



EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 051

October 1991

Source: ETSI TC-SPS

Reference: T/S 22-15

ICS: 33.080

Key words: ISDN, supplementary service

**Integrated Services Digital Network (ISDN);
Multiple Subscriber Number (MSN) supplementary service
Functional capabilities and information flows**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols & Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the Pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 2 aspects (functional capabilities and information flows) needed to support the Multiple Subscriber Number (MSN) supplementary service. The stage 1 and stage 3 aspects are detailed in ETS 300 050 (1991) and ETS 300 052 (1991), respectively.

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1 Scope

This standard defines the stage two of the Multiple Subscriber Number (MSN) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage two identifies the functional capabilities and the information flows needed to support the stage 1 service description. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [1]).

This standard is specified according to the methodology specified in CCITT Recommendation Q.65 [2].

This standard does not formally describe the relationship between this supplementary service and the basic call, but where possible this information is included for guidance.

In addition this standard does not specify the requirements where the service is provided to the user via a private ISDN. This standard does not specify the requirements for the allocation of defined functional entities within a private ISDN; it does, however, define which functional entities may be allocated to a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

The MSN supplementary service provides the possibility for assigning multiple numbers to a single public or private access.

NOTE: This allows e.g.:

- 1) a calling user to select, via the public network, one or multiple distinct terminals out of a multiple choice,
- 2) to identify the terminal to the network for the application of other supplementary services.

It is considered:

- that in the case of a basic access some service providers may not have knowledge or control over what is connected, e.g. a private ISDN or a terminal configuration,
- that service providers have differing numbering methods.

The MSN supplementary service is applicable to all telecommunication services.

This standard is applicable to the stage three standards for the ISDN MSN supplementary service. The term "stage three" is also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement (i.e. as strict command or prohibition, as authorisation leaving freedom, as a capability or possibility) this shall be reflected in the text of the relevant stage three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore no method of testing is provided for this standard.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterisation of services supported by an ISDN".
- [3] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [4] CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".
- [5] CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer services".
- [6] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means used to describe them".
- [7] CCITT Recommendation Z.100 (1988): "Functional Specification and Description Language (SDL)".

3 Definitions

For the purposes of this standard, the following definitions apply:

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [3], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [3], § 2.2, definition 201.

Supplementary service: see CCITT Recommendation I.210 [6], § 2.4.

ISDN number: a number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [4].

4 Symbols and abbreviations

FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
MSN	Multiple Subscriber Number
SDL	Specification and Description Language
TE	Terminal Equipment

5 Description

Not applicable.

6 Derivation of the functional model

6.1 Functional model description

The functional model for the MSN supplementary service is shown in figure 1.



Figure 1

6.2 Description of the functional entities

The functional entities required by the MSN supplementary service above those of the basic call are the follows:

FE1: Served user's service agent

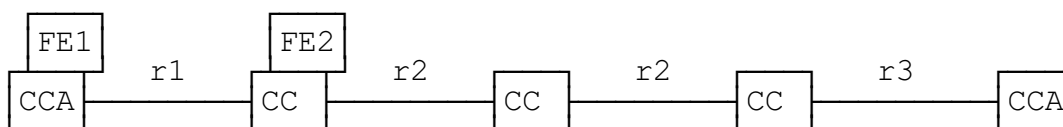
FE2: MSN service control entity

6.3 Relationship with a basic service

The relationship with a basic service is shown in figure 2.

NOTE: The basic call model is defined in CCITT Recommendation Q.71 [5], subclause 2.1, with the exception that r1 represents an outgoing call relationship from a CCA and r3 represents an incoming call relationship to a CCA.

Originating Service:



Terminating Service:

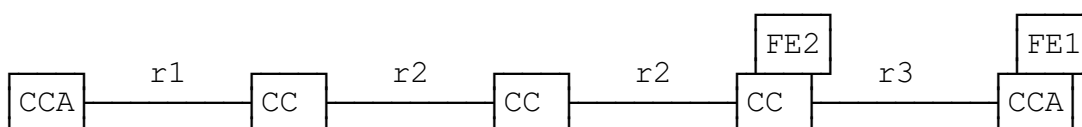


Figure 2

7 Information flows

7.1 Information flow diagrams

The information flows for the MSN supplementary service are shown in figures 3 and 4.

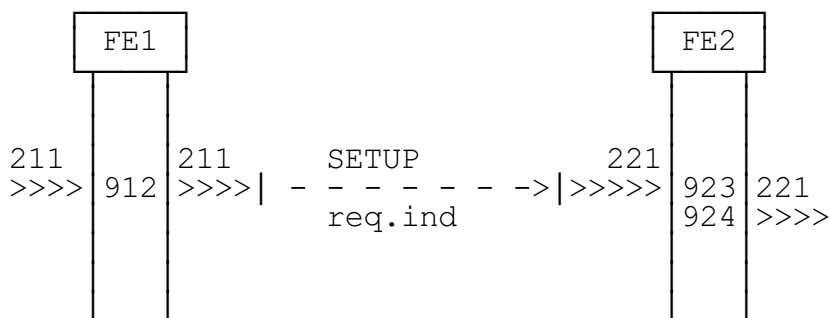


Figure 3: MSN supplementary service operations on an outgoing call

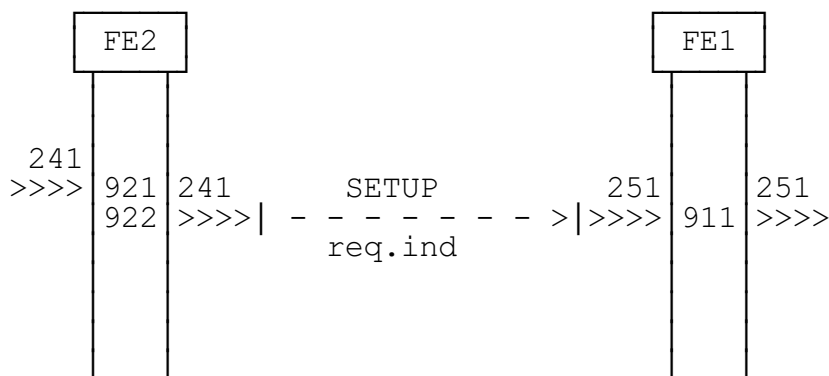


Figure 4: MSN supplementary service operations on an incoming call

7.2 Definition of individual information flows

There are no information flows specific to this service.

NOTE: The contents for SETUP in basic call are as specified for basic call (see CCITT Recommendation Q.71 [5]).

8 SDL diagrams for functional entities

The SDLs are provided according to CCITT Recommendation Z.100 [7].

8.1 FE1

The SDL for FE1 is shown in figure 5 and figure 6.

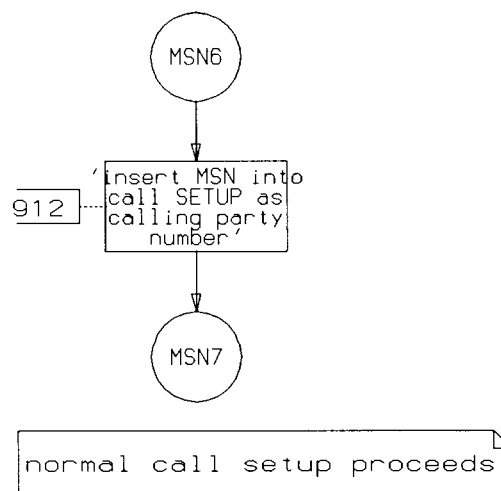


Figure 5:
MSN supplementary service functions in originating FE1

Note to figure 5.

NOTE: MSN6 and MSN7 break the basic call transition during FEA 211 (see figure 2-8 (Sheet 1 of 11) of CCITT Recommendation Q.71 [5]) between "Process Service Request Connect" and SETUP. MSN7 reconnects at the same point.

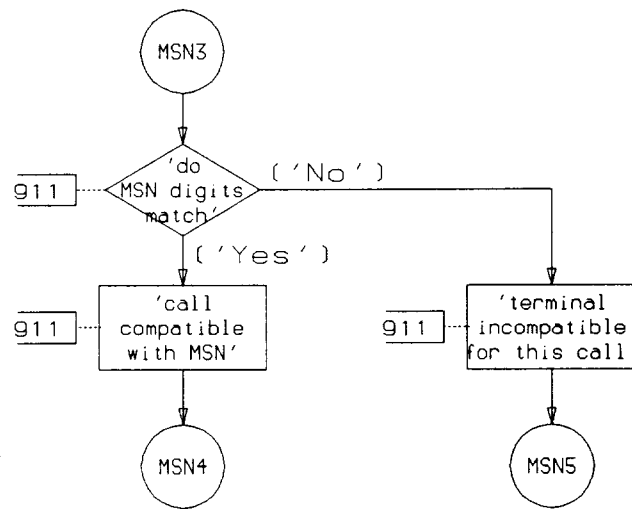


Figure 6:
MSN supplementary service functions in destination FE1

Note to figure 6.

NOTE: MSN3, MSN4 and MSN5 break the basic call transition during FEA 251 (see figure 2-8 (Sheet 7 of 11) of CCITT Recommendation Q.71 [5]), immediately following the "Y" branch of the decision "Compatible". MSN4 reconnects at the same point, and MSN5 joins the "N" branch of the decision "Compatible".

8.2 FE2

The SDL for FE2 is shown in figure 7 and figure 8.

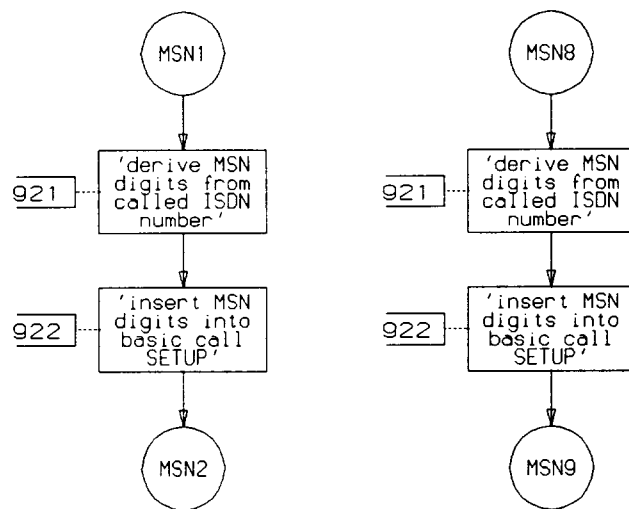


Figure 7:
MSN supplementary service functions in destination FE2

Notes to figure 7.

NOTE 1: MSN1 and MSN2 break the basic call transition:

during FEA 241 (see figure 2-9 (Sheet 7 of 19) of CCITT Recommendation Q.71 [5]), by following the "Y" branch of the decision "Supplementary Service Provided?" on the "Y" branch of the task "Term Screen Process Attempt" decision "Successful" and rejoins at the "N" branch of the decision "supplementary service provided".

NOTE 2: MSN8 and MSN9 break the basic call transition:

during FEA 241A (see figure 2-9 (Sheet 13 of 19) of CCITT Recommendation Q.71 [5]), subsequent to the decision "Successful" but prior to the sending of SETUP req.ind.

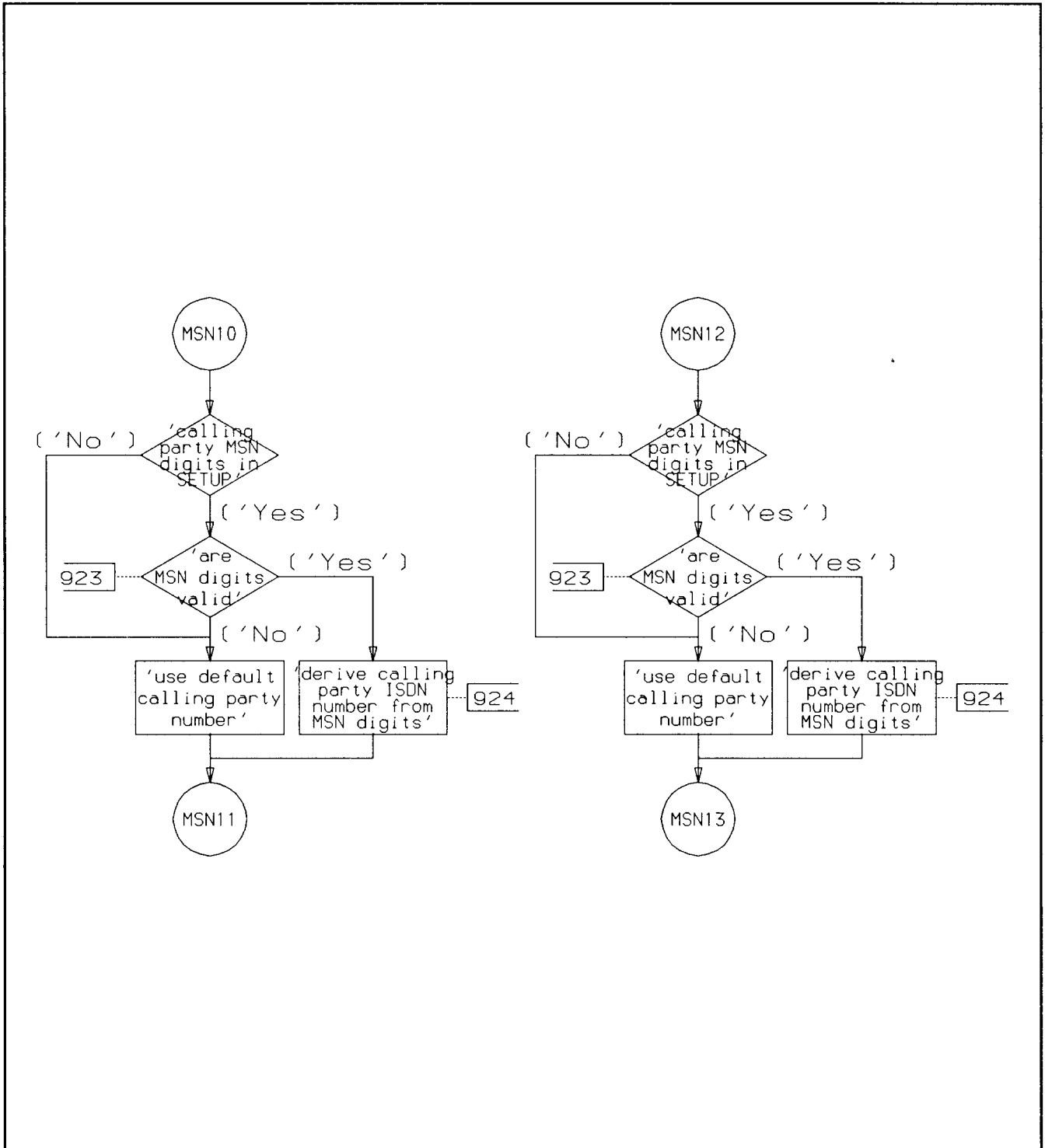


Figure 8:
MSN supplementary service functions in originating FE2

Notes to figure 8.

NOTE 1: MSN10 and MSN11 break the basic call transition during FEA 221 (see figure 2-9 (Sheet 1 of 19) of CCITT Recommendation Q.71 [5]), immediately following the "Y" branch of the task "Orig. Screen Process Attempt" decision "Successful". MSN11 reconnects at the same point.

NOTE 2: MSN12 and MSN13 break the basic call transition during FEA 221 (see figure 2-9 (Sheet 1 of 19) of CCITT Recommendation Q.71 [5]), by following the "Y" branch of the decision "Supplementary Service Provided?" on the "N" branch of the task "Orig. Screen Process Attempt" decision "Successful". MSN13 reconnects at the same point.

9 Functional Entity Actions (FEAs)

The FEAs of FE1 shall be optional for the basic call but shall be mandatory for the MSN supplementary service.

9.1 FEAs of FE1

For an incoming call:

911: The functional entity shall analyse the multiple subscriber number digits in the call set-up information and compare them with the configured multiple subscriber digits for use in the basic call.

For an outgoing call:

912: The functional entity shall insert the multiple subscriber number digits in the call set-up information as the calling party number.

9.2 FEAs of FE2

For an incoming call:

921: The functional entity shall derive the multiple subscriber number digits from the ISDN number.

922: The functional entity shall insert the multiple subscriber number digits into the call set-up information for transmission over the interface.

For an outgoing call:

923: The functional entity shall obtain and screen the digits from the call set-up information.

924: The functional entity shall derive the ISDN number from the multiple subscriber number digits.

10 Allocation of functional entities to physical locations

The possible locations of functional entities FE1 and FE2 are shown in table 1.

Table 1

	FE2	FE1
Scenario 1	LE	TE

NOTE: FE2 and FE1 are always allocated at opposite ends of the same access.

History

Document history	
October 1991	First Edition
May 1996	Converted into Adobe Acrobat Portable Document Format (PDF)