ETSI/TC SMG
Released by : ETSI/PT 12
Release date: February 1992

RELEASE NOTE

Recommendation GSM 08.01

General Aspects on the BSS-MSC Interface

Previously distributed version : 3.0.1 (Release 1/90)
New Released version February 92 : 3.0.1 (Release 92, Phase 1)

1. Reason for changes

No changes since the previously distributed version.

Blank page

ETSI-GSM
Technical
Specification

GSM 08.01

Version 3.0.1

UDC: 621.396.21

Key words: European Digital Cellular Telecommunications System, Global System for Mobile Communications (GSM)

European digital cellular telecommunication system (phase 1);

General Aspects on the BSS-MSC Interface

ETSI

European Telecommunications Standards Institute

ETSI Secretariat: B.P.152 . F - 06561 Valbonne Cedex . France

TP. + 33 92 94 42 00 TF. + 33 93 65 47 16 Tx. 47 00 40 F

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".

0. SCOPE

This recommendation is an introduction to the 08.0X series of recommendations and deals with the definition of the base station system (BSS) to mobile switching centre (MSC) (referred to as the A-interface) defined for the GSM system.

It also introduces recommendations in the 08.20 series, dealing with the support of data services on this interface.

This recommendation gives an overview of the content of the 08.0X and 08.20 series of recommendations explaining how the detailed content of the recommendations is partitioned and how the recommendations can be used to support a full BSS-MSC interface.

1. A-INTERFACE CAPABILITIES

The BSS-MSC interface shall be capable of supporting all the services offered to GSM users and subscribers. In addition it also allows for the allocation of suitable radio resources within the PLMN, and the operation and maintenance of those resources.

2. A-INTERFACE RECOMMENDATION OBJECTIVES

The MSC to BSS interface recommendations shall allow the following:

i) Connection of various manufacturers BSSs to the same MSC;

ii) The use of several manufacturers MSCs to the same type of BSS;

iii) The use of the same BSS in any PLMN;

iv) The use of the same MSC in any PLMN;

v) The separate evolution of MSC and BSS technology, and;

vi) The separate evolution of O&M facilities.

vii) Evolution towards lower speech coding rates

viii) Support of all services defined in the 02 series of recommendations.

3. A-INTERFACE CHARACTERISTICS

The interface is defined to be at the boundary of the MSC.

The MSC to BSS interface is specified by a set of characteristics, including:

i) Physical and electromagnetic parameters;

ii) Channel structures;

iii) Network operating procedures;

iv) Operation and Maintenance information support

The definition of the MSC to BSS interface follows a layered approach similar to that in the ISDN. Layer 3 is for the most part based on GSM recommendation 04.08 with additional procedures added for the control of radio resources and the identification of transactions using the SCCP. Layer 2 is based on the signalling system No.7 (SS No.7) Message Transfer Part (MTP). Layer 1 is either digital (at 2048 kbit/s, based on CCITT Rec G703 section 6) or analogue with the data being passed by the use of modems (this latter case is a national option).

4. OTHER RECOMMENDATIONS ON THE MSC-BSS INTERFACE

The full structure of the recommendations specifying the MSC to BSS link are as follows:

4.1 Recommendation 08.02 Interface Principles

This recommendation deals with the functional split between the BSS and the MSC. This functional split is then supported by the other recommendations in the 08.0X series.

Recommendation 08.02 also contains some information on the placement of transcoders/rate adapters, these being functionally part of the BSS though a degree of freedom is allowed in their geographical location.

Lastly 08.02 explains the use of transparent and non transparent signalling information across the interface. The key point is that the majority of call related signalling from the MS is passed in a fairly transparent way through the BSS.

4.2 Recommendation 08.04 Layer 1 - Specification

This recommendation defines the physical layer at the BSS-MSC interface point. The physical interface chosen is a 2Mbits/s (32*64kbits/s) interface according to the standard CCITT recommendations.

The speech coding called up in this recommendation is standard A-law, coding of the traffic bit streams for data calls is dealt with in recommendation 04.21 & 08.20.

4.3 Recommendation 08.06 Signalling Transport Mechanism - Specification

In order to pass the signalling information between BSS and MSC some reliable transport mechanism has to be used. The basis of the transport mechanism is an internationally agreed protocol known as signalling system No.7.

Several services are required from this protocol but two key requirements are that messages can be transferred between the BSS and MSC without corruption, and secondly that a transaction with a particular mobile can be identified.

The correct transfer of messages without corruption is handled by the "Message Transfer Part" of SS No.7 and this is documented in Recommendation GSM 08.06 which is an exceptions document to the CCITT specification. The subset so formed is designed so that it is compatible with a "full" MTP such as might be provided at an MSC.

The identification of the transaction involved implies some form of logical connection. This is achieved by using the signalling connection control part of SS No.7. Again a minimum subset is formed in order to ease implementation.

4.4 Recommendation 08.08 Layer 3 Specification

In this recommendation the application parts are described. There are two currently identified in the BSS to MSC interface protocol, these are the:

BSSOMAP

BSSAP

The BSSAP is further subdivided into two subprotocols, the BSSMAP and the DTAP.

The BSSMAP and DTAP are fully defined, the BSSOMAP is only supported in terms of a signalling transport ability.

The DTAP text is split between 08.06 and 08.08 but the text in 08.08 defines which layer 3 air interface messages are passed transparently through the BSS and which are analysed at the BSS.

The BSSMAP (base station system management application part) is that part of the protocol responsible for all aspects of the radio resource handling at the BSS. The text is structured as a set of procedures which are defined separately and can be employed as felt appropriate by the operator/manufacturer to meet the requirements of the application in which it is being used. The procedures themselves can be driven in different modes depending upon the input parameters received from the MSC or sent from the OMC.

The BSSOMAP (base station system operation and maintenance application part) supports all of the O and M communications for the BSS with either the MSC or the BSS. The actual detailed protocol at layer 3 is defined in recommendation GSM 08.09.

4.5 Recommendation 08.20 Rate adaption on the BSS-MSC interface

This recommendation describes the means by which the radio interface data rates are adapted to the 64 kbits/s needed at the MSC and vice versa, down to the bit level.

Blank page