INTERNATIONAL TELECOMMUNICATION UNION

CCITT

E.331

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

TELEPHONE NETWORK AND ISDN

OPERATION, NUMBERING, ROUTING AND MOBILE SERVICE

MINIMUM USER-TERMINAL INTERFACE FOR A HUMAN USER ENTERING ADDRESS INFORMATION INTO AN ISDN TERMINAL

Recommendation E.331

Geneva, 1991

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT 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 Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation E.331 was prepared by Study Group I and was approved under the Resolution No. 2 procedure on the 11th of October 1991.

CCITT NOTES

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

2) A list of abbreviations used in this Recommendation can be found in Annex A.

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Recommendation E.331

MINIMUM USER-TERMINAL INTERFACE FOR A HUMAN USER ENTERING ADDRESS INFORMATION INTO AN ISDN TERMINAL

1 General

1.1 *Intent*

This Recommendation is intended to achieve a degree of world-wide uniformity in the basic procedure for a human user inputting address information such as destination numbers to an ISDN terminal. It is desirable for a user employing these basic procedures to be able to establish an ISDN connection using any ISDN terminal without requiring specific knowledge about the characteristics of that terminal. It is intended to cover the long-term requirements rather than to meet intermediate, change-over needs. It provides for the same procedure for the two kinds of signalling: functional (en bloc) signalling between the terminal and the network, and stimulus (overlap) signalling between the user and the network (as in the PSTN).

1.2 *Background*

The customer using a PSTN terminal communicates directly with a network, but a customer using an ISDN terminal with functional signalling communicates by means of the terminal, which delivers appropriate access-signalling messages to a network in a different form from that used between the user and the terminal (see Figure 1/E.331).

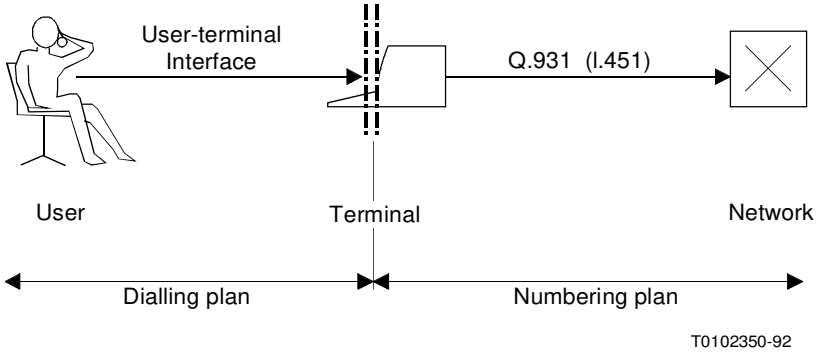

FIGURE 1/E.331

The relationship of dialling plan and numbering plan when functional signalling is used

There are many ways by which users could interact with terminals to make their intentions known; they will, in practice, vary according to features provided and to cost.

The minimum procedures specified here are suitable for use with a terminal having ten digits, a star (*) and a square (#) available for input dialling [1].

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1) "Dialling" normallly means signalling directly to a switch with a rotary or pushbutton dial. The word "dialling" in this Recommendation is used to mean either this or pushing the dial-pad buttons of a terminal to instruct that terminal. In this Recommendation, references to parameters like NPI and TON, that in Recommendation Q.931 refer to machine-read fields, refer here to the digits input to the terminals from which the appropriate Q.931 information is derived.

Minimum procedural requirements are in no way intended to preclude taking advantage of opportunities for new or varied communication services, or the design of intelligent terminals, or the design of cooperative procedures for user control. They are intended to allow the establishment of connections without regard to the type of terminal, and to achieve as much similarity as possible between different countries of origination. Application is primarily but not exclusively aimed at terminals supporting single services, usually voice services.

1.3 *Underlying principles*

Some aspects of the ISDN, notably the openness of the numbering plan, the possibility for sub-addresses, and the existence of functional signalling may require users to do some things in ways different from how they are done in the PSTN. However, it is possible and desirable to preserve some aspects of using the PSTN, and this Recommendation attempts to do this as it aims at the following goals:

a) unifying the minimum user-terminal interface procedures world-wide for establishing calls from ISDN terminals;

b) requiring nothing more of the terminal than the equivalent of the 12-button telephone pad;

c) assisting in a smooth transition from PSTN to ISDN by preserving where possible and convenient a similarity to the procedures of the PSTN; in particular, by allowing a user to set up a simple voice call with a procedure differing as little as possible from that used for the same purpose in the PSTN, and by maintaining a positioning analogy between the information associated with a destination number and the national uses of prefixes in the PSTN;

d) having procedures bear a visible relationship to the numbering plan for the ISDN era (see Recommendation E.164);

e) minimizing the number of control actions needed and making it reasonably easy to remember what to do;

f) having the same procedures for functional signalling (where the terminal translates into Q.931 protocols) as for stimulus signalling (where the network makes the translation).

In specifying the basic procedure, this Recommendation recognizes that an agreed set of principles does not necessarily lead different people to the same solution, even though one of the principles is that a single solution is desirable. This Recommendation embodies these principles and provides a single solution

2 Minimum terminal capability

2.1 This Recommendation defines a minimum procedure that can be applied to a terminal having the ability to receive as input from the human user the ten decimal digits and the star (*) and the square (#).

2.2 The minimum procedure enables the user to specify, for an intended connection:

a) the destination number;

b) the destination sub-address, if any;

c) the numbering plan identification (NPI), if necessary;

d) the type of number (TON), if necessary.

Future study should add to this list the method to select a carrier and the method to access a supplementary service.

2.3 The minimum procedure does not provide for user input of data for every field required in Q.931 for ISDN addressing. Default values for some fields must be assigned by the terminal in the case of functional signalling, or by the network in the case of stimulus signalling.

3 Numbering plan identification (NPI) [2)]

3.1 If the called number is in the same numbering plan as the default numbering plan of the originating terminal, no NPI need be indicated by the user.

Note – A voice terminal connected at an S reference point behind a PABX would normally have the private numbering plan of the PABX as its default. A voice terminal connected to the public network via a coincident S/T reference point would have the E.164 numbering plan as its default. Except when the originating terminal is behind a PABX, the need to indicate a different numbering plan may be infrequent.

3.2 The NPI should be indicated, if at all, by a single digit followed by a star (*). The digits to be used are for further study. This provision applies only to terminals connected to the public network via a coincident S/T reference point. It is desirable, but not required, that terminals connected at an S reference point behind a PABX also follow this provision.

3.3 The NPI, when input, precedes both the TON and the called number.

Note – A separator is used after the NPI to avoid reserving a digit that could not be used to start an E.164/E.163 number.

4 Type of number (TON) [3)]

4.1 The type of number (TON) should be indicated, if necessary, by up to three digits. To prevent user confusion due to conflict with existing national procedures (e.g. prefixes for international access, toll calls and trunk calls), the assignment of TON is a national matter.

Note 1 – Since no character is used to delimit the TON, it should start with a digit that is not used to start a national E.164 number.

Note 2 – It is anticipated that Administrations will choose to indicate TONs for the international number, national number, and network-specific number with the same digits that are used as prefixes for analogous purposes in their PSTNs.

4.2 The absence of a TON should be taken to mean a local subscriber number.

4.3 The indication of TON should follow the NPI (if any) and precede the called number.

5 Sub-address and end of dialling

5.1 The start of a dialled sub-address is indicated by a star.

5.2 The end of a dialled address (including sub-address, if any: see Figure 2/E.331) is indicated by a square.

Note – The square is recommended as an end-of-message character in Recommendation E.132.

5.3 The sub-address of a terminal intended to be accessible from simple terminals should contain only digits.

5.4 If dialling stops without the terminating square, the decision on how to respond is a national matter.

5.5 For networks that implement fixed length addresses, it is a matter for urgent study to determine whether an alternative procedure can be defined that does not require a terminator or time-out on every call, including those that do not involve sub-addresses.

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2) Numbering plan identification (NPI) was formerly known in the CCITT *Red Book* as numbering/addressing plan Information (NAPI).

3) Type of number (TON) was formerly known in the *Red Book* as type of address (TOA).

Note – Because of the possible input of a sub-address, a terminal cannot determine from numbering plan information alone (e.g. fixed length numbers) that input has ended.

6 Carrier selection

Where pre-call carrier selection is offered, it is desirable that the basic procedure provide a method for the user to make this selection. This is a matter for future study.

7 Summary

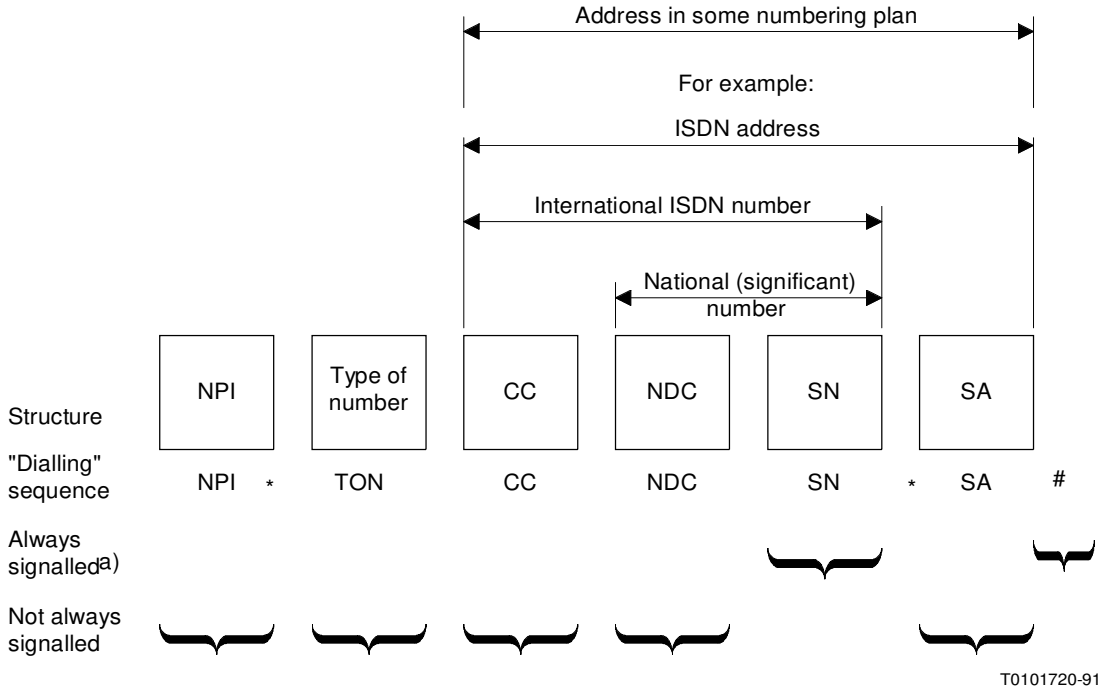
7.1 The NPI followed by a star should be dialled first, if necessary.

7.2 The type of number should be dialled next, if necessary.

7.3 The address number should be input next, including one star to begin a sub-address if present, and ending with the terminator square.

7.4 The general sequence is illustrated in Figure 2/E.331, with examples of particular sequences in Figures 3/E.331 to 6/E.331. In these figures, a national destination code (NDC) in an ISDN number is analogous to a trunk code or area code in a PSTN number.

7.5 A method for selecting a carrier is for future study, as is the method to access a supplementary service.



CC Country code
NDC National destination code
NPI Numbering plan identification
SA Sub-address
SN Subscriber number
TON Type of number

a) For the terminating #, "always signalled" means either that the # is signalled, or that the termination of dialling is deduced by a terminal or switch. This interpretation is applicable to the # throughout Figures 2/E.331 to 6/E.331.

Note – It would be seldom, if ever, that every part of this sequence were input for a single connection.

FIGURE 2/E.331

General sequence, illustrated with an ISDN number

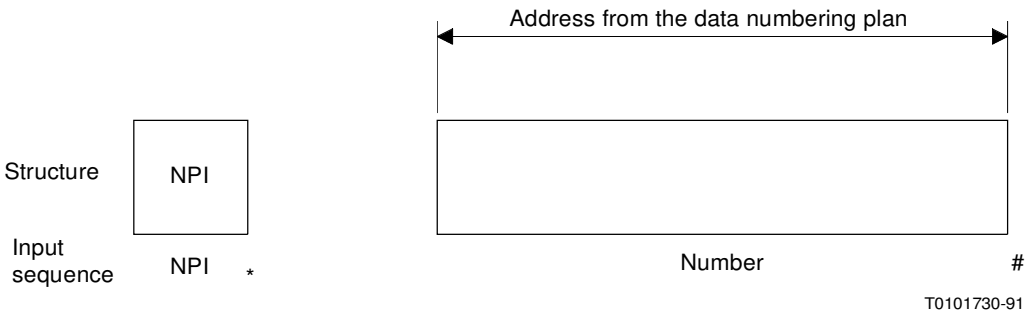


FIGURE 3/E.331

Calling a number in the data numbering plan (Recommendation X.121)

FIGURE 4/E.331

Calling a local ISDN number without a sub-address

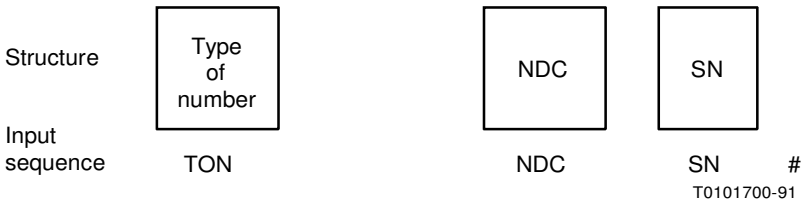


FIGURE 5/E.331

Calling a long-distance national PSTN number

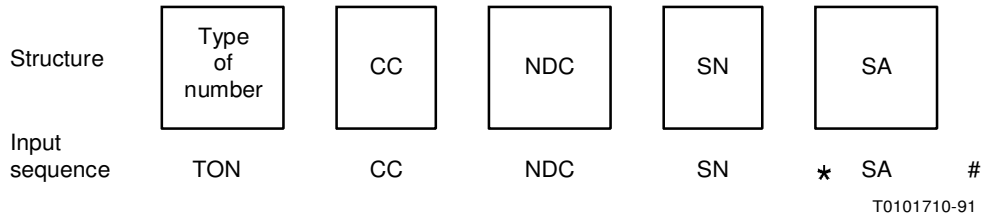


FIGURE 6/E.331

Calling an international ISDN number with a sub-address

ANNEX A

(to Recommendation E.331)

Alphabetical list of abbreviations used in this Recommendation

CC	Country code
NDC	National destination code
NPI	Numbering plan identification
SA	Sub-address
SN	Subscriber number
TON	Type of number