

9 OM of the BTS

About This Chapter

This part describes the modes, structure, and functions of the operation and maintenance (OM) subsystem for the BTS.

[9.1 OM Modes of the BTS](#)

The OM of the BTS is performed through the Site Maintenance Terminal, Local Maintenance Terminal (LMT), or network manager.

[9.2 OM Structure of the BTS](#)

The BTS OM subsystem consists of the OM hardware and the OM software.

[9.3 OM Functions of the BTS](#)

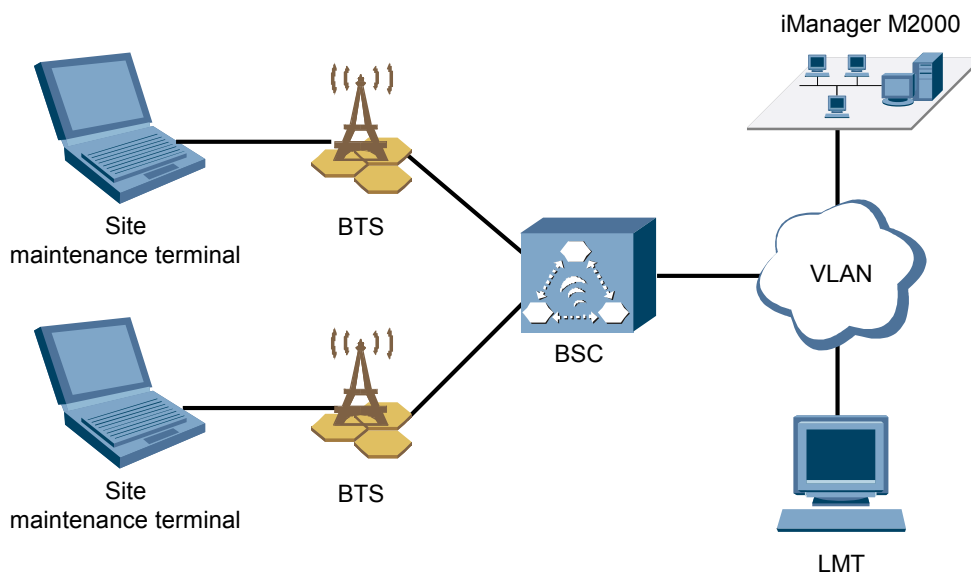
The BTS OM subsystem provides the functions of message sending, software management, test management, equipment management, alarm management, clock management, and transmission management.

9.1 OM Modes of the BTS

The OM of the BTS is performed through the Site Maintenance Terminal, Local Maintenance Terminal (LMT), or network manager.

Figure 9-1 shows the components of the BTS OM subsystem.

Figure 9-1 Components of the BTS OM subsystem



To maintain the BTS, use one of the following three means:

- **Site Maintenance Terminal:** The Site Maintenance Terminal is locally connected to the BTS through the Ethernet. You can use the Site Maintenance Terminal to perform the operations of the following objects: site, cell, Radio Carrier (RC), Baseband Transceiver (BT), and channel. You can also perform the operation by directly clicking a board. You can use the Site Maintenance Terminal to maintain one BTS at a time.
- **Local Maintenance Terminal:** The LMT maintains the BTS through the OM links on the Abis interface, which is an interface between the BSC and the BTS. The LMT communicates with the BSC through a LAN. You can use the LMT to perform the operations of the following objects: site, cell, RC, BT, and channel. The LMT is used to configure and adjust the data of the BSC and the BTS.
- **Network manager:** The iManager M2000 from Huawei can maintain the BTS through the OM network. You can use the M2000 to perform the operations of the following objects: site, cell, channel, and board. You can use the network manager to maintain several BTSs at a time.

Table 9-1 compares the functions among the three OM modes.

Table 9-1 Functions of the BTS OM subsystem

Maintenance Object	Maintenance Items for the Site Maintenance Terminal	Maintenance Items for the LMT	Maintenance Items for the M2000
Site maintenance	View Resource Site Opstart RF Specification Test Site Management Right Forced Software Load Software Activation Site Reset Hierarchically Site Test Environment Monitor Transport Performance Test Ring Topology Parameter Query Bar Code Query Site Alarm Delay Time Query Site Board Parameter Management (for the BTS3012AE only) Optical Transmission Board Command Console (for the BTS3006C only)	Download BTS Software Configure BTS Software Load BTS Software Activate BTS Software Query BTS Running Status Query BTS Attributes Reset BTS in Levels Browse BTS Initialization Process Message Query Board Running Software Version Test BTS Monitor BTS Resource Monitor Environment BTS Work Log Test Transmission Performance Reset BTS Hardware Optical Transmission Board Command Console	Managing the report of performance data Managing NE Users

Maintenance Object	Maintenance Items for the Site Maintenance Terminal	Maintenance Items for the LMT	Maintenance Items for the M2000
Cell maintenance	Cell Attributes Management Cell Extended Attributes Management Cell Opstart Cell Performance Test Change Cell Management State	Modify Administrative State Force Handover Send Cell System Message Query Frequency Scan Configure Frequency Scan	Checking Distribution of Cells Checking Basic Cell Configuration Information Checking CCH Configuration Information Checking Neighbor Cells Monitoring Object Configuration Status Summarizing Alarms of Monitored Objects Blocking/ Unblocking Cells
BT maintenance	BT Opstart BT Reinitialization TRX Full Power Emission Change BT Management State BT Loop Test View Channel State	-	-
RC maintenance	RC Attributes Management RC Extended Attributes Management RC Opstart RC Re-initialization Change RC Management State Get Auto Power Adjustment Type Get RC Power Mode	Modify Administrative State Test TRX Performance Query Power Mode Query Automatic Power Correction Type Test TRX Loopback Test Idle Timeslot Test CODEC Mode Reset TRX	-

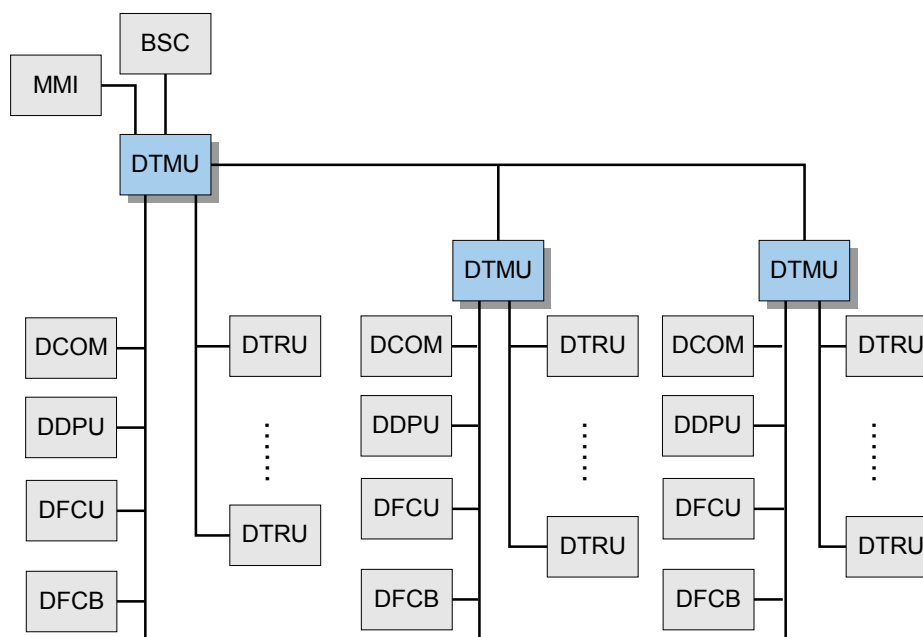
Maintenance Object	Maintenance Items for the Site Maintenance Terminal	Maintenance Items for the LMT	Maintenance Items for the M2000
Channel maintenance	Channel Attributes Management Channel Opstart Change Channel Management State Channel Loop Test	Modify Administrative State Monitor Channel Status Monitor Channel Interference Band Test Channel Loopback	Checking the Information on Basic Cell Configuration Checking the Information on CCH Configuration
Board	Rack Configuration Board Configuration Board Management	Query Board Running Software Version Query Board Match Query Board Bar Code Query Board Information Maintain Clock Reset Board Switch Board Query Power Module Status Reset Smoke Alarm Maintain Battery Set/Query Power Module Parameters	Viewing NE Board Reports Querying Inventory Data

9.2 OM Structure of the BTS

The BTS OM subsystem consists of the OM hardware and the OM software.

OM Hardware Structure

Figure 9-2 shows the OM hardware structure of the BTS3012/BTS3012AE.

Figure 9-2 OM hardware structure of the BTS3012/BTS3012AE

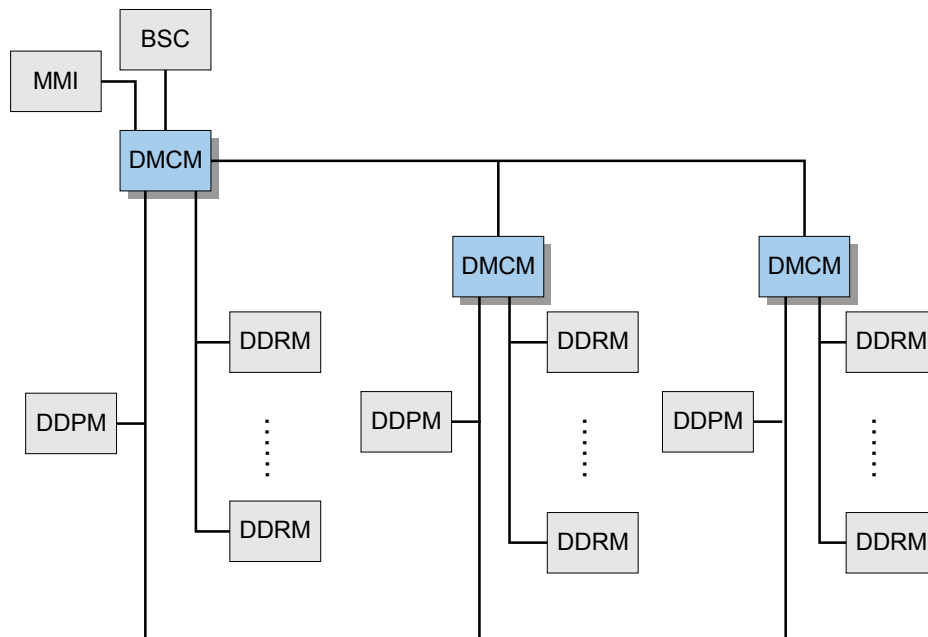
The OM application of the BTS3012/BTS3012AE runs on the DTMU. One end of the DTMU connects to the BSC and MMI, the other end connects to the boards and modules. The DTMUs work in the active/standby mode. The boards manage, monitor, and control all the equipment of one BTS.

The procedure of the BTS3012/BTS3012AE is as follows:

1. The active DTMU receives OM signals from the BSC or the MMI and then sends the OM signals to the standby DTMUs.
2. The DTMUs send the CBUS2 and DBUS signals (through signal conversion of relevant boards) to the DTRUs. The DTMUs also send the CBUS3 signals (through signal conversion of relevant boards) to the DCOM, DDPU, DFCU, or DFCB for processing.
3. The DTRU, DCOM, and DDPU (DFCU or DFCB) report their status to the DTMU.
4. The DTMU obtains the status of the BTS by collecting and analyzing the status of all boards and modules and then transmits the information to the BSC through the Abis interface.

Figure 9-3 shows the OM hardware structure of the BTS3006C.

Figure 9-3 OM hardware structure of the BTS3006C



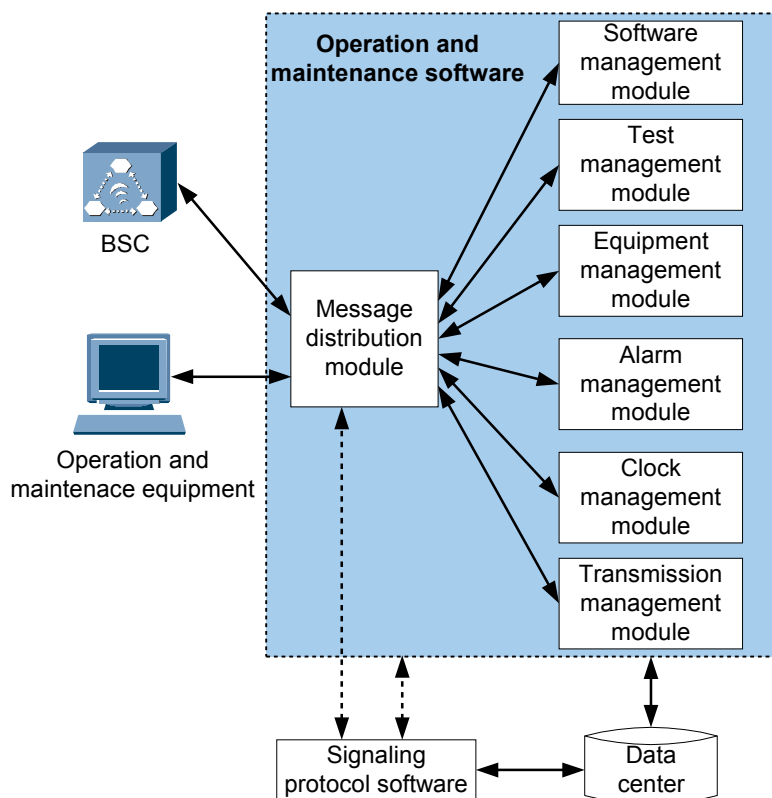
The OM application of the BTS3006C runs on the DMCM. One end of the DMCM connects to the BSC and MMI, the other end connects to the modules of the BTS. The DMCMs work in active or standby mode. The boards manage, monitor, and control all the equipment of one BTS.

The OM procedure of the BTS3006C is as follows:

1. The active DMCM receives OM signals from the BSC or the MMI and then sends the OM signals to the standby DTMUs.
2. The DMCMs send the CBUS2 and DBUS signals (through signal conversion of relevant modules) to the DDRMs. The DMCMs also send the CBUS3 signals (through signal conversion of relevant modules) to the DDPM for processing.
3. The DDRM and DDPM reports their status to the DMCM.
4. The DMCM obtains the status of the BTS by collecting and analyzing the status of all modules and then transmits the information to the BSC and the MMI through the Abis interface.

OM Software Structure

Figure 9-4 shows the OM software structure of the BTS.

Figure 9-4 OM software structure of the BTS

Together with the signaling protocol software, data center, and BSC, the OM software fulfills the , transmission management, and clock management functions. The OM software consists of the following modules:

- Message sending module
- Software management module
- Test management module
- Equipment management module
- Alarm management module
- Clock management module
- Transmission management module

9.3 OM Functions of the BTS

The BTS OM subsystem provides the functions of message sending, software management, test management, equipment management, alarm management, clock management, and transmission management.

- Message Sending
 - Receiving the messages from the BSC, MMI, or other boards, and then sending these messages to the management modules
 - Ensuring that the states of the logical objects and physical objects are consistent in the BSC, DTMU, and boards

- Tracing the messages on the Um interface through the BTS log
- Software Management
 - Downloading the software for the boards
 - Fulfilling the functions such as site configuration, board configuration, and dynamic data configuration
- Test Management
 - Board in-position test
 - Providing the test of Abis links and channels for the DTRU and the self checking for the site, cell, TRX, and board
- Equipment Management
 - Supporting the configuration and management of boards
 - Supporting the management of warm backup for the active and standby DTMUs
- Alarm Management
 - Supporting the fault management of DBUS and CBUS2
 - Providing complete and correct reports in case of errors or alarms occur in the BTS
 - The alarm management mechanism provides extended alarm branch number and alarm combination, shield, and report associated with boards, modules, and environment according to alarm severity levels.
- Clock Management
 - The clock management scheme provides the supply and management of clock, as well as the hot backup for the clock units.
 - The clock management scheme provides flexible ways of TS switching on the BIU to implement various networking modes.
- Transmission Management
 - The transmission management performs the E1 timeslots switching, L1 connection and signaling link L2 management. The transmission management performs the DBUS extension and the optimization of Abis bandwidth allocation strategy.
 - The transmission management configures the parameters for the physical channels and logical channels on the Um interface. These parameters include cell attribute, TRX attribute, and channel attribute.

