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

Operation, numbering, routing and mobile service –
International operation – General provisions concerning
Administrations

**Computerized information service for telephone
subscriber numbers in foreign countries
(directory assistance), reserved for operators**

Reedition of CCITT Recommendation E.115 published in
the Blue Book, Fascicle II.2 (1988)

NOTES

1 CCITT Recommendation E.115 was published in Fascicle II.2 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation E.115

COMPUTERIZED INFORMATION SERVICE FOR TELEPHONE SUBSCRIBER NUMBERS IN FOREIGN COUNTRIES (DIRECTORY ASSISTANCE), RESERVED FOR OPERATORS

1 Preamble

The method to be followed in providing the customers and operators in one country with information on the national significant telephone numbers (as specified in Recommendation E.160) of subscribers in another country depends on the way the information service is organized in the country of destination, distance between the countries, operating procedures, etc.

2 Methods of obtaining information

The operator in the country of origin dealing with international inquiries should be able to obtain information, depending on the organization of the inquiry service in each country, by one of the following methods:

- a) from telephone directories;
- b) from other information systems sent by the country of destination and kept up-to-date (e.g., microfiches);
- c) by calling the information service operator in the country of destination:
 - outgoing operators in the originating country should, where language and other conditions permit, have direct access to the appropriate foreign information centre(s) which hold, or are able to obtain from other centres up-to-date information;
 - where language and other conditions do not permit the outgoing operator to have direct access to the appropriate foreign information centre, the outgoing operator should call the operator in the international exchange of the country of destination;
 - where access to a number of information centres is possible, provision should be made for access to a centralized international information centre or assistance operator in case the originating operator encounters language or other difficulties;
- d) by having access to foreign information service computers:
 - either via a national computer using appropriate procedures;
 - or, in special circumstances, via direct access using dedicated or switched connections.

3 General principles applicable to the various methods of obtaining information

In any relation, Administrations should abide by the following general principles:

- a) Inquiries from customers concerning foreign subscribers' numbers should normally be addressed to operators in the country of origin who will obtain the required information; it may be useful to keep the customer on line while this information is being sought.
- b) In order to give operators in the country of origin ready access to the international telephone inquiry service in other countries, it is desirable that Administrations, in conformity with Recommendation E.149, provide common routing codes or abbreviated access numbers to the foreign computerized or manual telephone inquiry services.
- c) Technical arrangements should, as far as practicable, prevent access by a subscriber of one country to an operator of the telephone information service of another country. Administrations should not communicate access numbers of telephone information services in foreign countries to their subscribers (except in cases covered in Recommendation E.128).
- d) Exceptionally, however, subscribers in one country may be permitted to have access to the information service in another country subject to bilateral agreement between the Administrations concerned.
- e) An international system should be able to provide:

- for the desired correspondent: his international number;
 - for the locality in which this correspondent resides: the country code and the trunk code.
- f) No secret numbers should be issued.

4 Principles for the organization of an interconnected computerized international information service

For the organization of an interconnected computerized international information service, Administrations should abide by the following principles:

- a) The international system should be so designed that national systems can be used; each Administration should adapt its system to the international system by means of the appropriate interface procedures.
- b) The operator should be able to supply the fullest search data possible, in order to avoid a situation in which the number of subscribers matching the search criteria exceeds the maximum capacity of a single response message.
- c) To overcome language difficulties, the questions put to a remote system containing the file to be consulted should be formulated in the language used in the country concerned. This means that the language problems raised by certain inquiry and response features should be resolved by the country making the inquiry.
- d) Where, in a given country, the files have been allocated to different computers integrated in a single system, access to the system from a foreign country should be possible via a designated computer.
- e) Formats for inquiry and response procedures should be standardized.
- f) A question should give rise to only one response message with no dialogue between computers. The response message may cover several subscribers where such subscribers match the search characteristics introduced in the system. The maximum number of subscribers mentioned in a response message depends both on the maximum capacity prescribed for the type of message in question and on the limitations imposed by national systems. Any dialogue concerning all the information provided should be prepared at the national level.
- g) With regard to the management of messages, there is no relationship between the inquiry and the response; where for any reason the response to a particular question has not been obtained, the inquiry must be reiterated by the requesting country and on its initiative.
- h) To realise the interconnection of computers of different countries, the network procedures described in Annex A should be used. For the highest levels (above level 3), the procedures will be the subject of further study.
- i) The structure and coding of the Entry and Reply formats will use the notation defined in Recommendations X.208 and 209, and are described in Annex B.

5 Description of the standards used for inquiry and response

When operator access is given via a national computer to foreign information service computers, unless modified by bilateral agreement, the following *minimum* standards should apply to the inquiry and response process, to permit maximum flexibility in the national information service and compatibility with the international information service.

5.1 Input information

5.1.1 The operator should request information using the details supplied by the caller, according to the following format:

- country, locality (geographical area), surname, first name(s) or initial(s), trade or residential address (street name and number), supplementary data (according to bilateral agreement).

5.1.2 Country code, locality (or geographical area) and surname are minimum requirements.

5.1.3 The foreign system should reply to every question asked. If the foreign computer indicates that the information supplied is insufficient, the question should be repeated with more selective information.

5.1.4 Certain specified conditions, i.e. the number is not available (secret number, no listing, etc.) or further information has to be obtained, may be indicated by a standardized coded response.

5.2 *Output information*

The output from the foreign computer system should give the following information as available in the data base, in order to identify the accuracy of the telephone number:

- surname, first name(s) or initial(s), address, locality, country code, national significant number.

5.3 *Alphabet to be used*

5.3.1 The Latin alphabet should be employed for inquiries and responses in communication between computers. The systems must in general be able to use the following characters:

- 26 capital letters A-Z,
- 10 figures 0-9,
- space, full stop.

according to International Telegraph Alphabet No. 2 (Recommendation S.1 [1]).

5.3.2 Special signs associated with letters are not transmitted.

5.4 *Description of standardized inquiry and response messages*

The standard formats for inquiry and response shown in Figure 1/E.115 should be used¹⁾.

5.4.1 *Inquiry format*

The question contains the following information:

a) *Message heading*

1) obligatory

- message code identifying a request to the international inquiry service;
- codes identifying the countries of origin and destination; these codes normally consist of the country code (see Recommendation E.163);
- code of the originating terminal. This code should not be used by the receiving country but should be repeated in identical fashion in the response format.

2) optional

- areas reproduced identically in the response:
 - i) date and time of the origin of the inquiry:

Format: YYMMDDHHMMSS

- ii) message number given by the local country.

b) *Data*

1) basic data

- locality

The name of the locality should be introduced according to its exact²⁾ spelling. Special signs should be replaced by spaces and each space must be introduced as a space.

Abbreviations are not permitted, except for the words “Sint”, “Saint”, “Sankt”, “San”, . . . , which are abbreviated by the letter “S” followed by a space.

The mandatory minimum number of characters to be input should be fixed by each country and be mentioned in an operator’s manual. The system of the outgoing country should check whether this minimum is respected. When the name is completely input, it should be followed by a full stop.

1) The use of punctuation marks will be studied at a later stage.

2) The problem of exact native spelling is subject to further study.

- surname or trade name of subscriber

The subscriber's surname should be input according to its exact spelling.

Special signs, including the full stop, should be replaced by spaces and each space must be introduced as a space. Abbreviations should not be allowed. The mandatory minimum number of characters to be input should be fixed by each country and be mentioned in the operator's manual.

The system of the outgoing country should check whether this minimum is respected. When the surname is completely input, it should be followed by a full stop. When the subscriber's surname or trade name is replaced by initials, the characters composing the acronym should be introduced successively without being separated by special signs or spaces.

Numbers forming part of names or acronyms should be introduced as numbers.

2) additional data (for making the search easier)

- name of street or address

The name of the street should be input according to its exact spelling, the complete name of the street being retained. Special signs, including the full stop, should be replaced by spaces and each space must be input as a space.

The words "Sint", "Saint", "Sankt", "San", . . . , should be abbreviated by the letter "S" followed by a space. The mandatory minimum number of characters to be input should be fixed by each country and be mentioned in the operator's manual. The system of the outgoing country should check whether this minimum is respected. If the name is completely input, it should be followed by a full stop. Numbers forming part of the name of the street should be introduced as numbers.

- number of premises

The numerical part of the house number should precede the alphabetical part without separation. Non-significant zeros should be omitted.

- subscriber's first name

Entire first names, initials or a combination of first names and initials should always be separated by spaces.

| Message heading | | | | | Data | | | | | | |
|--------------------|--------------------------|---------------------------|---------------|----------------|----------|-------------------------------------|---------------------------|--------------------|------------|-----------------|--------------------|
| Message indicators | International indicators | Originating terminal code | Date and time | Message number | Locality | Surname or trade name of subscriber | Name of street or address | Number of premises | First name | Additional data | |
| | | | | | | | | | | Code | Definition of code |

a) Format of the inquiry

| Message heading | | | | | Data I | | | | | | | | | | Data 2-n | |
|--------------------|--------------------------|---------------------------|---------------|----------------|--------------|----------------------|------------|--|----------|-------------------------------------|--------------------------|---------------------------|--------------------|--------------------|--------------------|------------------------------------|
| Message indicators | International indicators | Originating terminal code | Date and time | Message number | Message code | International prefix | Trunk code | Telephone number of subscriber requested | Locality | Surname or trade name of subscriber | First name of subscriber | Name of street or address | Number of premises | Supplementary data | Subscriber message | Each item is the same as in Data I |

b) Format of the reply (total length: maximum 3 000 bytes)

FIGURE 1/E.115
Standard formats for inquiry and response

- supplementary data

This data will not be introduced without there first being a bilateral agreement; it must be preceded by a 2-character code.

The following codes have been defined:

00 = the heading in the guide (e.g., schools)

01 = profession code

02 = instruction for a selective search

03 = the country or province

04 = the category to which the required subscriber number belongs: business, residential or public service.

On the basis of the above data, the computer of destination searches in its files.

5.4.2 *Structure of the inquiry*

ENTRY message

1010 0000 Directory message (telephone)
LENGTH

1010 0000 Telephone (entry)
LENGTH

0011 0000 Entry
LENGTH

0110 0000 Part 1
LENGTH

1000 0000 Message indicators
LENGTH
Message indicators

1000 0001 International indicators
LENGTH
International indicators

1000 0010 Originating Terminal code
LENGTH
Originating Terminal code

1000 0011 Date and Time (optional)
LENGTH
Date and Time

1000 0100 Message number (optional)
LENGTH
Message number

0110 0001 Part 2
LENGTH

1000 0000 Locality
LENGTH
Locality

1000 0001 Subscriber name
LENGTH
Subscriber name

1000 0010 Street name (optional)
LENGTH
Street name

| | |
|--------------------------------------|---|
| 1000 0011 | House number (optional) |
| LENGTH | |
| House number | |
| 1000 0100 | First name (optional) |
| LENGTH | |
| First name | |
| 1000 0101 | Heading (optional) |
| LENGTH | |
| Heading | |
| 1000 0110 | Profession (optional) |
| LENGTH | |
| Profession | |
| 1000 0111 | Supplementary information for search (optional) |
| LENGTH | |
| Supplementary information for search | |
| 1000 1000 | Country/Province (optional) |
| LENGTH | |
| Country/Province | |
| 1000 1001 | Category (optional) |
| LENGTH | |
| Category | |

5.4.3 *Response format*

The response contains the following information:

a) *Message heading*

1) obligatory

- message code identifying an answer to the international inquiry service;
- codes identifying both the answering country and the requesting country; these codes normally consist of the country code (see Recommendation E.163);
- code of the originating terminal.

2) optional

- areas generated by the country of the input message:
 - i) date and time
 - ii) message number.

b) *Message code and international prefix*

- message code

Always included and common in all answer messages. The coded message must be converted to text by the calling country.

The following codes have been defined:

00 = one or some subscribers have been found

01 = locality insufficiently defined; no subscriber number is forthcoming

02 = street name insufficiently defined; no subscriber number is forthcoming

03 = no subscriber has been found

04 = fault or congestion; no subscriber number is forthcoming

05 = the number of subscribers who correspond to the selection criteria exceeds the maximum capacity for the message. Re-enter the question with more precise information. No subscriber number is forthcoming.

06 = partial fault or congestion. The list of subscriber numbers who correspond to the selection criteria is not complete.

07 = the number of subscribers who correspond to the selection criteria exceeds the maximum capacity of the message. The list of subscriber numbers answering to the selection criteria is not complete. Re-enter eventually the question using more precise indicators.

08 = insufficient search elements have been entered. Re-enter the question with more information. No subscriber number is forthcoming.

- international prefix (in accordance with the CCITT Recommendations) – 3 characters:
 - i) aligned from the left (if necessary, supplemented by spaces).

c) *Data I*

- trunk code (in accordance with the CCITT Recommendations) – 5 characters
- zone number: aligned from the left (if necessary, supplemented by spaces);
- zeros if no subscriber has been found or if a subscriber's number is not to be disclosed;
- subscriber's number (in accordance with the CCITT Recommendation) – 8 characters:
 - i) aligned from the left (if necessary, supplemented by spaces),
 - ii) zeros if no subscriber has been found or if a subscriber's number is not to be disclosed;
- locality, subscriber's surname or trade name, first name, address, number of premises, supplementary data;
- data concerning the subscriber found. If no subscriber has been found, the zone of the corresponding data in the question format;
- subscriber message:

the coded message which must be converted into text by the calling country.

The following codes have been defined:

00 = no comment

01 = subscriber changed address

02 = refer to distant operator.

d) *"Data 2-n"*

- contains the continuation of the selection if other subscribers have been selected. Each supplementary selection uses the same form as in the layout *"data I"*.

5.4.4 *Structure of the response*

REPLY message

1010 0000 Directory message (telephone)
LENGTH

1010 0001 Telephone (reply)
LENGTH

0011 0000 Reply
LENGTH

0110 0011 Part 1
LENGTH

1000 0000 Message indicators
LENGTH
Message indicators

1000 0001 International indicators
LENGTH
International indicators

1000 0010 Originating terminal code
LENGTH
Originating terminal code

1000 0011 Date and time (optional)
 LENGTH
 Date and time

1000 0100 Message number (optional)
 LENGTH
 Message number

0110 0100 Part 2
 LENGTH

1000 0000 Message code
 LENGTH
 Message code

1000 0001 International prefix
 LENGTH
 International prefix

0110 0101 Part 3 (optional)
 LENGTH

0011 0001 Selection
 LENGTH

 1000 0000 Trunk code
 LENGTH
 Trunk code

 1000 0001 Telephone number
 LENGTH
 Telephone number

 1000 0010 Locality
 LENGTH
 Locality

 1000 0011 Subscriber name
 LENGTH
 Subscriber name

 1000 0100 First name (optional)
 LENGTH
 First name

 1000 0101 Street name
 LENGTH
 Street name

 1000 0110 House number
 LENGTH
 House number

 1000 0111 Supplementary data (optional)
 LENGTH
 Supplementary data

 1000 1000 Subscriber message (optional)
 LENGTH
 Subscriber message

 0011 0001 Selection
 LENGTH

 1000 0000 Trunk code
 LENGTH
 Trunk code

5.4.5 The different parts of the inquiry formulated by the operator of the country of origin should be converted by the national computer into the international standard format. The different parts of the response transmitted in the international standard format should be converted by the computer of the country which made the request into its national format.

6 Charges

Note – As specified in Article 106 of the *Instructions for the International Telephone Service* [2], no charge is made for obtaining information in accordance with Article 51 of the *Instructions*, even when this requires the use of an international circuit.

However, some Administrations may reserve the possibility of applying certain charges in the future. The amounts charged would remain a national arrangement.

ANNEX A

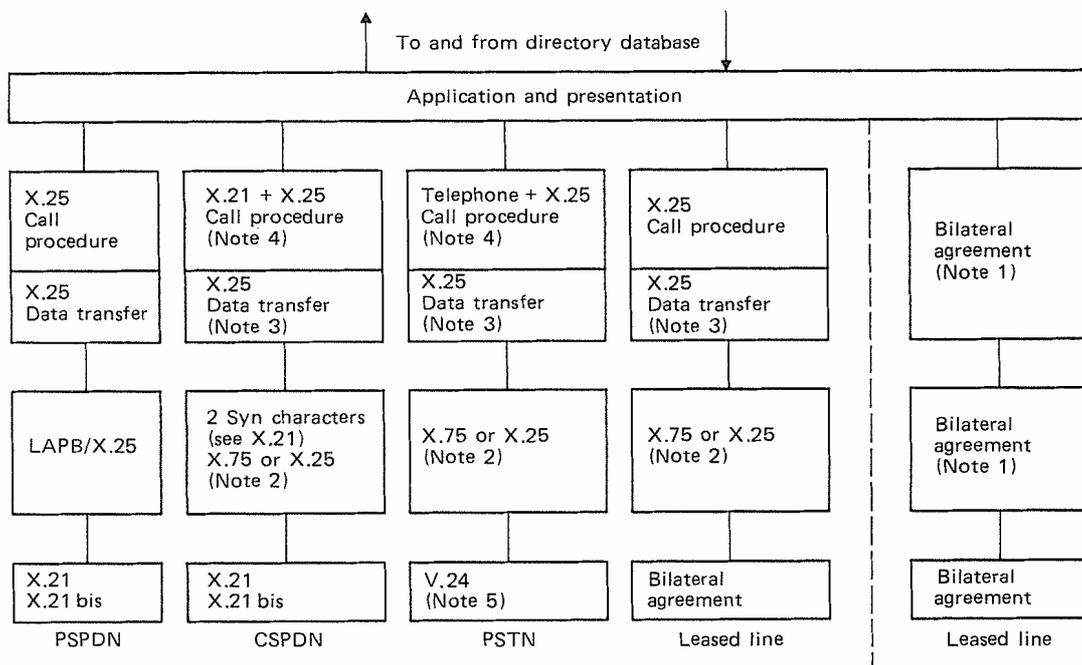
(to Recommendation E.115)

Directory services interconnect bearer services

A.1 Introduction

The interconnection of International Directory Databases should be network independent.

The general structure for the arrangement of the physical link (OSI layer 1), link access (OSI layer 2) and network layer (OSI layer 3) are as outlined in Figure A-1/E.115. Where Administrations have provided similar equipment, interconnection may be arranged by bilateral agreement to suit local requirements. This method of interconnection is solely the matter of the Administrations concerned.



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Note 1 – Where Administrations have provided similar equipments, they may be interconnected to suit bilateral arrangements.

Note 2 – The link procedures are in accordance with Recommendation X.75 for single link operation.

Note 3 – The X.25 network layer is introduced to ensure a common procedure at layer 3 for all types of network connection.

Note 4 – The network connection is established by a two-stage selection; the first using normal telephone network procedures and the second using X.25 call control procedures.

Note 5 – For automatic calling and/or answering, Recommendation V.25 may be applicable. Full duplex operation using modems in accordance with Recommendation V.32 is preferred.

FIGURE A-1/E.115

A.2 *Identification*

The types of bearer services considered applicable for directory inquiry interconnect are:

- i) packet switched public data network (PSPDN);
- ii) circuit switched public data network (CSPDN);
- iii) public switched telephone network (PSTN);
- iv) Administration leased line (point-to-point).

With possible evolution to ISDN, Signalling System No. 7 includes message transfer part and message handling systems.

A.3 *Network interconnection*

The choice of network to be used for the interconnection of computer-based directory systems should be agreed bilaterally. However, to achieve commonality across all types of networks, the link, data transfer and call procedures, as specified in the appropriate Recommendations, should be used.

ANNEX B

(to Recommendation E.115)

Formal definitions of directory messages

Directory Message ::= CHOICE {Telephone [1], Other [0]}

Telephone ::= CHOICE {Entry [0], Reply [1]}

Entry ::= SEQUENCE {Part 1, Part 2}

Part 1 ::= [APPLICATION 0] IMPLICIT SET {
 MessageIndicators [0] IMPLICIT IA5String,
 InternationalIndicators [1] IMPLICIT IA5String,
 OriginatingTerminalCode [2] IMPLICIT IA5String,
 DateAndTime [3] IMPLICIT IA5String OPTIONAL,
 MessageNumber [4] IMPLICIT IA5String OPTIONAL}

Part 2 ::= [APPLICATION 1] IMPLICIT SET {
 Locality [0] IMPLICIT IA5String,
 SubscriberName [1] IMPLICIT IA5String,
 StreetName [2] IMPLICIT IA5String OPTIONAL,
 HouseNumber [3] IMPLICIT IA5String OPTIONAL,
 FirstName [4] IMPLICIT IA5String OPTIONAL,
 Heading [5] IMPLICIT IA5String OPTIONAL,
 Profession [6] IMPLICIT IA5String OPTIONAL,
 SupplementaryInfoForSearch [7] IMPLICIT IA5String OPTIONAL,
 CountryOrProvince [8] IMPLICIT IA5String OPTIONAL,
 Category [9] IMPLICIT IA5String OPTIONAL}

Reply ::= SEQUENCE {Part 1, Part 2, Part 3 OPTIONAL}

Part 1 ::= [APPLICATION 3] IMPLICIT SET {
 MessageIndicators [0] IMPLICIT IA5String,
 InternationalIndicators [1] IMPLICIT IA5String,
 OriginatingTerminalCode [2] IMPLICIT IA5String,
 DateAndTime [3] IMPLICIT IA5String OPTIONAL,
 MessageNumber [4] IMPLICIT IA5String OPTIONAL}

Part 2 ::= [APPLICATION 4] IMPLICIT SET {

MessageCode [0] IMPLICIT IA5String,
InternationalPrefix [1] IMPLICIT IA5String

Part 3 ::= [APPLICATION 5] IMPLICIT SET of Selection

Selection ::= IMPLICIT SET {

TrunkCode [0] IMPLICIT IA5String,
TelephoneNumber [1] IMPLICIT IA5String,
Locality [2] IMPLICIT IA5String,
SubscriberName [3] IMPLICIT IA5String,
FirstName [4] IMPLICIT IA5String OPTIONAL,
StreetName [5] IMPLICIT IA5String,
HouseNumber [6] IMPLICIT IA5String,
SupplementaryData [7] IMPLICIT IA5String OPTIONAL,
SubscriberMessage [8] IMPLICIT IA5String OPTIONAL}

References

- [1] CCITT Recommendation *International telegraph alphabet No. 2 (ITA2)*, Rec. S.1.
- [2] CCITT – *Instructions for the International Telephone Service* (1st October 1985), ITU, Geneva, 1985.

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