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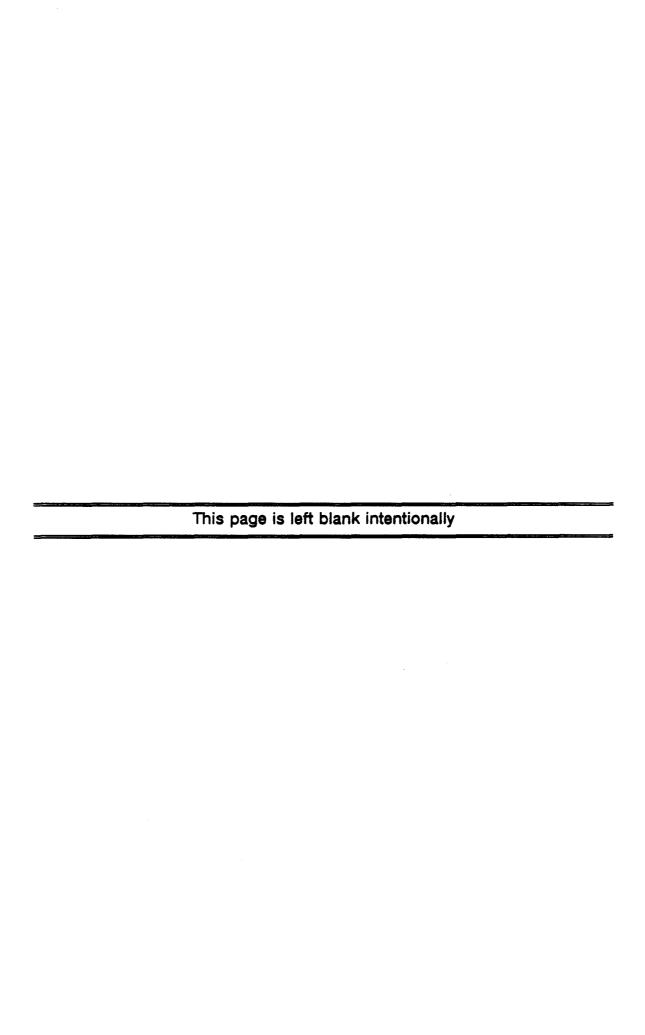

RELEASE NOTE

Recommendation GSM 08.59

BSC - BTS O&M Signalling Transport

Previously distributed version : 3.1.0 (Updated Release 1/90)
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1. Reason for changes

No changes since the previously distributed version.

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ETSI-GSM

Technical

Specification

GSM 08.59

Version 3.1.0

BSC - BTS

O&M

Signalling Transport

ETSI

PREFATORY NOTE

ETSI has constituted stable and consistent documents which give specifications for the implementation of the European Cellular Telecommunications System. Historically, these documents have been identified as "GSM recommendations".

Some of these recommendations may subsequently become Interim European Telecommunications Standards (I-ETSs) or European Telecommunications Standards (ETSs), whilst some continue with the status of ETSI-GSM Technical Specifications. These ETSI-GSM Technical Specifications are for editorial reasons still referred to as GSM recommendations in some current GSM documents.

The numbering and version control system is the same for ETSI-GSM Technical Specifications as for "GSM recommendations".

Title   :   RECOMMENDATION GSM 08.59, Version 3.1.0

BASE STATION CONTROLLER (BSC) TO BASE STATION TRANSCEIVER STATION (BTS) INTERFACE:

OPERATIONS AND MAINTENANCE SIGNALLING TRANSPORT

Contents :   0.   SCOPE

1.   GENERAL

2.   PRINCIPLES

3.   PROTOCOL MODEL

4.   MESSAGE FORMATS AND CODING

0.   SCOPE
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The use and general aspects of the Abis interface are given in recommendation GSM 08.51. The split of telecommunications functions and management procedures between BSC and BTS are defined in recommendation GSM 08.52. The split of operations and maintenance functions and procedures between BSC and BTS is defined in the 12 series of recommendations. Recommendation GSM 12.21 describes the operations and maintenance procedures, messages, and message codings.

This recommendation covers the transport of the messages by Layer 2 frames as defined in recommendation GSM 08.56.

1.   GENERAL

The general architecture for Network Management of the BTS is as in recommendation GSM 12.01. Other architectures can be envisaged, but are not covered by this recommendation. For example, the MMI information can be transported outside the A bis interface.

The use of a man-machine interface at the BTS for local purposes (e.g. during initial installation or maintenance operations) or for communication to the BSC shall be indicated and interpreted locally, by proprietary methods, and is not included in this recommendation. Similarly, the protocols and formats of MMI information across the Abis interface are not included in this recommendation. This recommendation only covers the transparent transport of MMI messages over the Abis interface (see Section 4.2).

Messages conveying commands, responses, reports, files etc., are here referred to as formatted O&M messages. Most formatted O&M messages will be conveyed in single layer 2 frames, but some messages will require more than one frame, and file transfers will require segmentation into many frames. The message format and coding are given in Section 4.1.

Layer 3 O&M messages conveyed across the Abis interface for remote Transcoder/Rate Adaptor Units (TRAU) are defined in Section 4.3.

2. PRINCIPLES

The use of acknowledged and unacknowledged mode on Layer 2 is defined in recommendation GSM 12.21.

2.1 MESSAGE PRIORITY

O&M messages are sent over the Abis interface using the LAP D Layer 2 transport mechanism, at SAPI 62 as defined in GSM 08.56. At this SAPI value, O&M messages share a priority level with Layer 2 management messages, which is higher than that of telecommunications messages. No other priority within O&M messages is specified. At the BTS, O&M messages are sent in the order of availability at the signalling link terminal point. This may be subject to any filtering of fault reports which may be implemented by the BTS. The BSC may organize its own priority and ordering of messages to the BTS if this is so required by the design or procedures.

2.2 ADDRESSING

As implied in the architecture given in recommendation GSM 12.01, some of the messages between the BSC and the BTS may actually originate or terminate at the OMC. The BSC therefore acts both as a transit and as an originating/terminating node for O&M messages. Since messages which transit the BSC may often convey information which should be stored at the BSC, or which require action by the BSC, all messages must be analysed by the BSC to determine their destination or destinations. This means that the BTS cannot know the ultimate physical destinations of messages which it originates, so no BSC addressing is included in the message headers.

In the case of formatted O&M messages BTS source or destination addressing depends on implementation and usually contains some proprietary elements. Such addressing is therefore part of the Layer 3 message content, and neither addressing information nor addressing format is included in this recommendation.

TRAU O&M messages refer to TRAUs connected to particular channels at the BTS (at least for the duration of a call) and addressing of the relevant channel is defined in this recommendation.

3. PROTOCOL MODEL

A protocol model for transport of O&M messages is given in the figure below.

Layer 2 addressing is made to TRX or BCF using the TEI of LAP D. The messages are of the three types described in Section 1. Discrimination between these types is based on the Message Discriminator which is sent as the first octet in all messages.

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                         GSM 12.21
              |           |           |
 ___ __ _ _|_ __ _ _|_ __ _ _|_ __ __ _ __|_ __ __ _
             |           |           |   |
         ┌───────────┬───────────┬─────────┐  |  ┌───────────┐
         │   O&M     │           │         │  |  │           │
         │ Formatted │   MMI     │  TRAU   │  |  │  Layer 2  │
         │ Messages  │ Transfer  │  O&M    │  |  │ Management │
         │           │           │         │  |  │           │
         ├───────────┴───────────┴─────────┤  |  └─────┬─────┘
         │     MESSAGE DISCRIMINATOR        │  |        │
         └───────────────┬─────────────────┘  |        │
     GSM 08.59           |                     |  GSM 08.56
 _ __ __ _ __ _ _ _ _ _ _|_ _ _ _ __ __ _ __|_ _ __ |__ __ _
                         |                     |        │
                     /───────\             /───────\
                     \  62   /             \  63   /
                      \─────/               \─────/
                         │                     │
         ┌───────────────┴─────────────────────┴─────────┐
         │                L2 (08.56)                      │
         └────────────────────────────────────────────────┘
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4. MESSAGE FORMATS AND CODING

This section defines the transport format and coding of the three
Network Management message categories sent over the Abis interface.
The various message categories may be sent in either direction;
directions of transmission are defined in recommendation GSM 12.21. In
each message, the message discriminator identifies the category and is
transmitted first. In a message the octets are sent in the order shown
in the description of the messages. In an octet bit 1 is transmitted
first.

In the following sub-sections M & O are used to denote whether
information elements are mandatory or optional.

4.1. FORMATTED O AND M MESSAGES

The message format and coding of these messages is below:

INFORMATION ELEMENT	M/O	LENGTH	CODING 8 1
Message Discriminator	M	1	1 0 0 0 0 0 0 0
Placement Indicator	M	1	Note 1
Sequence Number	M	1	Note 2
Length Indicator	M	1	Binary, Note 3
O&M Data Field	M	V	

Note 1: The meanings and codings of the Placement Indicator
are:

Only: This message is contained within one segment 1 0 0 0 0 0
0 0

First:The first segment of a multi-segment message 0 1 0 0 0 0
0 0

Middle: A middle segment of a multi-segment message 0 0 1 0 0 0
0 0

Last: The last segment of a multi-segment message   0 0 0 1 0 0
0 0

Note 2: This is the sequence number of the segment in the
message, modulo 256, starting with 00000000. Thus a single
segment message is here coded 00000000, but this does not
inhibit the use of this code in long multi-segment
messages.

Note 3: The Length Indicator gives the length of the O&M data
field which is less than or equal to 255 octets.

Multi-segment messages will be part of an overall procedure as defined
in recommendation GSM 12.21.

4.2 MMI Transfer

INFORMATION ELEMENT	M/O	LENGTH	CODING 8 1
Message Discriminator	M	1	0 1 0 0 0 0 0 0
Placement Indicator	M	1	Note 1 of Sec 4.1
Sequence Number	M	1	Note 2 of Sec 4.1
Length Indicator	M	1	Binary, Note 1
MMI Data Field	M	V	Proprietary

Note 1: The Length Indicator gives the length of the MMI data
field, which is less than or equal to 225 octets.

The protocol for MMI is not covered in this recommendation.

4.3 TRAU O&M Messages

These messages are required for option (ii) of section 4.10.1 of recommendation GSM 08.60. The message format is as below.

INFORMATION ELEMENT	M/O	LENGTH	CODING 8 1
Message Discriminator	M	1	0 0 1 0 0 0 0 0
Channel Number	M	1	Note 1
Repetition Indicator	M	1	Note 2
TRAU O&M Message	O	33	Note 3

Note 1: The channel number element is coded as defined for the octet of the channel number information element of recommendation GSM 08.58.

Note 2: The meanings and codings of the Repetition Indicator are:

- Terminate sending of O&M TRAU frames :0 0 0 0 0 0 0 1

- Repeat sending of O&M TRAU frames
every 20 ms   until a terminate order
is received   :0 0 0 0 0 0 1 0

- Send O&M TRAU frame once: 0 0 0 0 0 1 0 0

Note 3: The TRAU O&M message is not sent when the Repetition Indicator is set to 00000001, but sending of the TRAU O&M Message is mandatory otherwise. All 264 bits of the TRAU O&M frame information field are sent unchanged in the 33 octets.