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**DIGITAL SUBSCRIBER SIGNALLING
SYSTEM No. 1**

**INTEGRATED SERVICES DIGITAL NETWORK
(ISDN) – STAGE 3 DESCRIPTION FOR CALL
COMPLETION SUPPLEMENTARY SERVICES
USING DSS 1**

Clause 4 – Terminal Portability (TP)

ITU-T Recommendation Q.953

(Previously “CCITT Recommendation”)

FOREWORD

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ITU-T Recommendation Q.953, clause 4, was prepared by ITU-T Study Group 11 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 17th of October 1995.

NOTE

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

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SUMMARY

This Recommendation defines the operation of the Digital Subscriber Signalling System No. 1 (DSS 1) for the support of the Terminal Portability (TP) supplementary service at the T or the coincident S and T reference point of the User-to-Network Interface of the Integrated Services Digital Network (ISDN).

The Terminal Portability supplementary service allows the user to temporarily suspend an active call, and subsequently reactivate it from the same terminal equipment or from another one within the same user-network interface.

**INTEGRATED SERVICES DIGITAL NETWORK (ISDN) –
STAGE 3 DESCRIPTION FOR CALL COMPLETION
SUPPLEMENTARY SERVICES USING DSS 1**

(Geneva, 1995)

4 Terminal portability (TP)

4.1 Scope

This Recommendation specifies the stage three of the Terminal Portability (TP) supplementary service for the Integrated Services Digital Network (ISDN) at the T reference point or coincident S and T reference point (as defined in Recommendation I.411 [1]) by means of the Digital Subscriber Signalling System No. 1 (DSS 1). Stage three identifies the protocol procedures and switching functions needed to support a telecommunications service (see Recommendation I.130 [2]).

In addition, this Recommendation specifies the protocol requirements at the T reference point where the service is provided to the user via a private ISDN.

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

Terminal Portability is a supplementary service that allows the user during the Active call state of a call:

- to suspend the call and to reactivate it subsequently at the same terminal; or
- to move one terminal from one socket to another within one given basic access; or
- to move one call from one terminal to another terminal within one given basic access.

The portability of a terminal during the Null call state is part of the basic access capabilities and does not require any procedure.

The portability of a terminal in the call establishment and in the call clearing phases is not possible.

It is a user's responsibility to resume the call with a terminal which is compatible both with the remote terminal and the type of connection previously established.

The TP supplementary service is applicable to all circuit-switched telecommunication services requiring the attendance of a human being, such as telephony, videotelephony, etc.

The TP supplementary service does not apply to non-interactive services such as facsimile, teletex, mixed-mode, computer communication, etc. However, the network will not take any action to its applicability.

Further part(s) of this Recommendation shall specify the method of testing required to identify conformance to this Recommendation.

This Recommendation is applicable to equipment, supporting the TP supplementary service, to be attached at either side of a T reference point or coincident S and T reference points when used as an access to the public ISDN.

4.2 References

The following 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; all 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 currently valid ITU-T Recommendations is regularly published.

- [1] ITU-T Recommendation I.411 (1993), *ISDN user-network interfaces – Reference configurations*.
- [2] CCITT Recommendation I.130 (1988), *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN*.
- [3] ITU-T Recommendation clause 2/Q.954 (1993), *Stage 3 service description for multiparty supplementary services using DSS 1 – Three-Party service*.
- [4] ITU-T Recommendation clause 2/Q.956 (1995), *Integrated Services Digital Network (ISDN) – Stage 3 service description for charging supplementary services using DSS 1 – Advice Of Charge*.
- [5] CCITT Recommendation I.253 (1988), *Call completion supplementary services*.
- [6] ITU-T Recommendation Q.931 (1993), *Digital Subscriber Signalling System No. 1 (DSS 1) – ISDN user-network interface layer 3 specification for basic call control*.
- [7] ITU-T Recommendation Q.920 (1993), *Digital Subscriber Signalling System No. 1 (DSS 1) – ISDN user-network interface data link layer – General aspects*.
- [8] ITU-T Recommendation clause 1/Q.957 (1993), *Stage 3 description for additional information transfer supplementary services using DSS 1 – User-to-User Signalling (UUS)*.

4.3 Definitions

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

4.3.1 connection endpoint identifier (CEI): See 3.4.1/Q.920 [7].

4.3.2 location interaction: An interaction of the protocol for two or more supplementary services where the served user (of all supplementary services) is on the same access.

4.3.3 local interaction for the CEI: The calls for which the local interaction exists are at the same access and are identified by the same CEI.

4.3.4 local interaction for the call: The local interaction exists on a single call, i.e. both supplementary services are invoked by the same call.

4.3.5 network: The DSS 1 protocol entity at the network side of the user-network interface.

4.3.6 no impact: The interaction between the two identified supplementary services contains no requirements for the protocol over and above the requirements of the Recommendation for each individual supplementary service.

NOTE – Other aspects of interactions that do not affect the DSS 1 protocol are covered in the service description of the relevant supplementary service.

4.3.7 not applicable: The interaction between the two identified supplementary services is outside the scope of this Recommendation, e.g. the interaction is between the supplementary service and itself, and is therefore covered in the Recommendation for the individual supplementary service.

4.3.8 remote interaction: An interaction of the protocol for two or more supplementary services where one user is the served user for one supplementary service and (for the same call) the remote user for another supplementary service. The interaction for the served user's supplementary service exists at the remote user.

4.3.9 remote user: The DSS 1 protocol entity at the user side of the user-network interface which is involved in an instance of this supplementary service, but which has no control of it.

4.3.10 user: The DSS 1 protocol entity at the user side of the user-network interface.

4.4 Abbreviations

For the purposes of this Recommendation, the following abbreviations are used:

CEI	Connection Endpoint Identifier
DSS 1	Digital Subscriber Signalling System No. 1
ISDN	Integrated Services Digital Network
TP	Terminal Portability

4.5 Description

The general description of the TP supplementary service is specified in clause 4/I.253 [5].

The procedures make use of the suspend and resume functions as described in Recommendation Q.931 [6].

4.6 Operational requirements

4.6.1 Provision/withdrawal

This supplementary service may be provided by a prior arrangement with the service provider or may be generally available. Withdrawal shall be at the request of the customer or for administrative reasons.

4.6.2 Requirements on the originating network side

The procedures according to 5.6/Q.931 [6] shall apply.

4.6.3 Requirements on the destination network side

The procedures according to 5.6/Q.931 [6] shall apply.

4.7 Coding requirements

All parameters or parameter values required for the TP supplementary service are specified in Recommendation Q.931 [6]. If the user provides IA5 characters in the Call identity information element, these shall be encoded with bit eight of octet three set to "0".

4.8 State definitions

The states associated with basic call control according to clause 2/Q.931 [6] shall apply.

4.9 Signalling procedures at the coincident S and T reference point

4.9.1 Invocation and operation

4.9.1.1 Normal operation

For call suspension, 5.6.1/Q.931 and 5.6.2/Q.931 [6] shall apply.

For call re-establishment, 5.6.4/Q.931 [6] shall apply.

4.9.1.2 Exceptional procedures

In addition to the situations listed below, the normal error handling procedures according to 5.8/Q.931 [6] shall apply:

- for call suspend error, 5.6.3/Q.931 [6] shall apply;
- for call resume errors, 5.6.5/Q.931 [6] shall apply;
- for call double suspension, 5.6.6/Q.931 [6] shall apply.

4.10 Procedures for interworking with private ISDNs

The procedures of 5.6.7/Q.931 [6] shall apply.

4.11 Interaction with other networks

4.11.1 Interactions with non-ISDNs

No impact on the protocol.

4.12 Interaction with other supplementary services

The following principle applies for the interaction of the TP supplementary service with other supplementary services, if the remote network or the remote user send a NOTIFY message during the suspension phase of a call, then the network of the suspending user shall discard this message.

4.12.1 Call Waiting

No impact.

4.12.2 Explicit Call Transfer

No applicable interaction at this time.

4.12.3 Connected Line Identification Presentation

No impact.

4.12.4 Connected Line Identification Restriction

No impact.

4.12.5 Calling Line Identification Presentation

No impact.

4.12.6 Calling Line Identification Restriction

No impact.

4.12.7 Closed User Group

No impact.

4.12.8 Conference Calling

4.12.8.1 The served user of the Conference supplementary service uses the TP supplementary service

4.12.8.1.1 Normal operation

No impact.

NOTE – The invocation of the TP supplementary service is not allowed for the served user of the Conference supplementary service.

4.12.8.1.2 Exceptional procedures

If, within the TP supplementary service, the network refuses a request to suspend a call because the call is part of a conference controlled by the same served user (local interaction for the call), or because another call for that CEI is part of a conference for which the served user is located at that CEI (local interaction for the CEI), the SUSPEND REJECT message shall contain cause value #29 “facility rejected”.

4.12.8.2 The remote user of the Conference supplementary service uses the TP supplementary service

4.12.8.2.1 Normal operation

If, during operation of the Conference supplementary service, a remote user uses the TP supplementary service (remote interaction), then notifications concerning the TP supplementary service shall be sent to the controller of the Conference supplementary service as specified in 1.6.8/Q.954 [3], i.e. the PartyId of the suspending user is included.

4.12.8.2.2 Exceptional procedures

No impact.

4.12.9 Direct-Dialling-In

No impact.

4.12.10 Call Diversion (Call Forwarding) services

4.12.10.1 Call Forwarding Busy

No impact.

4.12.10.2 Call Forwarding No Reply

No impact.

4.12.10.3 Call Forwarding Unconditional

No impact.

4.12.10.4 Call Deflection

No impact.

4.12.11 Line Hunting

No access signalling requirements defined.

4.12.12 Three-Party service

4.12.12.1 The served user of the Three-Party supplementary service uses the TP supplementary service

4.12.12.1.1 Normal operation

No impact.

NOTE – The invocation of the TP supplementary service is not allowed for the served user of the Three-Party supplementary service.

4.12.12.1.2 Exceptional procedures

If, within the TP supplementary service, the network refuses a request to suspend a call because the call is part of a three-way conversation controlled by the same served user (local interaction for the call), or because another call for that CEI is part of a three-way conversation controlled by the same served user (local interaction for the CEI), the SUSPEND REJECT message shall contain cause value #29 “facility rejected”.

4.12.12.2 The remote user of the Three-Party supplementary service uses the TP supplementary service

4.12.12.2.1 Normal operation

If, during operation of the Three-Party supplementary service, a remote user uses the TP supplementary service (remote interaction), then notifications concerning the TP supplementary service shall be sent as normal to the controller of the Three-Party supplementary service.

4.12.12.2.2 Exceptional procedures

No impact.

4.12.13 User-to-User Signalling

4.12.13.1 Service 1

No impact.

4.12.13.2 Service 2

No impact.

4.12.13.3 Service 3

See 1.6.18/Q.957.1 [8].

4.12.14 Multiple Subscriber Number

No impact.

4.12.15 Call Hold

4.12.15.1 The served user of the Call Hold supplementary service uses the TP supplementary service

4.12.15.1.1 Normal operation

No impact.

NOTE – The invocation of the TP supplementary service is not allowed for the served user of the Call Hold supplementary service.

4.12.15.1.2 Exceptional procedures

If, within the TP supplementary service, the network refuses a request to suspend a call, e.g. because the call is in the Call Held auxiliary state (local interaction for the call), or because another call for that CEI is part of a Call Held auxiliary state (local interaction for the CEI), the SUSPEND REJECT message shall contain cause value #29 “facility rejected”.

4.12.15.2 Remote user of the HOLD supplementary service uses the TP supplementary service

No impact.

4.12.16 Advice Of Charge

See 2.6.18/Q.956 [4].

4.12.17 Sub-addressing

No impact.

4.12.18 Terminal Portability

Not applicable.

4.12.19 Completion of Calls to Busy Subscriber

No applicable interaction at this time.

4.12.20 Malicious Call Identification

No applicable interaction at this time.

4.12.21 Reverse Charging

- *Case A and Case D*

Not applicable.

- *Case B (requested by the calling user)*

If the user of the Reverse Charging supplementary service requests the TP supplementary service while the user’s network is in Reverse Charging request or Reverse Charging indication state, then the network shall reject this request by sending a SUSPEND REJECT message with cause value #29 “facility rejected” to the user.

If the destination network of the user who has activated the TP supplementary service receives a request for the Reverse Charging supplementary service from the originating network, then the destination network rejects this request by sending a FACILITY message with the Return error value “supplementaryServiceInteractionNotAllowed” to the calling user.

- *Case B (requested by the called user) and Case C*

If the called user requests the Reverse Charging supplementary service (Case B: requested by the called user or Case C) while the calling user has suspended the call, then the calling user's network shall discard the notification of Reverse Charging to the calling user.

4.12.22 Multi-level Precedence and Preemption

No impact.

4.12.23 Support of Private Numbering Plans

No applicable interaction at this time.

4.12.24 International Telecommunication Charge Card

No applicable interaction at this time.

4.12.25 Global virtual network services

No applicable interaction at this time.

4.13 Parameter values (timers)

The following timers as specified in clause 9/Q.931 [6] shall be relevant in the context of the TP supplementary service:

- user timer T319;
- user timer T318;
- network timer T307.

4.14 Dynamic description (SDLs)

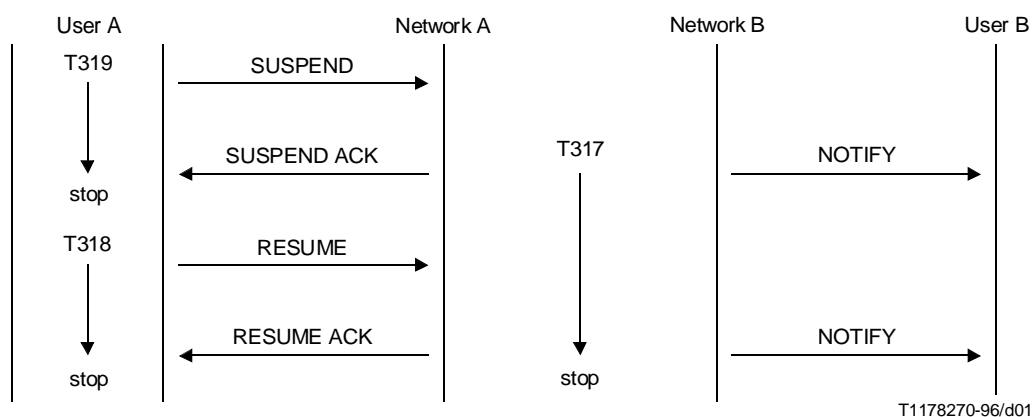
Annex A/Q.931 [6] shall apply.

Appendix I

Signalling flows

(This appendix does not form an integral part of this Recommendation)

The signalling flows for normal procedures are shown in Figure 4-I.1.



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FIGURE 4-I.1/Q.953

Successful invocation and completion of the TP supplementary service