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RELEASE NOTE

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MS-BSS Interface - General Aspects and Principles

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1. Reason for changes

No changes since the previously distributed version.

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MS - BSS Interface
General
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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".

ETSI/GSM

Recommendation GSM 04.01 Approved version 3.0.1

Title : MS-BS interface - General aspects and principles

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0. SCOPE

This Recommendation describes the general aspects and principles relating to the recommendations for the GSM MS-BS interface.

1. GENERAL

1.1. A GSM PLMN supports a wide range of services which a user accesses by a standard set of interfaces at a mobile station (MS). The mobile station is connected to the PLMN fixed infrastructure via a radio path to a base station, as shown in figure 1.

1.2. The MS-BS interface on this radio path is specified in the 04-series of recommendations in such a way as to permit user and network technologies and configurations to evolve separately.

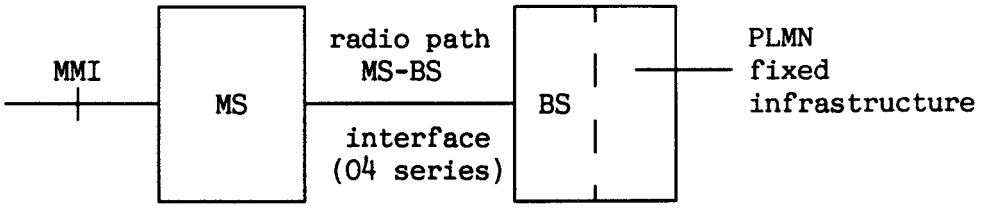


Figure 1 - Basic interfaces for user access for a GSM PLMN.

1.3. The principles and procedures for the man-machine interface (MMI) to the MS are described in Recommendation GSM 02.30. The user may also use standard terminal interfaces within the MS. The reference configuration for the access is described in Recommendation GSM 04.02.

2. INTERFACE APPLICATIONS

Figure 2 shows some examples of the application of GSM MS-BS interfaces. The following cases are shown:

i) access of simple handportable or vehicle mounted MSs;

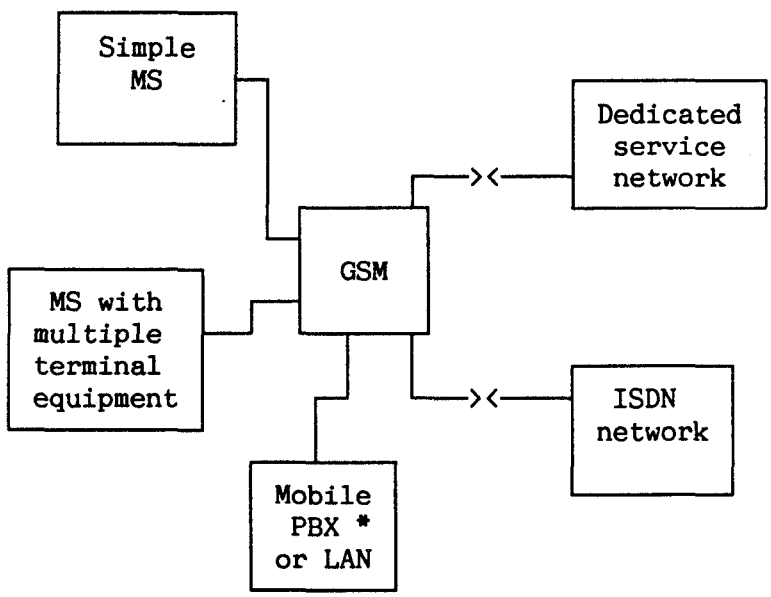
ii) access of an MS with multiple terminal equipment installation;

iii) access of a mobile PBX or LAN;

In addition, the figure identifies internetwork interfaces for connections to:

iv) land-line ISDN networks;

v) dedicated service networks.



* This case has not been specified yet.

Figure 2 - Examples of GSM interfaces.

3. INTERFACE RECOMMENDATION OBJECTIVES

MS-BS interface recommendations should allow:

i) different types of mobile stations and terminal equipment to use the same standard interface;

ii) portability of MSs within the system area of the GSM system;

iii) separate evolution of both mobile stations and network equipment technologies and configurations;

iv) calls to a terminal using the same code (call number) no matter in what country it is actually located;

v) connections of an MS to the ISDN network so that only the radio channel capacity and the ISDN protocol are limiting factors.

4. INTERFACE CHARACTERISTICS

The MS-BS interface is specified by a comprehensive set of characteristics, including:

i) channel structures and access capabilities;

ii) user-network (MS-BS) protocols;

iii) maintenance and operation characteristics;

iv) performance characteristics;

v) service characteristics.

5. INTERFACE CAPABILITIES

In addition to the multiservice capability, the GSM MS-BS interface may allow for capabilities such as the following:

i) multidrop and other multiple terminal arrangements;

ii) choice of informaion bit rate, circuit or packet switching mode, layer 2 coding method, etc..., on a call-by-call or other basis (e.g. semipermanent, or subscription time option), over the same interface according to the user's need;

iii) capability for compatibility checking in order to check whether calling and called terminals can communicate with each other.

6. RECOMMENDATIONS ON GSM MS-BS INTERFACES

6.1. The reference configurations for the GSM MS-BS interface define the terminology for various reference points. Recommendation GSM 04.02 contains the GSM PLMN access reference configuration.

6.2. Recommendation GSM 04.03 defines the channel structures and access capabilities for the MS-BS interface. A distinction is necessary between the logical channel structure supported by the interface and the access capability supported by the radio path of the system.

6.3. The MS-BS interface as defined in recommendations GSM 04.04 through 04.10 is applicable to a wide range of situations.

7. PROTOCOL MODELLING PRINCIPLES

7.1. The signalling protocols on the MS-BS Interface are specified using the concepts of the reference model of Open System Interconection (OSI) given in CCITT recommendations X.200 and X.210.

7.2. The basic structuring technique in the OSI reference model is layering. According to this technique, communication among application processes is viewed as being logically partitioned into an ordered set of layers represented in a vertical sequence as shown in figure 3.

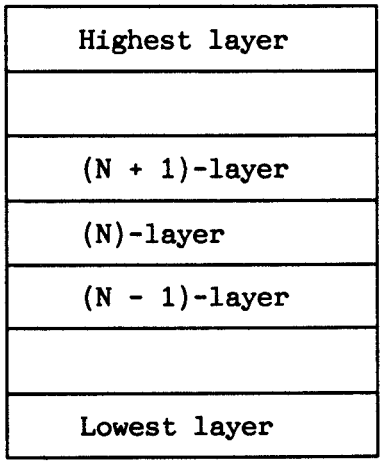


Figure 3 - Layering.

Entities exist in each layer. Entities in the same layer, but in different systems which must exchange information to achieve a common objective are called "peer entities". Entities in adjacent layers interact through their common boundary. The services provided by the (N + 1)-layer are the combination of the services and functions provided by the (N)-layer and all layers below the (N)-layer.

Management functions may also be required. They may include functions which are common for several layers and are not supported by the services provided by a specific layer. Examples of such functions are error reporting, status reporting and management of the operation of certain layers. Such management functions do not require that peer-to-peer messages are sent across the MS-BS interface.

7.3. For signalling on the MS-BS interface three layers are required as shown in figure 4.

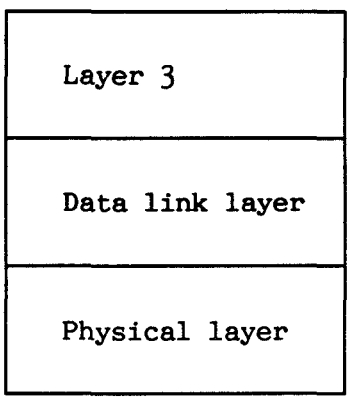


Figure 4 - Layering on the MS-BS interface.

The layers are:

- PHYSICAL LAYER which corresponds to the lowest layer. The functions and protocols of the physical layer are defined in recommendation GSM 04.04.

- DATA LINK LAYER. The functions and protocols of the data link layer are defined in recommendations GSM 04.05 and 04.06.

- LAYER 3. The functions and protocols of layer 3 are defined in recommendations GSM 04.07, 04.08 and 04.10.

The MOBILE MANAGEMENT ENTITY is defined in recommendation GSM 04.09.

7.4. Layer-to-layer interactions are specified in terms of service primitives. The primitives represent, in an abstract way, the logical exchange of information and control between adjacent layers. They do not specify or constrain implementation.

Primitives are also used to describe information exchange between layers and the mobile management entity.

The primitives that are exchanged between the (N + 1)-layer and the (N)-layer are of the following four types (see figure 5).

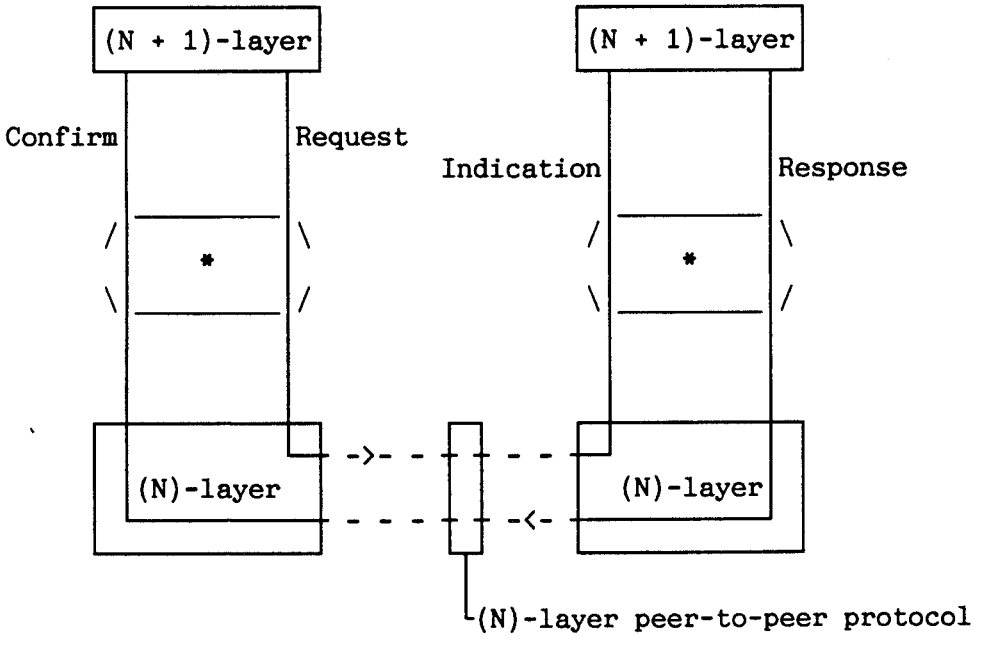


Figure 5 - Primitive action sequence for peer-to-peer communication.

The REQUEST primitive type is used when a higher layer is requesting a service from the next lower layer.

The INDICATION primitive type is used by a layer providing a service to notify the next higher layer of activities related to the primitive type REQUEST.

The RESPONSE primitive type is used by a layer to acknowledge receipt, from a lower layer, of the primitive type INDICATION.

The CONFIRM primitive type is used by the layer providing the requested service to confirm that the activity has been completed.