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SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS

International operation – Maritime mobile service and public land mobile service

Structure of the land mobile global title for the signalling connection control part (SCCP)

ITU-T Recommendation E.214

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ITU-T Recommendation E.214

Structure of the land mobile global title for the
signalling connection control part (SCCP)

Summary

The purpose of this Recommendation is to define the structure of the Mobile Global Title (MGT) used in Signalling Connection Control Part (SCCP)-addressing of Public Land Mobile Networks (PLMNs), and to establish the relationship between the MGT and the International Mobile Subscriber Identity (IMSI) as defined in ITU-T Rec. E.212.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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1 Scope

In order to permit land mobile subscribers to roam, there is a need to transfer information, e.g., the mobile subscriber roaming number between Public Land Mobile Networks (PLMNs). This transfer of information can be accomplished by the use of Transaction Capabilities (TC) and the Signalling Connection Control Part (SCCP) of Signalling System No. 7 (SS7).

When a land mobile subscriber roams to a foreign PLMN, it registers with a Visited Location Register (VLR) within that PLMN. The only information available to the VLR to address the mobile's Home Location Register (HLR) is its International Mobile Subscriber Identity (IMSI).

The purpose of this Recommendation therefore is to define the structure of the MGT used in SCCP-addressing of PLMNs, and to establish the relationship between the MGT and the IMSI as defined in ITU-T Rec. E.212.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

–   ITU-T Recommendation E.164 (2005), *The international public telecommunication numbering plan*.

–   ITU-T Recommendation E.165 (1988), *Timetable for coordinated implementation of the full capability of the numbering plan for the ISDN era (Recommendation E.164)*.

–   ITU-T Recommendation E.190 (1997), *Principles and responsibilities for the management, assignment and reclamation of E-series international numbering resources*.

–   ITU-T Recommendation E.212 (2004), *The international identification plan for mobile terminals and mobile users*.

–   ITU-T Recommendation E.213 (1988), *Telephone and ISDN numbering plan for land mobile stations in public land mobile networks (PLMN)*.

3 Definitions

This Recommendation defines the following term.

3.1   network code (NC): The Network Code (NC) can be the E.164 National Destination Code (NDC), or some leading digits of the E.164 National (Significant) Number (N(S)N). The CC + NC should be less than or equal to seven digits.

4 Abbreviations

This Recommendation uses the following abbreviations:

CC   E.164 Country Code (as specified in ITU-T Rec. E.164)

HLR   Home Location Register

IMSI   International Mobile Subscriber Identity

ITU-T   International Telecommunication Union – Telecommunication Standardization Sector

MCC   Mobile Country Code (as specified in ITU-T Rec. E.212)

MNC   Mobile Network Code (as specified in ITU-T Rec. E.212)

MSIN   Mobile Subscriber Identification Number (as specified in ITU-T Rec. E.212)

NDC   National Destination Code (as specified in ITU-T Rec. E.164)

N(S)N   National (Significant) Number (as specified in ITU-T Rec. E.164)

PLMN   Public Land Mobile Network

SCCP   Signalling Connection Control Part

SS7   Signalling System No. 7

TC   Transaction Capabilities

TSB   Telecommunication Standardization Bureau

VLR   Visited Location Register

5 Considerations

The considerations which form the basis of the Mobile Global Title (MGT) for the land mobile service are as follows:

5.1   The MGT shall be derived from the international mobile subscriber identity in a simplified manner.

5.2   There could be a number of PLMNs in a country.

5.3   The MGT shall permit the identification of the country as well as the PLMN in which the mobile subscriber is registered.

5.4   The MGT should, as an option, permit the identification of the home location register (HLR) of the mobile subscriber.

5.5   The length of the MGT should be minimized.

5.6   The MGT should enable the fixed network exchanges to utilize existing routing information in order to identify the PLMN.

5.7   ITU-T Recs E.164, E.165, E.212 and E.213 are applicable.
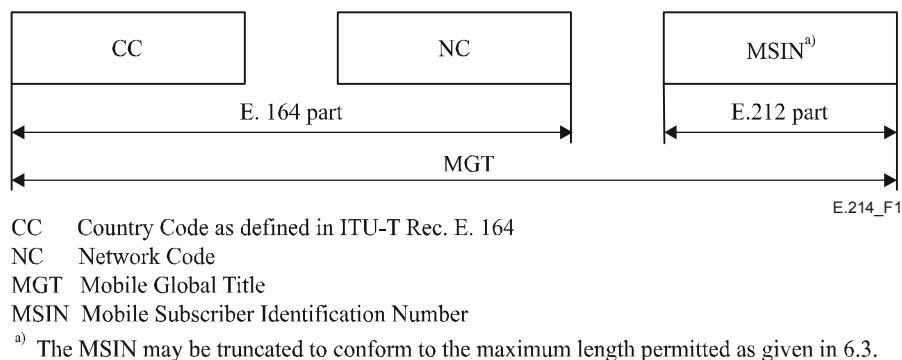
6 Global title principles

6.1 Structure of the mobile global title

The mobile global title is of variable length and composed of decimal digits arranged in two specific parts. These specific parts are the E.164 and the E.212 part.

The E.164 part is used to identify the country and the PLMN, or PLMN and HLR, where the mobile subscriber is registered. To accomplish this, the E.164 part comprises a Country Code (CC) as defined in ITU-T Rec. E.164 and a Network Code (NC). The NC can be the E.164 National Destination Code (NDC), or some leading digits of the E.164 National (Significant) Number (N(S)N). The NC would identify the PLMN or HLR within the PLMN. The number of E.164 digits required for identification may vary from network to network, and must be established by bilateral agreement.

The E.212 part is used to identify the mobile subscriber, or the mobile subscriber and its HLR and is composed of the mobile subscriber identification number as defined in ITU-T Rec. E.212.

Figure 1 shows the structure of the mobile global title:

CC   Country Code as defined in ITU-T Rec. E. 164
NC   Network Code
MGT   Mobile Global Title
MSIN Mobile Subscriber Identification Number
[a]   The MSIN may be truncated to conform to the maximum length permitted as given in 6.3.

Figure 1/E.214

6.2 Derivation of the mobile global title from the International Mobile Subscriber Identity (IMSI)

The MGT is derived from the IMSI (ITU-T Rec. E.212) in the manner shown in Figures 2 and 3. The difference in the two methods is dependent upon whether the E.164 Country Code is a country code used in an integrated numbering plan. If the E.164 country code is from an integrated numbering plan, the method shown in Figure 3 must be utilized to distinguish between providers within that numbering plan.

In Figure 2, the E.164 CC is derived directly from the MCC and the NC is derived either directly from the MNC, or from the MNC and some initial digits of the Mobile Subscriber Identification Number (MSIN). The MSIN is mapped directly into the MGT, up to its maximum length.
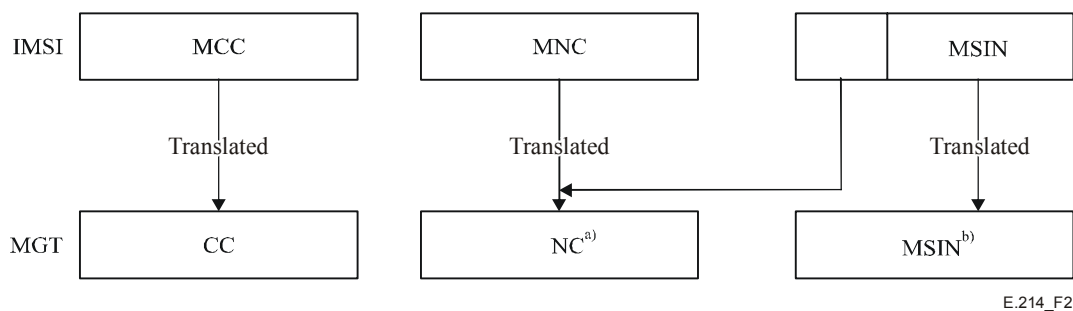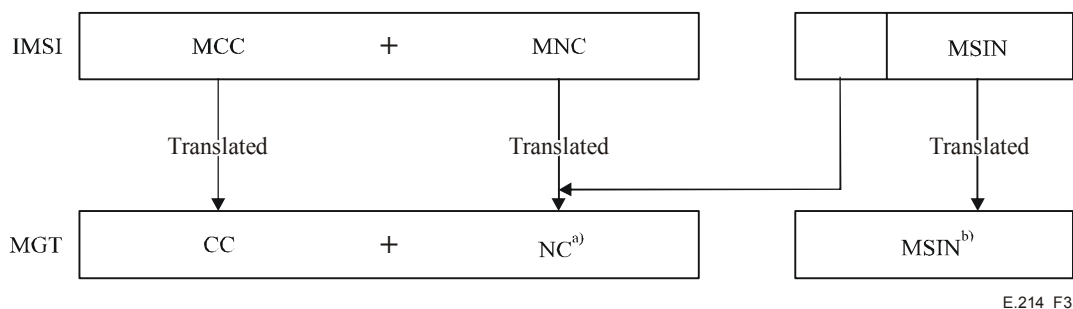

E.214_F2

MCC   E.212 Mobile Country Code
MNC   E.212 Mobile Network Code

[a] The NC can be the E.164 National Destination Code (NDC), or some leading digits of the E.164 National (Significant) Number (N(S)N). CC + NC should be less than or equal to seven digits.

[b] The MSIN may be truncated to conform to the maximum length permitted in 6.3.

Figure 2/E.214

In Figure 3, the E.164 CC + NC combination is derived from the MCC + MNC taken together rather than separately or from the MCC + MNC + some initial digits of the MSIN. This method must be used to distinguish between providers in an integrated E.164 numbering plan.

E.214_F3

MCC   E.212 Mobile Country Code
MNC   E.212 Mobile Network Code

[a] The NC can be the E.164 National Destination Code (NDC), or some leading digits of the E.164 National (Significant) Number (N(S)N). CC + NC should be less than or equal to seven digits.

[b] The MSIN may be truncated to conform to the maximum length permitted in 6.3.

NOTE – This method must be used if CC is an integrated numbering plan.

Figure 3/E.214

6.3   Length of mobile global title

The mobile global title will be of variable length, but with a maximum of 15 digits. Therefore, if necessary, the least significant digits of the MSIN will be omitted in order to conform with the maximum length of the MGT.

6.4 Analysis of the mobile global title

In order to permit fixed network nodes to utilize existing resources, digit analysis in the originating country will conform to ITU-T Rec. E.164. See also ITU-T Rec. E.165.

Further analysis beyond this requirement shall be by bilateral agreement.

The analysis of the E.212 part of the mobile global title in the destination fixed network is a national matter.

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