customize Process** dialog box is displayed.

Option	Description
Manual Transmission Detection Intervention Is Required	1. Select the check box in front of **Intervene Transmission**. 2. Perform **step 6**. For details about how to manually intervene GBTS transmission detection, see **4.4 Manually Intervening the MBTS Transmission Detection**.
Manual Transmission Detection Intervention Is Not Required	Perform **step 6**.

Step 6 Click **OK**. The M2000 starts commissioning the MBTS automatically.

M2000, see **4.5 Automatic Commissioning of the MBTS on the M2000**.

----End

Postrequisite

During the commissioning, you can monitor the MBTS commissioning status through the M2000 to handle commissioning exceptions in time and ensure that the commissioning can be performed successfully. For details, see **4.6.1 Viewing the Progress and Status of an MBTS Commissioning Task**.

4.3.2 Creating an MBTS Commissioning Task (Deploying a NodeB When the GBTS Is Normal)

This section describes how to create an MBTS commissioning task when the GBTS is normal and you need to deploy a NodeB. After making MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

Prerequisite

- The M2000 client is started.
- MBTS commissioning preparations are complete.
- The controller to which the MBTS to be commissioned belongs is properly connected to the M2000.

Context

The M2000 can commission a maximum of 500 base stations at a time, where one MBTS is equal to two base stations (the NodeB and the GBTS are not differentiated).

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 Keep ready the NodeB deployment list.

Option	Description
Exporting the MBTS Deployment List from the CME	Obtain and open the exported MBTS deployment list, and then add the related data according to the planned data that is confirmed with the network planning engineers. For the data that needs to be added, see **4.9.2 Parameters for the MBTS Deployment List**.

Exporting the Template of MBTS Deployment List from the M2000 Client	1. Click  . The **Save** dialog box is displayed.
	2. Specify the save path, enter the filename, and then click **Save**.
	3. Add the related data according to the planned data that is confirmed with the network planning engineers.
	NOTE
	● The exported template of MBTS deployment list is in .csv format. By default, the filename is **MBTS_GU_Auto_Deployment_List_Template.csv**. You can change the filename as required.
	● The exported template of MBTS deployment list contains three records, which represent three deployment scenarios. Edit the records according to the actual situation of the template.
	  ● If **Auto Deployment Type** is set to **MBTS**, it indicates that you need to create both the GBTS and the NodeB.
	  ● If **Auto Deployment Type** is set to **NodeB**, it indicates that you need to add a NodeB when the GBTS is normal.
	  ● If **Auto Deployment Type** is set to **GBTS**, it indicates that you need to add a GBTS when the NodeB is normal.

Step 3 Click  on the toolbar to import the MBTS deployment list.

Only GBTS deployment lists in .csv format can be imported to the M2000. After the MBTS deployment list is imported, the M2000 checks whether any mandatory parameter in the list is null and whether the MBTS is valid. In addition, the information indicating whether the import succeeded or failed is displayed on the **Operation Information** tab page.

- The import succeeded: The M2000 automatically creates a commissioning task for each MBTS and displays the task in both the **GBTS List** area and the **NodeB List** area. The **GBTS List** area displaying the commissioning tasks of the GBTSs that need not be deployed is unavailable.
- The import failed: The **Operation Information** tab page displays the MBTS that failed to be imported and the causes for the failure. For details about failure symptoms and solutions, see What Should I Do When a Failure Message Is Displayed During the Import of the MBTS Deployment List?.

Step 4 Upload the target software package and configuration file of the NodeB.

1. Right-click a record in the **NodeB List** area, and then choose **Upload versions and config files** from the shortcut menu. The **Upload versions and config files** dialog box is displayed.
2. Select the file to be uploaded.
3. After the upload is complete, click **Close**.

Step 5 In **MBTS List**, select an MBTS to be commissioned, and then click  on the toolbar. The M2000 starts commissioning the MBTS automatically.

- After the deployment starts, the M2000 deploys only the NodeB.
- For details about the automatic commissioning performed by the M2000, see **4.5 Automatic Commissioning of the MBTS on the M2000**.

----End

Postrequisite

During the commissioning, you can monitor the MBTS commissioning status through the M2000 to handle commissioning exceptions in time and ensure that the commissioning can be performed successfully. For details, see **4.6.1 Viewing the Progress and Status of an MBTS Commissioning Task**.

4.3.3 Creating an MBTS Commissioning Task (Deploying a GBTS When the NodeB Is Normal)

This section describes how to create an MBTS commissioning task when the NodeB is normal and you need to deploy a GBTS. After making MBTS commissioning preparations, you can create an MBTS commissioning task on the M2000 and enable the M2000 to commission the MBTS automatically.

Prerequisite

- The M2000 client is started.
- MBTS commissioning preparations are complete.
- The controller to which the MBTS to be commissioned belongs is properly connected to the M2000.

Context

The M2000 can commission a maximum of 500 base stations at a time, where one MBTS is equal to two base stations (the NodeB and the GBTS are not differentiated).

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 Keep ready the NodeB deployment list.

Option	Description
Exporting the MBTS Deployment List from the CME	Obtain and open the exported MBTS deployment list, and then add the related data according to the planned data that is confirmed with the network planning engineers. For the data that needs to be added, see **4.9.2 Parameters for the MBTS Deployment List**.
Exporting the Template of MBTS Deployment List from the M2000 Client	1. Click  . The **Save** dialog box is displayed. 2. Specify the save path, enter the filename, and then click **Save**. 3. Add the related data according to the planned data that is confirmed with the network planning engineers. **NOTE** ● The exported template of MBTS deployment list is in .csv format. By default, the filename is **MBTS_GU_Auto_Deployment_List_Template.csv**. You can change the filename as required. ● The exported template of MBTS deployment list contains three records, which represent three deployment scenarios. Edit the records according to the actual situation of the template. ● If **Auto Deployment Type** is set to **MBTS**, it indicates that you need to create both the GBTS and the NodeB. ● If **Auto Deployment Type** is set to **NodeB**, it indicates that you need to add a NodeB when the GBTS is normal. ● If **Auto Deployment Type** is set to **GBTS**, it indicates that you need to add a GBTS when the NodeB is normal.

Step 3 Click  on the toolbar to import the MBTS deployment list.

Only GBTS deployment lists in .csv format can be imported to the M2000. After the MBTS deployment list is imported, the M2000 checks whether any mandatory parameter in the list is null and whether the MBTS is valid. In addition, the information indicating whether the import succeeded or failed is displayed on the **Operation Information** tab page.

- The import succeeded: M2000 automatically creates a commissioning task for each MBTS and displays the task in both the **GBTS List** area and the **NodeB List** area. The **NodeB List** area that displays the commissioning tasks of NodeBs that need not be deployed is unavailable.
- The import failed: The **Operation Information** tab page displays the MBTS that failed to be imported and the causes for the failure. For details about failure symptoms and solutions, see What Should I Do When a Failure Message Is Displayed During the Import of the MBTS Deployment List?.

Step 4 In **MBTS List**, select an MBTS to be commissioned, and then click  on the toolbar. The **Customize Process** dialog box is displayed.

Option	Description
Manual Transmission Detection Intervention Is Required	1. Select the check box in front of **Intervene Transmission**. 2. Perform **step 5**. For details about how to manually intervene GBTS transmission detection, see **4.4 Manually Intervening the MBTS Transmission Detection**.
Manual Transmission Detection Intervention Is Not Required	Perform **step 5**.

Step 5 Click **OK**. The M2000 starts commissioning the MBTS automatically.

- After the deployment starts, the M2000 deploys only the GBTS.
- M2000, see **4.5 Automatic Commissioning of the MBTS on the M2000**.

----End

Postrequisite

During the commissioning, you can monitor the MBTS commissioning status through the M2000 to handle commissioning exceptions in time and ensure that the commissioning can be performed successfully. For details, see **4.6.1 Viewing the Progress and Status of an MBTS Commissioning Task**.

4.4 Manually Intervening the MBTS Transmission Detection

This section describes how to manually intervene GBTS transmission during MBTS commissioning. By intervening GBTS transmission, you can query the real-time status of the E1/T1 port to ensure that the GBTS transmission is normal and that you can proceed with the GBTS deployment.

Prerequisite

The automatic software commissioning already starts, and the GBTS transmission is being manually intervened.

Context

If you have set intervention on the commissioning task when starting the commissioning, the task switches to the intervention status after the OML detection is complete, regardless of whether the OML is normal. In addition, the function of querying the E1/T1 port status is provided.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 In **MBTS List**, select the GBTS to be intervened, and then click  on the toolbar. The transmission intervention dialog box is displayed.

1. Troubleshoot connection faults.
2. Type a query condition to query the E1/T1 port status.

   NOTE

   Querying the E1/T1 port status does not affect the transmission.
3. Transmission intervention is complete. You are prompted whether to continue the commissioning.
   - If you select **Continue**, the subsequent commissioning operations are automatically performed.
   - If you select **Stop**, the commissioning stops and switches to the  status, that is, the commissioning is abnormal.

----End

4.5 Automatic Commissioning of the MBTS on the M2000

After creating the MBTS commissioning task, the M2000 starts to commission the MBTS automatically.

Table 4-4 describes the automatic commissioning procedures of the MBTS. If a commissioning procedure is normal, the M2000 proceeds with the next commissioning procedure. If the commissioning procedure is not normal, the M2000 terminates the commissioning and reminds the user of the situation.

Table 4-4 Automatic commissioning procedures of the MBTS

Commissioning Procedure	Description
Establishing OM channel automatically	The M2000 can automatically establishes an OM channel with the base station based on the deployment list, provided that the transport network is functional. Then, the M2000 commissions the MBTS and performs other OM tasks through this channel. After detecting the MBTS, the M2000 automatically sets **Status** of the MBTS to **Processing**, such that no alarms reported by the MBTS during the commissioning procedure are displayed on the M2000 alarm interface and the normal networking monitoring is not affected. After the OM channel is established, you can start the automatic commissioning of the MBTS by creating a commissioning task on the M2000. **NOTE** You can proceed with the next step only when the OM channel for both GSM and UMTS is established.

Commissioning Procedure	Description
Checking GBTS OML automatically	The M2000 automatically checks whether the OML between the GBTS and its homing BSC is normal. ● If the link is normal and you do not set manual intervention when creating the commissioning task, the M2000 proceeds with the next procedure automatically. ● If the link is not normal and you do not set manual intervention when creating the commissioning task, the M2000 terminates the commissioning automatically. In this situation, you need to solve the problem first. ● If you have set manual intervention when creating the commissioning task, you need to decide whether to proceed with the next commissioning procedure regardless whether the link is normal or not.
Automatic software upgrade	Based on the target version information included in the deployment list, the M2000 automatically checks whether the target software version is consistent with that on the base station. If the software version is inconsistent, then the upgraded is failed. **NOTE** ● If the USB disk is used for the base station upgrade, ensure that the software version and configuration data of the base station are upgraded to the target ones. After confirmed, the M2000 skips this step and directly proceeds with the automatic software commissioning. ● For the NodeB, the M2000 downloads the target software and data configuration file from the server to the NodeB, and completes software upgrade and configuration activation automatically. ● For the GBTS, the M2000 instructs the BSC to start upgrading the GBTS software, and the GBTS downloads the target version from the BSC and upgrades the software. After the GBTS software is upgraded and the GBTS is reset, the GBTS automatically sends a request to the BSC for loading configuration data. ● In scenarios where both GBTS and NodeB need to be deployed, only the MBTS upgrade as a whole is supported. In scenarios where only one RAT needs to be deployed, perform the upgrade individually for the RAT. In the preceding scenarios, the upgrade is not supported for unmatched versions. ● Only when the software upgrade and configuration activation are completed for both GBTS and NodeB, the commission can go to next stage.

Commissioning Procedure	Description
Automatic software commissioning	During NodeB software commissioning, the M2000 performs fault diagnose to ensure that the service check is performed normally. It is carried out automatically, and you need to focus only on faults. The M2000 displays all reported alarms on the monitor interface and provides an easy fault diagnose entry to help you locate faults fast and provide troubleshooting suggestions. The software commissioning on the GBTS side involves the sub-processes. When detecting that the cell initialization of the base station is complete and there is an available cell for use, the M2000 proceeds with the next phase automatically. ● Check cell initialization status of the base station. ● Query base station information. ● Check high-precision VSWR. This operation is optional, based on the setting done when the commissioning task is created. ● Monitor base station alarms. ● Check cell serviceability status. **NOTE** In the software commissioning phase, you can view base station alarms and perform fault diagnose as required, and then take actions accordingly to solve problems.
Automatic service check	The M2000 automatically collects the following CS-related and PS-related counters of the NE to check whether the NE is operating normally. When non-zero values exist for all the counters, the service check is passed; otherwise, the service check phase is always sustained.
Completing commissioning	After service check is completed, the deployment task state is displayed as **Confirm Completed Deployment**. After you confirm that the commissioning task is completed, the M2000 automatically cancels the **Testing** state of the MBTS and then proceeds with the site location check. **NOTE** Site location check is the process of checking whether the ESN reported by the site is consistent with that included in the deployment list. The purpose is to check for situations where the USB disk is inserted incorrectly in IP networking mode.

4.6 Monitoring the MBTS Commissioning

This chapter describes how to monitor the MBTS commissioning, thus helping you to obtain the progress and status of the MBTS commissioning and then rectify faults in real time.

This section describes how to view the progress and status of an automatic MBTS commissioning task that is being performed by the M2000.

4.6.1 Viewing the Progress and Status of an MBTS Commissioning Task

This section describes how to view the progress and status of an automatic MBTS commissioning task that is being performed by the M2000.

Prerequisite

The automatic software commissioning already starts.

Context

User **admin** can view commissioning tasks created by any user, whereas other users can view only the commissioning tasks created by themselves.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 View the status and progress of an MBTS commissioning task.

Option	Description
Deploying a GBTS and a NodeB at the same time	View the commissioning progress and status of the GBTS and that of the NodeB in the **GBTS List** and **NodeB List** areas.
Deploying a NodeB when the GBTS is normal	View the commissioning progress and status of the NodeB in the **NodeB List** area.
Deploying a GBTS when the NodeB is normal	View the commissioning progress and status of the GBTS in the **GBTS List** area.

TIP

You can choose either of the following methods to quickly view the progress and status of the MBTS commissioning:

- Click the table heading field of the task list to sort the commissioning tasks.
- Click next to the table heading field of the task list to set the filtering condition. The task list displays only the tasks that meet the filtering condition. If no filtering condition is set, the list of commissioning tasks displays all the tasks that you are authorized to view.

  Select a field in the task list, click , and then select **Custom** from the drop-down list. Set the filtering condition in the displayed dialog box.

- GBTS commissioning status (**GBTS List** area): The statuses of commissioning tasks are displayed in **Status**. The progress of the current task is displayed in **Current Phase**. The details of each stage under each status are displayed in **Description**.
- NodeB commissioning status (**NodeB List** area): The statuses of commissioning tasks are displayed in **Status**. The progress of the current task is displayed in **Current Phase**. The details of each stage under each status are displayed in **Description**.

For example, when a commissioning task is in the state (that is, the commissioning is being performed), the operations such as version download, software upgrade, and configuration file upgrade are performed.

For details about each status, see **Table 4-5**.

Table 4-5 Description of the commissioning statuses

Status	Description
	Start the MBTS commissioning task.
	The commissioning is abnormal. View the alarm information, and then handle alarms and perform fault diagnosis and alarm in time. For details, see **4.6.2 Handling MBTS Alarms** and **4.6.3 Diagnosing MBTS Faults**.
	Pay attention to the commissioning. For example, an exception occurs in a certain procedure, which does not affect the commissioning and does not need to be handled.
	Manually intervene the commissioning of GBTS transmission. For details, see **4.4 Manually Intervening the MBTS Transmission Detection**.
	No operation needs to be performed. The commissioning is being performed normally.
	Confirm whether to complete the commissioning. For details, see **4.7 Confirming the Completion of MBTS Commissioning**.
	The commissioning is complete without errors. Obtain and archive the commissioning report. For details, see **4.8 Obtaining the MBTS Commissioning Report**.

----End

4.6.2 Handling MBTS Alarms

This section describes how to handle MBTS alarms. After the automatic software commissioning starts, you can use the M2000 to monitor the alarms of an MBTS and the relevant alarms of the controller that manages the MBTS in real time. If exceptions occur during the commissioning, you can view the alarm information to locate and handle faults in time.

Prerequisite

The automatic software commissioning already starts, and you have not confirmed the completion of the commissioning yet.

Context

M2000displays all the alarms reported during the MBTS commissioning based on object types.

- The alarms of GBTSs are categorized as the following types: E1T1 alarms, IP alarms, software alarms, board alarms, antenna alarms, cell service alarms, and other alarms. Other alarms refer to the alarms that cannot be categorized on the basis of specific objects.
- The alarms of NodeBs are categorized as the following types: E1T1 alarms, IP alarms, antenna alarms, board alarms, cell alarms, external alarms, and other alarms. Other alarms refer to the alarms that cannot be categorized on the basis of specific objects.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 From **MBTS List**, select an MBTS whose alarms you need to view, and then click  on the toolbar. The alarm monitoring window is displayed.

For details about the alarm monitoring window, see **Interface Description: MBTS Commissioning**.

Step 3 Select the object to be viewed in the left pane of the alarm monitoring window, and then view the alarm information about this object in the corresponding area in the right pane.

NOTE

- If you select an MBTS to view its alarms, you can view the alarms of both the GBTS and the NodeB. If one base station is normal and only the other base station is deployed, the deployed base station provides the entries of alarm classification and fault diagnosis, whereas the normal base station displays all the alarms without providing the entries.
- You can also choose to view the alarm information about only the GBTS or the NodeB. In the **GBTS List** or **NodeB List** area of the **MBTS Auto Deployment** window, right-click a record, and then choose **Open Monitor Window** from the shortcut menu. The alarm monitoring window of the GBTS or NodeB is displayed.

Step 4 Handle MBTS alarms.

1. Double-click an alarm to be handled, and then click the link provided in **Reason** in the displayed dialog box of details.
2. Rectify the alarm according to the alarm handling suggestions.

----End

4.6.3 Diagnosing MBTS Faults

In the case of GBTS/NodeB board alarms, GBTS/NodeB E1T1 alarms, and GBTS/NodeB antenna alarms, if the causes of the fault cannot be located in the alarm information, you can perform fault diagnosis and then take corresponding measures to handle the alarms.

Prerequisite

The automatic software commissioning already starts, and you have not confirmed the completion of the commissioning yet.

Context

CAUTION

E1T1 fault diagnosis leads to the interruption of all services on the port; antenna fault diagnosis leads to the interruption of all carrier services of the GBTS. Therefore, you need to perform the fault diagnosis when the GBTS services are in idle state or are segregated.

- After the fault diagnosis starts, the M2000 creates a diagnosis task and displays the troubleshooting progress. After the fault diagnosis is complete, you can obtain the fault diagnosis report to view fault location information.
- If you delete a fault diagnosis task, the corresponding diagnosis report is deleted accordingly. If you restart the M2000 server, all fault diagnosis tasks and reports are deleted.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 From **MBTS List**, select an MBTS whose alarms you need to view, and then click  on the toolbar. The alarm monitoring window is displayed.

For details about the alarm monitoring window, see **Interface Description: MBTS Commissioning**.

Step 3 Perform fault analysis on board alarms, E1T1 alarms, and antenna alarms.

1. Select an object (board, E1/T1, or antenna) in the left pane of the alarm monitoring window, or select a specific alarm of an object (board, E1/T1, or antenna) from the alarm list in the right pane.
2. Right-click the selected object or alarm, and then choose **Diagnose** from the shortcut menu. In the displayed dialog box, select the diagnosis type, enter the diagnosis parameters, and then click **OK**. The M2000 starts the fault diagnosis.

   A new diagnosis task is added to the diagnosis list. The diagnosis task list is located in the lower part of the alarm monitoring window.
3. In the diagnosis task list, right-click a fault diagnosis task, and then choose **Details** or **Diagnosis Report** from the shortcut menu. Then, view the diagnosis details or conclusion.

----End

4.6.4 Viewing the Service Verification Results of an MBTS

This section describes how to view the service verification results of an MBTS. After the automatic service verification starts, the M2000 automatically collects the performance data related to the GBTS and NodeB services and checks whether the services are normal.

Prerequisite

The automatic software commissioning already starts, and you have not confirmed the completion of the commissioning yet.

Context

For details about the process of MBTS service verification, see **Table 4-6**. For details about the service verification window, see **Interface Description: Commissioning the MBTS**.

Table 4-6 Procedure of automatic service verification

Step	Description	Operation Performed by Users
1. The M2000 collects the performance data related to the GBTS and NodeB services.	If you do not restart the MBTS commissioning or confirm the completion of the commissioning after the service verification starts, the M2000 collects the performance counter data related to the GBTS and NodeB services according to the shortest measurement period currently supported by the NEs. The performance counters of an MBTS consist of the performance counters of the GBTS and the performance counters of the NodeB. For details, see **4.9.3 Parameters for MBTS Service Verification Performance Counters**.	Not involved.

Step	Description	Operation Performed by Users
2. The M2000 checks whether the MBTS services are running normally according to the values of the performance counters.	If each GBTS and NodeB performance counter once has a non-zero value, the M2000 considers that the service verification is successful. At this time, the status of the commissioning task changes to , that is, waiting for you to manually confirm the completion of the commissioning. Otherwise, the commissioning task remains at the service verification stage.	• If the commissioning task is in the state, you need to check whether the commissioning is complete. For details, see **4.7 Confirming the Completion of MBTS Commissioning**. • If the commissioning task remains at the service verification stage, it is recommended that you view the service verification results to obtain the actual performance data.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 View the service verification results of the MBTS.

1. In **MBTS List**, select an MBTS whose service verification results need to be viewed, and then click on the toolbar. The service verification window is displayed.

   NOTE

   - If you select an MBTS to view the service verification results, you can view the results on both the GBTS side and the NodeB side.
   - You can also choose to view only the service verification results on the GBTS side or the NodeB side. In the **GBTS List** or **NodeB List** area of the **MBTS Auto Deployment** window, right-click a record, and then choose **Open Service Verification Window** from the shortcut menu. The service verification window of the GBTS or NodeB is displayed.

2. View the service verification results and perform corresponding operations.

   The accumulated values of the counters, which are collected in the time range between the start of the service verification and the restart of the commissioning or the confirmation of the commissioning completion, are displayed in the service verification window.

   - If the value of each counter is once displayed as (indicates a non-zero value), you can infer that the service verification is successful. Confirm whether to complete the commissioning.

- If the value of a counter is always displayed as  (indicates the value zero), you can infer that the services related to this counter are faulty. Rectify the fault.

----End

4.6.5 Restarting/Deleting MBTS Commissioning Tasks

This section describes how to restart or delete ongoing MBTS commissioning tasks.

Prerequisite

Certain MBTS commissioning tasks are created.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 Restart or delete MBTS commissioning tasks as required.

Option	Description
Restarting MBTS commissioning tasks	Select one or multiple MBTSs from **MBTS List**, and then click  on the toolbar to restart the selected MBTS commissioning tasks.
Deleting MBTS commissioning tasks	Select one or multiple MBTSs from **MBTS List**, and then click  on the toolbar to delete the selected MBTS commissioning tasks.

----End

4.7 Confirming the Completion of MBTS Commissioning

This chapter describes how to confirm an MBTS commissioning task. After the service verification of an MBTS is complete, the MBTS commissioning task changes to the status for confirmation. You need to manually confirm the completion of the MBTS commissioning.

Prerequisite

The MBTS service verification is complete.

Context

- If some alarms are still not cleared during the commissioning, it is recommended that you do not confirm the completion of the commissioning task, so that you can view and handle these alarms easily.
- After you confirm that the commissioning task is complete, the alarms related to all the GBTS and NodeB commissioning procedures cannot be viewed any longer.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 In **MBTS List**, select a commissioning task to be confirmed, and then click on the toolbar to confirm the completion of this task.

After the commissioning is complete, the M2000 stops monitoring the alarms on the GBTSs, NodeBs, and related controllers. In addition, it stops subscribing to the service verification performance counters of the GBTSs and NodeBs.

----End

4.8 Obtaining the MBTS Commissioning Report

A MBTS commissioning report records the task information about the commissioned MBTS and the information about the commissioning process. When a commissioning task is still in progress or is complete, you can obtain and analyze the commissioning report to learn the commissioning details, to view the exceptions that occur during the commissioning, or to determine whether to complete the commissioning.

Prerequisite

A commissioning task is in progress.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **MBTS Auto Deployment**. The **MBTS Auto Deployment** window is displayed.

Step 2 (Optional) In **MBTS List**, select a commissioning task to be confirmed, and then click on the toolbar to export the commissioning report.

In the exported file, select **index.html** to view the detailed commissioning information.

----End

4.9 References for the MBTS Commissioning Interface

This chapter describes the interfaces and parameters for MBTS commissioning, which help you to commission MBTSs.

4.9.1 Interface Description: MBTS Commissioning
This section describes the **MBTS Auto Deployment** window displayed when you commission MBTSs.

4.9.2 Parameters for the MBTS Deployment List
The MBTS deployment list provides the parameters required for commissioning MBTSs. After you import the MBTS deployment list into the M2000, the M2000 creates a MBTS commissioning task to implement automatic MBTS commissioning.

4.9.3 Parameters for MBTS Service Verification Performance Counters

This section describes the parameters of the performance counters that are monitored at the service verification stage during MBTS commissioning.

4.9.1 Interface Description: MBTS Commissioning

This section describes the **MBTS Auto Deployment** window displayed when you commission MBTSs.

Main Window

The MBTS commissioning task list contains GBTS commissioning tasks and NodeB commissioning tasks. **Figure 4-2** shows the main window for MBTS commissioning. **Table 4-7** describes the window.

Figure 4-2 Main window for MBTS commissioning

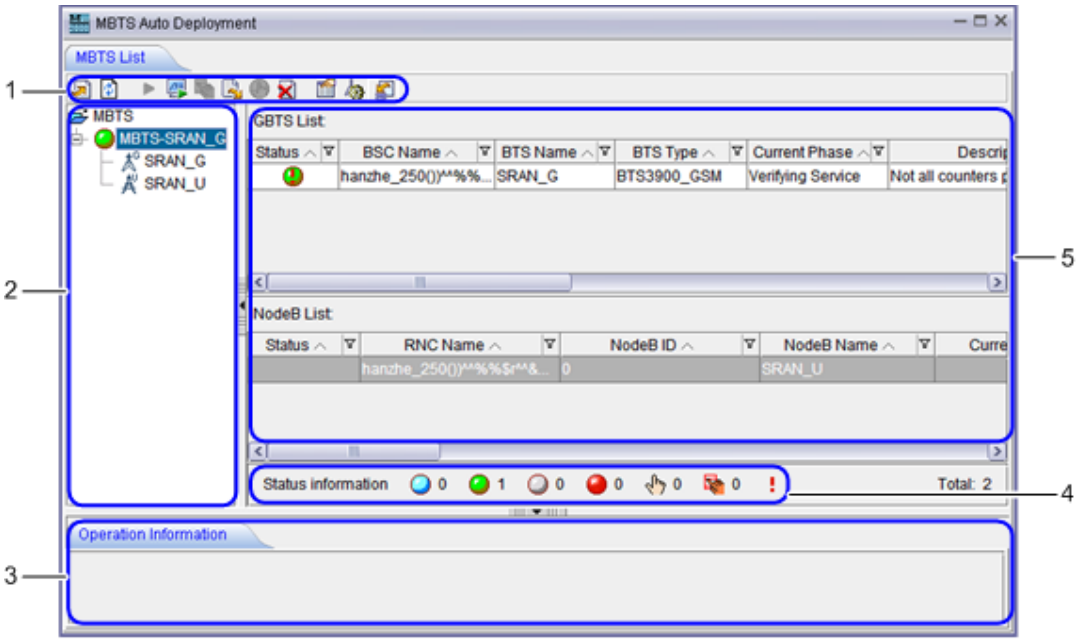


Table 4-7 Description

No.	Description
1	Toolbar: provides operation entries for commissioning MBTSs.
2	MBTS list: displays all the MBTSs to be commissioned in the commissioning tasks.
3	Operation result area: displays the results of the operations performed during the commissioning.
4	Status bar of commissioning tasks: displays the total number of commissioning tasks and number of commissioning tasks in each status.

No.	Description
5	Commissioning task list: displays all commissioning tasks and the commissioning progress of each task. You can right-click a commissioning task and then choose a menu item from the shortcut menu to perform the related operation.

Alarm Monitoring Window

The MBTS alarm monitoring window consists of the GBTS alarm pane and the NodeB alarm pane. **Figure 4-3** shows the MBTS alarm monitoring window. **Table 4-8** describes the window.

Figure 4-3 MBTS alarm monitoring window

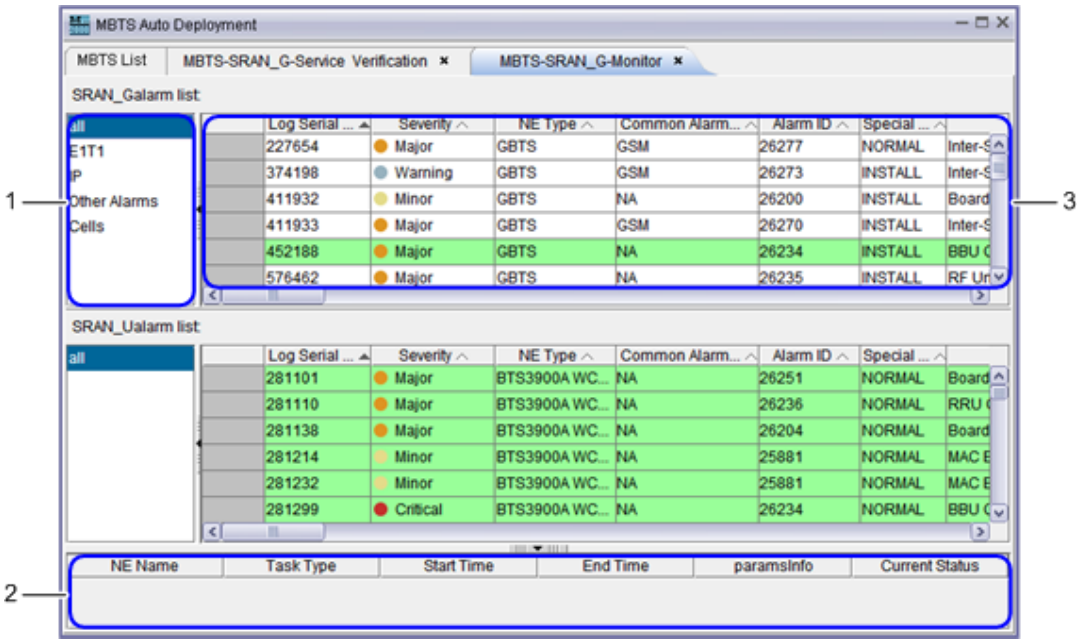


Table 4-8 Description

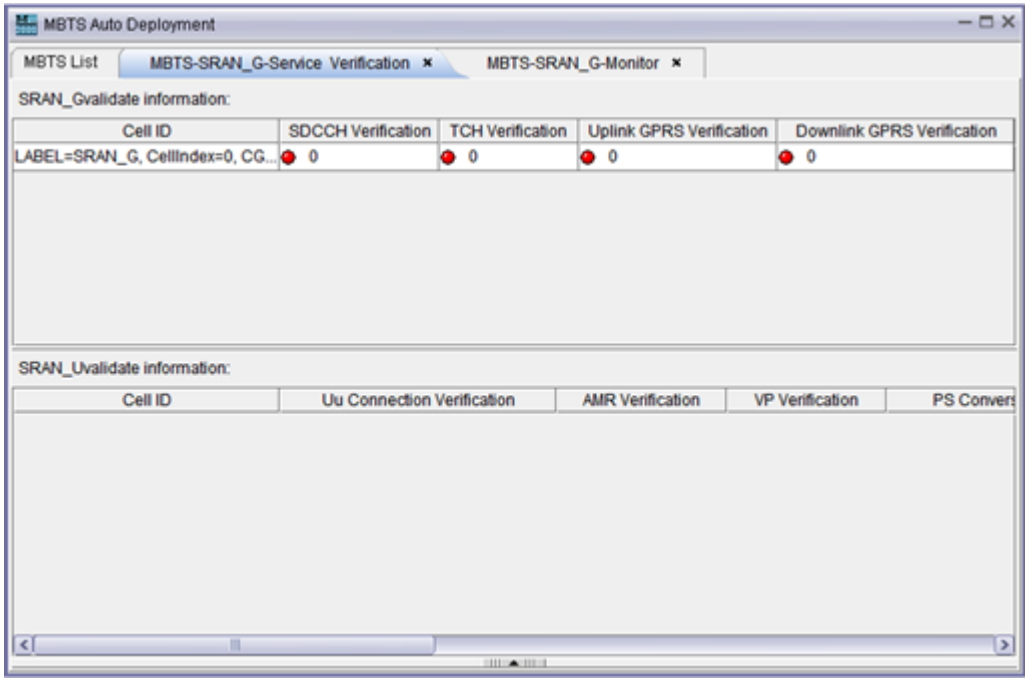
No.	Description
1	Object type: After selecting an object type, you can view all the alarms of this object type in the alarm list on the right.
2	Alarm list: After selecting an object type, you can view all the alarms of this object type in this list. You can right-click an alarm in the alarm list and then choose a menu item from the shortcut menu to perform the related operation.

No.	Description
3	Fault diagnosis task list: You can right-click an object type or an alarm and then choose **Diagnose** from the shortcut menu to diagnose faults. The M2000 creates a fault diagnosis task and displays the diagnosis progress. After the fault diagnosis is complete, you can obtain the fault diagnosis report to view fault locating information.

Service Verification Window

The MBTS service verification window consists the GBTS service verification pane and the NodeB service verification pane, as shown in **Figure 4-4**. The service verification window displays the accumulated values of the performance counters related to the GBTS and NodeB. It also indicates whether the accumulation values are normal.

Figure 4-4 MBTS service verification window



4.9.2 Parameters for the MBTS Deployment List

The MBTS deployment list provides the parameters required for commissioning MBTSs. After you import the MBTS deployment list into the M2000, the M2000 creates a MBTS commissioning task to implement automatic MBTS commissioning.

Table 4-9 describes the parameters in the MBTS deployment list.

NOTE

- If the CME is deployed, and you has used the CME to initially configure the MBTS, you are recommended to export the MBTS deployment list through the CME.For details, see **Exporting the MBTS deployment list and configuration file** in the online help. The principles for the CME to export the information about the parameter fields are as follows:
  - If the parameter is configured, the CME exports the value of the parameter.
  - If the parameter is not configured, the CME cannot export the value of the parameter.
- If the CME is not deployed, you can export the template of the MBTS deployment list template the **MBTS Auto Deployment** window in the M2000 client. For details, see **4.3.1 Creating an MBTS Commissioning Task (Deploying Both the GBTS and the NodeB)**, **4.3.2 Creating an MBTS Commissioning Task (Deploying a NodeB When the GBTS Is Normal)** or **4.3.3 Creating an MBTS Commissioning Task (Deploying a GBTS When the NodeB Is Normal)**.

Table 4-9 Parameters for the MBTS deployment list

Parameter Field	Description
GU ID	GU ID. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Auto Deployment Type	ID of the type of the commissioning MBTS. The value of this parameter is mandatory to be exported, and the parameter can be edited in the **MBTS Auto Deployment** window (If the CME cannot export the value of this parameter, you need to edit it manually).
RNC ID	ID of the RNC to which the NodeB belongs The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
RNC Name	Name of the RNC to which the NodeB belongs. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB ID	eNodeB ID. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Name	Name of the NodeB. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB ESN1	Electronic serial number of the NodeB active control board (If the parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB ESN2	Electronic serial number of the NodeB standby control board (If the parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.

Parameter Field	Description
NodeB TRANS IP address	The IP address of the OM channel configured for the NodeB by the RNC. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB TRANS IP Subnet mask	The IP subnet mask of the OM channel configured for the NodeB by the RNC. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Interface IP address	The interface IP address configured for the NodeB by the RNC (If the port type of the NodeB is ETH or THUNK, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Interface IP Subnet mask	The interface IP address configured for the NodeB by the RNC (If the port type of the NodeB is ETH or THUNK, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
DHCP Server IP address	The DHCP server IP address configured for the NodeB (If this parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
DHCP Server IP Subnet mask	The DHCP server IP subnet mask configured for the NodeB The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
AACP Server IP address	The AACP server IP address configured for the NodeB (If this parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
AACP Server IP Subnet mask	The AACP server IP subnet mask configured for the NodeB The value of this parameter is not exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Next Hop IP address to DHCP Server	Next hop IP address of the route from the NodeB to the DHCP server. (If this parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Next Hop IP Subnet mask to DHCP Server	Next hop IP subnet mask of the route from the NodeB to the DHCP server. (If this parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.

Parameter Field	Description
Next Hop IP address to AACP Server	Next hop IP address of the route from the NodeB to the AACP server. (If this parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Next Hop IP Subnet mask to AACP Server	Next hop IP subnet mask of the route from the NodeB to the AACP server. (If this parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Peer IP address	Peer IP address of the OM channel configured by the NodeB. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Peer IP Subnet mask	Peer IP subnet mask of the OM channel configured by the NodeB. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
OM VLAN ID	The VLAN ID configured for the NodeB by the RNC (If the VLAN is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
OM VLAN Priority	The VLAN priority configured for the NodeB by the RNC (If the VLAN is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
DHCP VLAN ID	The value is the same as the OM VLAN ID (If the VLAN is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
PING VLAN ID	The value is the same as the OM VLAN ID (If the VLAN is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
OM PING IP address	OM PING IP address The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
OM PING IP Subnet mask	OM PING IP subnet mask The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Type	The type of the NodeB to be commissioned. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.

Parameter Field	Description
NodeB BaseLine Software Version	The baseline version of the target NodeB (If the target version is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Cold Patch Version	The cold patch version of the target NodeB (If the target version is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Hot Patch Version	The hot patch version of the target NodeB (If the target version is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB Configuration File CRC	The CRC value of the NodeB data configuration file. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB FTP Server IP address	FTP server IP address of the NodeB. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB FTP Path	The FTP path of the NodeB. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB FTP User Name	The FTP user of the NodeB. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
NodeB FTP Password	The FTP password of the NodeB. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
BSC ID	The ID of the BSC to which the GBTS belongs (If the parameter is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
BSC Name	The name of the BSC to which the GBTS belongs. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
GBTS ID	GBTS ID. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.

Parameter Field	Description
GBTS Name	GBTS name The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
GBTS Type	The type of the GBTS to be commissioned. The value of this parameter is mandatory to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
GBTS Software Version	The target version of the GBTS (If the target version is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
GBTS Hot Patch Version	The hot patch version of the target GBTS (If the target version is configured, the value is mandatory to be exported). The value of this parameter is optional to be exported, and the parameter cannot be edited in the **MBTS Auto Deployment** window.
Contact	Contact of the frontline MBTS engineers for the engineers who perform remote commissioning to view conveniently. The value of this parameter is optional to be exported, and the parameter cannot be edited in the **NodeB Auto Deployment** window.

NOTE

When the GBTS side is being commissioned, the **Auto Deployment Type** should be **GBTS**.

When the NodeB side is being commissioned, the**Auto Deployment Type** should be **NodeB**.

When the MBTS is being commissioned, the **Auto Deployment Type** should be **MBTS**.

4.9.3 Parameters for MBTS Service Verification Performance Counters

This section describes the parameters of the performance counters that are monitored at the service verification stage during MBTS commissioning.

Table 4-10 describes the service performance counters of monitored GBTSs and NodeBs at the service verification stage during MBTS commissioning.

Table 4-10 Parameters of performance counters

NE Type	Parameter	Description
GBTS	**SDCCH Verification**	Refers to the number of times the SDCCH is occupied successfully. If the value of this counter is not zero, it indicates that this counter passes the service verification.

NE Type	Parameter	Description
	TCH Verification	Refers to the number of times the TCH is occupied successfully. If the value of this counter is not zero, it indicates that this counter passes the service verification.
	Uplink GPRS Verification	Refers to the number of times the uplink GPRS TBF is set up successfully. If the value of this counter is not zero, it indicates that this counter passes the service verification.
	Downlink GPRS Verification	Refers to the number of times the downlink GPRS TBF is created successfully. If the value of this counter is not zero, it indicates that this counter passes the service verification.
NodeB	**Uu Connection Verification**	Refers to the total number of times the radio resource control (RRC) is created successfully. If the value of this counter is not zero, it indicates that the air interface is available.
	AMR Verification	Refers to the number of times the radio access bearer (RAB) is successfully set up for the conversation AMR service. If the value of this counter is not zero, it indicates that the AMR voice service is available.
	VP Verification	Refers to the number of times the RAB is successfully set up for the CS conversation VP service. If the value of this counter is not zero, it indicates that the VP service is available.
	PS Conversation Verification	Refers to the number of times the PS conversation service is created successfully. If the value of this counter is not zero, it indicates that the PS conversation service is available.
	PS Streaming Verification	Refers to the number of times the PS streaming service is created successfully. If the value of this counter is not zero, it indicates that the PS streaming service is available.
	PS Interactive Verification	Refers to the number of times the PS interaction service is created successfully. If the value of this counter is not zero, it indicates that the PS interaction service is available.
	PS Background Verification	Refers to the number of times the PS background service is created successfully. If the value of this counter is not zero, it indicates that the PS background service is available.
	HSDPA Verification	Refers to the number of times the HSDPA RAB is created successfully. If the value of this counter is not zero, it indicates that the HSDPA service is available.

NE Type	Parameter	Description
	HSUPA Verification	Refers to the number of times the HSUPA RAB is created successfully. If the value of this counter is not zero, it indicates that the HSUPA service is available.

5 Commissioning the MBTS in GL or UL Mode on the M2000

About This Chapter

You can remotely commission an MBTS in GL or UL mode on the M2000 in a central equipment room, including upgrading software and configuring data, monitoring alarms, and obtaining the commissioning report.

This chapter describes how to monitor a NodeB commissioning task. By monitoring the NodeB commissioning task, you can learn the commissioning progress and status, and then rectify commissioning faults (if any) in time.

5.7 Monitoring the eNodeB Commissioning Task
This section describes how to monitor an eNodeB commissioning task. By monitoring the eNodeB commissioning task, you can learn the eNodeB commissioning progress and status, and then perform operations on the eNodeB commissioning task.

5.8 Obtaining the Commissioning Report
The commissioning report records the operation details, results, and error information obtained during the commissioning. The eNodeB commissioning report can be viewed during the commissioning task for handling problems in time, or be obtained after the commissioning task for report archiving.

5.9 Checking the Operating Status of the Base Station
The operating status of a base station can be viewed in the commissioning report.

5.10 Testing the Basic Services of the eNodeB
This section describes how to test the basic services of the eNodeB.

5.11 Confirming the Commissioning Task
After the M2000 finishes commissioning a base station automatically, the commissioning task enters the to-be-confirmed state, waiting for manual confirmation that the commissioning is complete.

5.12 Reference to the GBTS Commissioning Interface
This section describes the interfaces and parameters for GBTS commissioning and facilitates you to perform relevant operations for GBTS commissioning.

5.13 Reference to the NodeB Commissioning Interface
This section describes the interfaces and parameters for NodeB commissioning and facilitates you to perform relevant operations for NodeB commissioning.

5.1 Procedure for MBTS Commissioning in GL or UL Mode on the M2000

You can commission a base station in GL or UL mode on the M2000 in a central equipment room, including upgrading software and configuring data, monitoring alarms, and obtaining the commissioning report.

Prerequisite

Before you commission the MBTS, the MBTS, RNC, and M2000 must meet following requirements:

- The MBTS hardware such as the cabinets, cables, antenna system, and auxiliary devices, is installed and passes the installation check. The MBTS is powered on and passes the power-on check.
- The controller hardware is installed and commissioned, and the system works properly. The negotiation data of the MBTS to be commissioned is configured and recorded.
- The M2000 is commissioned, it is connected to the corresponding controller, and the configuration synchronization is completed.

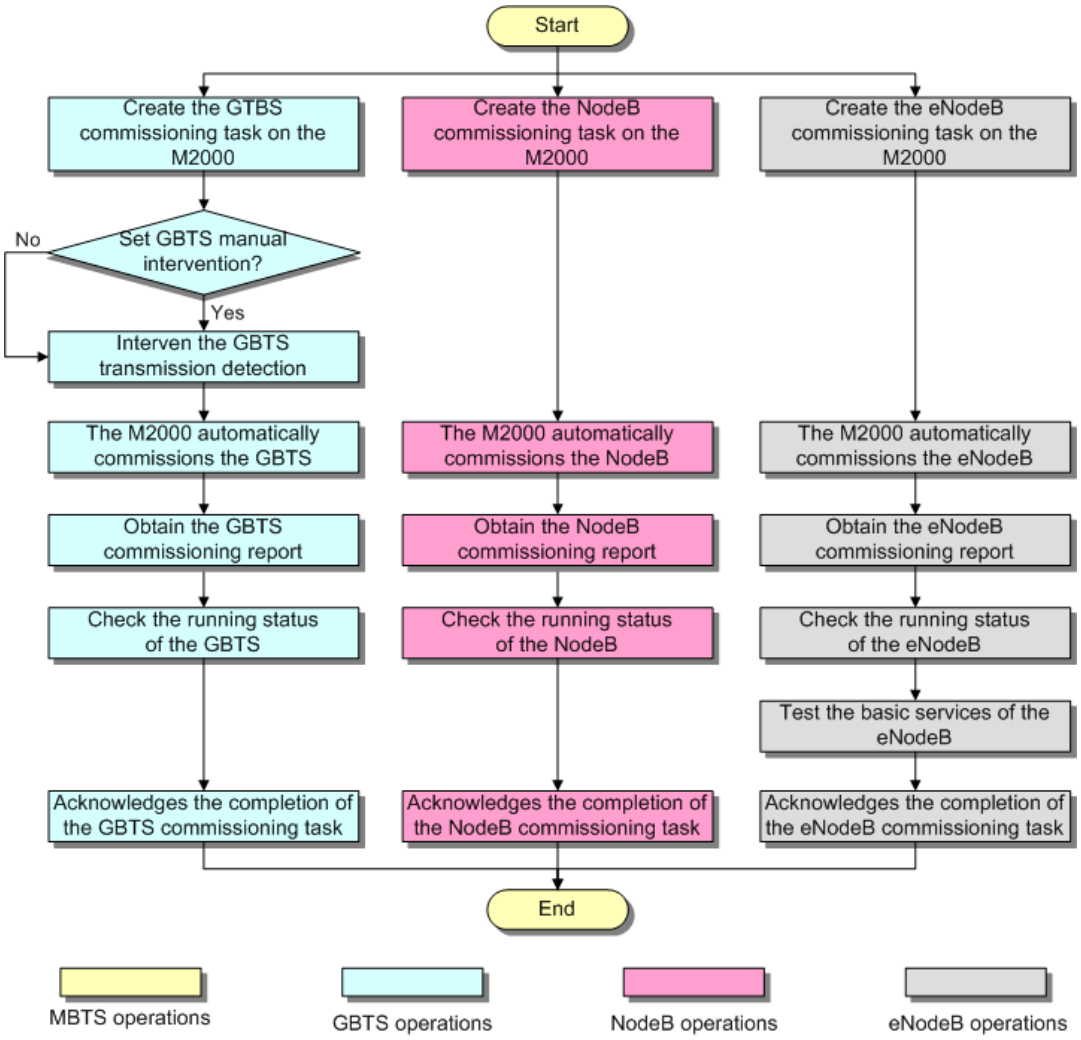
In addition, the following requirements should be met:

- Check that the network is normal.
- The data configuration file and target version software package that map the mode of the base station to be commissioned are ready. If a GBTS is to be commissioned, the data configuration file and target version software package must be uploaded to the BSC.
- The GBTS is activated using the **ACT BTS** command if one mode of an MBTS is GBTS.

Commissioning Flowchart

Figure 5-1 shows the procedure for remotely commissioning an MBTS in GL or UL mode on the M2000.

Figure 5-1 Flowchart for commissioning the MBTS in GL or UL mode on the M2000



NOTE

- The priority of a mode does not need to be considered during the MBTS commissioning.
- In the case of a dual-mode base station, you can consider the dual-mode base station as two single-mode base stations. During the process of upgrading software and activating the data configuration file, a large number of alarms may be generated because of configuration conflict. These alarms do not need to be handled, because they will be cleared automatically after the software is upgraded and the data configuration file is activated for base stations of each mode.

Procedure

Step 1 Create a commissioning task on the M2000. For details, see **5.2 Creating a Commissioning Task**.

Step 2 **Optional:** If a GBTS is to be commissioned and **Intervening transmission** is selected when a commissioning task is created, manually check the GBTS transmission state and rectify faults (if any). For details, see **5.3 Intervening the GBTS Transmission**.

Step 3 The M2000 automatically commissions the MBTS. For details, see **5.4 Commissioning the MBTS on the M2000**. During the process of the MBTS commissioning, monitor the commissioning progress and alarms, and rectify faults (if any). The monitoring operations vary

according to modes. For details on the operations in each mode, see **5.5 Monitoring the GBTS Commissioning Task**, **5.6 Monitoring the NodeB Commissioning Task**, and **5.7 Monitoring the eNodeB Commissioning Task**.

Step 4 Obtain the commissioning report from the M2000. For details, see **5.8 Obtaining the Commissioning Report**.

Step 5 View the commissioning report to check the MBTS operating status. For details, see **5.9 Checking the Operating Status of the Base Station**.

Step 6 Verify eNodeB services. For details, see **5.10 Testing the Basic Services of the eNodeB**.

Step 7 Confirm the MBTS commissioning task. For details, see **5.11 Confirming the Commissioning Task**.

----End

5.2 Creating a Commissioning Task

This chapter describes how to create a base station commissioning task on the M2000. The operations of creating a base station commissioning task vary according to the mode of the base station. Therefore, the commissioning task must be created based on the mode of the base station to be commissioned. After the commissioning task is created, it can be activated immediately. Then, the M2000 starts to commission the base station automatically.

5.2.1 Creating a GBTS Commissioning Task

This section describes how to create a GBTS commissioning task. After you create a GBTS commissioning task, the M2000 automatically commissions the GBTS. You can enable the M2000 to automatically commission GBTSs in batches.

Prerequisite

- The preparations for GBTS commissioning are made. For details. see Preparing for GBTS Commissioning.
- The connection between the GBSC managing the GBTS to be commissioned and the M2000 is normal.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** from the main menu of the M2000 client to open the **GBTS Auto Deployment** window.

For details about the **GBTS Auto Deployment** window, see **5.12.1 Interface Description: GBTS Commissioning**.

Step 2 Click  to import the GBTS deployment list. For details about the GBTS deployment list, see Exporting the Deployment List and Configuration Files of GBTSs.

TIP

If you do not export the GBTS deployment list through the CME, you can export the template of the GBTS deployment list on the M2000 client and then enter the related data based on the planned data confirmed with network planning engineers. To export the GBTS deployment list template, perform the following operations:

1. Click  . The **Save** dialog box is displayed.
2. Specify the save path, enter the filename, and then click **Save**.

The exported template of GBTS deployment list is in .csv format. By default, the filename is **GBTS_Auto_Deployment_List_Template.csv**. You can change the filename as required.

- If the import succeeds, a message is displayed on the **Operation Information** tab page, informing you of the success. In addition, the M2000 creates a commissioning task for each GBTS contained in the deployment list and displays the tasks on the **GBTS List** tab page.
- If the import fails, the GBTSs that fail to be imported and the failure causes are displayed on the **Operation Information** tab page. For details about failure symptoms and solutions, see What Should I Do When a Failure Message Is Displayed During the Import of the GBTS Deployment List?.

Step 3 If the version of the imported GBTS software or patch is incorrect or the contact person information is incorrect, double-click the corresponding information record on the **GBTS List** tab page, and then type the correct information.

----End

Postrequisite

Start the GBTS commissioning task to enable the M2000 to automatically commission the GBTS. For details, see Starting a GBTS Commissioning Task.

5.2.2 Creating a NodeB Commissioning Task

This section describes how to create a NodeB commissioning task. The M2000 creates a commissioning task for each NodeB based on the planned data in the imported NodeB deployment list. After obtaining the software package and configuration file, you can activate the commissioning task so that it starts automatic commissioning.

Prerequisite

NodeB version files and configuration files are saved on the local PC. The configuration file of each NodeB is saved in the folder named after the NodeB, and all the NodeB configuration files are saved in the same upper-layer folder. In this way, you can select the upper-layer folder to upload all the configuration files at a time.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment**. The **NodeB Auto Deployment** window is displayed.

Step 2 Keep ready the NodeB deployment list.

Option	Description
Exporting the NodeB Deployment List from the CME	Obtain and open the exported NodeB deployment list, and then add the related data according to the planned data that is confirmed with the network planning engineers. For the data that needs to be added, see **5.13.2 Parameters of the NodeB Deployment List**.
Exporting the Template of NodeB Deployment List from the M2000 Client	1. Click  . The **Save** dialog box is displayed. 2. Specify the save path, enter the filename, and then click **Save**. 3. Add the related data according to the planned data that is confirmed with the network planning engineers. **NOTE** The exported template of NodeB deployment list is in .csv format. By default, the filename is **NodeB_Auto_Deployment_List_Template.csv**. You can change the filename as required.

Step 3 Import the NodeB deployment list.

The M2000 performs the commissioning based on the planned data in the imported NodeB deployment list.

1. Click  .
2. Select the NodeB deployment list to be imported.

   TIP

   If you find that the ESN of a NodeB in the list is inconsistent with the actual ESN after importing the NodeB deployment list, you can manually change the value of the ESN. In this way, the M2000 performs the commissioning task based on the correct data.
3. Click **Finish**.

   The NodeBs whose commissioning tasks are created successfully are displayed in the task list.

Step 4 Upload version files and configuration files.

For details about the save paths of version files and configuration files on the M2000, see **Save Paths of Version Files and Configuration Files on the M2000 Server**.

1. Click  .
2. In the displayed **Upload version and config files** window, set the local path of the files to be uploaded.

   You can select the version files and configuration files to be uploaded according to the actual requirements.

   - In the **Upload Versions** area, the **Is Exist in Server** parameter shows whether the target version file exists on the current M2000 server. You can click the button next to **Local**

Path, and then specify a local save path of the version files to facilitate the upload of the version files.

- In the NE navigation tree in the **Upload Configuration Files** area, select the NEs whose configuration files need to be uploaded. After selecting the NodeB, you can click the button next to **Local Path** to specify the upper-layer folder for the folder of each NE configuration file to facilitate the upload of configuration files.

TIP

- To upload version files, you need to select the upper-layer folder of version files such as the .csp files after you decompress the software package in a local path.
- To upload configuration files, you need to save the configuration file of each NodeB in the folder whose name is the NodeB name and then save the folders of all the NodeB configuration files in one upper-layer folder. When uploading configuration files, you need to select the upper-layer folder to which the NodeB name folders belong.

After the upload starts, the information about the source path, destination path, upload progress, and upload result is displayed at the bottom of the **Upload version and config files** window.

3. After the upload is complete, click **Close**.

----End

Save Paths of Version Files and Configuration Files on the M2000 Server

After version files and configuration files are uploaded to the M2000 server, they are stored in the following paths:

- Basic version: **/export/home/sysm/ftproot/unKnownNodeB/Software/*version number*/**, where *version number* refers to the uploaded basic version number, such as *V200R012C00*.
- Patch version: **/export/home/sysm/ftproot/unKnownNodeB/Patch/*version number*/**, where *version number* refers to the version of the uploaded patch, such as *V200R012C00SPC001*.
- Configuration file: **/export/home/sysm/ftproot/unKnownNodeB/Configuration/*NodeB name*/**, where *NodeB name* refers to the name of the NodeB of the configuration file, for example, NodeB-Shanghai.

5.2.3 Creating an eNodeB Commissioning Task

After the preparations for eNodeB commissioning are complete, create the eNodeB commissioning task on the M2000. This task will be automatically performed by the M2000. The M2000 supports automatic commissioning of multiple eNodeBs.

Prerequisite

- The M2000 server and client are connected and are running properly. You have logged in to the M2000 client.
- If the eNodeB and M2000 server are not in the same network segment, the router or switch between the eNodeB and M2000 server must be configured as DHCP Relay.

NOTE

- If there is no security GW, you should set the IP address of the DHCP server of the M2000 on the DHCP Relay.
- If there is a security GW, you should set the IP address of the public DHCP server on the DHCP Relay. In addition, set the IP address of the DHCP server of the M2000 on the security GW.

- The eNodeB name, eNodeB ID, and ESN are collected.
- The eNodeB is powered on.
- The software and files required for eNodeB automatic deployment are ready.

Context

After the eNodeB is powered on, it sends the DHCP message to the M2000 requesting for the OM IP address. The DHCP message contains the eNodeB ESN and the GPS information of the eNodeB. If the eNodeB ID is not preset and a laptop is available on site, you can run the **MOD ENODEB** command to set the eNodeB ID on the LMT. If the eNodeB ID is successfully set, the DHCP message will contain the eNodeB ID.

The EDS file, which is the self-configuration file, includes the eNodeB ID, electronic serial number (ESN), and GPS information about the eNodeB. This file is used to be bound to the eNodeB. The eNodeB ID is unique and is used to identify an eNodeB. In an EDS file, the eNodeB ID is mandatory and the GPS information and ESN are optional.

The self-configuration data imported to the M2000 is bound with the ESN automatically in the following scenarios:

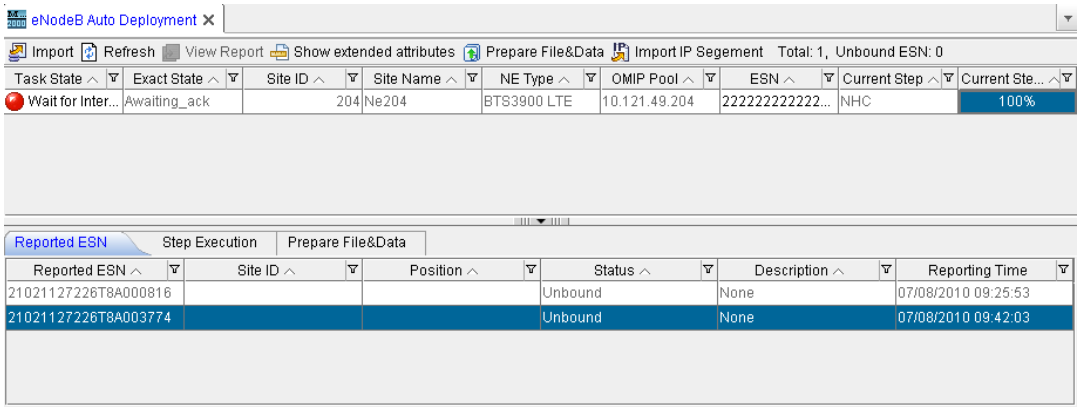
- If the EDS file contains the ESN of the eNodeB, the ESN reported by the eNodeB and the imported self-configuration data on the M2000 are automatically bound in the case that the ESN reported by the eNodeB is consistent with the ESN in the EDS file.
- If the M2000 receives the message containing the eNodeB ID, the imported self-configuration data and the ESN reported by the eNodeB are automatically bound after the mapping between the eNodeB ID reported by the eNodeB and the eNodeB ID in the EDS file.
- If the M2000 receives the message containing the eNodeB location information, which is within the error of 100 m compared with the latitude and longitude predefined in the EDS file, the imported self-configuration data and the ESN reported by the eNodeB are automatically bound after the mapping between the GPS information reported by the eNodeB and the location information in the EDS file.

If automatic binding fails, the information about the new eNodeB will be displayed in the **Reported ESN** tab page below the **eNodeB Auto Deployment** tab page. The user can obtain the ESN/eNodeB ID from the field engineer, and then binds the ESN/eNodeB ID and the imported self-configuration data.

Procedure

Step 1 On the **M2000 client**, choose **Configuration** > **Auto Deployment** > **eNodeB Auto Deployment**. The **eNodeB Auto Deployment** tab page is displayed, as shown in **Figure 5-2**.

Figure 5-2 eNodeB Auto Deployment tab page



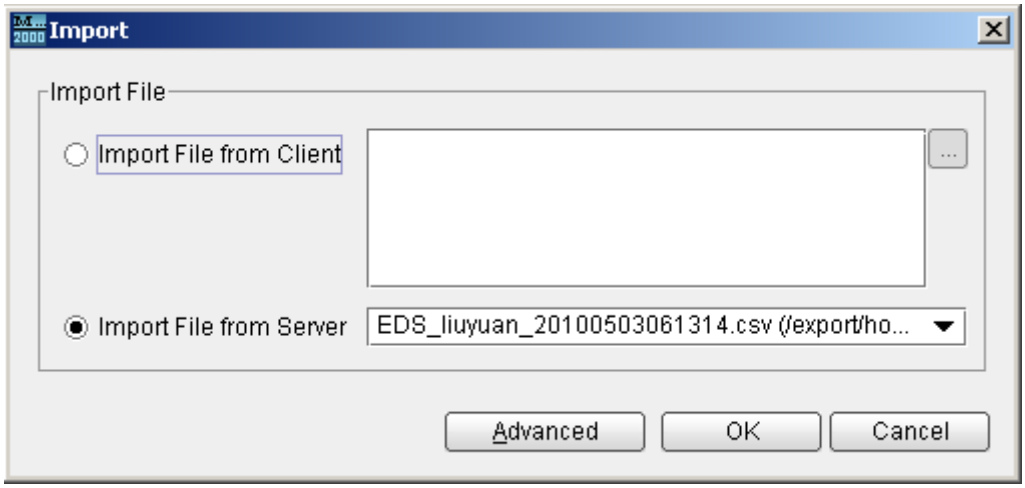
Step 2 Upload the software and files required for eNodeB commissioning on the M2000.

1. Click on the **eNodeB Auto Deployment** tab page. The **Prepare File&Data** dialog box is displayed.
2. In the **NE Software Version** area, click **Add**. The **Add** dialog box is displayed. Specify the related parameters in the displayed dialog box, such as NE type, version type, and local file path.
3. In the **RET Software** area, click and select one or more RET files to be uploaded in the local PC.
4. In the **RET Data** area, click and select one or more RET data configuration files to be uploaded in the local PC.
5. In the **RET Template** area, click and select the RET commissioning data template to be uploaded in the local PC.
6. In the **Test License** area, click and select the eNodeB commissioning license to be uploaded in the local PC.
7. In the **Prepare File&Data** dialog box, click **OK** to return to the **eNodeB Auto Deployment** tab page.
8. View the file uploading progress on the **Prepare File&Data** tab page below the **eNodeB Auto Deployment** tab page.
9. Click in the **eNodeB Auto Deployment** tab page. The **Open** dialog box is displayed. Select the OM IP data template to be uploaded in the local PC.

Step 3 Import the EDS file.

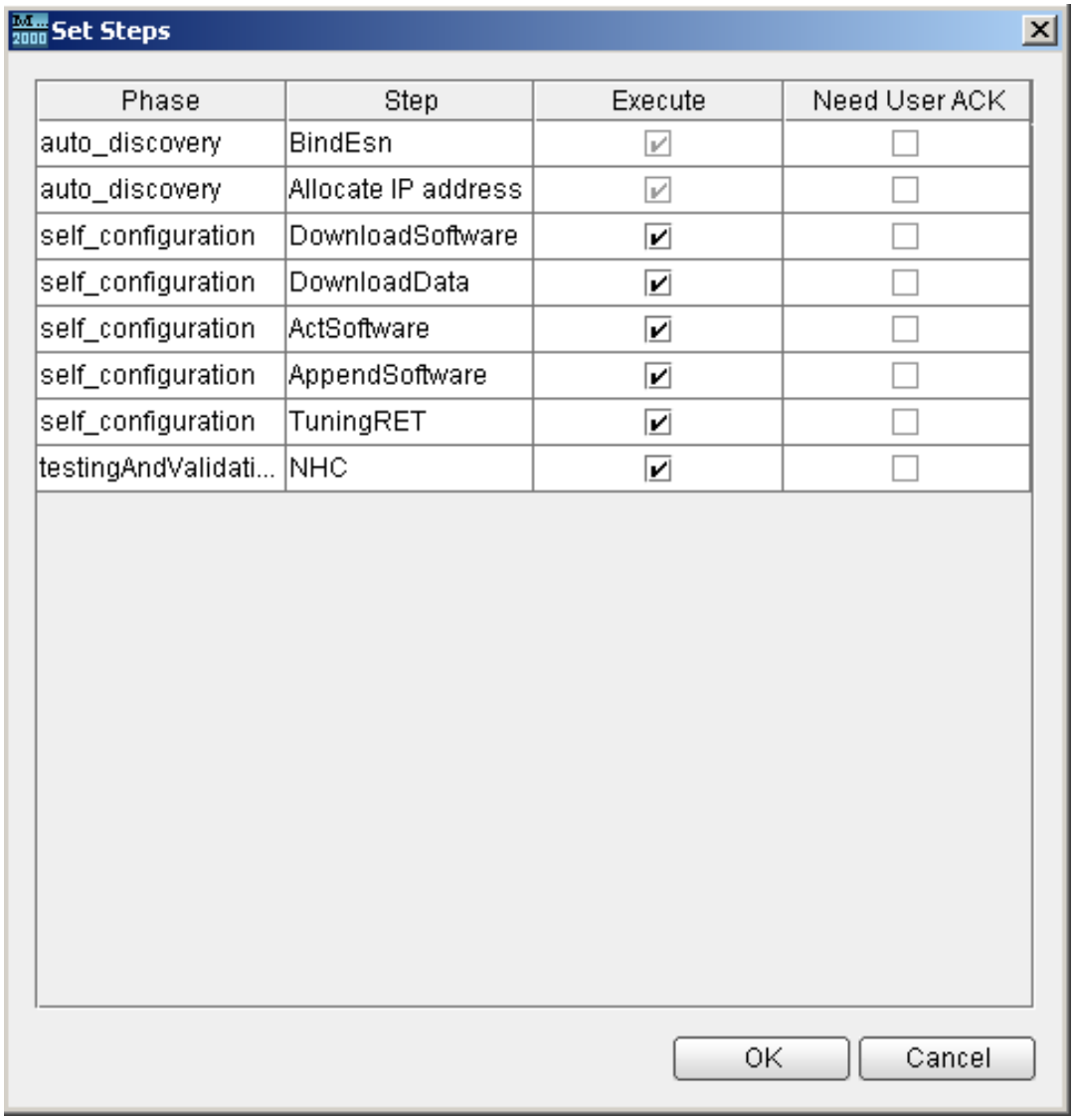
1. Click on the upper left of the **eNodeB Auto Deployment** tab page. The **Import** dialog box is displayed, as shown in **Figure 5-3**.

Figure 5-3 Import dialog box



2. According to the save path of the EDS file, select **Import File from Client** or **Import File from Server** to import the EDS file to the M2000 server. The EDS file to be imported from the client is stored in the local computer. The EDS file to be imported from the server is stored at a specified directory of the server.
3. Click **Advanced**. The **Set Steps** dialog box is displayed, as shown in **Figure 5-4**.

Figure 5-4 Set Stepsdialog box



4. Set the commissioning steps and then click **OK**. The **Import** dialog box is displayed.

   NOTE

   If the eNodeB software and data configuration are already upgraded to the target version through the USB storage device on site, click **Advanced** when importing the EDS file on the M2000, and then clear the **DownloadSoftware**, **DownloadData**, and **ActSoftware** check boxes in the displayed **Set Steps** dialog box. In this case, these cleared steps are skipped in the automatic eNodeB commissioning.

5. Click **OK** to import the EDS file. The basic configuration information about each new eNodeB is displayed in the **eNodeB Auto Deployment** tab page.

Step 4 Check whether the imported self-configuration data and the ESN reported by the eNodeB are automatically bound.

If ...	Then ...
The **ESN** field on the **eNodeB Auto Deployment** tab page indicates the ESN of the new eNodeB	The imported self-configuration data and ESN are automatically bound. The eNodeB software and data configuration file are automatically downloaded from the M2000 server to the eNodeB. The eNodeB commissioning task is created.
The **ESN** field on the **eNodeB Auto Deployment** tab page indicates 	The imported self-configuration data and ESN are not automatically bound. The eNodeB software and data configuration file cannot be automatically downloaded from the M2000 server to the eNodeB. Go to step **Step 5**.

Step 5 According to the eNodeB ID and ESN reported by the field engineer, manually bind the ESN and the self-configuration data that is imported.

1. In the **eNodeB Auto Deployment** tab page, select the corresponding eNodeB and click  . The **Bind ESN** dialog box is displayed.
2. Select the target ESN of the eNodeB, and then click **OK**. After the binding succeeds, the ESN information is displayed in the **eNodeB Auto Deployment** tab page. The eNodeB automatically downloads the software and data configuration file from the M2000 server.

Step 6 Repeat step **Step 5** to manually bind all ESNs of the eNodeBs that are not automatically bound to the imported self-configuration data.

----End

5.3 Intervening the GBTS Transmission

This section describes how to intervene the GBTS transmission. By intervening the GBTS transmission, you can query the real-time status of the E1/T1 port to ensure that the GBTS transmission is normal and that you can proceed with the GBTS deployment.

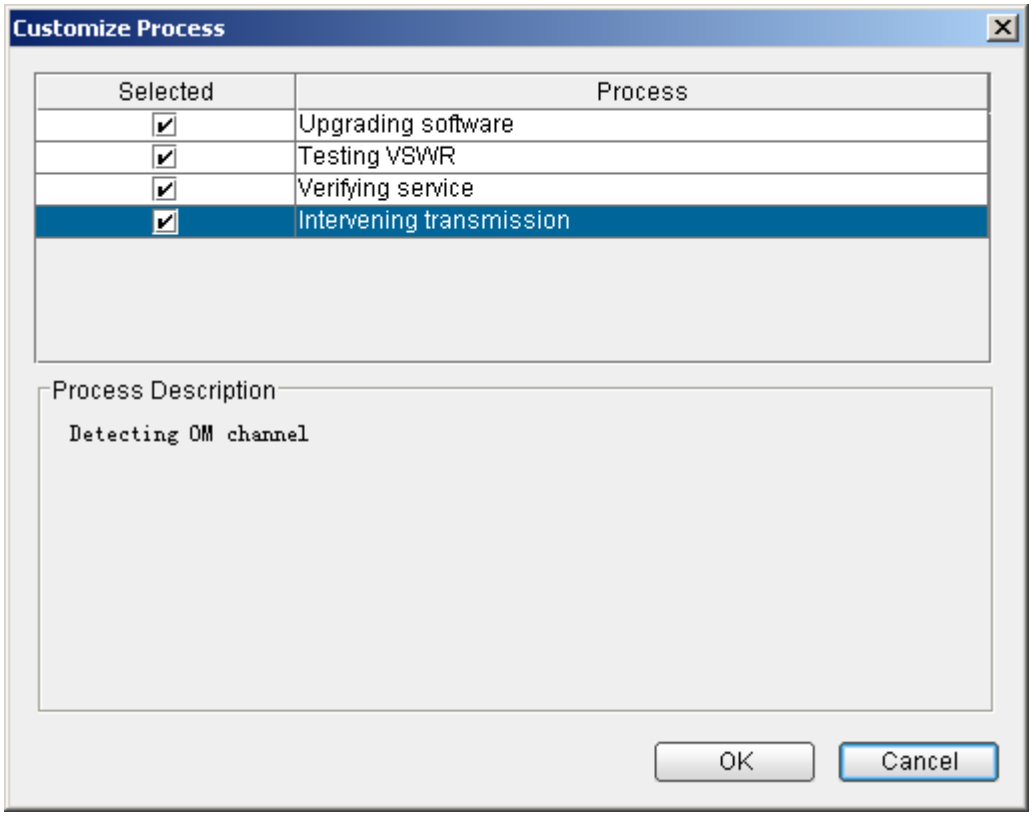
Context

If you have set intervention on the commissioning task when starting the deployment, the task switches to intervention status after the OML detection regardless of whether the OML is normal or abnormal, and the function of querying the E1/T1 port status is provided.

Procedure

Step 1 When starting the deployment task, choose **Intervening transmission**, as shown in **Figure 5-5**.

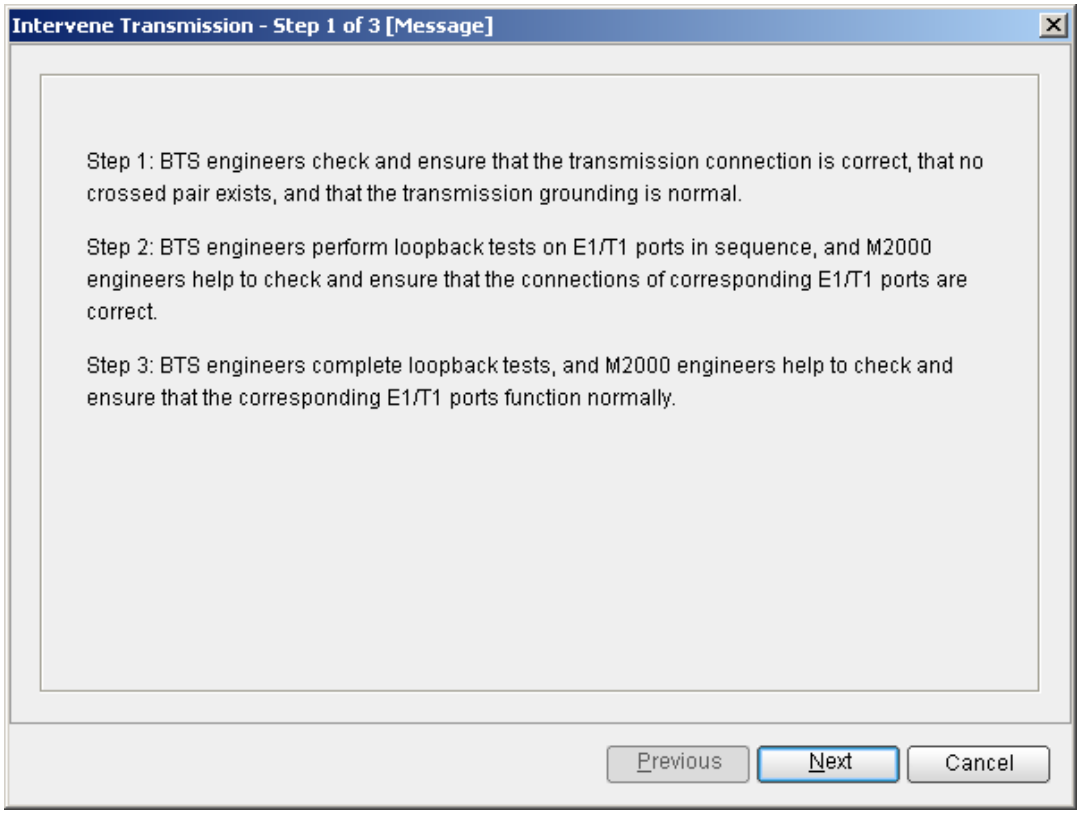
Figure 5-5 Dialog box for selecting **Intervening transmission**



Step 2 After the automatic deployment approaches the step where intervention is set, the status of the GBTS is displayed as . In this case, you can right-click the task, and then choose **Intervening transmission** or click on the toolbar to open the dialog box for intervening transmission.

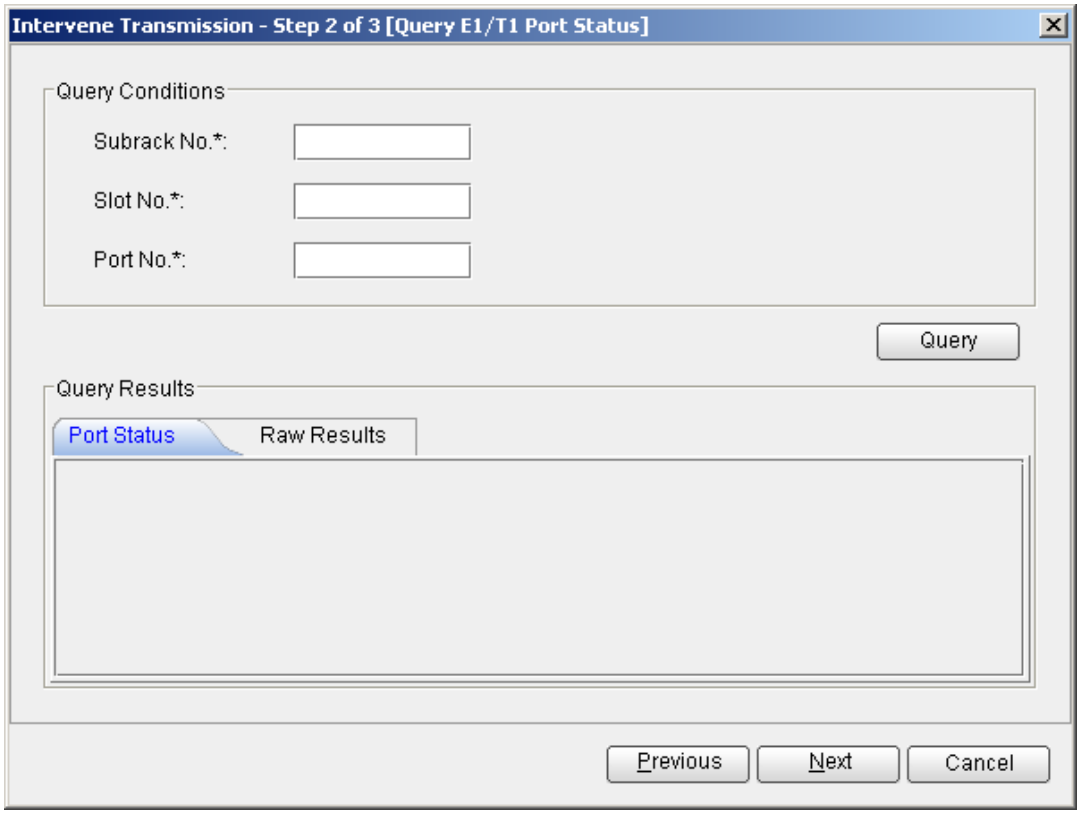
1. **Figure 5-6** shows the dialog box for intervening transmission.

Figure 5-6 Dialog box for intervening transmission



2. **Figure 5-7** shows the dialog box for querying the E1/T1 port status.

Figure 5-7 Dialog box for querying the E1/T1 port status

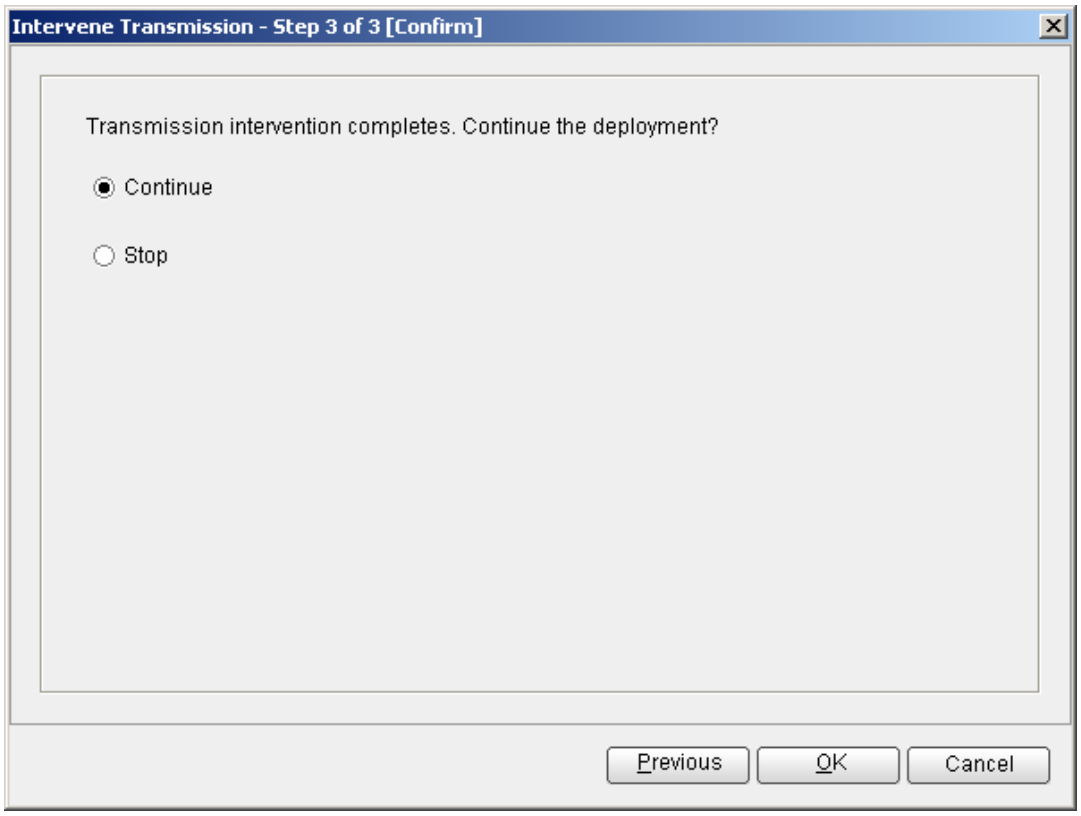


NOTE

- You must type the subrack number, slot number, and port number. By default, they are set to **0**.
- Querying the E1/T1 port status does not affect the transmission.

3. **Figure 5-8** shows the dialog box for confirmation.

Figure 5-8 Dialog box for confirmation



- Select **Continue**. The deployment proceeds with the version management and subsequent procedures.
- Select **Stop** to stop the deployment. **Status** stays in the intervention step, and **Current Phase** stays in the OML detection step. The description information shows that you have stopped the deployment.

----End

5.4 Commissioning the MBTS on the M2000

The procedure for automatically commissioning the MBTS by the M2000 involves detecting OM channels, upgrading software and configuring data, monitoring software commissioning, and verifying services. The procedure for automatically commissioning the MBTS by the M2000 varies according to the base station mode. Refer to the procedure for the commissioning accordingly.

5.4.1 Procedure for Automatically Commissioning the GBTS by the M2000

This section describes the process of automatic GBTS commissioning performed by the M2000.

5.4.2 Procedure for Automatically Commissioning the NodeB by the M2000

The procedure for automatically commissioning the NodeB by the M2000 involves detecting the OM channel, upgrading the software and configuration, monitoring the software commissioning, and verifying the services.

5.4.1 Procedure for Automatically Commissioning the GBTS by the M2000

This section describes the process of automatic GBTS commissioning performed by the M2000.

Table 5-1 describes the process of automatic GBTS commissioning. After the automatic software commissioning starts, you can manually complete the commissioning according to the actual requirement. For details, see **5.11.1 Confirming a GBTS Commissioning Task**.

Table 5-1 Process of automatic GBTS commissioning

No.	Procedure	Description	Standards for Continuing the Commissioning
1	Automatically set the maintenance mode of the GBTS	After locating the GBTS, the M2000 automatically sets the maintenance mode of the GBTS to testing so that all alarms reported by the GBTS during the commissioning are not to be displayed on the M2000 alarm interface by default. This avoids the alarms from affecting normal network monitoring. You can use the monitoring function provided by the GBTS commissioning to query all alarms generated during the GBTS commissioning. For details, see **5.5.1 Viewing the GBTS Alarm Status**.	Regardless of whether the maintenance mode of the GBTS is set successfully, the M2000 automatically proceeds with the next procedure.

No.	Procedure	Description	Standards for Continuing the Commissioning
2	Automatically detect the OML	The M2000 automatically checks the status of the OML between the GBTS and the GBSC managing the GBTS.	The M2000 automatically proceeds with the next procedure only when the OML between the GBTS and the GBSC managing the GBTS is normal. The details are as follows: ● If the OML is normal and you have not set intervention on the commissioning task during the task startup, the M2000 automatically proceeds with the next procedure. ● If the OML is normal and you have set intervention on the commissioning task during the task startup, the commissioning switches to the **Intervening transmission** status and a transmission loopback test is required. ● If the OML is abnormal after the OML detection is performed three times, the M2000 determines that the OML is faulty. In this case, the commissioning automatically stops and switches to the **Abnormal** status.

No.	Procedure	Description	Standards for Continuing the Commissioning
3	Automatically upgrade the software	The M2000 automatically checks whether the target GBTS version and the current GBTS version are consistent according to the target version information provided in the deployment list. ● If the versions are consistent, the GBTS software need not be upgraded. ● If the versions are inconsistent, the M2000 instructs the GBSC to start upgrading the GBTS software. The GBTS downloads the target version from the M2000 and upgrades the software. The parameters for upgrading the GBTS software are as follows: - Load mode: Load by Configuration and Abis Quick Load(No Service). - Automatically Load and Activate Switch: Determined by the **vercfg.xml** file in the software package. **NOTE** The upgrade of the GBTS configuration data is not controlled by the M2000. After the GBTS software is upgraded and the GBTS is reset, the GBTS automatically sends a request to the GBSC for loading configuration data.	You can set the M2000 to skip the software upgrade when starting the commissioning task. ● If the software need not be upgraded or is already upgraded successfully, the M2000 automatically proceeds with the next procedure. ● If the software fails to be upgraded, the commissioning automatically stops and switches to the **Abnormal** status.

No.	Procedure	Description	Standards for Continuing the Commissioning
4	Automatically commission the software	The automatic software commissioning consists of the following sub-procedures: ● GBTS cell initialization detection: Checks the initialization status of each cell under the GBTS. If all cells under the GBTS are initialized, the GBTS cell initialization detection succeeds. If any cell fails to be initialized after the GBTS cell initialization detection is performed three times, the commissioning automatically stops and switches to the **Abnormal** status. ● GBTS information query: The query results are saved in the commissioning report. Regardless of whether the query succeeds, the M2000 automatically proceeds with the next sub-procedure after the query. ● Standing wave ratio test: The standing wave ratio test is used to check whether the antenna system of the GBTS is faulty. This test is performed according to the settings that you configure during the startup of the commissioning task. The test results are saved in the commissioning report. Regardless of whether the test succeeds, the M2000 automatically proceeds with the next sub-procedure after the test. ● GBTS alarm monitoring: Monitors all alarms of a certain GBTS and all relevant alarms of the GBSC managing the GBTS and provides the fault diagnosis function. ● Cell serviceability detection: Checks the serviceability status of each cell under the GBTS.	You can set the M2000 to skip the standing wave ratio test when starting the commissioning task. Note that the GBTS cell initialization detection and cell serviceability detection must be performed successfully.

No.	Procedure	Description	Standards for Continuing the Commissioning
		If one cell is serviceable, the detection succeeds. Otherwise, the software commissioning persists, and the system displays a message, indicating that no cell is serviceable.	
5	Automatically verify services	The M2000 automatically collects the performance counters related to GBTS CS and PS services and checks that the GBTS services are normal. The involved performance counters are as follows: ● CS services: **SDCCH Verification** and **TCH Verification** ● PS services: **Uplink GPRS Verification** and **Downlink GPRS Verification**	You can set the M2000 to skip the service verification when starting the commissioning task. If each performance counter is once displayed as a value that is not **0**, the service verification succeeds and the commissioning switches to the **Confirming completed** status. Otherwise, the service verification persists.
6	Complete the commissioning	When the commissioning switches to the **Confirming completed** status, you need to confirm the completion of the GBTS commissioning. After the commissioning is complete, the M2000 automatically restores the GBTS status to normal status so that the GBTS alarms can be monitored normally.	Not involved.

5.4.2 Procedure for Automatically Commissioning the NodeB by the M2000

The procedure for automatically commissioning the NodeB by the M2000 involves detecting the OM channel, upgrading the software and configuration, monitoring the software commissioning, and verifying the services.

For details on the NodeB commissioning procedure, see **Table 5-2**.

Table 5-2 Item list of the NodeB commissioning procedure

Commissioning Item	Description
Detecting the OM channel	When the transmission network is functional, the M2000 automatically sets up the OM channel with the NodeB according to the NodeB deployment list. The OM channel is used to commission and maintain the NodeB. After the OM channel is set up, the M2000 automatically sets **Special Status** of the NodeB to **Testing**, so that the invalid alarms can be shielded during commissioning.
Upgrading the software and configuration	According to the version information in the NodeB deployment list, the M2000 automatically checks whether the current NodeB version is the same as the target version. If the current NodeB version differs from the target software version, the target software and data configuration file are downloaded from the server to the NodeB and activated automatically. **NOTE** If the USB disk is used for the upgrade on the NodeB side, and the NodeB software and data configuration file are upgraded to the target version, the M2000 skips this step and proceeds with the automatic software commissioning.
Monitoring the software commissioning	The purpose of software commissioning is to verify the services. Software commissioning starts automatically. During the commissioning, only faults need to be noted. All the reported alarms are displayed on the monitoring interface of the M2000. In addition, the fault diagnosis access that facilitates quick fault location is available, and the associated handling suggestions are provided.
Verifying the services	When detecting that the logical cell of the NodeB is available, the M2000 starts service verification. The M2000 determines whether service verification succeeds according to key performance counters, and then displays the results.
Completing the NodeB deployment	After a NodeB passes the service verification, the status of the commissioning task changes to **Waiting for Acknowledgement**. When the user acknowledges the completion of commissioning tasks, the M2000 automatically cancels the **Testing** state of the NodeB and verifies the NodeB location. **NOTE** ● Cancel the **Testing** state of the NodeB and resume the alarm reporting of the NodeB. ● NodeB location verification refers to the process in which the M2000 automatically checks whether the ESN reported by the NodeB is the same as the ESN in the NodeB deployment list. Through the NodeB location verification, you can check whether the USB disk for upgrade is the correct one in IP networking mode.

5.5 Monitoring the GBTS Commissioning Task

This chapter describes how to monitor a GBTS commissioning task. By monitoring the GBTS commissioning task, you can learn the commissioning progress and status, and then rectify commissioning faults (if any) in time.

5.5.1 Viewing the GBTS Alarm Status

This section describes how to view the GBTS alarm status. After the automatic software commissioning starts, you can use the M2000 to monitor the alarms of the GBTS and the relevant alarms of the GBSC managing the GBTS in real time. If exceptions occur during the commissioning, you can view the alarm information to locate and handle the exceptions in time.

Prerequisite

The automatic software commissioning already starts, and you have not confirmed the completion of the GBTS commissioning yet.

Context

The M2000 displays all alarms reported during the GBTS commissioning in real time according to object types. The objects consist of E1T1s, IP addresses, software, boards, antennas, cell services, and other objects that cannot be categorized.

You can select multiple commissioning tasks at a time to view the alarm status. The M2000 displays all the alarms of one task in one monitoring window. One M2000 client supports a maximum of 10 open window at a time, including all subwindows of the **GBTS Auto**

Deployment window. For example, the alarm monitoring window and service verification window.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open the **GBTS Auto Deployment** window.

Step 2 On the **GBTS List** tab page, select one or multiple commissioning tasks, and then click  . Alternatively, right-click the tasks, and then choose **Open Monitor Window** from the shortcut menu.

Step 3 In the displayed alarm monitoring window, select the object type in the left area and view the alarms of the object in the right area.

For details about the alarm monitoring window, see **5.12.1 Interface Description: GBTS Commissioning**.

Step 4 If the cause of a E1T1, a board, or an antenna alarm cannot be located according to the alarm information, you can perform the fault diagnosis. For details about how to perform the fault diagnosis, see **5.5.2 Performing the GBTS Fault Diagnosis**.

Step 5 Perform the following steps to handle an alarm:

1. Double-click the alarm to be handled, and then click the link in **Reason And Advice** in the displayed dialog box that shows the alarm details.
2. Handle the fault according to the alarm reference.

----End

5.5.2 Performing the GBTS Fault Diagnosis

This section describes how to perform the GBTS fault diagnosis. When exceptions occur during GBTS commissioning, you can use the automatic fault diagnosis function provided by the M2000 to check whether the GBTS that is being commissioned is faulty. E1T1s and antennas support the automatic fault diagnosis function.

Prerequisite

The automatic software commissioning already starts, and you have not confirmed the completion of the GBTS commissioning yet.

Context

The fault diagnosis operations supported by different objects vary.

- E1T1s: E1 port fault diagnosis on the GBSC side and E1 loopback fault diagnosis on the GBSC peer side
- Antennas: Antenna fault diagnosis including the standing wave ratio test

CAUTION

E1T1 fault diagnosis leads to the interruption of all services on the port; antenna fault diagnosis leads to the interruption of all carrier services of the GBTS. Therefore, you need to perform the fault diagnosis when the GBTS services are in idle state or are segregated.

After one fault diagnosis operation is performed, the M2000 creates a fault diagnosis task and displays the diagnosis progress. After the fault diagnosis is complete, you can obtain the fault diagnosis report.

If you delete a fault diagnosis task, the corresponding diagnosis report is deleted accordingly. If you restart the M2000 server, all fault diagnosis tasks and reports are deleted.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open the **GBTS Auto Deployment** window.

Step 2 On the **GBTS List** tab page, select one or multiple commissioning tasks, and then click  . Alternatively, right-click the tasks, and then choose **Open Monitor Window** from the shortcut menu.

Step 3 Perform the fault diagnosis.

1. In the **Monitor** window, select one object or select one alarm of a certain object from the alarm list in the right pane.
2. Right-click the object or alarm, and then choose **Diagnose...** from the shortcut menu to set diagnosis parameters.

   After the diagnosis parameters are set, a diagnosis task is added to the diagnosis task list. The diagnosis task list is located in the lower part of the **Monitor** window.
3. Right-click a fault diagnosis task in the diagnosis task list, and then choose **Diagnosis Report...** from the shortcut menu to view the diagnosis results.

Step 4 Perform the following steps to handle an alarm:

1. Double-click the alarm to be handled, and then click the link in **Reason And Advice** in the displayed dialog box that shows the alarm details.
2. Handle the fault according to the alarm reference.

----End

5.5.3 Viewing the GBTS Service Verification Results

This section describes how to view the GBTS service verification results. After the automatic service verification starts, the M2000 automatically collects the performance data related to GBTS CS and PS services and checks whether the GBTS services are normal. If the service verification persists, it is recommended that you view the service verification results to learn the actual performance data. This ensures the commissioning success.

Prerequisite

The automatic service verification already starts, and you have not confirmed the completion of the GBTS commissioning yet.

Context

During the service verification, the performance measurement period is the shortest measurement period supported by the GBTS. By default, the shortest measurement period is 15 minutes. The involved performance counters are as follows:

- CS services: **SDCCH Verification** and **TCH Verification**

- PS services: **Uplink GPRS Verification** and **Downlink GPRS Verification**

If every performance counter related to the CS and PS services is once displayed as a value that is not **0**, the M2000 considers the service verification a success, and the commissioning task automatically switches to **Confirming completed**. Otherwise, the service verification persists.

NOTE

The performance data collected for service verification is saved on theM2000 for 14 days. After 14 days, the M2000 automatically deletes the data to release system resources.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open the **GBTS Auto Deployment** window.

Step 2 On the **GBTS List** tab page, select one or multiple commissioning tasks, and then click  . Alternatively, right-click the tasks, and then choose **Open Service Verification Window** from the shortcut menu.

For details about the service verification window, see **5.12.1 Interface Description: GBTS Commissioning**.

Step 3 View the service verification results and perform corresponding operations.

The accumulation values of the counters, which are collected in the time range between the start of the service verification and the restart of the commissioning or the confirmation of the commissioning completion, are displayed in the service verification window.

- If  is displayed in each counter value, you can infer that the GBTS service verification succeeds. In this case, you can check and confirm the completion of the commissioning. For details, see **5.11.1 Confirming a GBTS Commissioning Task**.
- If  is displayed in the value of a certain counter, you can infer that the services related to this counter are running abnormally. In this case, you need to rectify the fault. If the system output indicates that the PS services are abnormal but no PS services exist actually, you can confirm the completion of the commissioning.

----End

5.5.4 Restarting a GBTS Commissioning Task

This section describes how restart a GBTS commissioning task that is still in progress according to the actual requirement. A GBTS commissioning task in progress indicates that it is not in **Waiting** or **Completed** status. If you restart a commissioning task, all commissioning operations that are already performed are cleared, and the commissioning restarts from the OML detection.

Prerequisite

A GBTS commissioning task is created.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open the **GBTS Auto Deployment** window.

Step 2 On the **GBTS List** tab page, select one or multiple commissioning tasks, and then click  . Alternatively, right-click the tasks, and then choose **Restart** from the shortcut menu.

----End

5.6 Monitoring the NodeB Commissioning Task

This chapter describes how to monitor a NodeB commissioning task. By monitoring the NodeB commissioning task, you can learn the commissioning progress and status, and then rectify commissioning faults (if any) in time.

5.6.1 Viewing the NodeB Commissioning Progress

You can view the stage and progress of a NodeB commissioning task.

Prerequisite

The NodeB deployment list is imported successfully.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment**. The **NodeB Auto Deployment** window is displayed.

Step 2 In the commissioning task list, view the status and progress of a commissioning task.

The commissioning task status is displayed in **Status**. The current task execution progress is displayed in **Current Phase**. The specific stage information about the task in each status is displayed in **Description**. For example, when a commissioning task is in the  state (that is, the commissioning is being performed), the operations such as version download, software upgrade, and configuration file upgrade are performed.

TIP

You can use either of the following methods to quickly view the NodeB commissioning status:

- Click the table heading field of the task list to sort the commissioning tasks.
- Click next to the table heading field of the task list to set the filtering condition. The task list displays only the tasks that meet the filtering condition. If no filtering condition is set, the list of commissioning tasks displays all the tasks that you are authorized to view.

  Select a field in the task list, click , and then select **Custom** from the drop-down list. Set the filtering condition in the displayed dialog box.

For details about each status, see **Table 5-3**.

Table 5-3 Description of the commissioning statuses

Status	Operation
	Start a NodeB commissioning task.
	The commissioning is abnormal. In this case, you can view the alarm information and then perform fault diagnosis and alarm handling in time.
	Pay attention to the commissioning. For example, an exception occurs in a certain procedure, which does not affect the commissioning and need not be handled.
	No operation needs to be performed. The commissioning is being performed normally.
	You need to confirm whether to complete the commissioning.
	The commissioning is complete without errors.

----End

5.6.2 Viewing NodeB Alarms

After the NodeB software is upgraded automatically during the NodeB commissioning, you can view the alarms of this NodeB and the relevant alarms of the RNC managing this NodeB through the M2000. All the alarms related to the NodeB are categorized according to objects. This helps you query required alarms. In addition, the M2000 provides the function of automatically diagnosing NodeB board alarms, NodeB antenna alarms, and E1T1 alarms. You can take corresponding measures to rectify the faults based on the diagnosis results.

Context

According to objects, alarms are categorized into physical transmission port alarms, transmission path alarms, antenna alarms, board alarms, cell alarms, external alarms, and other alarms. Other alarms refer to the alarms that cannot be categorized on the basis of specific objects.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open the **NodeB Auto Deployment** window.

Step 2 Right-click the commissioning task whose alarms are to be viewed, and then choose **Open Monitor Window** from the shortcut menu.

In the displayed window, you can view the alarms of this NodeB and the relevant alarms of the RNC managing this NodeB according to monitored objects. For details about the alarm monitoring window, see **5.13.1 Interface Description: NodeB Commissioning**.

TIP

After you confirm the commissioning task, no alarm generated during the commissioning can be viewed on the basis of a single NodeB on the **Monitor** tab page. If any uncleared alarm exists during the commissioning, the alarm is reported again under **Normal**.

Step 3 Perform the following steps to diagnose the faults of boards, antennas, and E1T1s based on board alarms, antenna alarms, and E1T1 alarms:

1. On the **Monitor** tab page, select a board, an antenna, or a physical transmission port, or select an alarm of a certain object from the alarm list in the right pane.
2. Right-click the board, antenna, port, or alarm, and then choose **Diagnose** from the shortcut menu.
3. Set the required diagnosis parameters.

   After the diagnosis parameters are set, a diagnosis task is added to the diagnosis task list.
4. Right-click the fault diagnosis task, and then choose **Diagnose Report** from the shortcut menu to view the diagnosis result.

Step 4 Perform the following steps to handle an alarm:

1. Double-click the alarm to be handled.
2. In the displayed dialog box that shows the alarm details, click the link in **Reason And Advice**.
3. Rectify the fault based on the alarm reference.

----End

5.6.3 Viewing Service Verification Results

After a NodeB commissioning task is at the service verification stage, the M2000 automatically subscribes to the performance counters of the logical cells of this NodeB and checks whether the NodeB services are normal based on the counter values. At this stage, you can check whether each cell of the NodeB has passed the service verification and view the accumulated value of each counter.

Context

- When the management status of a logical cell of the RNC to which the NodeB belongs is **Unblocked** and the operation status is **Enable**, it indicates that the commissioning is at the service verification stage. You can check whether a task is at the service verification stage by referring to **Description** of the task.
- At the service verification stage, the performance measurement period is the shortest measurement period supported by the NodeB. There are certain rules for checking whether NodeB services are normal. For details, see **Service Verification Rules**.

- If a NodeB passes the service verification, the status of its commissioning task automatically changes to **Waiting for Acknowledgement**. In such a case, you need to manually confirm that the commissioning is complete.
- The M2000 automatically clears the service verification measurement data that is generated two weeks ago. This avoids a large amount of unnecessary history data on the M2000 server.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open **NodeB Auto Deployment**.

Step 2 Right-click the commissioning task whose alarms are to be viewed, and then choose **Open Service Verification Window** from the shortcut menu.

In the displayed window, you can view the verification result of each cell and the accumulated values of all the performance counters based on cells. For details about the service verification window, see **5.13.1 Interface Description: NodeB Commissioning**.

----End

Service Verification Rules

- If the value of a single performance counter is not 0 during the service verification, it indicates that this counter has passed the verification.
- If all the performance counters of a cell have passed the verification, it indicates that this cell has passed the verification.
- If all the logical cells of a NodeB have passed the verification, it indicates that this NodeB has passed the verification.

5.6.4 Performing a NodeB Task Again or Deleting the Task

When a NodeB commissioning task is running, you can perform this task again or delete this task.

Prerequisite

The NodeB deployment list is imported successfully.

Context

When the NodeB version software is being downloaded, the restart is performed after the FTP service is complete. Therefore, you need to wait for a certain period to view the operation result on the M2000.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open **NodeB Auto Deployment**.

Step 2 In the commissioning task list, select the commissioning task to be performed again or deleted.

You can select multiple commissioning tasks.

Step 3 Right-click a commissioning task, and then choose the required menu item from the shortcut menu.

- You can choose **Restart** to perform the commissioning task again.
- You can choose **Delete** to delete this task.

----End

5.7 Monitoring the eNodeB Commissioning Task

This section describes how to monitor an eNodeB commissioning task. By monitoring the eNodeB commissioning task, you can learn the eNodeB commissioning progress and status, and then perform operations on the eNodeB commissioning task.

5.7.1 Viewing the eNodeB Commissioning Progress
After the eNodeB commissioning task is created, the user can view the task progress and related information to handle problems during the eNodeB commissioning.

5.7.2 Pausing/Retrying the eNodeB Commissioning Task
During the automatic eNodeB commissioning on the M2000, the commissioning task can be paused and retried as required.

5.7.3 Restarting/Deleting the eNodeB Commissioning Task
During the automatic eNodeB commissioning on the M2000, a commissioning task can be deleted and a terminated commissioning task can be restarted as required.

5.7.1 Viewing the eNodeB Commissioning Progress

After the eNodeB commissioning task is created, the user can view the task progress and related information to handle problems during the eNodeB commissioning.

Prerequisite

The eNodeB commissioning task is created.

Context

Table 5-4 describes the automatic eNodeB commissioning process.

Table 5-4 Automatic eNodeB commissioning process

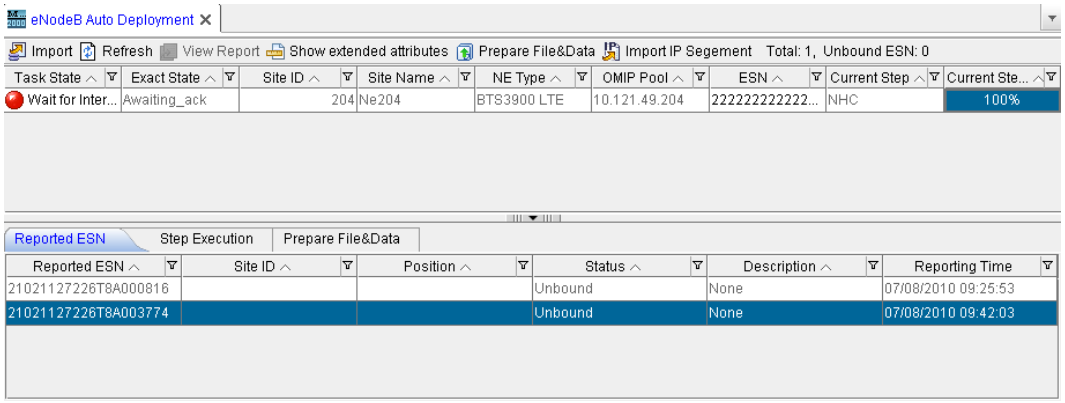
eNodeB Commissioning Process	Description
Automatic deployment	After the eNodeB ESN and imported EDS file are bound together, the M2000 automatically allocates the IP address for the eNodeB. In this way, the OM channel can be established automatically between the M2000 and the eNodeB for remote commissioning and routine maintenance. After the M2000 discovers an eNodeB, the M2000 automatically sets the eNodeB to TESTING mode. Thus, all alarms generated during the eNodeB commissioning are not reported on the M2000.

eNodeB Commissioning Process	Description
Automatic configuration	Automatic configuration includes the steps listed as follows. If you deselect a step when importing the EDS file, or if the file related to a step does not exist, the automatic eNodeB commissioning skips this step and proceeds. ● Downloading the eNodeB software ● Downloading the data configuration file ● Activating the eNodeB software and data configuration file ● Supplementing the software automatically ● Updating the license file ● Commissioning the RET antenna
Testing and verification	The M2000 automatically performs the eNodeB health check, which involves checking for active alarms.
eNodeB deployment complete	After the testing and verification is complete, the user decides whether to end the eNodeB commissioning based on the actual situations. When the eNodeB commissioning is complete, the M2000 restores the eNodeB to the normal state. Thus, the eNodeB alarms can be reported as usual.

Procedure

Step 1 On the **M2000 client**, choose **Configuration** > **Auto Deployment** > **eNodeB Auto Deployment**. The **eNodeB Auto Deployment** tab page is displayed, as shown in **Figure 5-9**.

Figure 5-9 eNodeB Auto Deployment tab page



Step 2 View **Current Step** and **Current Step Progress** of the commissioning task. Click the **Step Execution** tab page, and view **Status**, **Progress**, and **Details** of the steps of each phase.

----End

5.7.2 Pausing/Retrying the eNodeB Commissioning Task

During the automatic eNodeB commissioning on the M2000, the commissioning task can be paused and retried as required.

Prerequisite

The automatic eNodeB deployment is in progress or is paused.

Procedure

Step 1 On the **M2000 client**, choose **Configuration** > **Auto Deployment** > **eNodeB Auto Deployment**. The **eNodeB Auto Deployment** tab page is displayed.

Step 2 Right-click a commissioning task and choose **Pause** or **Retry** from the shortcut menu.

NOTE

More than one commissioning task can be paused or retried at a time.

----End

Result

- When you choose **Pause** from the shortcut menu, the commissioning task stops after the current step is complete.
- When you choose **Retry** from the shortcut menu, the commissioning task proceeds at the paused step.

5.7.3 Restarting/Deleting the eNodeB Commissioning Task

During the automatic eNodeB commissioning on the M2000, a commissioning task can be deleted and a terminated commissioning task can be restarted as required.

Prerequisite

The eNodeB commissioning task is created.

Procedure

Step 1 On the **M2000 client**, choose **Configuration** > **Auto Deployment** > **eNodeB Auto Deployment**. The **eNodeB Auto Deployment** tab page is displayed.

Step 2 Right-click one or multiple commissioning tasks and choose **Restart** or **Delete** from the shortcut menu.

----End

5.8 Obtaining the Commissioning Report

The commissioning report records the operation details, results, and error information obtained during the commissioning. The eNodeB commissioning report can be viewed during the commissioning task for handling problems in time, or be obtained after the commissioning task for report archiving.

5.8.1 Obtaining a GBTS Commissioning Report

This section describes how to obtain a GBTS commissioning report. A GBTS commissioning report records the task information about a commissioned GBTS and the information about the commissioning process. When a commissioning task is still in progress or is complete, you can obtain and analyze the commissioning report to learn the commissioning details, to view the exceptions that occur during the commissioning, or to determine whether to complete the commissioning.

Prerequisite

A commissioning task is in progress.

Context

You can select multiple commissioning tasks at a time to obtain their reports. In this case, the M2000 combines and displays all information contained in these reports in one report. If you manually deletes a commissioning task, the corresponding commissioning report is deleted accordingly.

For details about the GBTS commissioning report, see **5.12.3 Parameters of the GBTS Commissioning Report**.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open the **GBTS Auto Deployment** window.

Step 2 On the **GBTS List** tab page, select one or multiple commissioning tasks whose commissioning reports are to be viewed, and then click  . Alternatively, right-click the tasks, and then choose **Export Report** from the shortcut menu.

You can customize the filename of the commissioning report. If you do not specify the filename, the M2000 names the file in **user name@report exporting time** format by default. For example, **admin@2009_10_16_15_37_21**.

Step 3 In the exported commissioning report folder, select **index.html** to view the commissioning report.

----End

5.8.2 Obtaining a NodeB Commissioning Report

A NodeB commissioning report records detailed commissioning operations, operation results, and exceptions that occur during the commissioning. You can obtain the commissioning report to view the detailed information when a commissioning task is running. You can also obtain the commissioning report for archive after the commissioning task is complete.

Prerequisite

A commissioning task is running.

Context

The exported commissioning report records the information about the procedures of only the selected commissioning tasks. If you manually delete a commissioning task, the generated commissioning report does not contain the information about this task any longer.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open **NodeB Auto Deployment**.

Step 2 Select one or multiple commissioning tasks whose commissioning report you want to view.

Step 3 Click  .

Step 4 Specify a local save path, and then click **Confirm**.

You can customize the file name of a commissioning report. If you do not specify the file name, the M2000 uses **user name@report exporting time** as the file name by default. For example, admin@2009_10_16_15_37_21.

----End

5.8.3 Obtaining an eNodeB Commissioning Report

The eNodeB commissioning report includes the operation details, results, and error information obtained during commissioning. It also includes the eNodeB health check report. The eNodeB commissioning report can be viewed during the commissioning task for handling problems in time, or be obtained after the commissioning task for report archiving.

Prerequisite

The eNodeB commissioning task is in progress.

Context

The exported commissioning report records the information about only the selected commissioning task. If a commissioning task is deleted manually, the corresponding commissioning report cannot be generated.

Procedure

Step 1 On the **M2000 client**, choose **Configuration** > **Auto Deployment** > **eNodeB Auto Deployment**. The **eNodeB Auto Deployment** tab page is displayed.

Step 2 Select one or more commissioning tasks.

Step 3 Click  to view the automatic deployment report, which includes the health check report.

----End

5.9 Checking the Operating Status of the Base Station

The operating status of a base station can be viewed in the commissioning report.

5.9.1 Checking the Running Status of the GBTS
You can analysis the GBTS commissioning report to infer the running status of the GBTS.

5.9.2 Checking the Running Status of the NodeB
You can analysis the NodeB commissioning report to infer the running status of the NodeB.

5.9.3 Checking the Running Status of the eNodeB
You can analysis the eNodeB commissioning report to infer the running status of the eNodeB.

5.9.1 Checking the Running Status of the GBTS

You can analysis the GBTS commissioning report to infer the running status of the GBTS.

Context

NOTE

- When the status of the GBTS commissioning task is **Waiting for Acknowledgement**, you can infer that the service verification is complete. The obtained commissioning report can help you determine the running status of the GBTS.
- The commissioning report records all the commissioning information generated from the start of the commissioning task to the moment the report is generated. Therefore, the commissioning report that records the information about the whole commissioning process can be obtained only when the status of the GBTS commissioning task is **Finished**, that is, at the end of the GBTS commissioning task.

Procedure

Step 1 View the GBTS commissioning report to infer the running status of the GBTS.

Step 2 View the alarm list and clear the active alarms according to the *BSC6900 GSM Alarm Reference*.

NOTE

There are two methods of viewing the alarm list:

- Export the alarm list when the commission report is exported. Then, the commissioning report includes the alarm list.
- Open the alarm list window according to step 1 and step 2 in **5.5.1 Viewing the GBTS Alarm Status**.

Step 3 **Optional:** View the service verification results to learn about service verification counters. For details, see **5.5.3 Viewing the GBTS Service Verification Results**.

----End

5.9.2 Checking the Running Status of the NodeB

You can analysis the NodeB commissioning report to infer the running status of the NodeB.

Context

NOTE

- When the status of the NodeB commissioning task is **Waiting for Acknowledgement**, you can infer that the service verification is complete. The obtained commissioning report can help you determine the running status of the NodeB.
- The commissioning report records all the commissioning information generated from the start of the commissioning task to the moment the report is generated. Therefore, the commissioning report that records the information about the whole commissioning process can be obtained only when the status of the NodeB commissioning task is **Finished**, that is, at the end of the NodeB commissioning task.

Procedure

Step 1 View the NodeB commissioning report to infer the running status of the NodeB.

Step 2 View the alarm list and clear the active alarms according to the *NodeB Alarm Reference*.

NOTE

There are two methods of viewing the alarm list:

- Export the alarm list when the commission report is exported. Then, the commissioning report includes the alarm list.
- Open the alarm list window according to step 1 and step 2 in **5.6.2 Viewing NodeB Alarms**.

Step 3 **Optional:** View the service verification results to learn about service verification counters. For details, see **5.6.3 Viewing Service Verification Results**.

----End

5.9.3 Checking the Running Status of the eNodeB

You can analysis the eNodeB commissioning report to infer the running status of the eNodeB.

Prerequisite

eNodeB health check is complete in the eNodeB commissioning task.

Context

Table 5-5 describes the eNodeB health checklist.

Table 5-5 eNodeB health checklist

Check Item	Check Sub-Item	Description
eNodeB software version check	eNodeB software version check	Check the active eNodeB software, including the version and running status.
Environment status check	RRU temperature check	Check the temperature of the RRU.
	Environment temperature and humidity check	Check the temperature and humidity of the environment.
eNodeB type check	eNodeB type check	Check the eNodeB type in data configuration.
Data configuration check	Consistency check on the data configuration	Check the consistency between the effective data applied to modules and the configured data in the database.
	Active alarm query	Check for active alarms of an NE.
Cell status check	Cell status check	Check the cell status.
MBTS alarm check	Inter-system communication alarm check	Check the status of inter-system communication.
	Inter-system BBU board parameter settings conflict alarm check	Check the consistency of inter-system parameter settings for the BBU board.
	Inter-system cabinet configuration conflict alarm check	Check the consistency of inter-system configurations for the cabinet.
	Inter-system monitoring device parameter settings conflict alarm check	Check the consistency of inter-system parameter settings for the monitoring device.
	Inter-system board object configuration conflict alarm check	Check the consistency of inter-system configurations for the board object.
	Inter-system RF unit parameter settings conflict alarm check	Check the consistency of inter-system parameter settings for the RF unit.
	Inter-system site-level configuration conflict alarm check	Check the consistency of inter-system configurations on site level.
	Inter-system control rights conflict alarm check	Check the consistency of inter-system control rights.

Check Item	Check Sub-Item	Description
	RF unit working mode and board capability mismatch alarm check	Check the matching between the RF unit working mode and the board capability.
Hardware status check	CPU usage check	Check the CPU usage.
	Transmit channel check	Check the status of the transmit channel.
	Receive channel check	Check the status of the receive channel.
	RRU status check	Check the status of an RF unit.
	Board status check	Check the status of a board.
Interface status check	X2-interface link check	Check the status of the current X2 interface and the information about the peer eNodeB.
	S1-interface link check	Check the parameters of the current S1 interface and the information about the peer MME.
	GE/FE port status check	Check the parameter settings of the Ethernet port.
	E1/T1 port status check	Check the parameter settings of the E1/T1 port.
	Remote maintenance channel status check	Check the data configuration on all the remote maintenance channels of the eNodeB.
	SCTP link status check	Check the parameter settings of the SCTP link.
	IP Path status check	Check the parameter settings related to IP Path.
	CPRI port status check	Check the parameter settings of the CPRI port.
Clock status check	Clock status check	Check the current clock of the main cabinet, including the current reference clock, clock quality, clock priority, clock working mode, and status of the phase-locked loop.

Procedure

Step 1 Open the eNodeB commissioning report and view the health check report. Learn the running status of the eNodeB.

Step 2 If the result of the eNodeB health check fails, check for active alarms and rectify the related faults by referring to the *eNodeB Alarm Reference*. If all active alarms are cleared but the health check still fails, contact Huawei for technical support.

----End

5.10 Testing the Basic Services of the eNodeB

This section describes how to test the basic services of the eNodeB.

Prerequisite

- The eNodeB and the MME/S-GW are properly connected.
- The negotiation data of the eNodeB to be commissioned is added to the MME/S-GW.
- The testing UE is functional and is registered in the HSS.
- The FTP server for testing the basic services is available.
- The WWW server for testing the basic services is available.

Procedure

- Test the web page browsing service.

Testing Method	Access the WWW server and browse the web pages through a UE. Perform the test 20 times.
Expectation	Success rate > 95%. Web browsing is normal.

- Test the file uploading service.

Testing Method	Access the FTP server and upload files through a UE. Perform the test 10 times.
Expectation	Success rate > 90%. The upload rate is stable.

- Test the file downloading service.

Testing Method	Access the FTP server and download files through a UE. Perform the test 10 times.
Expectation	Success rate >90%. The download rate is stable.

- Test the VoIP services.

Testing Method	Use the testing UE to call another UE 20 times.

Expectation	Connection success rate > 95%. The calls are uninterrupted and none of the calls get dropped till they are released. The voice is clear with no loud noise.

----End

5.11 Confirming the Commissioning Task

After the M2000 finishes commissioning a base station automatically, the commissioning task enters the to-be-confirmed state, waiting for manual confirmation that the commissioning is complete.

5.11.1 Confirming a GBTS Commissioning Task

This section describes how to confirm the completion of GBTS commissioning. After the GBTS service verification is complete, the commissioning task switches to **Confirming completed** status, and you need to manually confirm the completion.

Context

If some alarms are still not cleared during the commissioning, it is recommended that you not confirm the completion of the commissioning task so that you can view and handle these alarms easily. After you confirm the completion, all GBTS alarms, which are generated during the commissioning, cannot be viewed on the monitoring tab page on the basis of a single GBTS. The alarms that are not cleared during the commissioning are reported again as common alarms.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open the **GBTS Auto Deployment** window.

Step 2 In the commissioning task list, select the commissioning task to be confirmed.

Step 3 Click  on the toolbar to confirm the completion of the commissioning task.

After the commissioning is complete, the M2000 performs the following operations:

- Stop monitoring the alarms of the GBTS and the GBSC managing the GBTS.

- Stop subscribing to the performance counters of the GBTS for service verification.

----End

5.11.2 Confirming a NodeB Commissioning Task

This section describes how to confirm a NodeB commissioning task. After a NodeB passes the service verification, the status of the NodeB commissioning task changes to **Waiting for Acknowledgement**. You need to manually confirm that the commissioning is complete.

Context

If some alarms are still not cleared during the commissioning, it is recommended that you not confirm the commissioning task. After you confirm the commissioning task, any alarm generated during the commissioning cannot be viewed on the basis of a single NodeB on the **Monitor** tab page. If any uncleared alarm exists during the commissioning, the alarm is reported again in the **Normal** status.

Procedure

Step 1 Choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment**. The **NodeB Auto Deployment** window is displayed.

Step 2 In the commissioning task list, select the commissioning task to be confirmed.

Step 3 Click on the toolbar to confirm that the commissioning is complete.

After the commissioning is complete, the M2000 performs the following operations:

- Stop monitoring the alarms on the NodeB and its RNC.
- Stop subscribing to the service verification performance counters of the NodeB.

----End

5.11.3 Confirming an eNodeB Commissioning Task

After the eNodeB health check is complete, the status of the commissioning task changes to **Awaiting_ack**. In this case, you need to acknowledge the eNodeB commissioning.

Procedure

Step 1 On the **M2000 client**, choose **Configuration** > **Auto Deployment** > **eNodeB Auto Deployment**. The **eNodeB Auto Deployment** tab page is displayed.

Step 2 Right-click the target commissioning task and choose **Acknowledge** from the shortcut menu. The commissioning task is acknowledged.

----End

5.12 Reference to the GBTS Commissioning Interface

This section describes the interfaces and parameters for GBTS commissioning and facilitates you to perform relevant operations for GBTS commissioning.

5.12.1 Interface Description: GBTS Commissioning

This section describes the layout of the **GBTS Auto Deployment** window for commissioning GBTSs and provides the information about each element displayed in the window.

5.12.2 Parameters for a GBTS Commissioning Task
This section describes the parameters for a GBTS commissioning task that are displayed on the **GBTS List** tab page of the **GBTS Auto Deployment** window. You can refer to this part when viewing the GBTS commissioning progress.

5.12.3 Parameters of the GBTS Commissioning Report
This section describes the parameters displayed in the GBTS commissioning report and the format of the GBTS commissioning report.

5.12.4 Parameters of the Performance Counters for GBTS Service Verification
This section describes the parameters of the performance counters that are monitored in the service verification procedure during GBTS commissioning.

5.12.1 Interface Description: GBTS Commissioning

This section describes the layout of the **GBTS Auto Deployment** window for commissioning GBTSs and provides the information about each element displayed in the window.

This section mainly describes the following tab pages in the **GBTS Auto Deployment** window:

- **GBTS List tab page**
- **Monitor tab page**
- **Service Verification tab page**

GBTS List Tab Page

Figure 5-10 shows the **GBTS List** tab page that provides the operation access for commissioning GBTSs. For details, see **Table 5-6**. You can choose **Configuration** > **Auto Deployment** > **GBTS Auto Deployment** to open this tab page.

Figure 5-10 GBTS List tab page

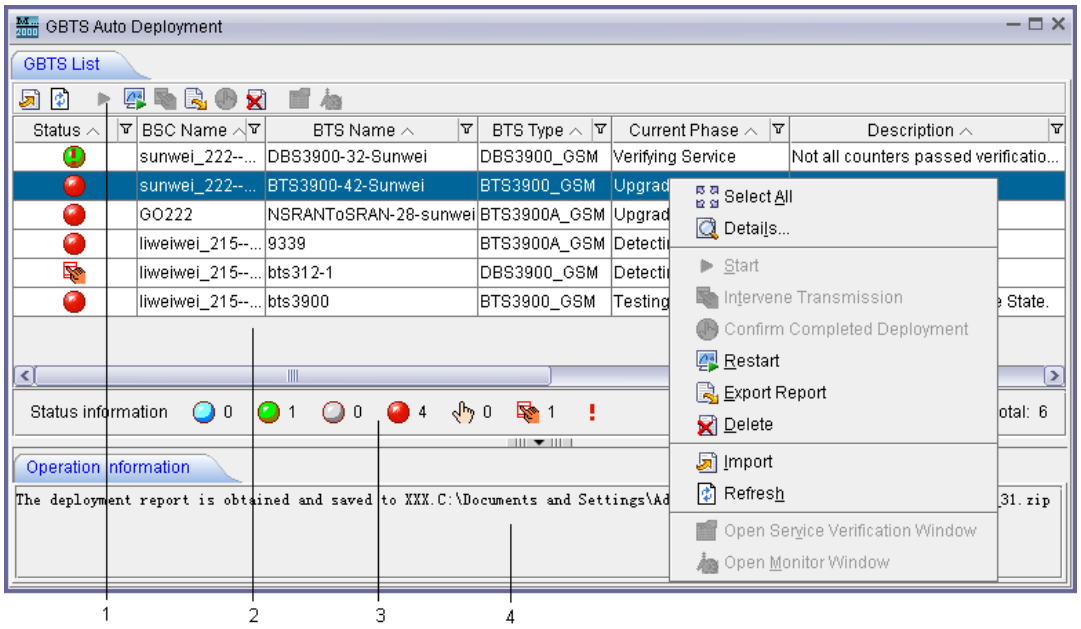


Table 5-6 GBTS List tab page

No.	Description
1	Toolbar, providing the operation access for commissioning GBTSs. You can locate the cursor on each icon on the toolbar to learn the meaning of this icon according to the displayed message.
2	Commissioning task list, displaying all commissioning tasks that you create and the commissioning progress of each task. You can right-click a task, and then choose the corresponding item from the shortcut menu to perform a certain operation.
3	Status bar of commissioning tasks, displaying the total number of commissioning tasks and number of commissioning tasks in each status.
4	Operation results, that is, the results of the operations that you perform in the **GBTS Auto Deployment** window.

Monitor Tab Page

Figure 5-11 shows the **Monitor** tab page. The **Monitor** tab page displays all alarms of a certain GBTS and all relevant alarm of the GBSC managing the GBTS, which are generated during the commissioning. If the fault cause cannot be located according to the alarm information, you can select one object or alarm to perform the fault diagnosis. For details about **Figure 5-11**, see **Table 5-7**.

You can select a commissioning task on the **GBTS List** tab page, and then click  . Alternatively, right-click the task, and then choose **Open Monitor Window** from the shortcut menu to open this tab page.

Figure 5-11 Monitor tab page

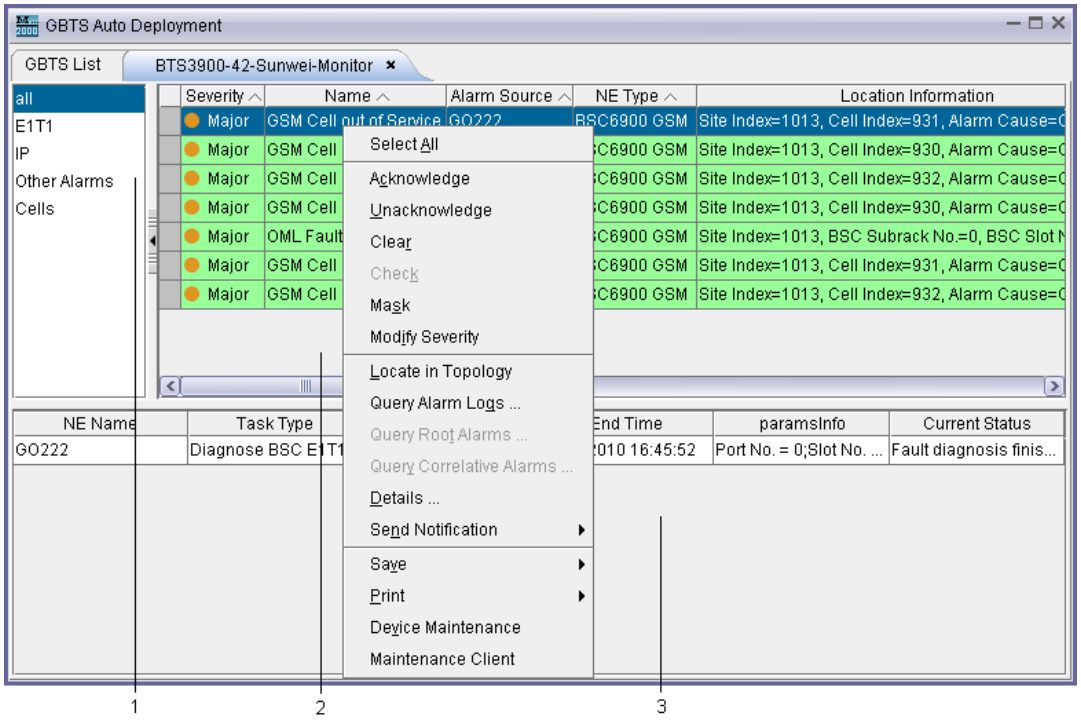


Table 5-7 Monitor tab page

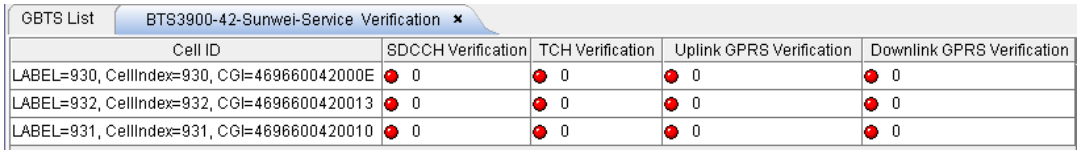
No.	Description
1	Object type. After selecting an object type, you can view the alarms of all the objects of this type in the alarm list located in the right pane.
2	Alarm list. After an object type is selected, the alarms of all the objects of this type are displayed in the alarm list. You can right-click an alarm in the alarm list, and choose corresponding items from the shortcut menu to perform required operations easily.
3	Fault diagnosis task list. You can right-click an object type or alarm, and then choose **Diagnose...** from the shortcut menu to perform the fault diagnosis. The M2000 creates a fault diagnosis task and displays the diagnosis progress. After the fault diagnosis is complete, you can obtain the fault diagnosis report to view fault location information. **NOTE** E1T1s and antennas support the fault diagnosis.

Service Verification Tab Page

Figure 5-12 shows the **Service Verification** tab page. The **Service Verification** tab page displays the accumulation values of the performance counters related to GBTS CS and PS services. It also displays information, indicating that the accumulation values are normal or abnormal. You can select a commissioning task on the **GBTS List** tab page, and then click

 . Alternatively, right-click the task, and then choose **Open Service Verification Window** from the shortcut menu to open this tab page.

Figure 5-12 Service Verification tab page



5.12.2 Parameters for a GBTS Commissioning Task

This section describes the parameters for a GBTS commissioning task that are displayed on the **GBTS List** tab page of the **GBTS Auto Deployment** window. You can refer to this part when viewing the GBTS commissioning progress.

Parameter Description

Parameter	Description
Status	Current status of a commissioning task. For the meaning of each commissioning task status, see the description of the task status bar on the **GBTS List** tab page.
BSC Name	Name of a GBSC.
BTS Name	Name of a GBTS.
BTS Type	Type of a GBTS.
Current Phase	Current commissioning procedure that a commissioning task is in.
Description	Details of the current commissioning procedure that a commissioning task is in.
BTS Software Version	Version of the target GBTS software.
BTS Hot Patch Version	Version of the target hot patch.
User Name	Name of the user who creates a commissioning task.
Contact	Contact person of the GBTS to be commissioned and his or her contact information.

5.12.3 Parameters of the GBTS Commissioning Report

This section describes the parameters displayed in the GBTS commissioning report and the format of the GBTS commissioning report.

If you select multiple commissioning tasks at a time to obtain related reports, the M2000 combines and displays all information contained in these reports in one report so that you can

view the information easily. The commissioning report is in .html format and contains the summary information about commissioning tasks and the details of the commissioning process of each GBTS. **Figure 5-13** shows the page of summary information. **Figure 5-14** and **Figure 5-15** show the pages of details. For details about these pages, see **Table 5-8**, **Table 5-9**, and **Table 5-10**, respectively.

Figure 5-13 Summary information in the GBTS commissioning report

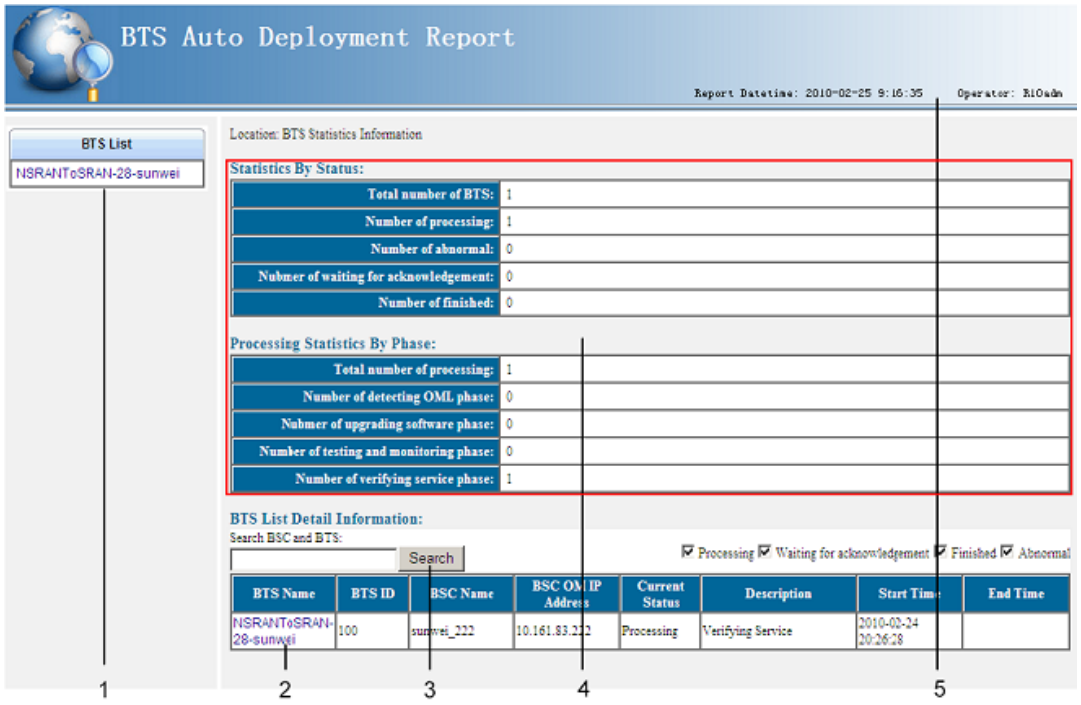


Table 5-8 Page of summary information in the GBTS commissioning report

No.	Description
1	This area lists all the GBTSs involved in the current commissioning report. You can click a GBTS name to navigate to the pages of details of this GBTS. For the examples of the pages of details, see **Figure 5-14** and **Figure 5-15**.
2	GBTS list. This list displays the basic information about each GBTS and the current status, start time, and end time of each GBTS commissioning task. You can click a GBTS name to navigate to the pages of details of this GBTS. For the examples of the pages of details, see **Figure 5-14** and **Figure 5-15**.
3	Filtering conditions of the GBTS list. If the information about multiple GBTSs is contained in the commissioning report, you can type the name of a GBTS or the name of the GBSC managing the GBTS to locate the GBTS that you want to query. In addition, you can select a commissioning task status to filter the commissioning tasks that are in this status.
4	Summary information about commissioning tasks. This area displays the total number of commissioning tasks contained in the commissioning report and number of commissioning tasks in each procedure.

No.	Description
5	This area displays the generation time of the report and the names of the users who obtain this report.

Figure 5-14 Page of details of a GBTS in the commissioning report (1)

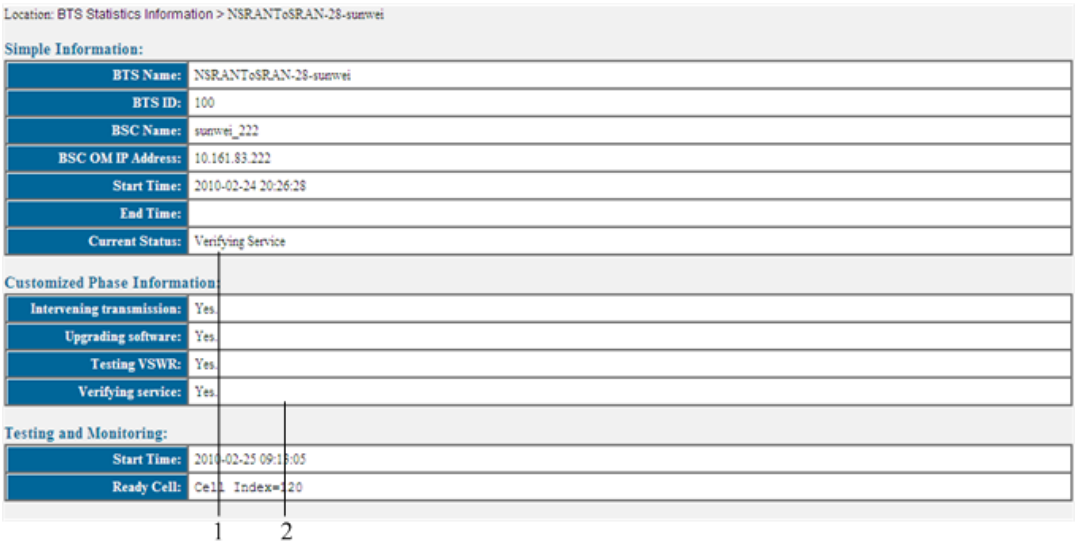


Table 5-9 Page of details of a GBTS in the commissioning report (1)

No.	Description
1	This area displays the basic information about a commissioned GBTS.
2	This area displays the details of a commissioned GBTS.

If the service verification starts and you have manually triggered the automatic fault diagnosis, the information shown in **Figure 5-15** is also displayed in this area.

Figure 5-15 Page of details of a GBTS in the commissioning report (2)

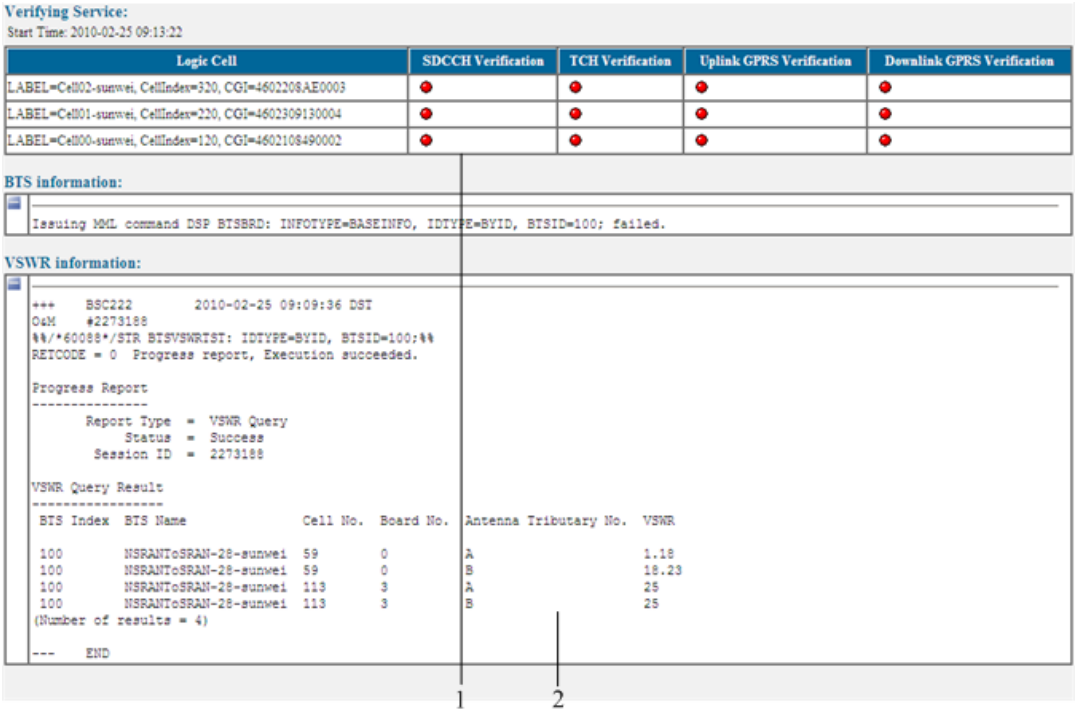


Table 5-10 Page of details of a GBTS in the commissioning report (2)

No.	Description
1	Service verification results of a commissioned GBTS.
2	Automatic fault diagnosis results of a commissioned GBTS.

5.12.4 Parameters of the Performance Counters for GBTS Service Verification

This section describes the parameters of the performance counters that are monitored in the service verification procedure during GBTS commissioning.

Parameter Description

Parameter	Description
SDCCH Verification	If the value is not **0**, you can infer that the counter meets the requirement.
TCH Verification	If the value is not **0**, you can infer that the counter meets the requirement.

Parameter	Description
Uplink GPRS Verification	If the value is not **0**, you can infer that the counter meets the requirement.
Downlink GPRS Verification	If the value is not **0**, you can infer that the counter meets the requirement.

NOTE

- If the values of **SDCCH Verification** and **TCH Verification** are not **0**, you can infer that the corresponding CS service verification succeeds.
- If the values of **Uplink GPRS Verification** and **Downlink GPRS Verification** are not **0**, you can infer that the corresponding PS service verification succeeds.

5.13 Reference to the NodeB Commissioning Interface

This section describes the interfaces and parameters for NodeB commissioning and facilitates you to perform relevant operations for NodeB commissioning.

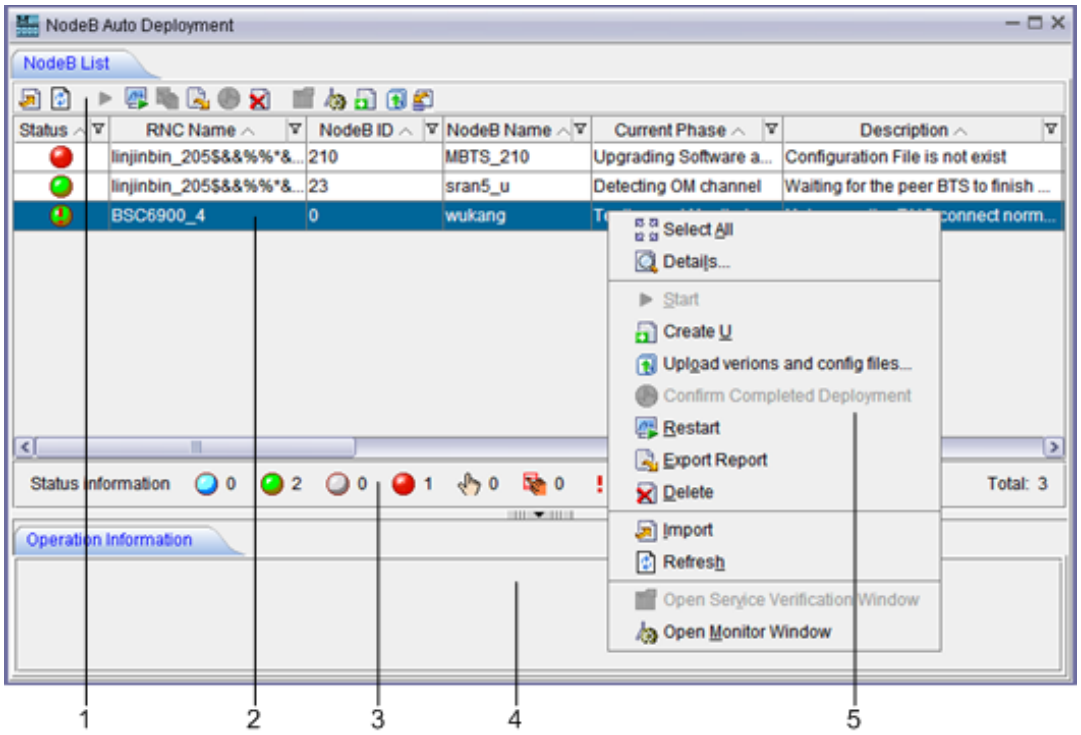
5.13.1 Interface Description: NodeB Commissioning

This section describes the **NodeB Auto Deployment** window during NodeB commissioning. You can learn about the components of this window.

NodeB Auto Deployment window-NodeB List tab page

On the M2000 client, you can choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open the NodeB auto-deployment window. By default, **NodeB List** tab page is displayed in the NodeB auto-deployment window, as shown in **Figure 5-16**.

Figure 5-16 NodeB Auto Deployment window-**NodeB List** tab page



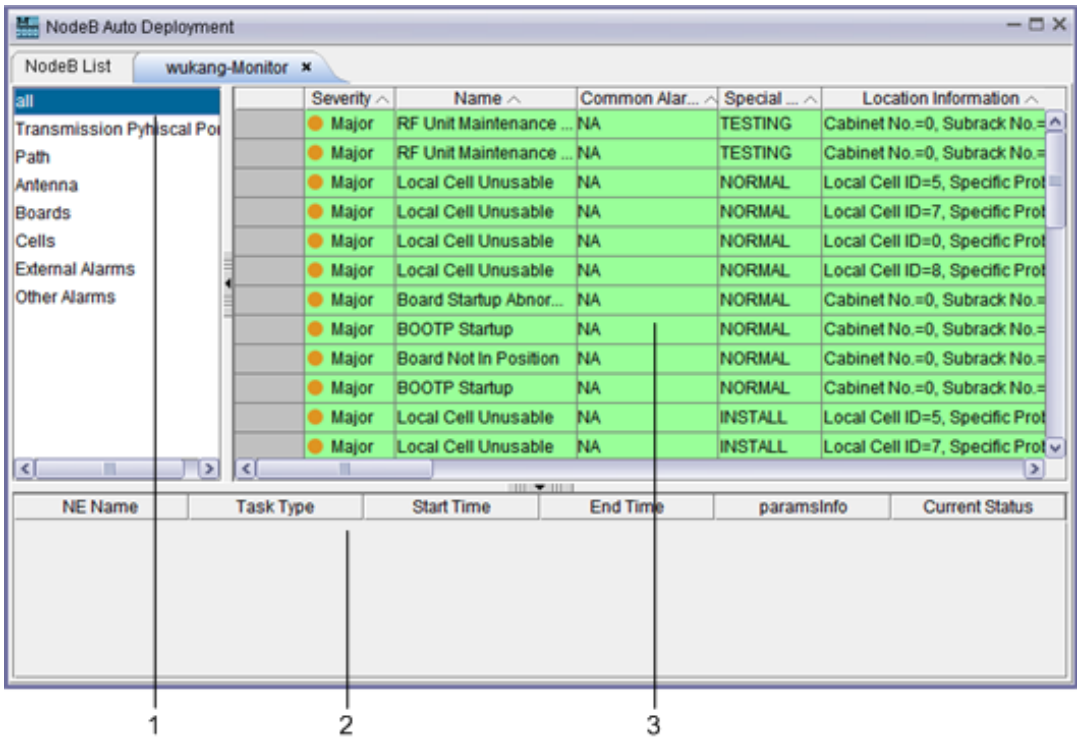
No.	Description
1	Buttons. You can perform different operations by clicking the corresponding buttons. From the left to the right, the buttons on the **NodeB List** tab page are used for importing the NodeB deployment list, refreshing the interface, uploading versions and configuration files, activating commissioning tasks, restarting commissioning tasks, confirming commissioning tasks, exporting commissioning reports, deleting commissioning tasks, filtering commissioning tasks, and obtaining the NodeB deployment list template.
2	Commissioning task list. This list displays all the created commissioning tasks. You can right-click a task and then choose a menu item from the shortcut menu to perform the corresponding operation. **TIP** If you use the **admin** user account, you can view the commissioning tasks created by all users. You can also filter the commissioning tasks created by a user by specifying **User Name**.
3	Status bar of commissioning tasks. The status bar displays the total number of commissioning tasks and number of commissioning tasks in each status.
4	Operation result area. This area displays the results of operations performed in the **NodeB Auto Deployment** window.

NodeB Auto Deployment window-Monitor tab page

The **Monitor** tab page displays all the alarms generated on the NodeB and the related alarms on the RNC to which the NodeB belongs during NodeB commissioning. On the M2000 client, you can choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open the NodeB auto-deployment window. By default, **NodeB List** tab page is displayed in the NodeB auto-deployment window. On the **NodeB List** tab page, you can right-click a commissioning task for

which the alarms need to be monitored and then choose **Open Monitor Window** from the shortcut menu to open the corresponding tab page.

Figure 5-17 NodeB Auto Deployment window-**Monitor** tab page



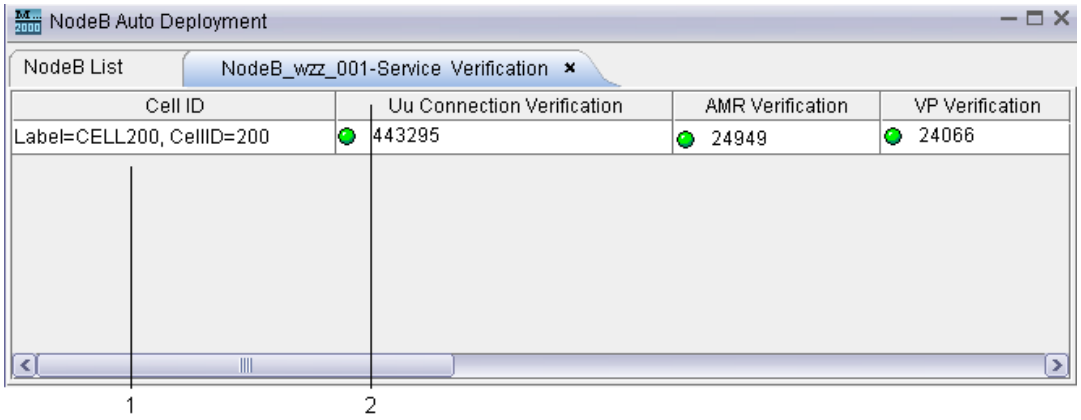
No.	Description
1	Object type. After selecting an object type, you can view all the alarms of this object type in the alarm list on the right.
2	Alarm list. After an object type is selected, this area displays all the alarms of this object type. After selecting an alarm from the alarm list, you can perform the required operations through the shortcut menu.
3	Diagnosis task list. You can right-click an object type or alarm, and then choose **Diagnose** from the shortcut menu to run the automatic diagnosis script. At the same time, the corresponding diagnosis task is created in this area. After the diagnosis task is complete, you can right-click it and then choose **Diagnose Report** from the shortcut menu to view the diagnosis result. **NOTE** The objects that support automatic diagnosis are boards, transmission physical ports, and antennas.

NodeB Auto Deployment window-Validate tab page

The **Validate** tab page displays the accumulated values of the performance counters monitored by the M2000 during service verification of all logical cells. On the M2000 client, you can choose **Configuration** > **Auto Deployment** > **NodeB Auto Deployment** to open the NodeB auto-deployment window. By default, **NodeB List** tab page is displayed in the NodeB auto-deployment window. On the **NodeB List** tab page, you can right-click a commissioning task

whose service verification result you want to view and then choose **Open Service Verification Window** from the shortcut menu to open the corresponding tab page.

Figure 5-18 NodeB Auto Deployment window-**Validate** tab page



No.	Description
1	Verification objects, that is, all the logical cells of the NodeB to be commissioned.
2	Verification result. This area displays the accumulated values of all the performance counters that are verified during service verification.

5.13.2 Parameters of the NodeB Deployment List

The NodeB deployment list records the parameter information required for NodeB commissioning. After the NodeB deployment list is imported to the M2000, the M2000 can automatically commission the NodeBs in the NodeB deployment list.

Table 5-11 describes the parameters in the NodeB deployment list.

NOTE

- If the CME is deployed and the initial configuration of the NodeB is finished by using the CME, exporting the NodeB deployment list from the CME is recommended. For the detailed operations, see the **Exporting the Deployment List and Configuration Files of Physical NodeBs** section in the online help. The principles of exporting parameters using the CME are listed as follows:
  - The planned information must be exported from the CME.
  - The unplanned information cannot be exported from the CME.
- If the CME is not deployed, export the template of NodeB deployment list from the **NodeB Auto Deployment** window on the M2000 client. For the detailed operation, see **5.2.2 Creating a NodeB Commissioning Task**.

Table 5-11 Parameters in the NodeB deployment list

Parameter	Description
RNC ID	ID of the RNC to which the NodeB belongs This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.

Parameter	Description
RNC Name	Name of the RNC to which the NodeB belongs This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB ID	ID of the NodeB This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB Name	Name of the NodeB This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB ESN1	Electronic serial number (ESN) of the active main control board of a NodeB (it must be exported from the CME if it is planned) The ESN uniquely identifies one NodeB. The ESN is usually labeled as the bar code on the main control board of the NodeB. The site engineer should record the ESN before leaving the site, so as to assist the commissioning engineer in the remote check on the site. This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
NodeB ESN2	ESN of the standby main control board of the NodeB (it must be exported from the CME if it is planned) This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
NodeB TRANS IP address	OM IP address of the NodeB configured at the RNC This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB TRANS IP Subnet mask	OM IP subnet mask of the NodeB configured at the RNC This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB Interface IP address	IP address of the port on the NodeB configured at the RNC (it must be exported from the CME if the port type of the NodeB is set to ETH/TRUNK) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB Interface IP Subnet mask	IP subnet mask of the port on the NodeB configured at the RNC (it must be exported from the CME if the port type of the NodeB is set to ETH/TRUNK) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.

Parameter	Description
DHCP Server IP address	Planned IP address of the DHCP server of the NodeB (it must be exported from the CME if it is configured) If the M2000 is set to the DHCP server, the IP address of the M2000 is automatically obtained. This parameter does not need to be set. This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
DHCP Server IP Subnet mask	Planned IP subnet mask of the DHCP server of the NodeB This parameter is not exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
AACP Server IP address	Planned IP address of the AACP server of the NodeB (it must be exported from the CME if it is configured) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
AACP Server IP Subnet mask	Planned IP subnet mask of the AACP server of the NodeB This parameter is not exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Next Hop IP address to DHCP Server	IP address of the next hop from the NodeB to the DHCP server (it must be exported from the CME if it is configured) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Next Hop IP Subnet mask to DHCP Server	IP subnet mask of the next hop from the NodeB to the DHCP server (it must be exported from the CME if it is configured) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Next Hop IP address to AACP Server	IP address of the next hop from the NodeB to the AACP server (it must be exported from the CME if it is configured) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Next Hop IP Subnet mask to AACP Server	IP subnet mask of the next hop from the NodeB to the AACP server (it must be exported from the CME if it is configured) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Peer IP address	Peer IP address of the OM channel configured at the NodeB This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Peer IP Subnet mask	Peer IP subnet mask of the OM channel configured at the NodeB This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.

Parameter	Description
OM VLAN ID	VLAN ID of the NodeB configured at the RNC (it must be exported from the CME if the VLAN is planned) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
OM VLAN Priority	VLAN priority of the NodeB configured at the RNC (it must be exported from the CME if the VLAN is planned) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
DHCP VLAN ID	Same value as OM VLAN ID (it must be exported from the CME if the VLAN is planned) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
PING VLAN ID	Same value as OM VLAN ID (it must be exported from the CME if the VLAN is planned) This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
OM PING IP address	OM ping IP address This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
OM PING IP Subnet mask	OM ping subnet mask This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB Type	Type of the NodeB to be commissioned This parameter must be exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB BaseLine Software Version	Baseline version of the target NodeB (it must be exported from the CME if the target version is planned) This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
NodeB Cold Patch Version	Version of the cold patch of the target NodeB (it must be exported from the CME if the target version is planned) This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
NodeB Hot Patch Version	Version of the hot patch of the target NodeB (it must be exported from the CME if the target version is planned) This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.
NodeB Configuration File CRC	CRC value of the NodeB data configuration file This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.

Parameter	Description
NodeB FTP Server IP address	IP address of the FTP server of the NodeB This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB FTP Path	Path on the FTP server of the NodeB This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB FTP User Name	User name for login to the FTP server of the NodeB This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
NodeB FTP Password	Password for login to the FTP server of the NodeB This parameter can be optionally exported from the CME. It is not configurable in the **NodeB Auto Deployment** window.
Contact	Information about the contact person in the field This parameter can be optionally exported from the CME. It is configurable in the **NodeB Auto Deployment** window.

6 Commissioning the MBTS by Using USB and M2000

About This Chapter

This chapter describes how to upgrade software and configure data using a USB disk, check the operating status of the MBTS hardware, and rectify the MBTS hardware faults (if any) in time at the MBTS. This section also describes how to check the operating status of the MBTS on the M2000.

6.1 Procedure for Commissioning the MBTS by Using USB and M2000

At the local end of the MBTS, you can use a USB disk to upgrade the MBTS software and data, and check whether the MBTS hardware status is normal according to the board status and LED status, to locate and rectify faults in time. At the remote end of the MBTS, you can perform fault diagnosis on the MBTS and verify services of the MBTS on the M2000.

Prerequisite

Before you commission the MBTS, the MBTS, RNC, and M2000 must meet following requirements:

- The MBTS hardware such as the cabinets, cables, antenna system, and auxiliary devices, is installed and passes the installation check. The NodeB is powered on and passes the power-on check.
- The controller hardware is installed and commissioned, and the system works properly. The negotiation data of the MBTS to be commissioned is configured and recorded.
- The M2000 is commissioned, it is connected to the corresponding controller, and the configuration synchronization is completed.

The USB disk for local commissioning should be ready for this commissioning mode. For details, see **6.2 Preparing the USB Disk for Local Commissioning**.

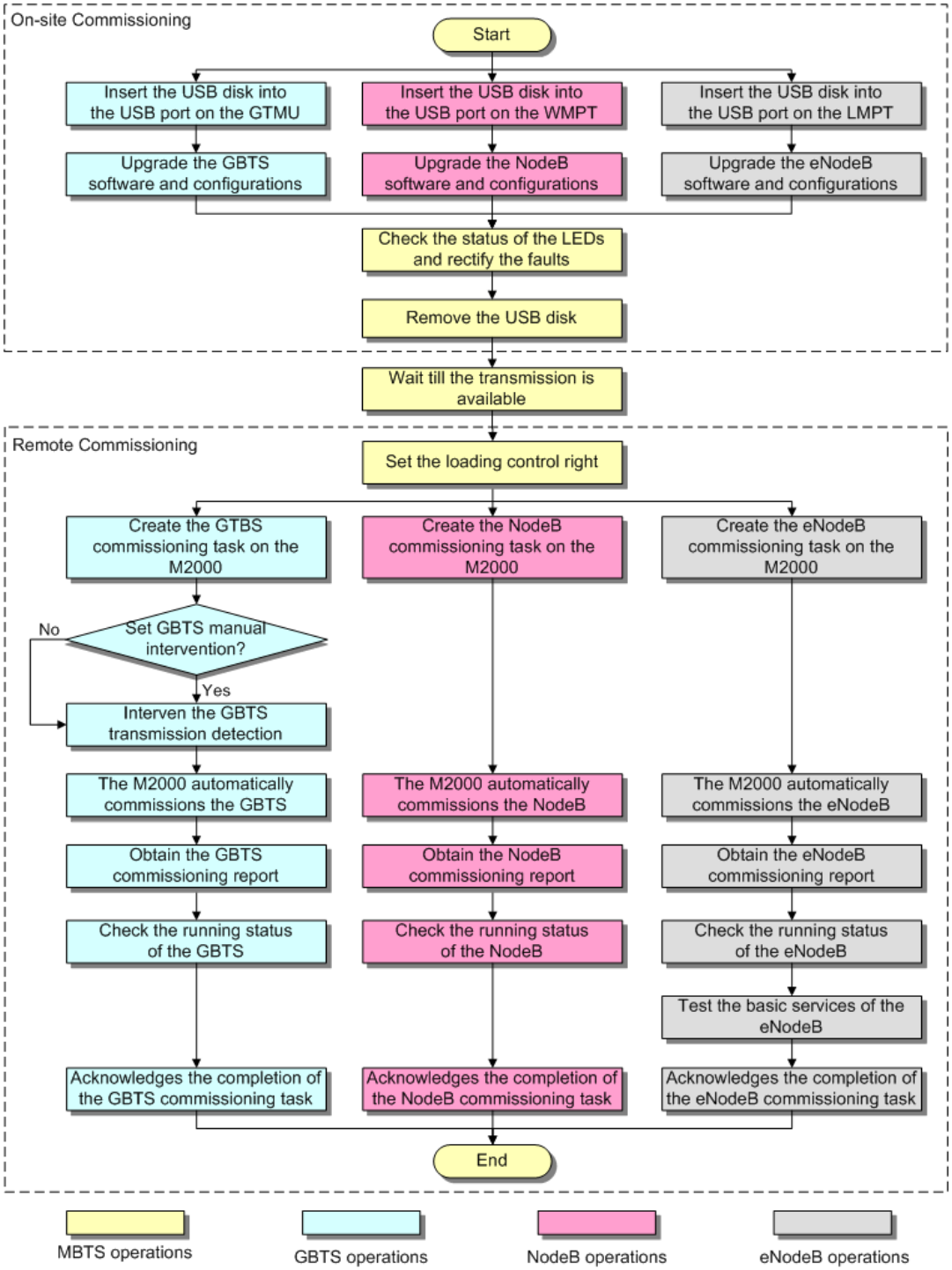
NOTE

- The USB disk type and the files saved in the USB disk vary according to the base station mode. Prepare a USB disk accordingly.
- Files required for both modes must be saved to the USB disk when base stations of two modes are deployed.

Commissioning Flowchart

Figure 6-1 shows the procedure for commissioning the MBTS using local USB and M2000.

Figure 6-1 Procedure for commissioning the MBTS using USB and M2000



NOTE

- The priority of a mode does not need to be considered during the MBTS commissioning.
- When a base station supporting two modes is deployed,
  - The two modes must be upgraded separately if only one USB disk is available for the upgrade on site.
  - The two modes can be upgraded simultaneously by inserting the two USB disks into the USB ports on the main control boards in the two modes if two USB disks are available for the upgrade on site.
- If the MBTS that works in the co-module scenario is not connected with Base Station Controler, to upgrade with a USB disk locally will raise the **Inter-System Control Rights Conflict** alarm. This alarm will not affect the commissioning and the services. After the BTS connects with Base Station Controler, manually sets the download control right, which will clear this alarm.

Procedure

- Local end of the MBTS
  1. Insert the USB disk into the USB port on the panel of the main control board in specific mode. Choose an appropriate operation based on the active software version and data configuration of the MBTS.

If...	Then...
The active software version and data configuration are inconsistent with those in the USB disk,	Go to step **Step 2**.
The active software version and data configuration are consistent with those in the USB disk,	Remove the USB disk, because the software and data of the base station in the specific mode have been upgraded.

  2. The base station automatically upgrades the software and data. For details, see **6.3 Upgrading Software and Configuring Data by Using the USB Disk**.
  3. Check whether the MBTS hardware is normal according to the LED status. For details, see **6.4 Checking the Status of the LEDs and Rectifying the Faults**.
  4. Remove the USB disk before leaving the site.
- Remote end of the MBTS

  NOTE

  When the MBTS is commissioned remotely on the M2000, commission the base station of a mode, and then commission the base station of the other mode. The two modes are equal in priority.

  1. Wait till the transmission is available.
  2. **Optional:** If the MBTS is working in the co-module scenario, the download control right needs to be set. During the commissioning on the M2000, the M2000 automatically compares the software version of the system with the download control right to the software version of the current co-module MRFU/RRU3908, and check their consistency. If the versions are not consistent, the MBTS automatically upgrade the MRFU/RRU3908. For detail of setting the download control right, see **6.5 Set the Download Control Right**.
  3. Create a commissioning task on the M2000. For details, see **5.2 Creating a Commissioning Task**.
  4. **Optional:** If a GBTS is to be commissioned and **Intervening transmission** is selected when a commissioning task is created, manually check the GBTS transmission state

and rectify faults (if any). For details, see **5.3 Intervening the GBTS Transmission**.

5. The M2000 automatically commissions the MBTS. For details, see **5.4 Commissioning the MBTS on the M2000**. During the process of the MBTS commissioning, monitor the commissioning progress and alarms, and rectify faults (if any). The monitoring operations vary according to modes. for details on the operations in each mode, see **5.5 Monitoring the GBTS Commissioning Task**, **5.6 Monitoring the NodeB Commissioning Task**, and **5.7 Monitoring the eNodeB Commissioning Task**.
6. Obtain the commissioning report from the M2000. For details, see **5.8 Obtaining the Commissioning Report**.
7. View the commissioning report to check the MBTS operating status. For details, see **5.9 Checking the Operating Status of the Base Station**.
8. Verify eNodeB services. For details, see **5.10 Testing the Basic Services of the eNodeB**.
9. Confirm the MBTS commissioning task. For details, see **5.11 Confirming the Commissioning Task**.

----End

6.2 Preparing the USB Disk for Local Commissioning

The USB disk should be ready before it is used for local commissioning. The preparation of the USB disk for local commissioning varies according to the base station mode. Therefore, you must prepare the USB disk based on the mode of the base station to be commissioned.

Context

NOTE

Files required for both modes must be saved to the USB disk when base stations supporting two modes are deployed.

6.2.1 Arranging the USB Disk for Local GBTS Commissioning
The USB disk should be ready before it is used for local GBTS commissioning.

6.2.2 Arranging the USB Disk for Local NodeB Commissioning
The USB disk should be ready before it is used for local NodeB commissioning.

6.2.3 Arranging the USB Disk for Local eNodeB Commissioning
Before the local eNodeB commissioning through the USB storage device, you need to save the required files in a specified directory in the USB storage device.

6.2.4 Configuring the Security Equipment
When the security gateway (GW) is deployed in the network, you need to configure data for the security GW. In the case that the IEEE 802.1x authentication is adopted, the authentication access equipment and the authentication server should be configured. Generally, an authentication server is the Authentication, Authorization and Accounting (AAA) server.

6.2.1 Arranging the USB Disk for Local GBTS Commissioning

The USB disk should be ready before it is used for local GBTS commissioning.

Context

CAUTION

1. Data configuration through a USB disk is applicable only to the BTS supporting IP over FE or IP over E1.
2. Data configuration through a USB disk can be used with the software upgrade using a USB disk. The prerequisite is that the active BTS software supports the data configuration using a USB disk.
3. A USB disk contains the configuration file of only a BTS.
4. Ensure that the route from the BTS to the BSC is configured on the Web LMT before the conversion into the configuration file. Thus, the related MML commands and parameters have the route information and are converted into the configuration file containing the route information.

Procedure

Step 1 Prepare the USB disk with a LED. The requirements are as follows: when there is no read or write operation on the USB disk, the LED on the USB disk is ON; when there is any read or write operation on the USB disk, the LED on the USB disk is blinking.

Step 2 Check the compatibility of the USB disk with the NodeB. Do as follows to test the USB disk: Insert the USB disk into the USB port on the WMPT of a GBTS that runs normally, and wait for 3 seconds. If the LED on the USB disk blinked once, it indicates that the USB disk is functional. If the USB disk fails the preceding test, change the USB disk.

Step 3 Obtain the software package for the upgrade.

1. Three days before the upgrade, visit the website **http://support.huawei.com** and click **Software** to download the software package.
2. Decompress BTS3000V100R012C00SPCXXX_VER.zip to obtain the software package BTS3000V100R012C00SPXX.csp.

NOTE

In V100R012C00SPCXXX, XXX is three digits indicating the SPC version.

Step 4 Prepare the configuration script.

CAUTION

The software loading may fail if the configuration file is not used in the case of the pre-deployment upgrade. In the pre-deployment upgrade, if the configuration file that specifies the boards to be loaded is not used, all the board software stored in the USB storage device is loaded into the flash of the GTMU. Thus, the software loading may fail due to the insufficient flash memory.

1. Create a **.txt** file, and rename the file **Precfg.ini**. Edit the **Precfg.ini** file to add the following contents into the **Precfg.ini** file.

   [PRECONFIG]

ALL=GTMU|DRFU|GRFU

Where, **ALL=XXXX** is set by the user manually and it specifies the type of the board onto which the software is to be loaded. In the preceding example, the software is to be loaded onto the GTMU, DRFU, and GRFU.

CAUTION

- All letters are in capitals, and different board names are separated by "|". Do not add any comment or press the space or TAB key before or after "=" or the name of each board.
- The base stations using different configurations cannot use the same configuration file. New configuration files should be created for the base stations of different configurations.

2. Save the configuration script in ANSI characters.

Step 5 The data configuration file is made and exported through the CME. This is usually performed by configuration engineers.

Step 6 Store the files according to the following path, as shown in **Table 6-1**.

Table 6-1 Saving path of the file

File	Specified Path of the USB Storage Device
Upgrade software package	\\BTS3900 GSM
Configuration script	\\BTS3900 GSM\Precfg.ini
Data configuration file	\\BTS3900 GSM\SiteName\TranCfg.ini

----End

6.2.2 Arranging the USB Disk for Local NodeB Commissioning

The USB disk should be ready before it is used for local NodeB commissioning.

Procedure

Step 1 Prepare the USB disk with a LED. The requirements are as follows: when there is no read or write operation on the USB disk, the LED on the USB disk is ON; when there is any read or write operation on the USB disk, the LED on the USB disk is blinking.

Step 2 Check the compatibility of the USB disk with the NodeB. Do as follows to test the USB disk: Insert the USB disk into the USB port on the WMPT of a NodeB that runs normally, and wait for 3 seconds. If the LED on the USB disk blinked once, it indicates that the USB disk is functional. If the USB disk fails the preceding test, change the USB disk.

Step 3 Save the related files in the USB disk according to the specified path.

1. Prepare the NodeB software package, data configuration file, and VSWR check script file.

- Obtain the NodeB software package from the support website.
- The data configuration file can be made and exported through the CME. This is usually performed by configuration engineers.

2. Store the files according to the following path.

File	Specified Path of the USB Storage Device
NodeB software	\\NodeB\Software\Software.csp
Data configuration file	\\NodeB\Configuration\NodeBCfg.xml

CAUTION

After you have downloaded the file from the PC into the USB disk, unplug the USB disk according to the system prompt. If not, errors may occur when you use the USB disk.

----End

6.2.3 Arranging the USB Disk for Local eNodeB Commissioning

Before the local eNodeB commissioning through the USB storage device, you need to save the required files in a specified directory in the USB storage device.

Prerequisite

- The operator already obtains the cross certificate signed by Huawei if cross certification is used.

  NOTE

  Before Huawei signs the cross certificate for the operator, the operator is required to provide the request file of cross certificate for Huawei. The request file of cross certificate is in format of PKCS#10, which is generated by the operator's root CA certificate, or the operator's child CA certificate that is used for the certification of eNodeB, security GW, and M2000.
- The CR/CRL database is deployed on the server of the DeMilitarized Zone (DMZ) of the operator, and supports FTP. Thus, the files on the CR/CRL database can be downloaded in FTP mode.
- The USB storage device is ready.
- The eNodeB software package and data configuration file are available.
- When the security GW is deployed on the network, the common configuration file and digital certificate to be imported to the eNodeB are saved in the USB storage device.

Context

When the security GW is deployed in the network, the eNodeB and the security GW need to identify each other through the digital certificate. Therefore, the digital certificate is required for the eNodeB commissioning. The digital certificate on the eNodeB side incorporates the operator's cross certificate signed by Huawei, operator's root certification authority (CA) certificate (or CA certificate chain with the root CA certificate), and operator's certificate

revocation list (CRL). The digital certificate on the security GW side incorporates Huawei root CA certificate and Huawei CRL file.

NOTE

The cross certificates involved in this document are signed by Huawei for the operator.

If the operator's certificate chain with the root CA certificate is used instead of the operator's root CA certificate, you can replace the operator's root CA certificate in this document with the operator's certificate chain with the root CA certificate.

Procedure

Step 1 Arrange for the tools required for the local commissioning through the USB storage device, as described in **Table 6-2**.

Table 6-2 Tools required for the local commissioning through the USB storage device

Tool	Description
USB storage device	• The USB storage device is equipped with an indicator that indicates the data transmission status. • Capacity ⩾ 256 MB • Recommended models: Netac U208, Netac U180, Netac U215, and Netac U210. • The USB storage device has no additional function. The additional functions include but are not limited to encryption, antivirus, bootstrap, MP3, MP4, and smart mobile phone.

Step 2 Obtain the digital certificate required by the eNodeB. That is, save the operator's cross certificate, operator's root CA certificate, and operator's CRL file(optional) to the USB storage device.

NOTE

You can save either or both of the cross certificate and operator's root CA certificate to the USB storage device.

Step 3 Obtain the eNodeB software package and data configuration file.

NOTE

The eNodeB software package is ready, and can be downloaded from http://support.huawei.com/.

The name of the data configuration file should be CFGDATA.XML. The file name is case sensitive. Complete the configuration by referring to the *eNodeB Initial Configuration Guide*. Then, save the data configuration file in the local computer.

The name of the common configuration file should be PreInfo.xml. The file name is case sensitive.

Step 4 Save the files required for local commissioning in the following specified paths in the USB storage device. The save path is case sensitive.

- The security GW is not deployed on the network

File	Specified File Path in the USB Storage Device
eNodeB software package	**usb:\eNodeB\Software**
Data configuration file	**usb:\eNodeB**

- The security GW is deployed on the network

File	Specified File Path in the USB Storage Device
Common configuration file	**usb:\eNodeB**
Cross certificate granted by Huawei	**usb:\eNodeB\Certificates\CrossCACert**
Operator's root CA certificate	**usb:\eNodeB\Certificates\CACert**
Operator's CRL file	**usb:\eNodeB\Certificates\CRL**
eNodeB software package	**usb:\eNodeB\Software**
Data configuration file	**usb:\eNodeB**

----End

6.2.4 Configuring the Security Equipment

When the security gateway (GW) is deployed in the network, you need to configure data for the security GW. In the case that the IEEE 802.1x authentication is adopted, the authentication access equipment and the authentication server should be configured. Generally, an authentication server is the Authentication, Authorization and Accounting (AAA) server.

Prerequisite

- The *Quidway S6500 Series Ethernet Switches Operation Manual* is ready, and can be downloaded from http://support.huawei.com/.
- The *infoX AAA Commissioning Guide* is ready, and can be downloaded from http://support.huawei.com/.
- If the IEEE 802.1x authentication is adopted, the operator should use the authentication access equipment that supports 802.1x authentication and the corresponding AAA server that supports Extensible Authentication Protocol (EAP).

Context

- Table 6-3 describes the configuration items that you need to pay special attention to when the security GW is used.

Table 6-3 Security GW configuration

Item	Description
IP address	Both the public security GW and the serving security GW should be configured with the IP address of the interface for the untrusted domain on the eNodeB side and IP address of the interface for the trusted domain on the EPC side.

Item	Description
Route	● Public security GW: The routes to the M2000, eNodeB, and temporary OM IP address should be configured. ● Serving security GW: The routes to the M2000, S-GW, MME, IP address of the interface to the eNodeB, S1 signaling, S1 services, and OM IP address should be configured.
ike local name	The public security GW and serving security GW should be configured.
ike proposal	● The authentication method item should be digital certificate mode or pre-shared key mode according to the actual network. ● The authentication algorithm item must be SHA1. ● The encryption algorithm item must be AES. ● The DH group item must be DH group2.
acl	It is recommended that permit ip be configured.
ike peer	● Public security GW: The key or certificate domain should be configured according to the authentication mode specified in the ike proposal. The local id type item must be name, the remote name item must be p-segw, the ike proposal item should be configured according to previous configurations, and the ike version item can be V1 or V2. The ip pool item should be configured to allocate the temporary OM IP for the eNodeB. ● Serving security GW: The key or certificate domain should be configured according to the authentication mode specified in the ike proposal. The local id type item must be name, the remote name item must be s-segw, the ike proposal item should be configured according to previous configurations, and the ike version item can be V1 or V2.
ipsec proposal	The encapsulation mode item must be tunnel, the transform item must be esp, the esp authentication item must be shal, and the esp encryption item must be aes.
ipsec policy-template	The public security GW and serving security should be set to the template mode. The Acl should be configured according to previous configurations. If the public security GW and serving security GW are the same, different acl values must be configured. The psf group must be DH group2. The public security GW and serving security GW must correspond to different ike peer values. The ipsec proposal item should be configured according to previous configurations.
ipsec policy	This item must be configured according to the template in the ipsec policy-template.
ipsec binding to port	The policy can be bound to the planned port according to the configuration in the ipsec policy.

- When the authentication access equipment is used, the authentication mode of Radius (remote authentication dial-in user service) and the authentication method of EAP should be configured, because certificate authentication is adopted at present.
- When the AAA server is used, the CA certificates of terminal users should be uploaded, and the file names of the user certificate and private key should be configured for the AAA server.

Procedure

Step 1 Check the configuration of the security GW according to **Table 6-3**.

Step 2 Ensure that Huawei root CA certificate and Huawei CRL file are configured on the security GW.

Step 3 Configure the authentication access equipment. The authentication access equipment may vary with different operators. The example here describes a typical configuration of an authentication access equipment. Take the Quidway S6500 series Ethernet switch as an example. Run the **dot1x** command to enable the global 802.1x feature. Run the **dot1x [interface interface-list]** command to enable the 802.1x feature on a specified port. Run the **dot1x authentication-method { chap | pap | eap }** command to set the EAP authentication method. For details, see the *Quidway S6500 Series Ethernet Switches Operation Manual*.

Step 4 Configure the eNodeB CA certificate for the AAA server. The AAA server may vary with different operators. The descriptions here take the infoX AAA as an example. For details, see the *infoX AAA Commissioning Guide*.

1. Upload the CA certificate of a terminal user to the **iscc2/config/secert** directory of infoX AAA.
2. Change the file names of the user certificate and private key in the SCPCFG.INI file. Ensure that the file names are consistent with the file names of the user certificate and private key uploaded in step **Step 4.1**.

----End

6.3 Upgrading Software and Configuring Data by Using the USB Disk

You can locally upgrade software and configure data of a base station by using the USB disk on the base station side.

Context

CAUTION

- If a USB disk is to be used repeatedly, the target software and data configuration file in the USB disk should be updated before the USB disk is used for a base station deployment.
- When you save the software and data configuration file to the USB disk, ensure that the write lock (if any) on the USB disk is unlocked. Otherwise, the software and data configuration file cannot be updated to the USB disk.

6.3.1 Upgrading the GBTS Software and Downloading the Data Configuration File (on the BTS Side)

The GBTS supports direct software and data configuration file downloading from the USB disk. After the downloading, the GBTS automatically activates the software, and then resets.

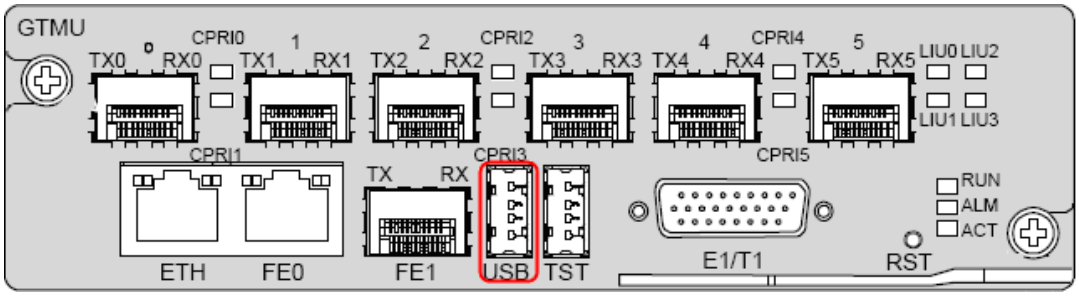
Context

- Software upgrade by using a USB disk is supported from GSM BTS3000 V100R009C00SPC058.
- Transmission configuration by using a USB disk is supported from GSM BTS3000 V100R009SPC072.
- Within 3 minutes after GBTS started, GBTS cannot perform the USB upgrade or configuration. During the 3-minute period, GBTS is trying to connect with BSC and is not using the date files in the USB disk. After the GBTS started for 3 minutes, it is sure that the GBTS cannot connect to the BSC, and the GBTS starts the configuration by downloading the board software according to the pre-configured script with the data configuration files on USB.
- If the GBTS is not connected with BSC, only the transmission data can be configured with the USB disk, other data will not be configured. Also, the GBTS only upgrades the software on GTMU, and will not upgrade the software on other boards(For example, DRFU, MRFU, UTRP). After the GBTS connects BSC, the GBTS finishs the data configuration, and upgrades the software on other boards except GTMU.

Procedure

Step 1 Insert the USB disk to the USB port on the GTMU, as shown in **Figure 6-2**.

Figure 6-2 USB port on the GTMU



Step 2 When the LED on the USB disk is blinking, the GBTS loads the version and parses the configuration file and saves it to the flash memory of the GBTS.

CAUTION

Do not remove the USB disk during this period. Otherwise, the file parsing fails.

Step 3 Check and ensure that the GBTS configuration is successful, as shown in **Table 6-4**.

Table 6-4 Status

	Status of the LED on the USB Disk	State of the RUN LED on the GTMU	Duration
Plug the USB disk into the USB port and detect the USB disk automatically.	ON	Blinking (on for 1s and off for 1s)	About 1s to 2s
The GTMU downloads the software and data configuration file from the USB disk.	Blinking	Blinking (ON for 0.125s and OFF for 0.125s)	About 8 minutes
The GTMU downloads the software and data configuration file from the USB disk.	Blinking	Blinking (ON for 0.125s and OFF for 0.125s)	About 10s
The GTMU activates the software.	ON	Blinking (ON for 0.125s and OFF for 0.125s)	About 3 to 4 minutes
The GTMU resets.	ON first, OFF for a while, and then ON	ON first, OFF for a while, and then ON	About 2 minutes
The GTMU is running properly.	ON	Blinking (on for 1s and off for 1s)	-

The BTS configuration is successful when the following phenomena continue over a minute:

- The LED on the USB disk is ON.
- The RUN LED on the GTMU blinks slowly.

The BTS configuration fails if any of the following phenomena occurs:

- After the USB disk is inserted, the RUN LED on the GTMU blinks slowly, and the LED on the USB disk is ON.

- During the upgrade, the LED on the USB disk is OFF, and the RUN LED on the GTMU blinks slowly.
- The LED on the USB disk is OFF during the configuration.

Rectify the fault in the hardware of the USB disk. Verify that the TranCfg.ini file is saved in the directory of \BTS3900 GSM\SiteName in the USB disk and that the active BTS software supports the configuration using the USB disk.

Step 4 Remove the USB disk from the GBTS.

----End

6.3.2 Upgrading the NodeB Software and Downloading the Data Configuration File (on the NodeB Side)

The NodeB supports direct software and data configuration file downloading from the USB disk. After the downloading, the NodeB automatically activates the software, and then resets.

Prerequisite

- The NodeB passes a power-on status check and is powered on.
- The USB disk for local commissioning is ready. For details, see **6.2.2 Arranging the USB Disk for Local NodeB Commissioning**.

Context

When the USB disk is plugged into the corresponding port on the WMPT in the BBU3900, the BBU3900 automatically detects the USB disk and installs the USB disk driver. After the installation, the NodeB automatically reads the software and data configuration file in the fixed directories of the USB disk and verifies their names and formats.

When the system reads the software package and data configuration file, the NodeB checks the consistency between the active software version and configuration data and the software version and configuration data in the USB disk. If they are inconsistent, the software and configuration upgrade is automatically started. If they are consistent, the upgrade is not performed.

Note the following situations when the software and configurations are upgraded from the USB disk:

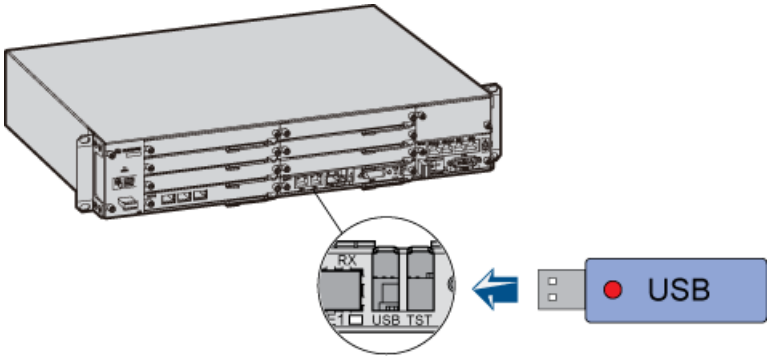
- By default, the NodeB downloads the software and data configuration file from the USB disk by configuration. The NodeB also supports the supplementary download. For example, When the RRU is not connected to the BBU3900 through the optical cable, the software and data configuration file related to the RRU are not downloaded. After the RRU is connected, the software and data configuration file related to the RRU are automatically downloaded from the USB disk.
- If the USB disk saves only the software, the NodeB automatically upgrades the software.
- If the USB disk is only saved with the data configuration file, the NodeB automatically downloads the data configuration file.
- In any of the following situations, the NodeB does not upgrade the software or download the data configuration file from the USB disk.
  - The directory or the file does not exist.
  - The file format is illegal.

- The software version to be used is the same as the active software version.
- The data to be used in the configuration file is the same as the active configuration data.

Procedure

Step 1 Plug the USB disk into the USB port on the WMPT of the BBU3900, as shown in **Figure 6-3**.

Figure 6-3 Plugging the USB disk into the USB port on the WMPT



Step 2 The NodeB automatically downloads the software and data configuration file, and activates the software. After the activation, the NodeB resets. Wait until the NodeB reset is complete. For details on the status of the LED on the USB disk and the status of the RUN LED on the WMPT in this process, see **Table 6-5**.

Table 6-5 LEDs on the USB disk and the WMPT

	Status of the LED on the USB Disk	State of the RUN LED on the WMPT	Duration
When the USB disk is plugged into the corresponding port on the WMPT, the WMPT automatically detects the USB disk.	ON	Blinking (on for 1s and off for 1s)	About 1s to 2s
The WMPT downloads the software and data configuration file from the USB disk.	Blinking	Blinking (ON for 0.125s and OFF for 0.125s)	About 12 minutes
The WMPT activates the software.	ON	Blinking (ON for 0.125s and OFF for 0.125s)	About 3 to 4 minutes

	Status of the LED on the USB Disk	State of the RUN LED on the WMPT	Duration
The NodeB resets.	ON first, OFF for a while, and then blinking	ON first, OFF for a while, and then blinking (ON for 0.125s and OFF for 0.125s)	About 2 minutes
The NodeB runs normally.	ON	Blinking (on for 1s and off for 1s)	-

NOTE

The time for downloading software and data configuration file from the USB disk and the time for the NodeB to activate the software may differ from those in **Table 6-5**, according to the version and configuration.

----End

6.3.3 Upgrading the eNodeB Software and Downloading the Data Configuration File (on the eNodeB Side)

This section describes how to download and activate the eNodeB software and data configuration file through the USB storage device. The eNodeB automatically downloads the software and data configuration file from the USB storage device, and then activates them. The software and data configuration take effect after the eNodeB resets.

Prerequisite

The USB storage device is ready for use. The required files are saved in the USB storage device. For details, see **6.2.3 Arranging the USB Disk for Local eNodeB Commissioning**.

CAUTION

If one USB storage device is used repeatedly, the target eNodeB software and data configuration file in the USB storage device should be updated before the USB storage device is used for an eNodeB deployment.

When you save the eNodeB software and data configuration file to the USB storage device, ensure that the locking switch on the USB storage device is disabled. In other words, the USB storage device should be writable.

Context

When the LMPT of the BBU3900 is started, it automatically detects the USB storage device, reads the related software and data configuration file in the USB storage device, and verifies the file names and formats.

If you install the BBU before installing the RRU, you can install and power on the RRU during the process of BBU software downloading. After the BBU software is downloaded and activated

successfully, and the RRU is powered on, reset the LMPT for automatic upgrade of the RRU software.

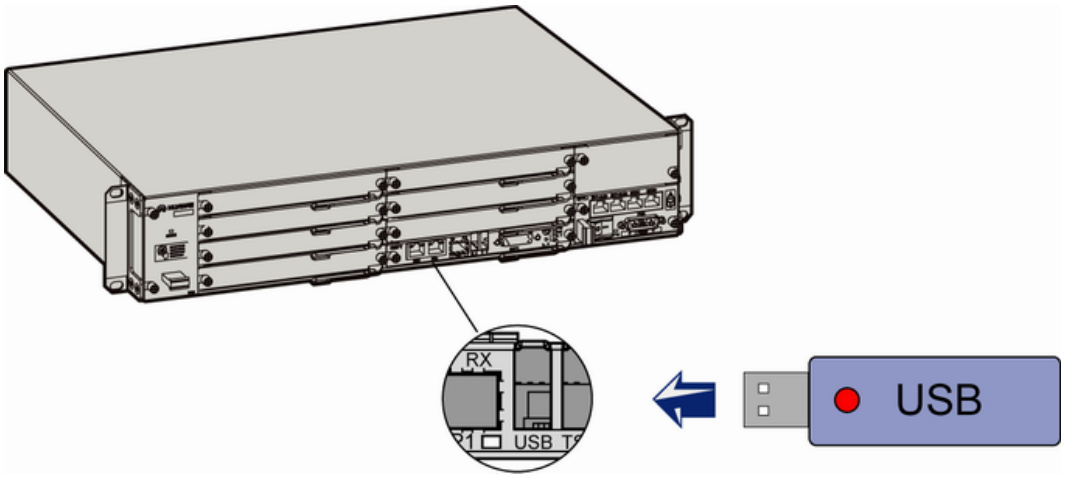
You should pay attention to the following points when you download and activate the software and the configuration file through the USB storage device:

- If the USB storage device contains the common configuration file of the site, digital certificate and eNodeB software, the eNodeB parses the common configuration file, loads the digital certificate, and then downloads and activates the eNodeB software and data configuration. If the eNodeB cannot parse the common configuration file, it does not proceed with the subsequent process.
- If the USB storage device contains only the eNodeB software and data configuration, the eNodeB downloads and activates the eNodeB software, and then downloads and activates the data configuration.
- If the eNodeB software or data configuration file is missing in the USB storage device, the eNodeB performs the following steps:
  - If the eNodeB software is missing in the USB storage device, the eNodeB commissioning through the USB storage device is not performed.
  - If the data configuration file is missing in the USB storage device, the eNodeB upgrades to the minimum configuration of the target version and skips the download and activation of data configuration.
- If the eNodeB software upgrade fails, the eNodeB rolls back to the pre-upgrade version.
- Before downloading and activating data configuration, the eNodeB does not check the compatibility between the data configuration file and the eNodeB software version. The eNodeB performs the following activities:
  - If the eNodeB software is upgraded successfully but is not compatible with the data configuration file, or if the download and activation of data configuration fail, the eNodeB uses the minimum configuration of the target version.
  - When the active eNodeB software is consistent with the target software version, software upgrade is not performed. After the eNodeB resets, if the active eNodeB software is not compatible with the data configuration file or if the download and activation of data configuration fail, the eNodeB uses the data configuration of the earlier version.
- If any of the following situations occurs, the eNodeB would not download or activate the eNodeB software or data configuration file from the USB storage device.
  - The directory or the file does not exist.
  - The eNodeB software is missing in the USB storage device, and therefore the software and data cannot be downloaded or activated.
  - The target software version is consistent with the active eNodeB software, and therefore the eNodeB software is not downloaded or activated. The download and activation of data configuration is still normal.
  - The data configuration file is consistent with the active data configuration, and therefore data configuration is not downloaded. The download and activation of the software is still normal.

Procedure

Step 1 Insert the USB storage device into the USB port on the LMPT of the BBU3900, as shown in **Figure 6-4**.

Figure 6-4 Inserting the USB storage device



Step 2 Check whether the eNodeB is powered on.

If ...	Then ...
The eNodeB is not powered on	Power on the eNodeB. The eNodeB automatically detects the USB storage device during startup.
The eNodeB is powered on	Power off the eNodeB and power it on again. The eNodeB automatically detects the USB storage device during startup.

Step 3 After the eNodeB is started, it automatically upgrades the eNodeB software and data configuration.

If the download or activation fails, reinsert or replace the USB storage device, power off the eNodeB and power it on again, and then perform the commissioning through the USB storage device. If the download or activation still fails, perform the local eNodeB commissioning on the LMT. **Table 6-6** lists the status of LEDs when the software and data configuration file are downloaded and activated through the USB storage device.

Table 6-6 LED status

	Status of the LED on the USB Storage Device	Status of the RUN LED on the LMPT
Automatically detecting the USB storage device	On	Blinking (on for 1s and off for 1s)
Downloading the software from the USB storage device	Blinking	Blinking (on for 0.125s and off for 0.125s)

	Status of the LED on the USB Storage Device	Status of the RUN LED on the LMPT
Downloading the data configuration file from the USB storage device	Blinking	Blinking (on for 0.125s and off for 0.125s)
Activating the software	On	Blinking (on for 0.125s and off for 0.125s)
Activating the data configuration file	On	Blinking (on for 0.125s and off for 0.125s)
Resetting the base station	On, and then off	On, and then blinking (on for 0.125s and off for 0.125s)
Base station operating normally	Off	Blinking (on for 1s and off for 1s)

WARNING

Do not remove the USB storage device or reset the eNodeB during the download or activation of eNodeB software and data configuration through the USB storage device. After the files are downloaded, the eNodeB automatically activates the software and data configuration. Then, the eNodeB resets.

Step 4 When the download and activation are successful, unplug the USB storage device, and proceed with checking the status of the LEDs and rectifying the faults.

----End

Postrequisite

CAUTION

The eNodeB software package contains the LMT software. To reduce the eNodeB deployment duration, some of the files of the LMT software are automatically downloaded to the eNodeB four hours after the eNodeB deployment. If you need to use the LMT immediately after the eNodeB deployment, run the **SPL SOFTWARE** command on the M2000 after the eNodeB is connected to the M2000. Set **Delay Download File Supply Flag** to **YES(Supply File that Support Delay)**. Thus, the remaining files of LMT software are downloaded to the eNodeB.

6.4 Checking the Status of the LEDs and Rectifying the Faults

This section describes how to check the operating status of the LEDs according to the states of the LEDs on the modules of the base station.

Context

LED status of functional eNodeB

If the status of the LEDs on the boards and auxiliary devices are the same as that shown in **Table 6-7**, you can infer that the base station runs properly.

Table 6-7 LED status of the functional base station

LED	Status
RUN LED on each board in the base station	Blinking (ON for 1s and OFF for 1s)
ALM LEDs on the GTMU/WMPT/LMPT/WBBP/LBBP/UERI/UTRP/PMU/AFMU/EMUA/MRFU/RRU3908	OFF
STATE LED on the FAN of the BBU3900	Blinking (green, ON for 1s and OFF for 1s)
CPRI LED on the GTMU/WBBP/LBBP/MRFU/RRU3908	ON (green)
VSWR LED on the MRFU/RRU3908	OFF

NOTE

If the transmission is unavailable in the local USB commissioning scenario, the GBTS automatically resets at intervals of 10 minutes. During this period, you need not check the status of the ALM LEDs on the MRFU/RRU3908 working in the GSM system, GTMU, and UBRI. Check the status of co-cabinet MRFU/RRU3908 modules when you check the hardware status of the NodeB or eNodeB.

Procedure

Step 1 Check the LEDs on each board in the base station.

1. Check the RUN LED on each board.

If the RUN LED Is...	It Indicates That...	Then...
Blinking at 0.5 Hz (ON for 1s and OFF for 1s)	The board works properly.	Go to **Step 1.2**.

If the RUN LED Is...	It Indicates That...	Then...
ON	The power supply is available but the board is faulty.	Reinstall the board to check whether the fault is rectified. If the fault persists, replace the board.
Blinking at 4 Hz (ON for 0.125s and OFF for 0.125s)	The software is being loaded or the board is inserted in the wrong slot.	Wait for five minutes to check the status of the RUN LED again. If the RUN LED still blinks at 4 Hz, check whether the board is inserted in the correct slot. If not, reinstall the board.
OFF	The power supply is unavailable or the board is faulty.	• Check whether the base station is powered on. If not, power on the base station. • Reinstall the board to check whether the fault is rectified. If the fault persists, replace the board.

2. Check the ALM LEDs on the GTMU/WMPT/LMPT/WBBP/LBBP/UERI/UTRP/MRFU/RRU3908.

If the ALM LED Is...	It Indicates That...	Then...
OFF	The GTMU/WMPT/LMPT/WBBP/LBBP/UERI/UTRP/MRFU/RRU3908 are not faulty.	Go to **Step 1.3**.
ON	The GTMU/WMPT/LMPT/WBBP/LBBP/UERI/UTRP/MRFU/RRU3908 are faulty.	Reinstall the board to check whether the fault is rectified. If the fault persists, replace the board.

If the ALM LED Is...	It Indicates That...	Then...
Blinking	An alarm is generated but the board may not need to be changed. Check whether this alarm is due to faults caused by the associated boards or ports.	• Check whether the RUN LEDs on the other boards blink quickly. – If the RUN LED on the EMUA blinks quickly, check the RS485 signal cable connection. – **Check the RUN LED on each board in the BBU**. • Check whether the dry contact alarm signal cable is properly connected to the corresponding port on the UPEU. • Plug in the GTMU/WMPT/LMPT/ WBBP/LBBP/UERI/UTRP again or restart the MRFU/RRU3908 to check whether the fault is rectified. • If the GPS antenna system is configured, check whether it is properly connected.

3. Check the STATE LED on the FAN.

If the STATE LED Is...	It Indicates That...	Then...
Blinking (green)	The board works properly.	Go to **Step 1.4**.
Blinking (red)	The board is faulty.	Reinstall the board to check whether the fault is rectified. If the fault persists, replace the board.

4. Check the CPRI LEDs on the GTMU/WBBP/LBBP/MRFU/RRU3908.

If the CPRI LED Is...	It Indicates That...	Then...
ON (green)	The CPRI link is normal, and the MRFU/RRU3908 is functioning properly.	Go to **Step 2**.

If the CPRI LED Is...	It Indicates That...	Then...
OFF	The port of the optical module is not configured, the optical module is powered off, or the LED is faulty.	If the MRFU or RRU3908 is connected to this port, check the installation of BBU and RRU according to configuration requirements. ● If the installation is inconsistent with configuration requirements, reinstall the RRU according to configuration requirements. ● If the installation is consistent with configuration requirements, replace the boards.
ON (red)	The port of optical module is configured, but the optical module is not in position, or the CPRI optical cable is improperly connected.	Handle the alarm according to the suggestions. For details, see *Alarm Reference*.
Blinking red, ON for 1s, OFF for 1s)	The RRU or LRFU on the CPRI link reports the VSWR alarm.	Handle the alarm according to the suggestions. For details, see *Alarm Reference*.
Blinking (red, ON for 0.25s, OFF for 0.25s)	The RRU or LRFU on the CPRI link is faulty.	Handle the alarm according to the suggestions. For details, see *Alarm Reference*.

Step 2 Check the ALM LEDs on the PMU/AFMU/EMUA.

If the ALM LED Is...	It Indicates That...	Then...
OFF	The module or the device is functioning properly.	The check is complete.
ON	The module or the device is faulty.	Reinstall the module or power on the device again to check whether the fault is rectified.

Step 3 Check the VSWR LED status of the MRFU/RRU3908, and perform the next step based on the status of the VSWR LED.

If the VSWR LED is...	It Indicates That...	Then...
OFF	No VSWR alarm is generated.	Wait till the transmission is available.
Blinking (ON for 0.125s and OFF for 0.125s)	There are alarms on the ANT_TX/RXA port and ANT_RXB port.	Check whether the antenna system is properly connected to the MRFU or RRU3908. If the fault persists, record the fault and the LED status in the **7.10 Data Sheet for Commissioning**. Then, rectify the fault on the LMT or M2000.
ON	There is an alarm on the ANT_TX/RXA port.	
Blinking (ON for 1s and OFF for 1s)	There is an alarm on the ANT_RXB port.	

----End

6.5 Set the Download Control Right

If the BTS is working in the co-module scenario, the download control right needs to be set. The system with the download control right upgrades the co-modulated RRU3908/MRFU and the USCU software during software upgrade.

Prerequisite

- M2000 server/terminal is working properly, and M2000 is logged on.
- The connection between BTS and M2000 is working properly. If the BTS is GSM BTS, the connection between the BSC and M2000 needs to work properly.

Procedure

Step 1 Run the corresponding MML command to set the download control right according to the actual system of BTS, see **Table 6-8**.

Table 6-8 The corresponding MML commands of setting the download control right versus the BTS Systems

BTS Systems	MML Commands
GSM	**SET BTSLOADCTRL**
UMTS	**SET LOADCTRL**
LTE	**SET LOADCTRL**

----End

7 Commissioning the MBTS by Using Local Maintenance Terminal and M2000

About This Chapter

This chapter describes how to use local maintenance terminal at the MBTS to upgrade MBTS software and configure MBTS data, check MBTS hardware status, rectify MBTS hardware faults (if any) to facilitate the establishment of MBTS OM channels. This chapter also describes how to check the operating status of the MBTS on the M2000.

NOTE

The GBTS local maintenance terminal is named SMT, the NodeB local maintenance terminal is named NodeB LMT, and the eNodeB local maintenance terminal is named eNodeB LMT. Select a local maintenance terminal according to the mode of the base station to be commissioned.

7.1 Procedure for Commissioning the MBTS Using Local Maintenance Terminal and M2000

At the local end of the MBTS, you can use local maintenance terminal to upgrade MBTS software and configure MBTS data and to facilitate the establishment of MBTS OM at the MBTS. You can also check whether the MBTS hardware status is normal according to the board status and LED status, to locate and rectify faults (if any) in time. At the M2000, you can check the MBTS operating status.

Prerequisite

Before you commission the MBTS, the MBTS, RNC, and M2000 must meet following requirements:

- The MBTS hardware such as the cabinets, cables, antenna system, and auxiliary devices, is installed and passes the installation check. The MBTS is powered on and passes the power-on check.
- The controller hardware is installed and commissioned, and the system works properly. The negotiation data of the MBTS to be commissioned is configured and recorded.
- The M2000 is commissioned, it is connected to the corresponding controller, and the configuration synchronization is completed.

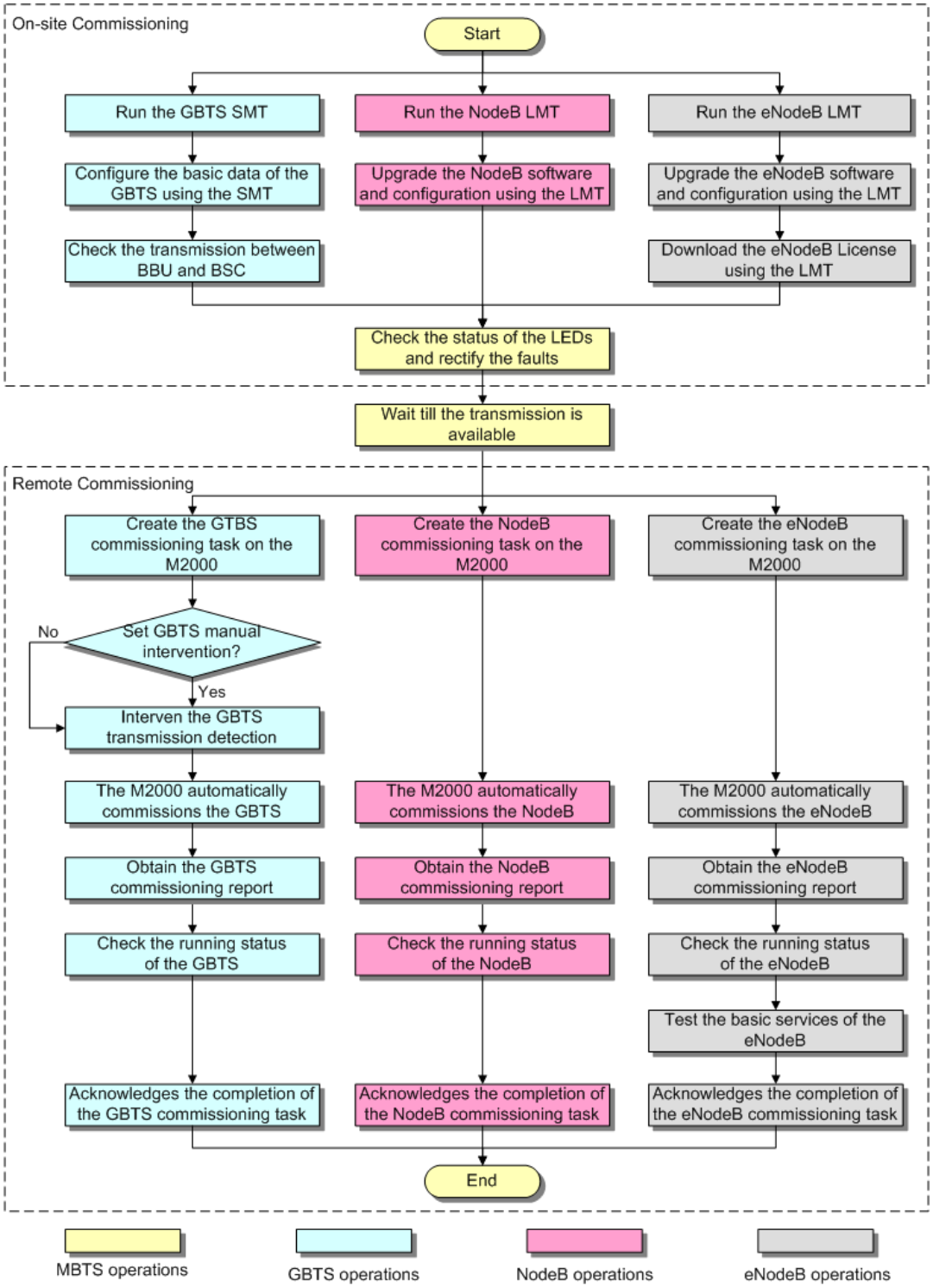
In addition, the following requirements must be met:

- A portable computer used for local commissioning is ready.
- The portable computer is installed with local maintenance terminal mapping with the mode of the base station to be commissioned.
- The target version software package and data configuration file of the base station to be commissioned are ready and saved on the portable computer.

Commissioning Flowchart

Figure 7-1 shows the procedure for commissioning the MBTS using local maintenance terminal and M2000.

Figure 7-1 Procedure for commissioning the MBTS using local maintenance terminal and M2000



NOTE

- The priority of a mode does not need to be considered during the MBTS commissioning.
- Before upgrading the dual-mode MRFU or RRU3908 to a target version on the local maintenance terminal, check in which mode (GSM, UMTS, or LTE) the MRFU or RRU3908 is upgraded and obtain the upgrade control rights on the local maintenance terminal in the mode.

Procedure

- Local end of the MBTS
  1. Start the GBTS SMT to commission the GBTS on the base station side. For details, see **7.2 Running the GBTS SMT**.
  2. Configure the basic data of the GBTS on the SMT. For details, see **7.3 Configuring the Basic Data of the GBTS**.
  3. **Optional:** Check the transmission between the BBU and the BSC. For details, see **7.4 Checking the Transmission Between the BBU and the BSC on the BTS Side**.
  4. Start the NodeB LMT. For details, see **7.5 Running the NodeB LMT**.
  5. Upgrade the NodeB software and data configuration file using the NodeB LMT. For details, see **7.6 Upgrading the NodeB Software and Downloading the Data Configuration File**.
  6. Start the eNodeB LMT. For details, see **7.7 Running the eNodeB LMT** .
  7. Upgrade the eNodeB software and data configuration file using the eNodeB LMT. For details, see **7.8 Upgrading the eNodeB Software and Downloading the Data Configuration File**.
  8. Download the eNodeB commissioning license file using the eNodeB LMT. For details, see **7.9 Downloading the eNodeB License**.
  9. Check the connection status of the base station, and rectify faults if any. For details, see **6.4 Checking the Status of the LEDs and Rectifying the Faults**.
- Remote end of the MBTS

  NOTE

  When the MBTS is commissioned remotely on the M2000, commission the base station of a mode, and then commission the base station of the other mode. The two modes are equal in priority.

  1. Wait till the transmission is available.
  2. Create a commissioning task on the M2000. For details, see **5.2 Creating a Commissioning Task**.
  3. **Optional:** If a GBTS is to be commissioned and **Intervening transmission** is selected when a commissioning task is created, manually check the GBTS transmission state and rectify faults (if any). For details, see **5.3 Intervening the GBTS Transmission**.
  4. The M2000 automatically commissions the MBTS. For details, see **5.4 Commissioning the MBTS on the M2000**. During the process of the MBTS commissioning, monitor the commissioning progress and alarms, and rectify faults (if any). The monitoring operations vary according to modes. For details on the operations in each mode, see **5.5 Monitoring the GBTS Commissioning Task**, **5.6 Monitoring the NodeB Commissioning Task**, and **5.7 Monitoring the eNodeB Commissioning Task**.

5. Obtain the commissioning report from the M2000. For details, see **5.8 Obtaining the Commissioning Report**.
6. View the commissioning report to check the MBTS operating status. For details, see **5.9 Checking the Operating Status of the Base Station**.
7. Verify eNodeB services. For details, see **5.10 Testing the Basic Services of the eNodeB**.
8. Confirm the MBTS commissioning task. For details, see **5.11 Confirming the Commissioning Task**.

----End

7.2 Running the GBTS SMT

To run the GBTS site maintenance terminal (SMT), you need to first set the IP address of the SMT client, connect the base station and the SMT, and then log in to the SMT.

7.2.1 Setting the IP address of the SMT Client
This section describes how to set the IP address of the SMT client. The IP address of the SMT client is on the same network segment as the IP address (192.168.0.72/255.255.255.0) of the GTMU.

7.2.2 Connecting the SMT Client and the Base Station
This section describes how to connect the SMT client to the ETH port on the GTMU of the base station through an Ethernet cable. After the connection is established, you can operate and maintain the base station on the SMT.

7.2.3 Logging In to the SMT
This section describes how to log in to the base station through the SMT.

7.2.1 Setting the IP address of the SMT Client

This section describes how to set the IP address of the SMT client. The IP address of the SMT client is on the same network segment as the IP address (192.168.0.72/255.255.255.0) of the GTMU.

Prerequisite

The TCP/IP protocol is applied on the SMT client.

Procedure

Step 1 To set the IP address of the SMT client, perform the following steps. This section takes the Windows XP operating system as an example. Choose **Start** > **Setting** > **Control Panel**.

Step 2 Double-click **Network Connections** in the displayed **Control Panel** window. Right-click **Local Area Connection** in the displayed dialog box.

Step 3 Choose **Properties** from the shortcut menu. The **Local Area Connection Properties** dialog box is displayed.

Step 4 Select **Internet Protocol (TCP/IP)**, and click **Properties**. The **Internet Protocol (TCP/IP) Properties** dialog box is displayed.

Step 5 Select **Use the following IP address**.

Step 6 Enter the correct IP address, subnet mask, and default gateway. Ensure that the IP address of the SMT client is on the same network segment as the IP address (192.168.0.72/255.255.255.0) of the base station, so that a local OM channel can be established.

Step 7 Click **OK** to complete the settings.

----End

7.2.2 Connecting the SMT Client and the Base Station

This section describes how to connect the SMT client to the ETH port on the GTMU of the base station through an Ethernet cable. After the connection is established, you can operate and maintain the base station on the SMT.

Prerequisite

The IP address and subnet mask of the SMT client are set correctly. The IP address of the SMT client is on the same network segment as the IP address (192.168.0.72/255.255.255.0) of the base station.

Procedure

Step 1 Use an Ethernet cable to connect the SMT client and the base station. One end is connected to the ETH port on the GTMU of the main cabinet, and the other end is connected to the Ethernet port on the SMT client (generally a laptop).

Step 2 Open an MS-DOS command prompt window.

- In the case of the Windows 2000/XP operating system, choose **Start** > **Run** at the lower-left corner of the computer's desktop. In the **Run** dialog box, enter **cmd** and click "OK". The MS-DOS command prompt window is displayed.

Step 3 Run **ping 192.168.0.72** to verify the network connection between the SMT client and the base station.

NOTE

192.168.0.15 is the IP address of the base station.

- If the information similar to that in the following example is returned, you can infer that the SMT client and the BBU can communicate normally.

```
Pinging 192.168.0.72 with 32 bytes of data:
Reply from 192.168.0.72: bytes=32 time=1ms TTL=253
Reply from 192.168.0.72: bytes=32 time=1ms TTL=253
Reply from 192.168.0.72: bytes=32 time=1ms TTL=253
Reply from 192.168.0.72: bytes=32 time=1ms TTL=253
Ping statistics for 192.168.0.72:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

- If the SMT client and the BBU cannot communicate properly, the possible causes are as follows:
  - The GTMU is faulty.
  - The Ethernet cable is disconnected or in poor contact.
  - The COM port of the SMT client is faulty.
  - The base station is resetting.

- The IP address is incorrect.

----End

7.2.3 Logging In to the SMT

This section describes how to log in to the base station through the SMT.

Prerequisite

- The SMT client is properly connected to the base station.
- The latest software of the SMT is installed on the SMT client.

Procedure

Step 1 Start the SMT.

- If the connection between the SMT client and the base station is established, a dialog box shown in **Figure 7-2** is displayed. The SMT is successfully started.
- If the SMT client cannot communicate with the base station, the **Communication failed** dialog box is displayed, as shown in **Figure 7-3**. Go to **Step 2**.

Figure 7-2 SMT login interface

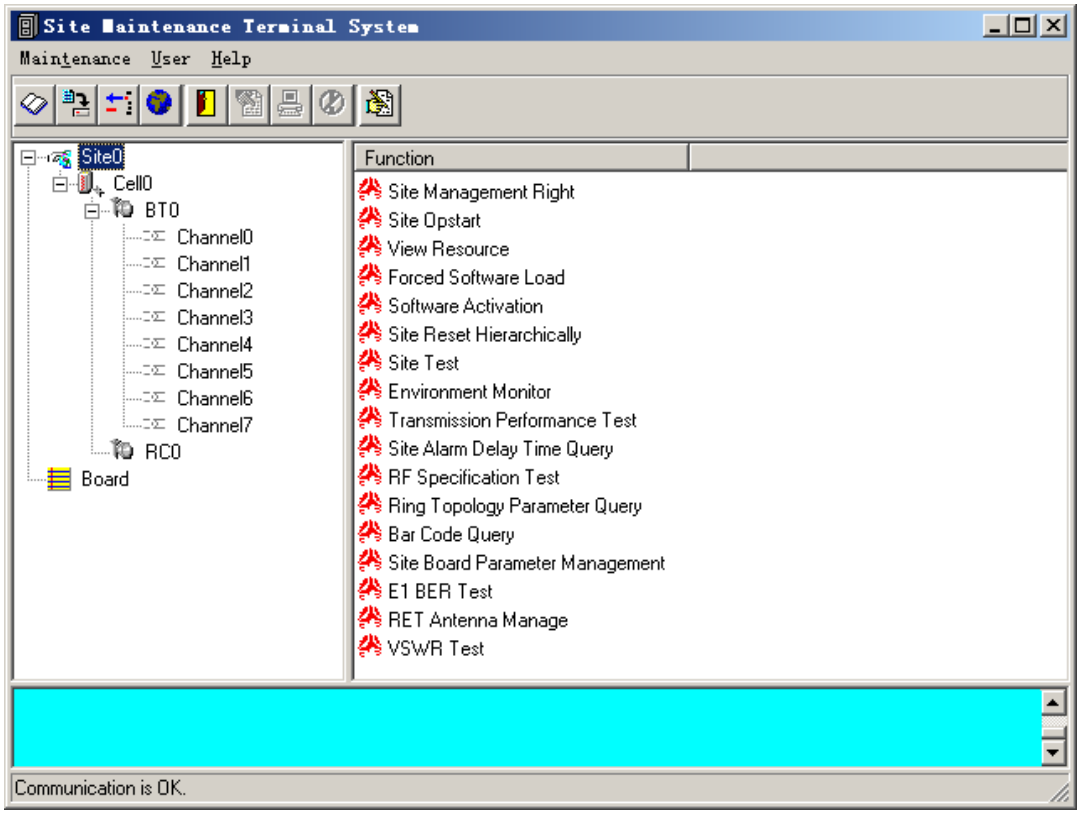
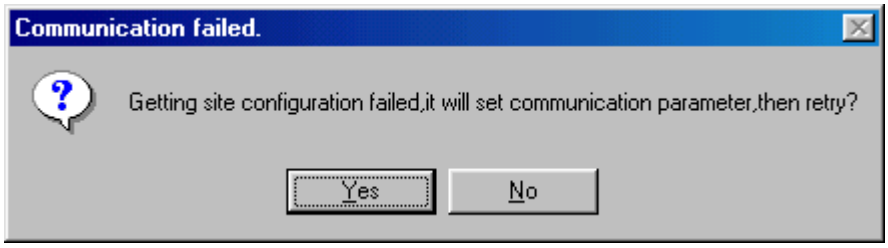


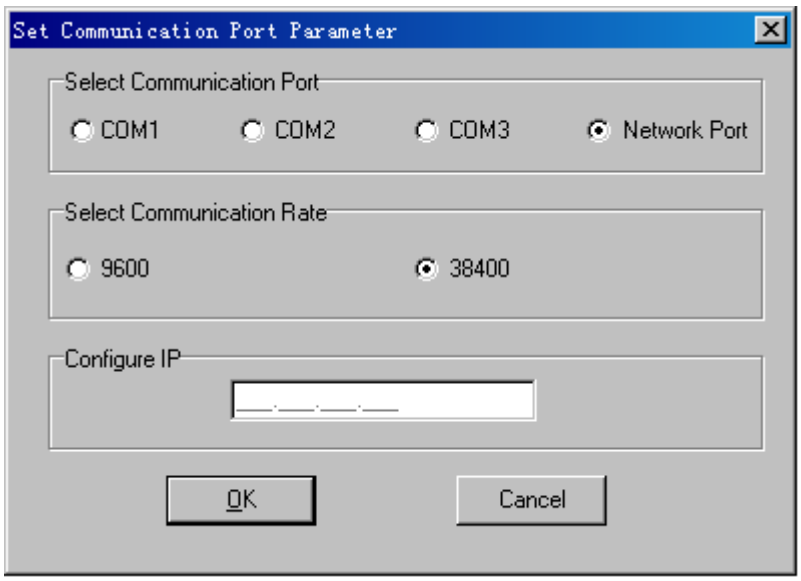
Figure 7-3 Communication failed dialog box



Step 2 Click **Yes**.

The **Set Communication Port Parameter** dialog box is displayed, as shown in **Figure 7-4**.

Figure 7-4 Set Communication Port Parameter dialog box



Step 3 In the **Select Communication Port** area, click **Network Port**. In the **Configure IP** area, set the IP address to **192.168.0.72**.

Step 4 Click **OK**.

The interface shown in **Figure 7-2** is displayed.

Step 5 In the **Site Maintenance Terminal System** window, click **User**, and select **User Login**. Enter **User Name** (Omc by default) and **User Password** (omc by default).

----End

7.3 Configuring the Basic Data of the GBTS

This section describes how to configure the basic data of the GBTS such as the GBTS boards and logical objects. You must configure the basic data of the GBTS before performing the local commissioning on the GBTS side.

7.3.1 Obtaining the Site Management Rights

This section describes how to obtain the site management rights. Before configuring the base station boards and logical objects, you must obtain the site management rights after logging into the base station at the local end.

Prerequisite

You have logged in to the base station through the SMT.

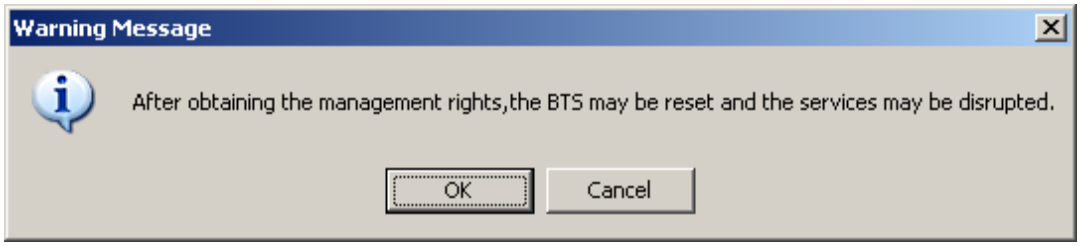
Procedure

Step 1 In the **Site Maintenance Terminal System** window, select **Site**, and double-click **Site Management Right**.

The **Site Management Right** dialog box is displayed.

Step 2 Click **Obtain**. The **Warning Message** dialog box is displayed, as shown in **Figure 7-5**.

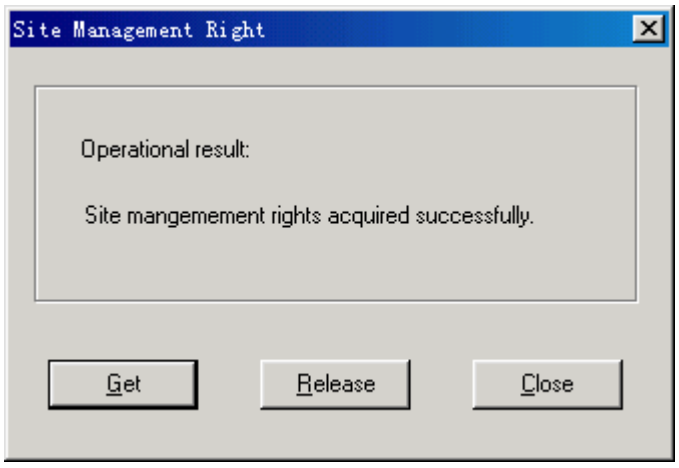
Figure 7-5 Warning Message dialog box



Step 3 Click **OK**, and wait for the response.

- If the site management rights are successfully obtained, a dialog box is displayed, as shown in **Figure 7-6**.
- If failed, the probable cause is that engineers are configuring or managing base station data on the LMT side. Wait till the operations are complete and then perform **Step 2** and **Step 3**.

Figure 7-6 Site Management Rights dialog box



Step 4 Click **Close** to close the **Site Management Rights** dialog box.

CAUTION

After commissioning on the SMT is complete, you need to release the site management rights. Otherwise, you cannot log in to the LMT within 15 minutes.

To release the site management rights, perform the following steps:

Click **Release** on the **Site Management Rights** dialog box. When **Releasing site management rights successfully.** is displayed, click **Close**.

----End

7.3.2 Configuring Base Station Boards

This section describes how to configure RF units and other boards of the base station on the SMT.

Context

Table 7-1 shows the types of configurable RF units on the BTS.

Table 7-1 Configurable RF units on the BTS

BTS Type	Configurable TRX Types
BTS3900 GSM	DRFU, GRFU, and MRFU
BTS3900A GSM	DRFU, GRFU, and MRFU
BTS3900L GSM	DRFU, GRFU, and MRFU
DBS3900 GSM	DRRU, GRRU, and MRRU

NOTE

- The following description takes the MRFU as an example to explain the procedure of configuring the RF units for the BTS3900.
- The RF units of the BTS3900A are installed in the RFC. Thus, the RF units must be configured on the RFC interface of the SMT.
- The configuration of the BTS3900L is the same as the BTS3900. Right-click an idle RFU slot in the **Board Configuration** window and perform the configuration.
- The RF units of the DBS3900 must be configured in the **Topology Configuration** window.

Procedure

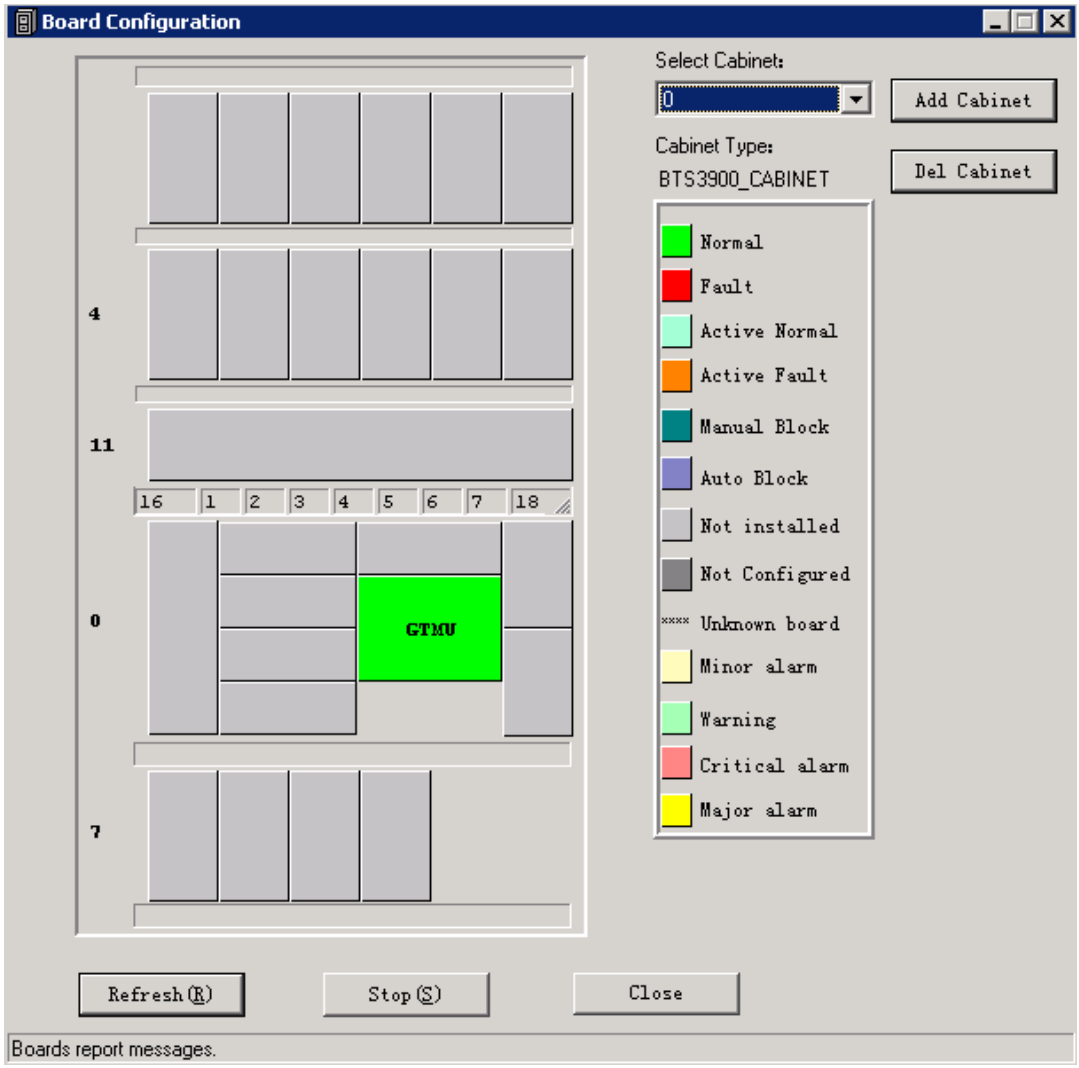
Step 1 Click **Board** in the navigation tree.

The **Board Configuration** and **Board Management** windows are displayed.

Step 2 Double-click **Board Configuration**.

The **Board Configuration** window is displayed, as shown in **Figure 7-7**.

Figure 7-7 Board Configuration window



NOTE

When no site information is configured, there is only the GTMU on the **Board Configuration** window. The status of the GTMU is **Active Fault**.

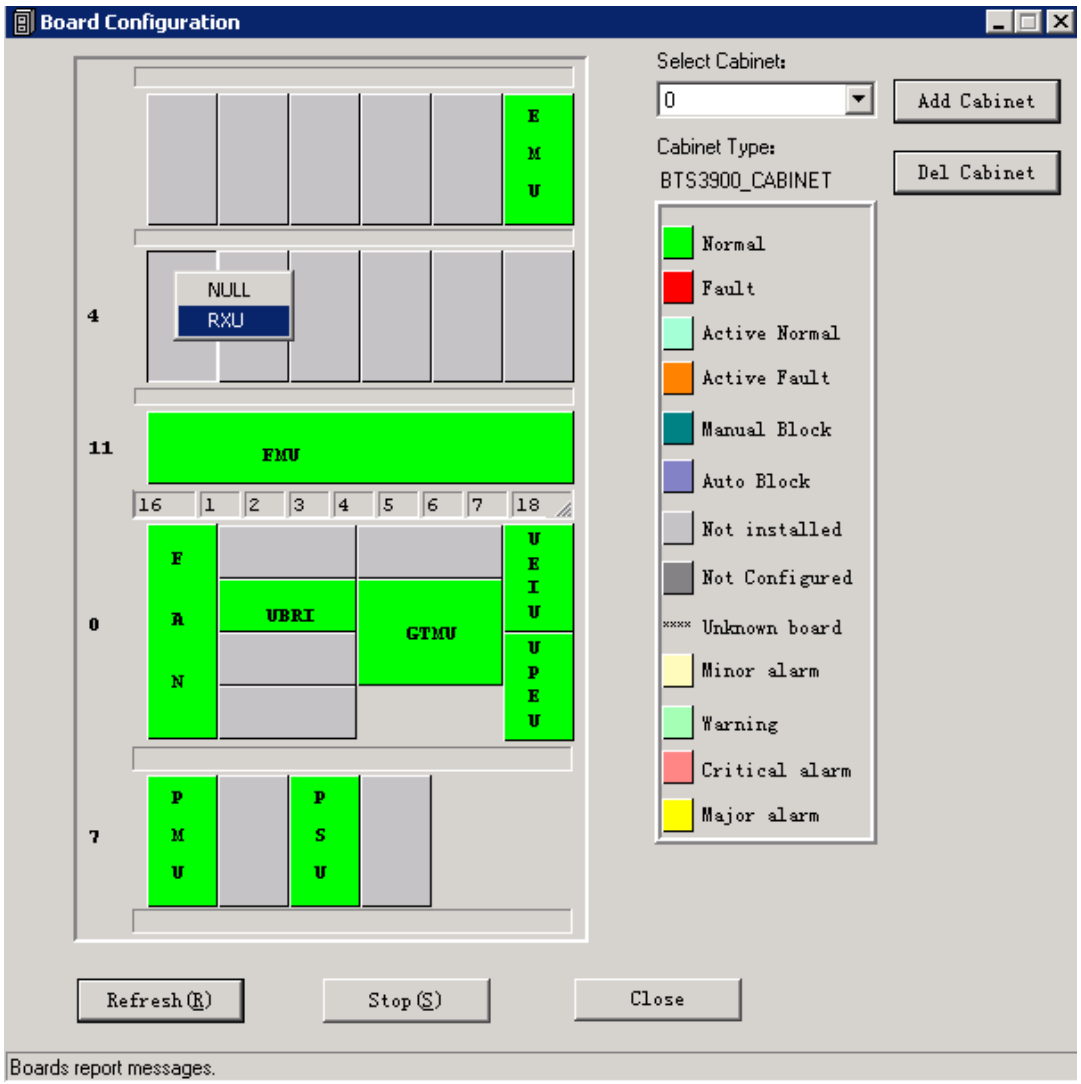
Step 3 Right-click an idle RFU slot in the **Board Configuration** window,

CAUTION

Double-click **GTMU**. Then, configure RXUs in the displayed **Topology Configuration** window.

as shown in **Figure 7-8**.

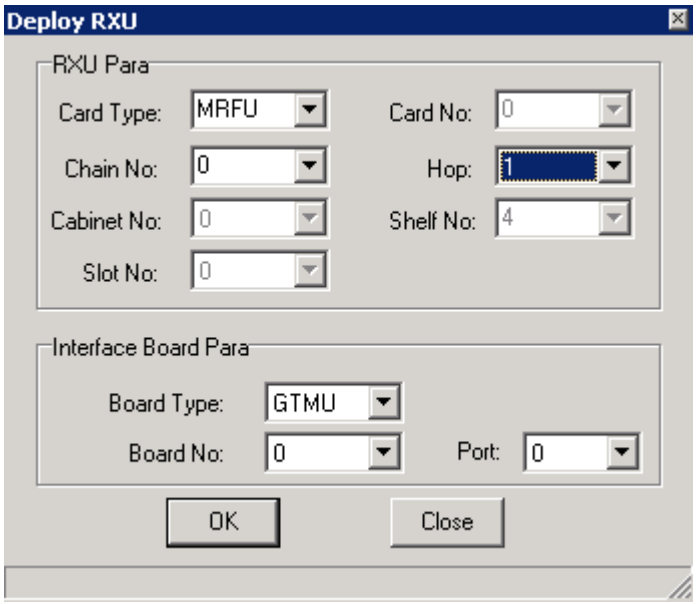
Figure 7-8 Board Configuration window



Step 4 Choose **RXU** from the shortcut menu, as shown in **Figure 7-8**.

The **Deploy RXU** dialog box is displayed. Set **Card Type** to **MRFU**, as shown in **Figure 7-9**.

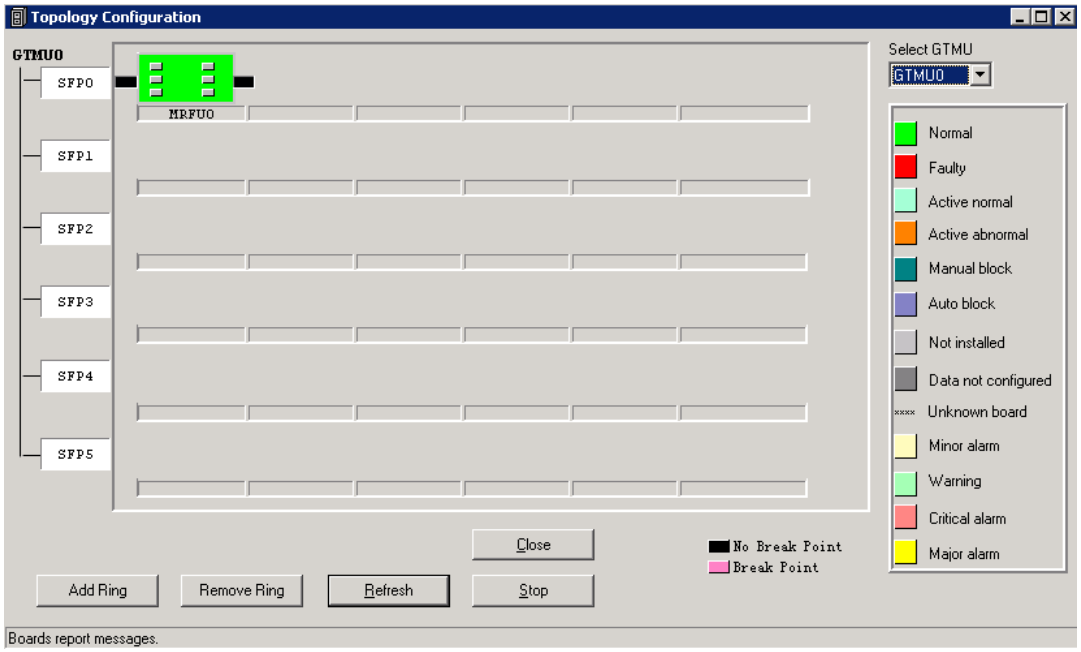
Figure 7-9 Configuring the MRFU



Step 5 Set **Card No.**, **Chain No.**, and **Hop** for the MRFU in the **Deploy RXU** dialog box.

Step 6 In the **Deploy RXU** dialog box, click **OK**. The configuration of a new MRFU is complete. Double-click **GTMU**. The **Topology Configuration** window is displayed, as shown in **Figure 7-10**.

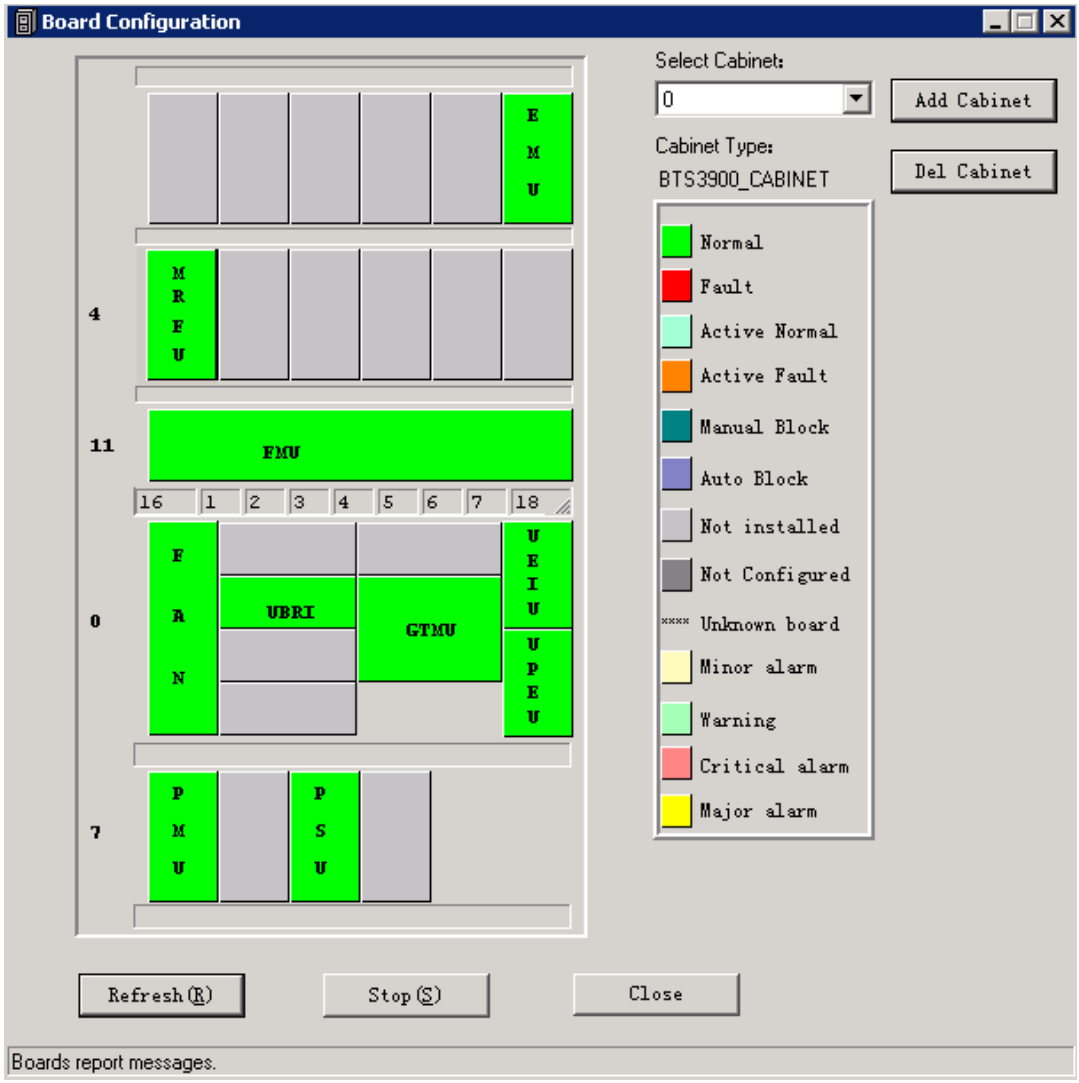
Figure 7-10 Topology Configuration window



Step 7 Click **Close**. The **Board Configuration** window is displayed. Right-click an idle slot, and then choose the board to be configured from the shortcut menu.

Add **PMU** and **FMU**, as shown in **Figure 7-11**.

Figure 7-11 Board Configuration window



Step 8 Set the related parameters. On the SMT, the parameters of **EMU** cannot be set and the parameters of **PMU** are default values. Therefore, no parameter setting is required.

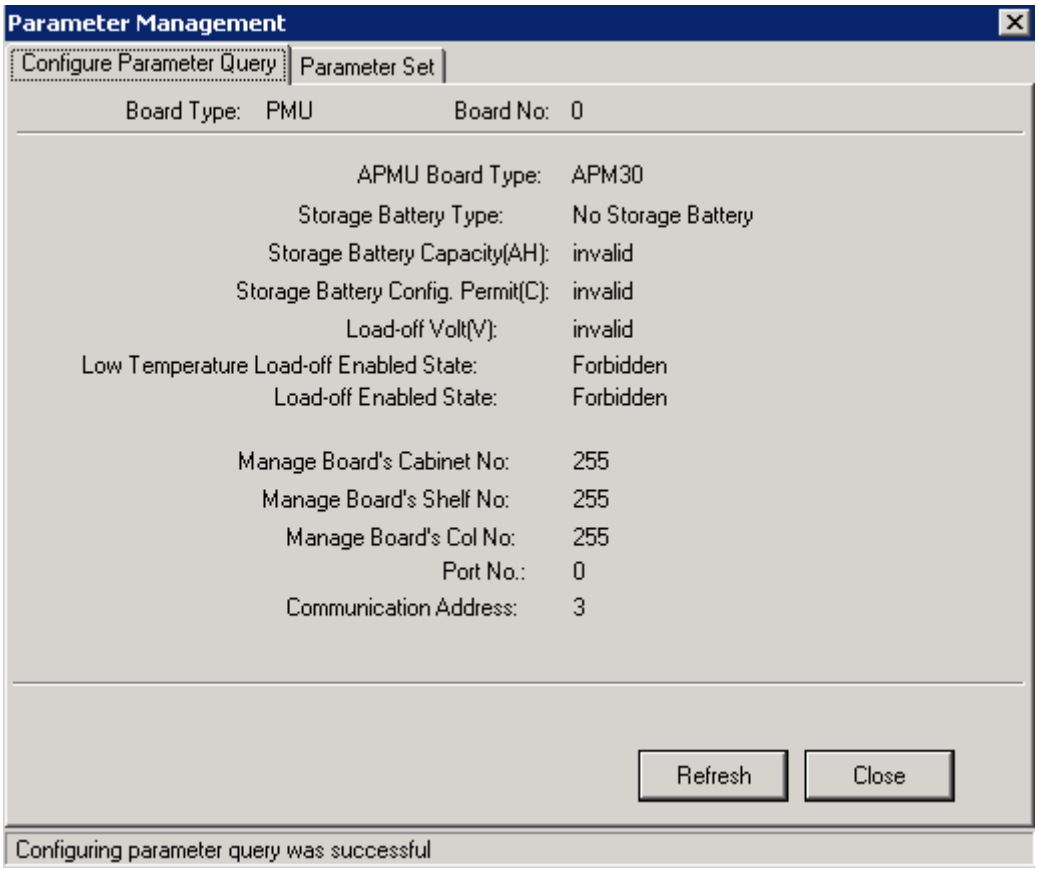
Step 9 Configure the APMU. The **PMU** is added for the BTS3900A and DBS3900. Perform the following steps to configure the new types of **PMU**, such as APM100 and APM30.

1. Click **Board** in the navigation tree.

   The **Board Configuration** and **Board Management** windows are displayed.
2. Double-click **Board Management**. The **Board Management** window is displayed.
3. In the **Board Management** window, right-click **PMU**, and then choose **Parameter Management** from the shortcut menu.

   The **Parameter Management** dialog box is displayed.
4. On the **Parameter Management** dialog box, click **Parameter Set**. Select *APM30* or other options under **APMU Type** according to the configuration data, as shown in **Figure 7-12**.

Figure 7-12 Parameter Management dialog box



Step 10 Click **Close** to complete the configuration of BTS boards.

----End

7.3.3 Configuring BTS Logical Objects

This section describes how to configure logical objects of the BTS. The BTS logical object configuration consists of the cell configuration, carrier binding, and activation of cell configuration data.

Context

NOTE

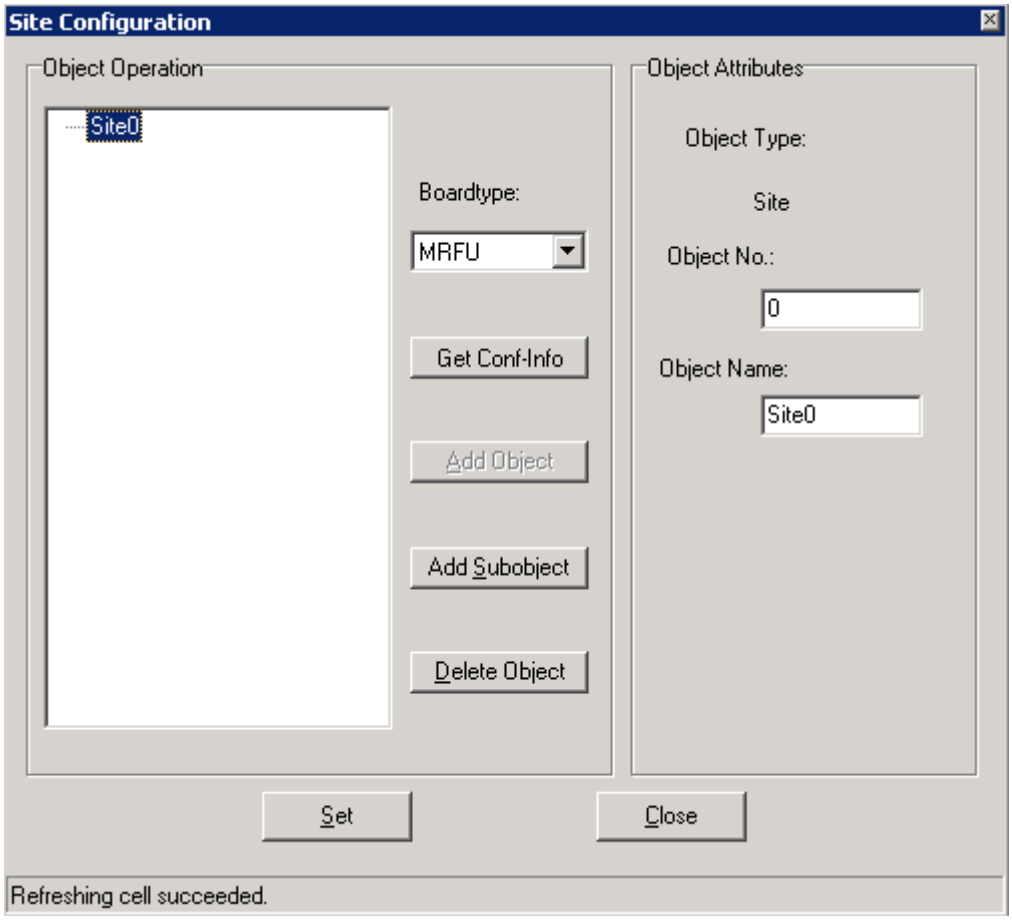
The following part describes the configuration and binding of carriers based on one MRRU configured with two carriers.

Procedure

Step 1 Add a cell. Click **Site0**, and double-click **Site Configuration** in the **Function** area.

The **Site Configuration** dialog box is displayed, as shown in **Figure 7-13**.

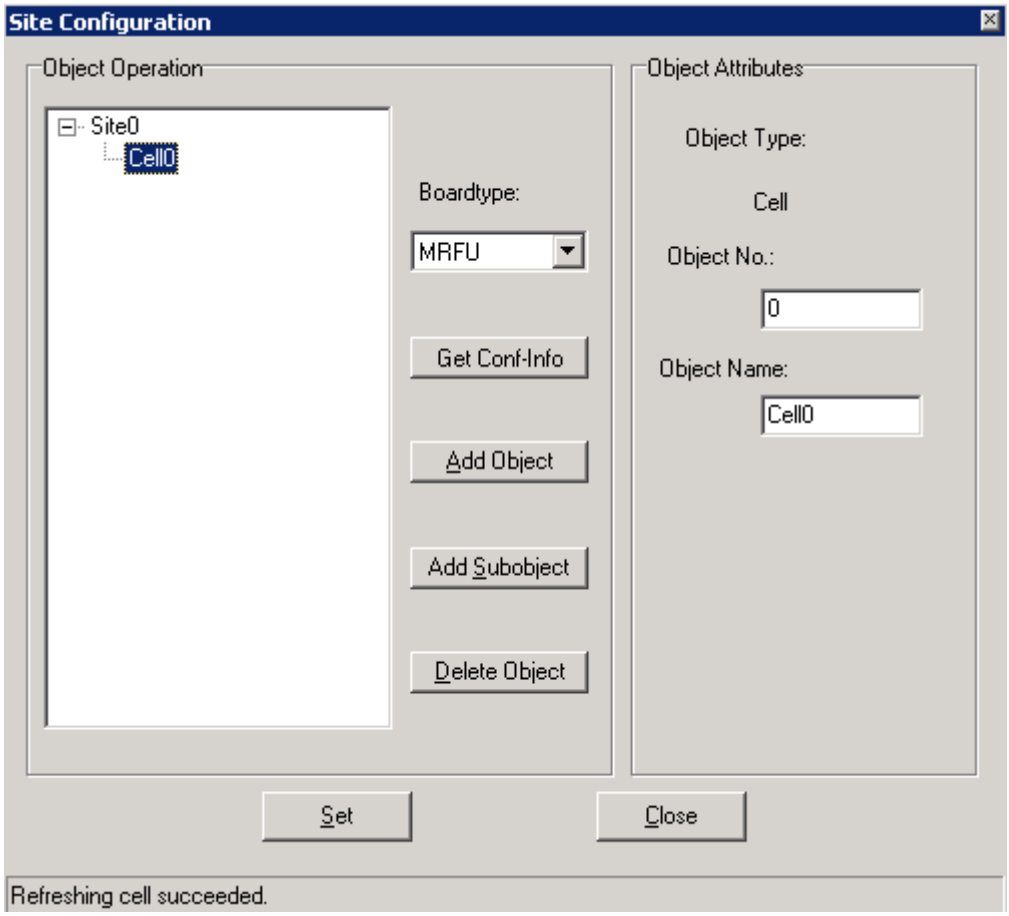
Figure 7-13 Site Configuration dialog box (1)



Step 2 Click **Site0**, and then click **Add Subobject**. In the **Object Attributes** area, specify **Object No.** and **Object Name**.

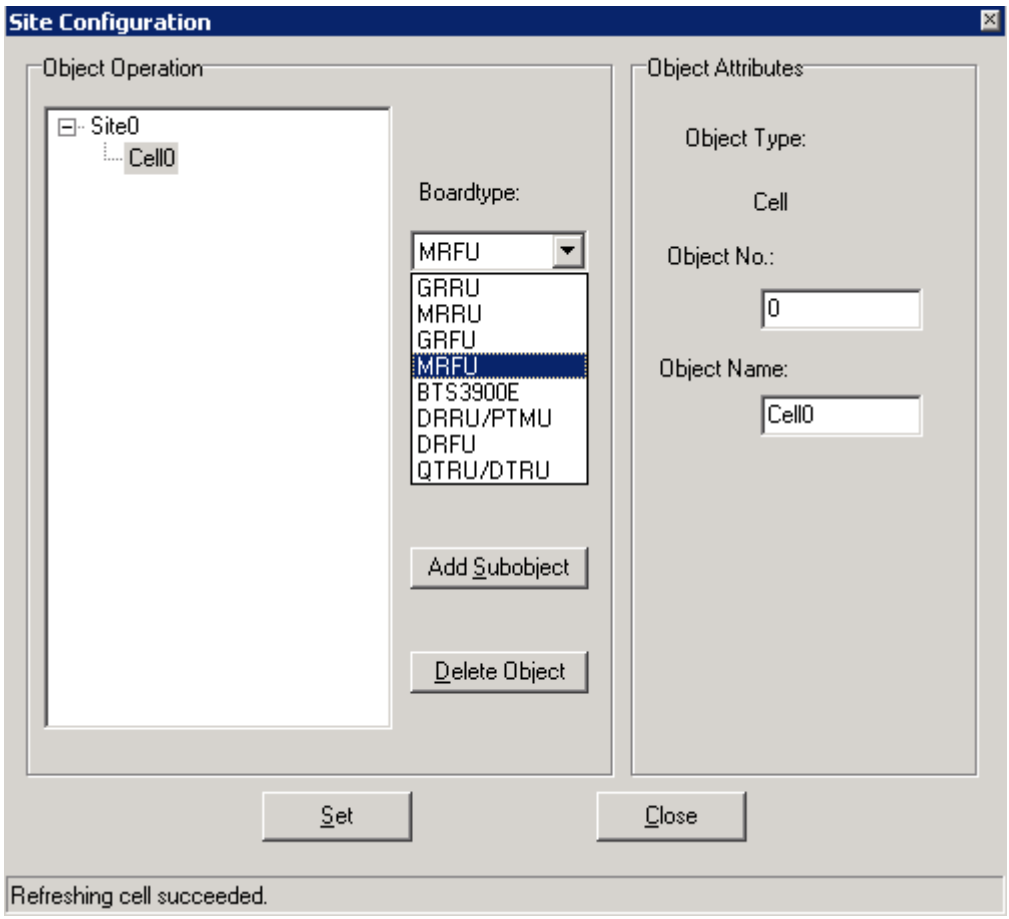
In the **Object Operation** area, **Cell0** is added, as shown in **Figure 7-14**.

Figure 7-14 Site Configuration dialog box (2)



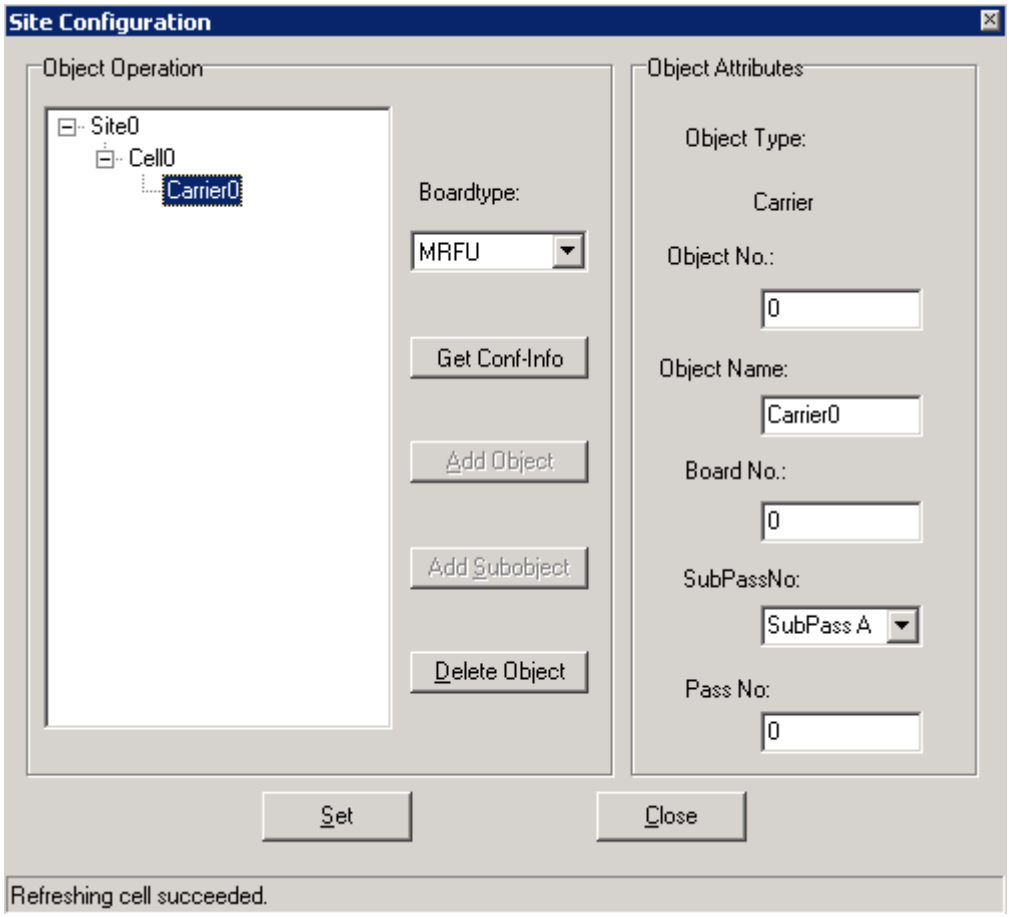
Step 3 Bind the carrier. Click **Cell0**, and select the TRX to be configured in the **Boardtype** drop-down list box. Set the board type to *MRRU*, as shown in **Figure 7-15**.

Figure 7-15 Site Configuration dialog box (3)



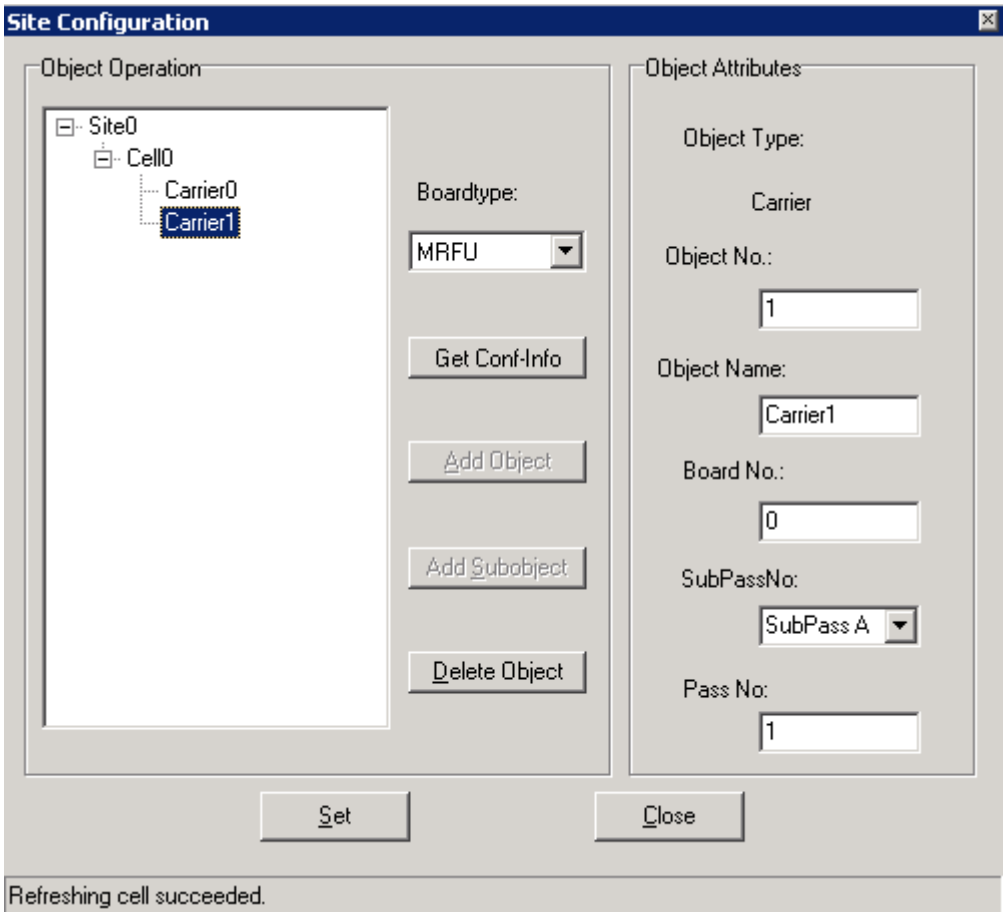
Step 4 Click **Add Subobject**. In the **Object Attributes** area, specify **Object No.**, **Object Name**, **Board No.**, and **Pass No.**. In the **Object Operation** area, **Carrier0** is added. The carrier is bound to the number 0 pass of the TRX whose **Board No.** is *0*, as shown in **Figure 7-16**. Pass 0 is also called carrier A. The pass number of the TRX depends on the carrier number.

Figure 7-16 Site Configuration dialog box (4)



Step 5 Configure the second carrier: Set **Object Name** to *Carrier1*, **Board No.** to *0*, and **Pass No.** to *1*, as shown in **Figure 7-17**. The MRRU 0 is configured with two carriers.

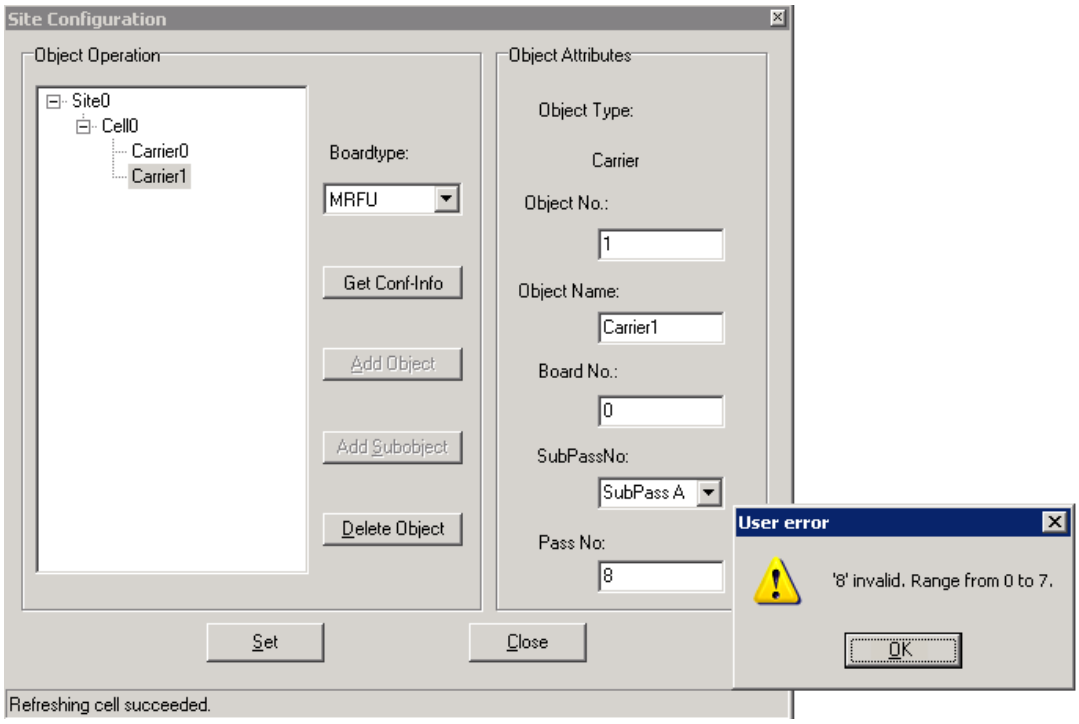
Figure 7-17 Site Configuration dialog box (5)



NOTE

- The procedure for adding carriers for other TRX boards is the same as adding carrier for the MRRU.
- The SMT provides the self-check function. When an invalid value is specified, the **User Error** dialog box is displayed, as shown in **Figure 7-18**.

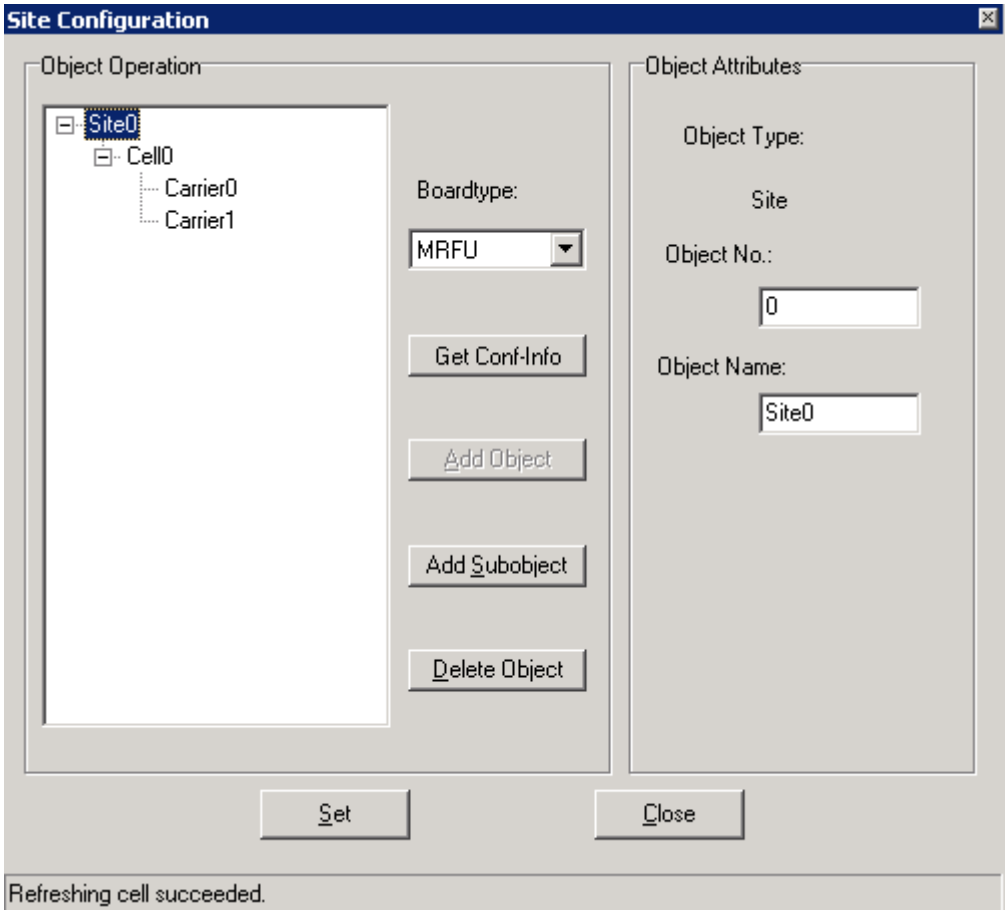
Figure 7-18 User Error dialog box



Step 6 Click **Site0**.

The **Set** button is available. Click **Set**. **Configuring cell succeeded** is available, as shown in **Figure 7-19**.

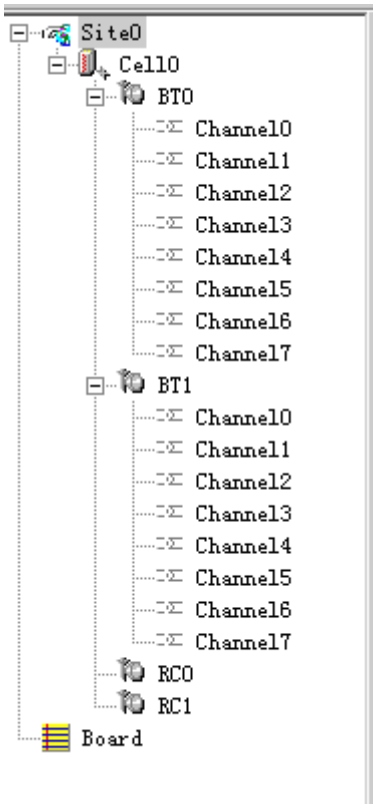
Figure 7-19 Site Configuration dialog box (6)



Step 7 Close the dialog box.

The configured cell is displayed in the navigation pane, as shown in **Figure 7-20**. The data is configured but not activated. To activate the data, go to **Step 8**.

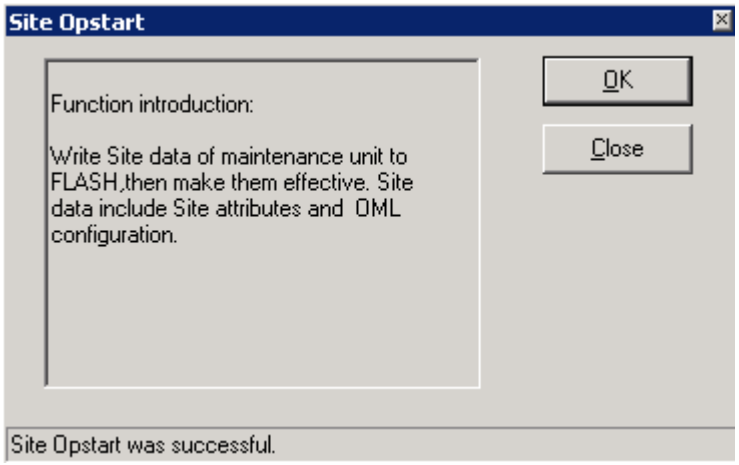
Figure 7-20 Configured cell and channels



Step 8 Choose **Site0** > **Site Opstart** > **OK**. The **Site Opstart** dialog box is displayed, as shown in **Figure 7-21**.

If...	Then...
Site Opstart successfully is displayed	Click **Close** and proceed with the next step.
Site operation start fails	1. Repeat **Step 8**. If the operation succeeds, go to **Step 9**. If the operation fails, go to **8.2**. 2. Check whether data configuration conflict exists. If there is configuration conflict, modify the configuration. If the configuration is incorrect, turn to GBTS engineers for help.

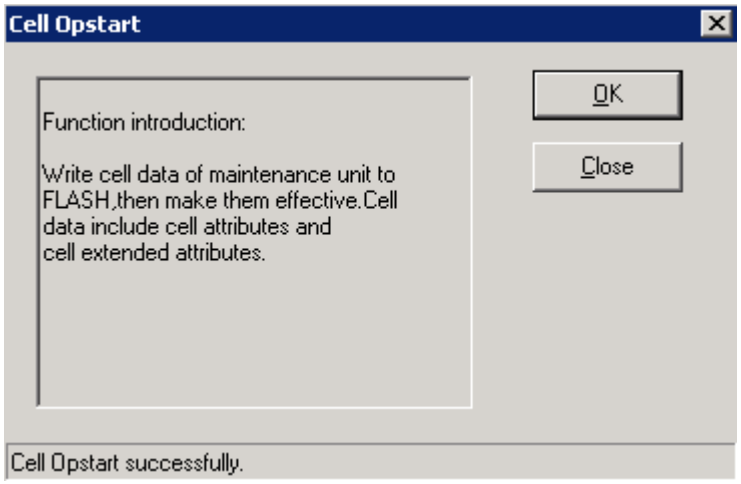
Figure 7-21 Site Opstart dialog box



Step 9 Choose **Cell0** > **Cell Opstart** > **OK**. The **Cell Opstart** dialog box is displayed, as shown in **Figure 7-22**.

If...	Then...
Cell Opstart successfully is displayed	Click **Close** and proceed with the next step.
Cell operation start fails	See **Step 8**.

Figure 7-22 Cell Opstart dialog box

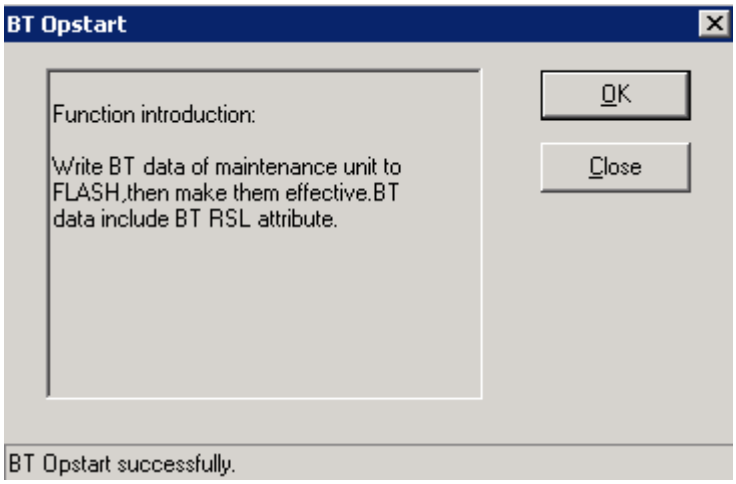


Step 10 The site configuration takes effect.

Step 11 Make the attributes of other TRXs take effect: Choose **BT0** > **BT Opstart** > **OK**. The **BT Opstart** dialog box is displayed, as shown in **Figure 7-23**.

If...	Then...
BT Opstart successfully is displayed	Click **Close** and proceed with the next step.
Baseband operation start fails	See **Step 8**.

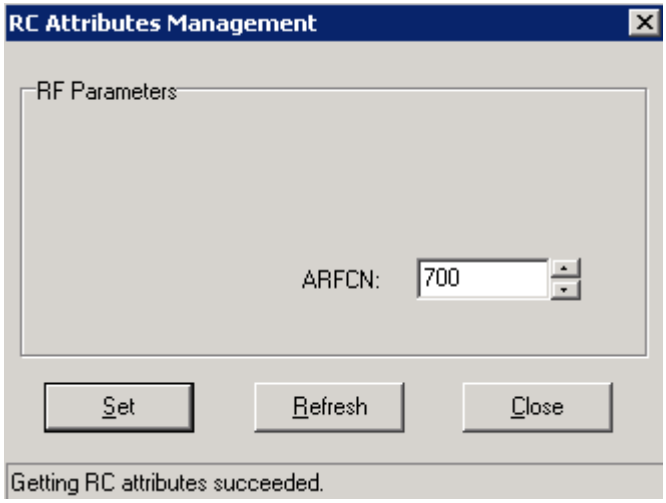
Figure 7-23 BT Opstart dialog box



Step 12 Choose **RC0** > **RC Attributes Management**. Specify frequency in **ARFCN**, and click **Set**. **Getting RC attributes succeeded** is displayed. Click **Close**.

Repeat **Step 12** to set the frequencies of other carriers. The **RC Attributes Management** dialog box is displayed, as shown in **Figure 7-24**.

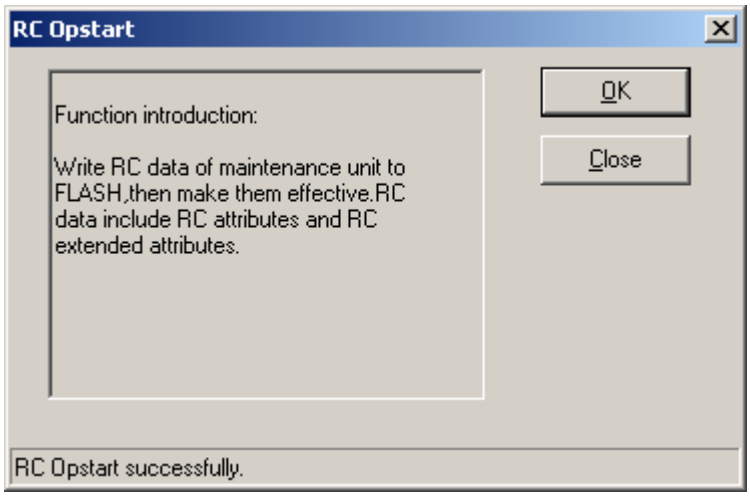
Figure 7-24 RC Attributes Management dialog box



Step 13 Choose **RC0** > **RC Opstart** > **OK**. The **RC Opstart** dialog box is displayed, as shown in **Figure 7-25**.

If...	Then...
RC Opstart successfully is displayed	Click **Close**. Repeat **Step 13** to validate the frequencies of other carriers.
Carrier operation start fails	See **Step 8**.

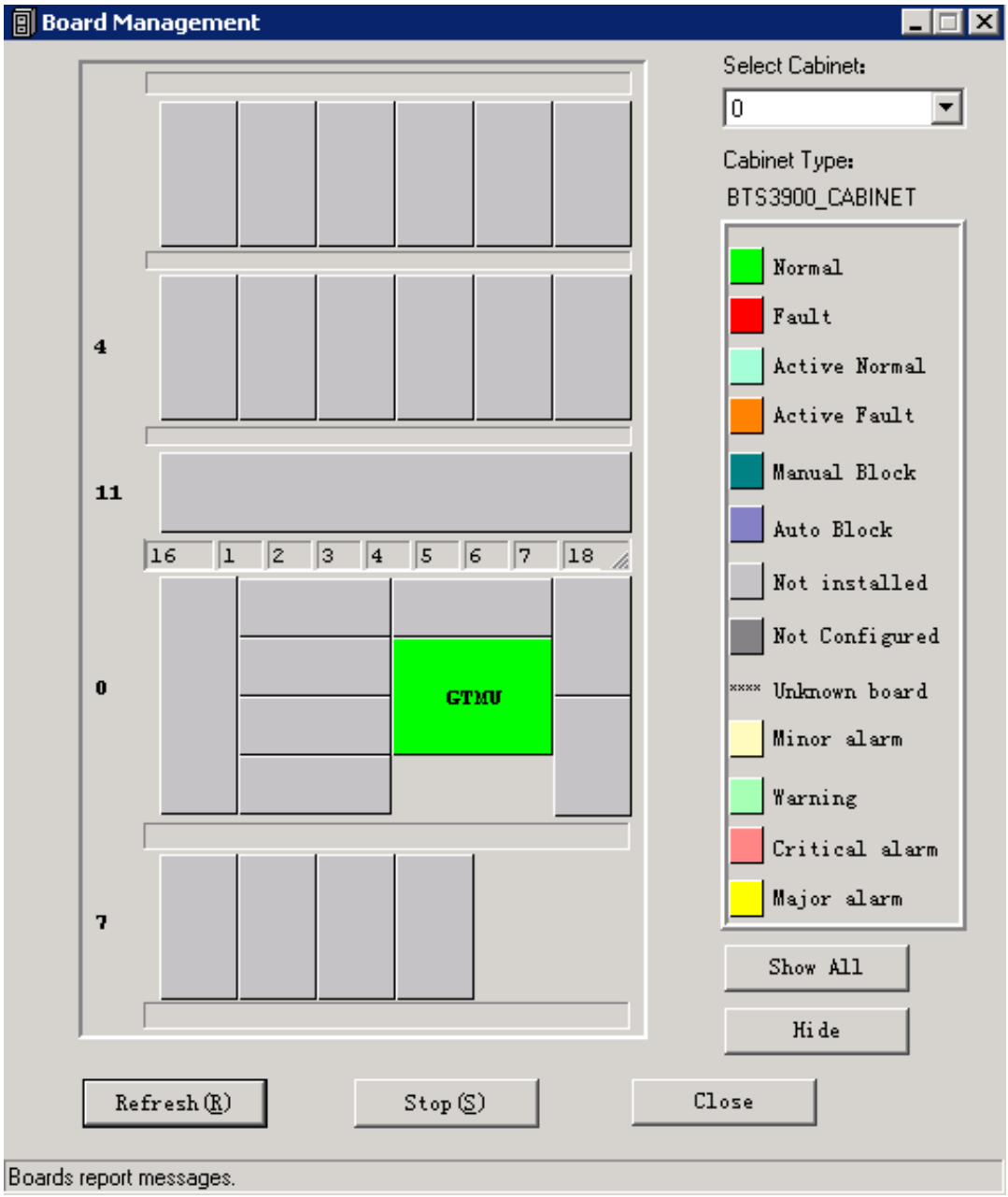
Figure 7-25 RC Opstart successfully dialog box



Step 14 **SFP Port Logic Inconsistency Alarm** is not displayed. The transmission is unavailable and the **LAPD Alarm** persists. Therefore, the GTMU state is **Active Fault**.

As shown in **Figure 7-26**.

Figure 7-26 Board Management window



----End

7.4 Checking the Transmission Between the BBU and the BSC on the BTS Side

This section describes how to check the status of the LEDs on the panels of the GTMU and UTRP (if the UTRP is installed) and how to check the connections of the E1 cable and E1 surge protection transfer cable to ensure that the BBU properly communicates with the BSC.

Prerequisite

- The BBU is properly connected to the BSC through an E1/T1 cable.
- The BBU and the BSC are successfully powered on.

Procedure

Step 1 Check whether the UTRP is installed. If it is installed, perform the check based on the following table. If it is not installed, go to **Step 2**.

If ...	Then ...
The RUN LED is oN for 1s and off for 1s and the ALM LED is off.	The board properly works according to the configuration. Then, go to **Step 2**.
The RUN LED is on for 0.125s and off for 0.125s.	The board is not configured or software is being loaded to the board. After the board is configured or the loading is complete, go to **Step 2**.
The RUN and ALM LED are in other states.	The E1/T1 link is faulty. Go to **Step 4**.

Step 2 Check whether the settings of DIP switch meet the field requirements. if not, modify the settings of DIP switch as required.

Step 3 Check the status of the LEDs **LIU0** to **LIU3** on the panel of the GTMU in the BBU. The LEDs **LIU0** to **LIU3** correspond to links 1 to 4 of the E1/T1 cable respectively. Each link has one TX line and one RX line.

If ...	Then ...
The LED is OFF	The E1/T1 link is normal. End this task.
The LED is on or on for 0.125s and off for 0.125s.	The E1/T1 link is faulty. Go to **Step 4**.

NOTE

You need to check the status of only the **LIU** LED corresponding to the E1/T1 link in use. The **LIU** LEDs corresponding to the unused E1/T1 links are on.

- For the BBUs that are not connected in cascading mode, if the LIU LED for the E1/T1 link is off, the communication between the BBU and the BSC is normal. If the LIU LED is on, the communication is abnormal.
- For the BBUs that are connected in cascading mode, if the LIU LEDs on the E1 ports corresponding to level 1 BBU and level 2 BBU are off, the communication is normal. If multiple BBUs are connected in cascading mode, check the LEDs of the corresponding links.
- If the BBU and the BSC form a ring, check the LIU LEDs corresponding to the links in the ring. To check the inter-BBU connections, check the corresponding LEDs of the cascaded BBUs.

Step 4 Check the connections and connectors at both ends of the cables. If a connector is damaged, replace it.

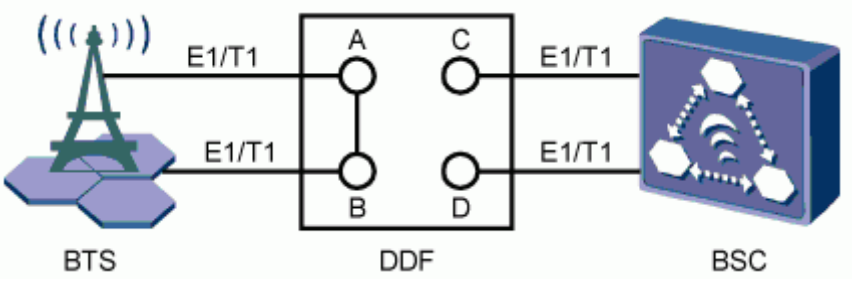
If ...	Then ...
The UELP is configured	• Check the connection between the E1/T1 cable and the **OUTSIDE** port on the panel of the UELP. • Check the connection between the E1 surge protection transfer cable and the **INSIDE** port on the panel of the UELP. • Check the connection between the E1 surge protection transfer cable and the **E1/T1** port on the panel of the GTMU.
The UELP is not configured	Check the connection between the E1/T1 cable and the **E1/T1** port on the panel of the GTMU.

Step 5 At the DDF on the BTS side, check whether the connectors of the E1/T1 link on which the communication is abnormal are properly soldered. Poor jointing may cause poor E1/T1 connection.

Step 6 Perform a physical loopback test on the E1/T1 cable where the communication is abnormal. Check whether the transmission of the E1/T1 cable is normal on the BTS side.

1. For a pair of E1s/T1s connecting the BTS and BSC through the DDF, port A is connected to port C, and port B is connected to port D. In the loopback test, disconnect port A from port C, and port B from port D, and then connect port A to port B, as shown in **Figure 7-27**. In this way, the TX end and RX end of the E1/T1 cable are connected and the physical loopback is formed on the BTS side.

Figure 7-27 Physical loopback of the E1/T1 cable at the DDF



2. Check the status of the **LIU** LEDs on the panel of the GTMU.

If ...	Then ...
The LEDs are off.	The E1/T1 connections are normal on the BTS side. The problem may be the abnormal connection between the BTS and the BSC or the abnormal connection on the BSC side. In this case, end the check, and contact the technical support engineer on the BSC side to clear the fault.

If ...	Then ...
The LEDs are on or on for 0.125s and off for 0.125s	The cable connections on the BTS side are abnormal. Clear the fault on the BTS side.

3. Set the E1s/T1s at the DDF on the BTS side from physical loopback to normal connection. Ensure that the connections are sound.

Step 7 Check the E1/T1 connections at the DDF. Ensure that the TX and RX ends of the E1 cables are connected properly.

NOTE

Do as follows to distinguish the E1 RX end from the E1 TX end:

Connect a pin of an LED to the wire of the E1/T1 cable, and the other pin to the shielding layer of the E1/T1 cable. If the LED is on, this end is the TX end. If the LED is off, this end is the RX end.

----End

7.5 Running the NodeB LMT

To run the NodeB LMT, you need to first set the IP address of the LMT client, connect the base station and the LMT, and then log in to the LMT.

7.5.1 Setting the IP address of the LMT Client

This section describes how to set the IP address of the LMT client. You must set a correct IP address of the LMT client before logging in to the LMT. The following procedure is performed on the Windows XP system.

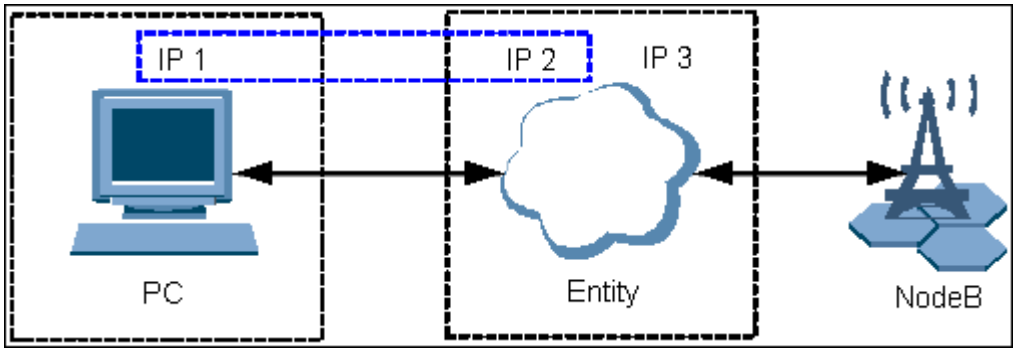
Prerequisite

The TCP/IP protocol is installed on the LMT client.

Context

In remote maintenance mode, you need ; IP 1, and IP 2. IP 1 stands for the IP address of the LMT client. IP 2 stands for the external IP address of the entity directly connected to the LAN where the LMT client is located, for example, the external IP address of the RNC BAM. IP 1 and IP 2 must be on the same network segment, as shown in **Figure 7-28**.

Figure 7-28 IP addresses in remote maintenance mode



CAUTION

Ensure that the IP address of the LMT client does not conflict with the IP address of another computer within the same LAN.

Procedure

Step 1 On Windows XP, choose **Start** > **Control Panel**.

If...	Then...
The control panel is displayed in category view	Go to **Step 2**.
The control panel is displayed in classic view	Go to **Step 3**.

Step 2 Click **Network and Internet Connections**, and then go to **Step 3**.

Step 3 Double-click **Network Connections**. The Network Connections dialog box is displayed. Right-click **Local Area Connection**.

Step 4 Choose **Properties** from the shortcut menu. The **Local Area Connection Properties** dialog box is displayed.

Step 5 Select **Internet Protocol (TCP/IP)**.

Step 6 Click **Properties**. The **Internet Protocol (TCP/IP) Properties** dialog box is displayed.

Step 7 Select **Use the following IP address**.

Step 8 Set the IP address, subnet mask, and default gateway of the LMT client. For details, see **Table 7-2**.

Table 7-2 IP parameters of the LMT client for commissioning on the NodeB side

Parameter	Description
IP Address	The IP address of the LMT client is on the same network segment as the IP address of the NodeB local maintenance channel. In local maintenance mode, the IP address of the NodeB is 17.21.2.15 by default.
Subnet Mask	The subnet mask of the LMT client is the same as that of the NodeB local maintenance channel.
Default Gateway	

NOTE

The IP addresses on the same network segment correspond to the same subnet masks and subnet addresses (subnet mask AND IP address).

Step 9 Click **OK** to complete the settings.

----End

7.5.2 Connecting the LMT Client and the Base Station

This section describes how to set the route from the LMT client to the NodeB in remote maintenance mode. If you do not set the route in remote maintenance mode, you fail to log in to the NodeB through the LMT client.

Procedure

Step 1 On the LMT client, choose **Start** > **Run**, and then run the **cmd** command. The command window is displayed.

Step 2 Run the **ROUTE ADD Networkaddress MASK netmask gatewayaddress** command in the command window to add a route from the PC to the gateway. Then, set "Networkaddress", "netmask", and "gatewayaddress". For details, see **Table 7-3**.

Table 7-3 Parameters for setting the route from the PC to the gateway

Parameter	Description
Networkaddress	OM IP address of the NodeB.
netmask	Subnet mask of the PC is the same as the external subnet mask of the RNC BAM.
gatewayaddress	External IP address of the BAM.

NOTE

- Different devices must correspond to different IP addresses.
- The IP addresses on the same network segment correspond to the same subnet masks and subnet addresses (subnet mask AND IP address).

Step 3 Run **ping target_name -t** in the command window to check the connection between the LMT client and the NodeB. "target_name" is the OM IP address of the base station.

----End

7.5.3 Logging In to the LMT

This section describes how to log in to the NodeB LMT.

Prerequisite

The communication between the LMT client and the NodeB is normal.

Procedure

Step 1 Choose **Start** > **All Programs** > **HUAWEI Local Maintenance Terminal**. If the Local Maintenance Terminal is started, choose **System** > **Logout**, or click  . The **User Login** dialog box is displayed, as shown in **Figure 7-29**.

Figure 7-29 User Login dialog box

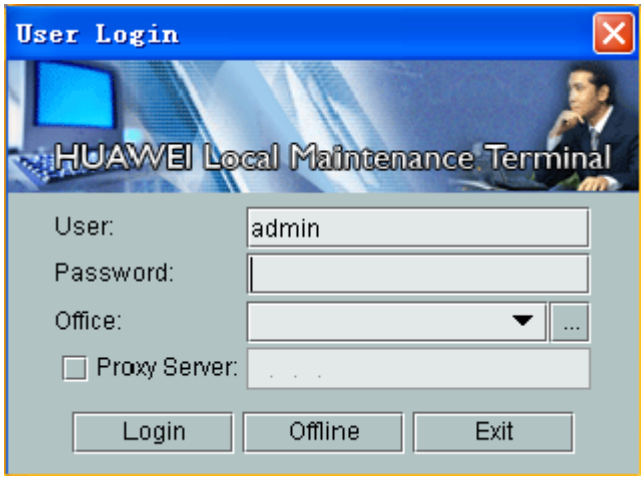


Table 7-4 describes the fields in the **User Login** dialog box.

Table 7-4 Fields in the User Login dialog box

Field	Description
User Name	Type the user name of the NodeB. By default, the user name is admin. The user name is mandatory and case-sensitive.

Password	Password of the NodeB. By default, the password is NodeB. The password consists of 6 to 16 alphanumeric and case-sensitive characters.
Office	Select the name and IP address of the LMT client that is connected to the NodeB. Click ... to edit the office information. When you log in to the NodeB locally through the LMT, the IP address of the office is the same as the IP address of the NodeB local maintenance channel.
Proxy Server	Leave this field blank. Ensure that you do not select the check box.

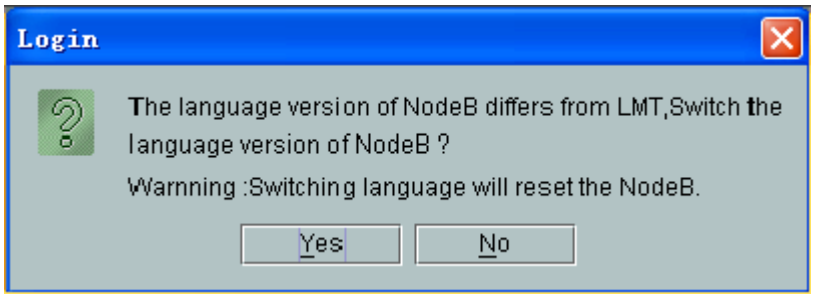
Step 2 In the **Office** area, set **IP Address** and **Office**.

Step 3 Type the user name and password in corresponding text boxes.

Step 4 Click **Login** to log in to the NodeB.

Step 5 If a dialog box is displayed, as shown in **Figure 7-30**, you can infer that the language version of the NodeB does not match that of the LMT. In this case, switch the NodeB language so that you can log in to the NodeB through the LMT.

Figure 7-30 Switching the language



CAUTION

The NodeB is reset after you switch the NodeB language.

Step 6 Click **Yes** to switch the NodeB language.

NOTE

If you click **No**, a dialog box is displayed, indicating **The language of NE differs from LMT**. Click **OK** and you can still log in to the NodeB. This operation, however, may cause the following effects:

- The language of the message reported by the NodeB does not match that of the LMT.
- The message cannot be parsed during software management.

----End

7.6 Upgrading the NodeB Software and Downloading the Data Configuration File

This section describes how to upgrade the NodeB software, download the data configuration file, and activate the NodeB on the LMT. The software and the configuration data take effect after the NodeB resets automatically.

Prerequisite

- You have logged in to the NodeB LMT.
- The FTP server functions properly and is connected to the NodeB in the same Intranet.
- There is no firewall between the FTP server and the NodeB.
- The FTP user can access a specified directory.

Procedure

Step 1 In the navigation tree of the NodeB LMT window, click the **MML Commands** tab. Run the **LST VER** command to query the active software version.

If...	Then...
The active software version is consistent with the target software version,	Download only the data configuration file and check that it takes effect.
The active software version is inconsistent with the target software version,	Download the target version software package and data configuration file, check that the data configuration file takes effect, and activate the NodeB.

Step 2 Click the **Maintenance** tab in the navigation tree.

Step 3 Choose **Software Management** > **Software Update**. The **Software Update** dialog box is displayed.

Step 4 Select **Upgrade NodeB Software** in the dialog box. Click **Next**. The **Update NodeB Software** dialog box is displayed.

Step 5 Select **Download Data Configuration File**, **Download NodeB Software Package**, **Download by Configuration**, **Effective Data Configuration File**, and **Activate NodeB Software** in sequence, and set the directory for downloading the data configuration file and NodeB software package.

NOTE

- You are advised to select **Download by Configuration**. If it is not selected, a dialog box is displayed, prompting that this may cause software download failure. Click **OK** to start downloading the software. Click **Cancel** to select again, and download the software by configuration.
- If you select **Download by Configuration**, the NodeB selectively downloads required board software packages from the relay server according to the configured board type. In this manner, the total amount of data to be downloaded is reduced, thus reducing download time and saving storage space.

Step 6 Click **Next**. A confirmation dialog box is displayed.

Step 7 Click **Yes**. A dialog box is displayed, indicating the status and the progress of the procedure.

CAUTION

- The NodeB is automatically reset, and the new version of the NodeB software is enabled after the activation.
- If the software activation fails, the NodeB software cannot operate properly. You need to reactivate the NodeB software in the standby file directory or reinstall the NodeB software.

----End

7.7 Running the eNodeB LMT

You can maintain the eNodeB by logging on to the LMT. Alternatively, you can maintain the eNodeB on the M2000.

Prerequisite

The JRE plug-in jre-6u11-windows-i586-p-s.exe is installed before you use the LMT. JAVA Platform Standard Edition Runtime Environment (JRE) is a standard JAVA plug-in and it must be installed on the LMT computer in advance. You can download the JRE plug-in at **http://java.com/** or **http://support.huawei.com/**.

- If the JRE plug-in is not installed, you are prompted to install it when using the LMT.
- If installed JRE is not the latest version, you are prompted to upgrade it when logging on to the LMT. You are advised to remove the early version and then to install the latest version.
- If you cannot log on to the LMT after JRE upgrade, restart the browser and log on to the LMT again.

Context

There are two types of LMT users, local user and emergency (EMS) user.

- Local user: refer to the accounts (including the default account admin) that are separately managed by the LMT. The users can operate and maintain the eNodeB when the LMT is disconnected from the M2000 server.
- EMS users: refer to the accounts managed by the M2000 server in centralized mode. The users are created, changed, authenticated, and authorized through the M2000 server. After the users are authorized, they can manage the eNodeB through the LMT or manage the M2000 server through the M2000 client. If you log in to the eNodeB as an EMS user, ensure that the eNodeB is connected to the M2000 server normally.

WARNING

Do not change the system time or time zone of the computer installed with the LMT when the LMT is in progress. Otherwise, a critical fault may occur in the system. If you need to modify the system time and time zone on the server, stop the LMT application first.

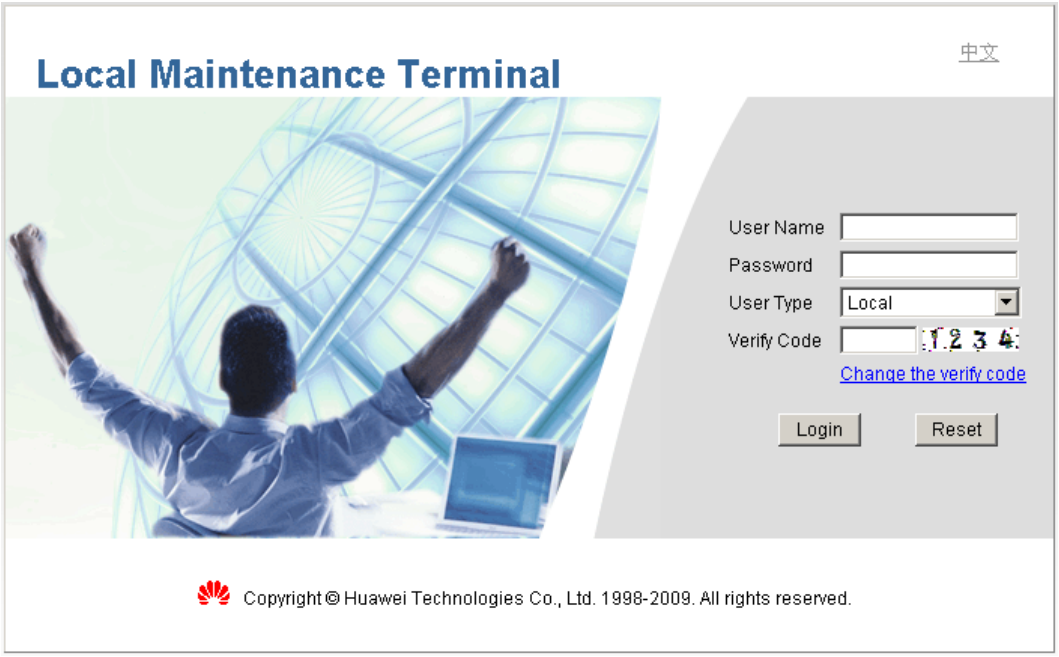
CAUTION

- The refresh function of the Internet Explorer (IE) is unavailable on the LMT. When you use the refresh function on the main interface of the LMT, the main interface exits. If you use the refresh function on the monitoring page, a script error occurs.
- When the LMT runs in the IE browser, do not change the properties of the file system. Otherwise, the IE is automatically refreshed, and therefore the interface of the LMT becomes abnormal.
- If you start the FTP service through choosing **Start** > **Run**, the LMT window is replaced with the login dialog box of the FTP server. To avoid this problem, perform the following settings: Choose **Tools** > **Internet Options** from the menu of the IE. On the **Advanced** tab page, clear **Reuse windows for launching shortcuts** under **Browse**.
- If the colors of the LMT window cannot be displayed, perform the following settings: Choose **Tools** > **Internet Options** from the menu of the IE. On the **General** tab page, click **Accessibility**. Then, clear **Ignore colors specified on Web pages** under **Formatting**.
- In the case of an LMT version upgrade or rollback, you need to clear the buffer and cookies of the IE.

Procedure

- Logging in to the eNodeB through LMT.
  1. In the IE address bar, enter the IP address for local maintenance of the eNodeB main control board. By default, the IP address is 192.168.0.49.
  2. Click **Go**. The **Local Maintenance Terminal** dialog box is displayed, as shown in Figure 7-31.

Figure 7-31 BSC6000 local maintenance terminal window



3. Type the user name and the password in the **Name**, **Password**, and **Verify Code** text boxes. Set **User Type** to **Local**.

   NOTE

   By default, the user name and password is admin.

   If the verify code is indistinct, click **Change the verify code** to change the verify code.

4. Click **Login**. The LMT window is displayed.

   NOTE

   If the login fails due to entered incorrect information, click **Reset** and enter the correct information in the **Name**, **Password**, and **Verify Code** text boxes. If the login failure persists, check the connection between the LMT and the LMPT on the eNodeB

- Logging in to the eNodeB through M2000

1. Type the IP address for OM of the LMPT in the address box of the browser.

   NOTE

   Assume that the IE browser is used. Perform the following settings before typing the IP address:

   1. Start the IE, and then choose **Tools** > **Internet Options** from the menu bar. On the **Connections** tab page, click **LAN Settings**. In the displayed **LAN Settings** dialog box, under **Proxy server**, select **Use a proxy server for your LAN**, and then type the IP address of the M2000 in the **Address** box and set **Port Number** to 80.
   2. Start the IE, and then choose **Tools** > **Internet Options** from the menu bar. On the **Advanced** tab page, select **Use HTTP1.1 through proxy connections** under **HTTP 1.1 settings**.

2. Click **Go**. The **Local Maintenance Terminal** dialog box is displayed, as shown in **Figure 7-31**.
3. Type the user name and the password in the **Name**, **Password**, and **Verify Code** text boxes. Set **User Type** to **EMS**.

   NOTE

   The **EMS** user names and passwords are authorized by the M2000 server.

   If the verify code is indistinct, click **Change the verify code** to change the verify code.

4. Click **Login**. The LMT window is displayed.

   NOTE

   If the login fails due to entered incorrect information, click **Reset** and enter the correct information in the **Name**, **Password**, and **Verify Code** text boxes. If the login failure persists, check the connection between the LMT and the LMPT on the eNodeB

----End

7.8 Upgrading the eNodeB Software and Downloading the Data Configuration File

This section describes how to upgrade the eNodeB software and data configuration file on the LMT. The upgraded eNodeB software and data configuration file take effect after the eNodeB is automatically reset. The process for upgrading the eNodeB software and data configuration file takes about 45 minutes.

Prerequisite

- The LMT communicates properly with the eNodeB.

- The FTP server functions properly and is connected to the eNodeB on the same network segment.
- The FTP user can access the specified directory.
- There is no firewall between the FTP server and the eNodeB.

Procedure

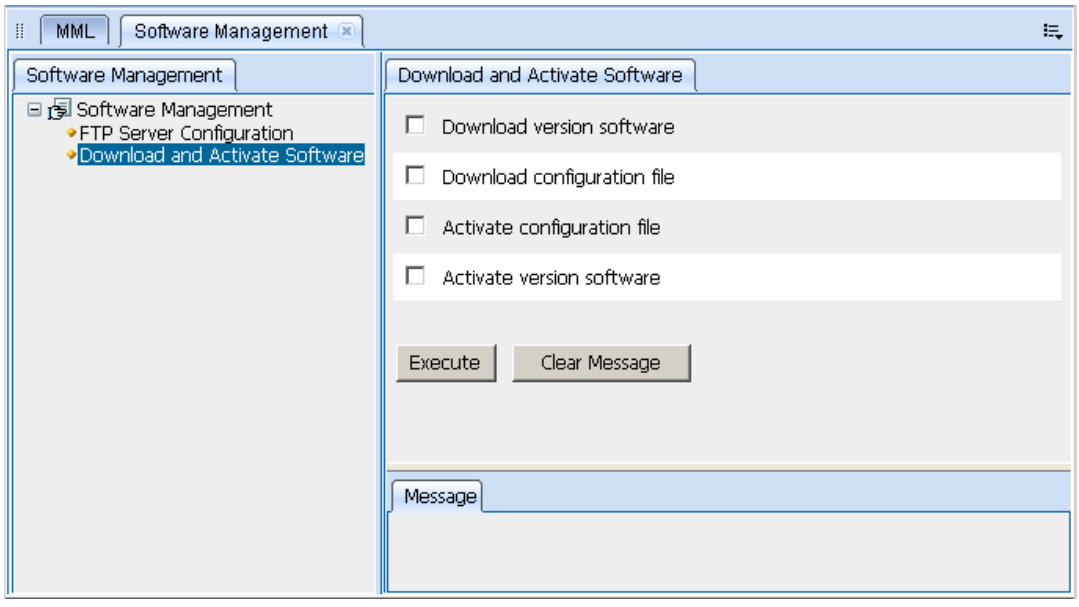
Step 1 In the **MML** interface on the LMT, run the command to query the active eNodeB software version.

If...	Then...
The active software version is the target software version	Download and activate only the data configuration file.
The active software version is not the target software version	Download the eNodeB software and data configuration file, and then activate the data configuration file and eNodeB software in sequence.

Step 2 On the LMT, click the **Software Management** button. The **Software Management** tab page is displayed.

Step 3 In the navigation tree, double-click **Download and Activate Software**. The **Download and Activate Software** interface is displayed, as shown in **Figure 7-32**.

Figure 7-32 Download and Activate Software interface



Step 4 Select the tasks to be performed according to step **step 1** and set the parameters related to the tasks.

NOTE

If a task is not selected, the eNodeB skips the task and proceeds with the next task.

Step 5 Click the **Execute** button. The eNodeB performs the selected tasks from top to bottom. There is a progress bar under the **Execute** button, indicating the current progress and status of the task. When the progress bar of each task displays 100%, the upgrade is complete.

CAUTION

If a task fails, the eNodeB stops the task and does not proceed with subsequent tasks. If only the data configuration file is downloaded and activated during the upgrade, you need to manually reset the eNodeB after the data configuration file is activated so that the updated data takes effect. The eNodeB is automatically reset after the eNodeB software is activated. Before the eNodeB is automatically reset, do not send any reset command to the eNodeB or boards, and do not power off the eNodeB or remove the boards. If you perform any of the preceding operations before the eNodeB is automatically reset, the upgrade fails, and the software and files on the boards may be cleared or damaged.

----End

7.9 Downloading the eNodeB License

By downloading the license to the eNodeB on the LMT, you are authorized to use the eNodeB software.

Prerequisite

- The LMT communicates properly with the eNodeB.
- The license is already obtained.

Procedure

Step 1 Run the **INS LICENSE** command to download and activate the license on the eNodeB.

----End

7.10 Data Sheet for Commissioning

This chapter provides the data sheet that is used to record the process and result of the commissioning.

7.10.1 Data Sheet for GBTS Commissioning
This section provides the data sheet that is used to record the process and results of the GBTS commissioning.

7.10.2 Data Sheet for NodeB Commissioning
This section provides the data sheet that is used to record the process and results of the NodeB commissioning

7.10.3 Data Sheet for eNodeB Commissioning
This section provides the data sheet that is used to record the process and results of the eNodeB commissioning. The Data Sheet for Commissioning used at different sites may be different. This table serves as a reference only.

7.10.1 Data Sheet for GBTS Commissioning

This section provides the data sheet that is used to record the process and results of the GBTS commissioning.

Table 7-5 Data sheet for GBTS commissioning

Site Name				
GBTS Type				
Commission Time				
Commissioning Engineer				
Commissioning Mode		☐ Local USB + remote commissioning ☐ SMT/LMT + remote commissioning ☐ Remote commissioning		
Commissioning Result		☐ Successful ☐ Failed		
Commissioning Item			Conclusion	Handling Exceptional Case
Commissioning Preparation Phase		The resources required for commissioning are available.		
		The commissioning requirements are met.		
Commissioning Phase	Local eNodeB Commissioning Through the USB Storage Device	The GBTS is upgraded.		
		The GBTS hardware is functional.		
	SMT/ LMT + Remote Commissioning	You have logged in to the GBTS through the SMT.		
		The GBTS board and logical objects are available.		
		The active software version is correct.		
		The transmission between the BBU and the MRFU/ RRU3908 is normal.		
		Only the alarms related to the transmission are reported.		

		The hardware connections are correct.		
		Site management rights are released.		
	The transmission between the BBU and the BSC is available.			
	Remote Commissioning	The transmission between BBU and MRFU, BBU and RRU3908, and BBU and BSC are normal.		
		The transmission between the cascaded GBTSs is normal.		
		The transmission between the GBTSs in ring topology is normal.		
		The board configuration is correct and the boards are working properly.		
		The active software version is correct.		
		The hardware installation and the data configuration are consistent with each other.		
		No alarm related to the GBTS is reported.		
		The CS service test is successful.		
		The PS service test is successful.		
		The environment monitoring alarm can be reported normally.		
		The VSWR is correct. Record the value of the VSWR.		
		The output power of the TRX is normal. Record the value of the output power per carrier.		
		The antenna system is properly connected.		

Commissioning Result		
	Unsolved Problems	Impact
Unsolved Problems After Commissioning		

7.10.2 Data Sheet for NodeB Commissioning

This section provides the data sheet that is used to record the process and results of the NodeB commissioning

Table 7-6 Data sheet for NodeB commissioning

Site Name				
NodeB Type				
Commission Time				
Commissioning Engineer				
Commissioning Mode		☐ Local USB + remote commissioning ☐ SMT/LMT + remote commissioning ☐ Remote commissioning		
Commissioning Result		☐ Successful ☐ Failed		
Commissioning Item			Conclusion	Handling Exceptional Case
Commissioning Preparation Phase		Faults in the NodeB hardware installation are rectified.	☐ Yes; ☐ No	
		Transmission links between the NodeB and RNC are ready.	☐ Yes; ☐ No	
		Negotiation data of the NodeB to be commissioned is added to the RNC.	☐ Yes; ☐ No	
Commissioning Phase	Local Commissioning through USB	The NodeB is upgraded.	☐ Yes; ☐ No	
		The NodeB hardware is functional.	☐ Yes; ☐ No	

	SMT/ LMT Commissioning	The NodeB software and BootROM software are upgraded through the LMT.	☐ Yes; ☐ No	
		The data configuration file of the NodeB is downloaded from the LMT.	☐ Yes; ☐ No	
		The NodeB hardware status is checked.	☐ Yes; ☐ No	
	Remote Commissioning	The UMTS transmission is normal.	☐ Yes; ☐ No	
		The commissioning project of the NodeB is created.	☐ Yes; ☐ No	
		The commissioning report of the NodeB is obtained.	☐ Yes; ☐ No	
		The NodeB hardware status is checked.	☐ Yes; ☐ No	
		The NodeB services are commissioned.	☐ Yes; ☐ No	
		The NodeB environment alarms are commissioned.	☐ Yes; ☐ No	
		Problem Description	Impact	
Unsolved Problems After Commissioning				
		Component	P/N	
Faulty Board Record				

7.10.3 Data Sheet for eNodeB Commissioning

This section provides the data sheet that is used to record the process and results of the eNodeB commissioning. The Data Sheet for Commissioning used at different sites may be different. This table serves as a reference only.

Table 7-7 Data sheet for eNodeB commissioning

Site Name				
eNodeB Type				
ESN				
Commission Time				
Commissioning Engineer				
Commissioning Result	☐ Successful ☐ Failed			
Commissioning Item			Conclusion	Handling Exceptions
Commissioning Preparation Phase	Faults in the eNodeB hardware installation are rectified.		☐ Yes; ☐ No	
	The transmission links between the S1 port and X2 port are ready.		☐ Yes; ☐ No	
	Negotiation data of the eNodeB to be commissioned is added to the MME/S-GW.		☐ Yes; ☐ No	
	Software and data configuration file are ready.		☐ Yes; ☐ No	
Remote Commissioning on the M2000	Local end of the eNodeB	The information regarding the eNodeB, such as name, ID, and ESN, is reported.	☐ Yes; ☐ No	
		The eNodeB is powered on.	☐ Yes; ☐ No	
	Remote end of the eNodeB	The ESN is bound.	☐ Yes; ☐ No	
		The software and data configuration file are loaded through the M2000.	☐ Yes; ☐ No	
		The software is upgraded to the target version.	☐ Yes; ☐ No	

		The test result of the external environment alarm is correct.	☐ Yes; ☐ No	
		The running status of the eNodeB is normal.	☐ Yes; ☐ No	
		The test result of the basic services is correct.	☐ Yes; ☐ No	
Local eNodeB Commissioning Through the USB Storage Device	Local end of the eNodeB	The ESN is reported.	☐ Yes; ☐ No	
		The software and data configuration file are loaded through the USB disk.	☐ Yes; ☐ No	
		The eNodeB is reset.	☐ Yes; ☐ No	
		The indicator status is normal.	☐ Yes; ☐ No	
		The test result of the external environment alarm is correct.	☐ Yes; ☐ No	
		The running status of the eNodeB is normal.	☐ Yes; ☐ No	
		The test result of the basic services is correct.	☐ Yes; ☐ No	
	Remote end of the eNodeB	The ESN is bound.	☐ Yes; ☐ No	
		The OM channel is established.	☐ Yes; ☐ No	
Local eNodeB Commissioning on the LMT	Local end of the eNodeB	The ESN is reported.	☐ Yes; ☐ No	
		The software and data configuration file are loaded through the LMT.	☐ Yes; ☐ No	
		The software is upgraded to the target version.	☐ Yes; ☐ No	
		All the active alarms are cleared.	☐ Yes; ☐ No	

		The test result of the external environment alarm is correct.	☐ Yes; ☐ No	
		The running status of the eNodeB is normal.	☐ Yes; ☐ No	
		The test result of the basic services is correct.	☐ Yes; ☐ No	
	Remote end of the eNodeB	The ESN is bound.	☐ Yes; ☐ No	
		The OM channel is established.	☐ Yes; ☐ No	
	Problem Description		**Impact**	
Unsolved Problems After Commissioning				
	Component		**P/N**	
Faulty Board Record				

8 Communication Port for Multi-Mode Base Station

This chapter describes communication ports on multi-mode base stations.

Figure **Table 8-1**, **Table 8-2**, and **Table 8-3** show these communication ports on multi-mode base stations.

Table 8-1 Communication ports on the GBTS

Protocol	A Side	A Side Port Number (RX)	B Side	B Side Port Number (TX)	Service	Authority Management
TCP	GBTS	700	SMT	1024-65535	Before the GBTS is connected to the BSC, the local OM of the GBTS can be implemented through this port on the SMT.	None

Table 8-2 Communication ports on the NodeB

Protocol	A Side	A Side Port Number (RX)	B Side	B Side Port Number (TX)	Service	Authority Management
TCP	NodeB	6000	LMT	1024-65535	For the LMT to deliver the maintenance command to the NodeB	User name/ password
TCP	NodeB	6001	LMT	1024-65535	For the NodeB to report alarm	None

Protocol	A Side	A Side Port Number (RX)	B Side	B Side Port Number (TX)	Service	Authority Management
TCP	NodeB	6006	LMT	1024-65535	For maintenance, the format is BIN.	None
TCP	NodeB	6007	M2000 server	1024-65535	For M2000. Integration port for MML, alarm, and BIN	User name/ password
TCP	NodeB	20	Commissioning console	1024-65535	For FTP; debug mode; local maintenance FE port only	None
TCP	NodeB	21	Commissioning console	1024-65535	For FTP; debug mode; local maintenance FE port only	User name/ password
TCP	NodeB	23	Commissioning console	1024-65535	For telnet; debug mode; local maintenance FE port only	User name/ password
UDP	NodeB	67/68	M2000 server or any other DHCP server	67/68	For DHCP services	None
UDP	M2000 server or any other DHCP server	67/68	NodeB	67/68	For DHCP services	None
UDP	M2000 server, RNC BAM, or any other SNTP server	123	NodeB	1024-65535	For synchronizing SNTP clock	None

Protocol	A Side	A Side Port Number (RX)	B Side	B Side Port Number (TX)	Service	Authority Management
TCP	LMT, M2000 server, RNC BAM, or any other FTP server	20	NodeB	1024-65535	For FTP: upload configuration file, logs from the NodeB to the FTP server; download configuration file, software packages to the NodeB from the FTP server	None
TCP	LMT, M2000 server, RNC BAM, or any other FTP server	21	NodeB	1024-65535	For FTP control	User name/ password

Table 8-3 Communication ports on the eNodeB

Protocol	A Side	A Side Port Number (RX)	B Side	B Side Port Number (TX)	Service	Authority Management
TCP	eNodeB	6000	LMT	1024-65535	For the LMT to deliver the maintenance command and for the UE to respond. Format: MML	User name/ password
TCP	eNodeB	6001	LMT	1024-65535	For the NE to report alarm. Format: MML	None
TCP	eNodeB	6006	LMT	1024-65535	For maintenance. Format: BIN	None
TCP	eNodeB	6007	M2000 server	1024-65535	For M2000. Integration port for MML, alarm, and BIN.	User name/ password

Protocol	A Side	A Side Port Number (RX)	B Side	B Side Port Number (TX)	Service	Authority Management
TCP	eNodeB	21	Commissioning console	1024-65535	For FTP. Commissioning mode. Local maintenance FE port only	User name/ password
TCP	eNodeB	23	Commissioning console	1024-65535	For telnet. Commissioning mode. Local maintenance FE port only	User name/ password
UDP	eNodeB	67/68	M2000 server or any other DHCP server	67/68	For DHCP services	None
UDP	M2000 server or any other DHCP server	67/68	eNodeB	67/68	For DHCP services	None
UDP	M2000 server or any other DHCP server	123	eNodeB	1024-65535	For synchronizing the NTP time	None
TCP	M2000 server or any other FTP server	21	eNodeB	1024-65535	For FTP control	User name/ password