



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.2955.1

(06/97)

SERIES Q: SWITCHING AND SIGNALLING

**Broadband ISDN – B-ISDN application protocols for
access signalling**

**Stage 3 description for community of interest
supplementary services using B-ISDN Digital
Subscriber Signalling System No. 2 (DSS 2):
Closed User Group (CUG)**

ITU-T Recommendation Q.2955.1

(Previously CCITT Recommendation)

ITU-T Q-SERIES RECOMMENDATIONS
SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5	Q.120–Q.249
SPECIFICATIONS OF SIGNALLING SYSTEM No. 6	Q.250–Q.309
SPECIFICATIONS OF SIGNALLING SYSTEM R1	Q.310–Q.399
SPECIFICATIONS OF SIGNALLING SYSTEM R2	Q.400–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1999
BROADBAND ISDN	Q.2000–Q.2999
General aspects	Q.2000–Q.2099
Signalling ATM adaptation layer (SAAL)	Q.2100–Q.2199
Signalling network protocols	Q.2200–Q.2299
Common aspects of B-ISDN application protocols for access signalling and network signalling and interworking	Q.2600–Q.2699
B-ISDN application protocols for the network signalling	Q.2700–Q.2899
B-ISDN application protocols for access signalling	Q.2900–Q.2999

For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION Q.2955.1**STAGE 3 DESCRIPTION FOR COMMUNITY OF INTEREST SUPPLEMENTARY
SERVICES USING B-ISDN DIGITAL SUBSCRIBER SIGNALLING
SYSTEM No. 2 (DSS 2): CLOSED USER GROUP (CUG)****Summary**

This Recommendation specifies the DSS 2 signalling protocol for the support of the CUG supplementary service in B-ISDN. The protocol can be used at the T_B and at the coincident S_B and T_B reference point.

The CUG supplementary service enables users to form groups, to and from which access is restricted. Members of a specific closed user group can communicate among themselves but not, in general, with users outside the group. Specific CUG members can have additional capabilities that allow them to originate calls to destinations outside the group, and/or to receive calls from outside the group. Specific CUG members can have additional restrictions that prevent them from originating calls to other members of the CUG or from receiving calls from other members of the CUG. A specific user may be a member of one or more closed user groups.

Source

ITU-T Recommendation Q.2955.1 was prepared by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 5th of June 1997.

FOREWORD

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The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 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.

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CONTENTS

	Page
1 Closed User Group (CUG)	1
1.1 Scope	1
1.2 References	2
1.3 Definitions	3
1.4 Abbreviations	4
1.5 Description	4
1.6 Operational requirements	5
1.6.1 Provision and withdrawal.....	5
1.6.2 Requirements on the originating network side.....	6
1.6.3 Requirements on the destination network side.....	6
1.7 Coding requirements	7
1.7.1 Messages and closed user group information element.....	7
1.7.2 Cause information element.....	8
1.8 Primitive and state definitions	8
1.8.1 Primitive definitions.....	8
1.8.2 State definitions.....	8
1.9 Signalling procedures at the coincident S_B and T_B reference point	8
1.9.1 Activation, deactivation and registration	8
1.9.2 Invocation and operation.....	8
1.10 Procedures at the T_B reference point for interworking with private B-ISDNs	13
1.11 Procedures for interworking between the DSS 1 and the DSS 2 protocol	13
1.12 Interactions with other networks	15
1.13 Interactions with (other) supplementary services.....	15
1.13.1 Connected line identification presentation.....	15
1.13.2 Connected line identification restriction	15
1.13.3 Calling line identification presentation	15
1.13.4 Calling line identification restriction.....	15
1.13.5 Closed User Group	16
1.13.6 Direct-Dialling-In.....	16
1.13.7 User-to-user signalling	16
1.13.8 Multiple subscriber number	16
1.13.9 Sub-addressing	16
1.14 Parameter values.....	16
1.15 Dynamic description (SDL)	16
1.15.1 The closed user group process.....	16
1.15.2 Relation to basic call/connection control	19

	Page
Annex A – Symmetric operation	20
Annex B – Protocol extensions to this Recommendation for calls/connections using the procedures of Recommendation Q.2971 [13].....	20

Recommendation Q.2955.1**STAGE 3 DESCRIPTION FOR COMMUNITY OF INTEREST SUPPLEMENTARY
SERVICES USING B-ISDN DIGITAL SUBSCRIBER SIGNALLING
SYSTEM No. 2 (DSS 2): CLOSED USER GROUP (CUG)***(Geneva, 1997)***1 Closed User Group (CUG)****1.1 Scope**

This Recommendation specifies the stage 3 of the Closed User Group (CUG) supplementary services for the Broadband Integrated Services Digital Network (B-ISDN) at the T_B reference point or coincident S_B and T_B reference point (as defined in Recommendation I.413 [1]) by means of the Digital Subscriber Signalling System No. 2 (DSS 2) protocol. Stage 3 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_B reference point where the service is provided to the user via an intermediate private B-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 a B-ISDN.

The CUG supplementary service enables users to form groups, to and from which access is restricted. A specific user may be a member of one or more closed user groups. Members of a specific closed user group can communicate among themselves but not, in general, with users outside the group. Specific CUG members can have additional capabilities that allow them to originate calls to destinations outside the group, and/or to receive calls from outside the group. Specific CUG members can have additional restrictions that prevent them from originating calls to other members of the CUG, or from receiving calls from other members of the CUG.

The CUG supplementary service is applicable to all telecommunication services.

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 CUG supplementary service, to be attached at either side of a T_B reference point or coincident S_B and T_B reference point when used as an access to the public B-ISDN.

The main part of this Recommendation specifies the protocol to support the CUG supplementary service in association with point-to-point connections using the procedures described in Recommendation Q.2931 [7]. To support CUG also in other connection configurations, the modifications required are specified in annexes to this Recommendation. Annex B, for example, specifies the CUG-protocol for point-to-multipoint connections using the procedures of Recommendation Q.2971 [13].

The protocol specified in this Recommendation distinguishes two different types of CUG calls:

- Type 1 considers CUG calls with emulated N-ISDN services. These services can be identified by the presence of the N-BC information element.

NOTE – The exact basic telecommunications service is specified by the content of the N-BC and, if present, of the N-HLC information elements [7].

For these services, the control of the CUG supplementary service depends on the ISDN numbers (calling and called party) **and** on the basic telecommunications service involved in the call. This service dependency is required in order to guarantee CUG integrity in the same manner as in N-ISDN.

- Type 2 considers CUG calls with B-ISDN applications for which CUG is provided without basic service dependence. No emulated N-ISDN services are involved, and no B-ISDN service type has been specified for these applications. These calls can be identified by the absence of the N-BC information element [7] and by the absence of a coding specifying a B-ISDN service type in the SETUP message (see the paragraph below). For these applications, the control of the CUG supplementary service depends only on the ISDN numbers (calling and called party) involved in the call.

In future, the necessity may be given to distinguish a third type of CUG call. This type will cover connections with B-ISDN basic services for which a service type is defined (see Recommendation I.371 [12]). This type of CUG call is not supported by this Recommendation.

In this Recommendation, the control of the CUG supplementary service is based on the usage of a CUG specific information element. In order to ease interworking with N-ISDN, some networks may wish to support the control of CUG also by the ROSE components specified in CCITT clause 1/Q.955 [6]. If this additional feature is offered, then the CUG supplementary service shall be provided on the basis of Recommendation Q.955.1 [6] with the following additions:

- the service types as listed above have to be taken into account;
- Note 8 against Table 3 of this Recommendation has to be respected;
- the facility information element shall be coded as specified in Recommendation Q.2932 [9];
- in the case of interworking with the N-ISDN, the facility information element shall be mapped in accordance with 6.3 and 6.4/Q.2931 [7]. The content of the components remains unchanged; and
- the mapping of return error and cause values shall be in alignment with 1.11.

1.2 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; 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 the currently valid ITU-T Recommendations is regularly published.

- [1] ITU-T Recommendation I.413 (1993), *B-ISDN user-network interfaces*.
- [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 I.112 (1993), *Vocabulary and terms for ISDNs*.
- [4] ITU-T Recommendation I.210 (1993), *Principles of telecommunication services supported by an ISDN and the means used to describe them*.
- [5] CCITT Recommendation E.164 (1991), *Numbering plan for the ISDN era*.
- [6] CCITT Recommendation Q.955.1 (1992), *Stage 3 description for community of interest supplementary services using DSS 1: Closed user group*.

- [7] ITU-T Recommendation Q.2931.1 (1995), *Digital Subscriber Signalling System No. 2 – User-Network Interface (UNI) layer 3 specification for basic call/connection control*.
- [8] CCITT Recommendation Z.100 (1988), *Functional specification and description language (SDL)*.
- [9] ITU-T Recommendation Q.2932.1 (1996), *Digital subscriber Signalling System No. 2 – Generic functional protocol: Core functions*.
- [10] CCITT Recommendation Q.85.1 (1992), *Stage 3 description for community of interest supplementary services using DSS 1: Closed user group*.
- [11] ITU-T Recommendation Q.2610 (1995), *Usage of cause and location in B-ISDN user part and DSS 2*.
- [12] ITU-T Recommendation I.371 (1996), *Traffic control and congestion control in B-ISDN*.
- [13] See Annex B of this Recommendation.
- [14] CCITT Recommendation X.180 (1988), *Administrative arrangements for international Closed User Groups (CUGs)*.
- [15] ITU-T Recommendation Q.932 (1993), *Generic procedures for the control of ISDN supplementary services*.

1.3 Definitions

This Recommendation defines the following terms:

1.3.1 basic telecommunications service: A bearer service or teleservice. The terms "bearer service" and "teleservice" are defined in 2.2/I.112 [3], definitions 202 and 203.

1.3.2 CUG call: A CUG call is a call which is restricted to a predefined group of users.

1.3.3 CUG index: The closed user group index is a parameter used by the calling user to select a particular closed user group when originating a call. The index is also used by the network to indicate to the called user the closed user group from which an incoming call has originated. This index has only local significance, i.e. the index used by the calling user is, in general, different from the index used by the called user to identify the same closed user group.

1.3.4 CUG interlock code: This is a means of identifying closed user group membership within the network. At the calling side, if a closed user group match exists, the CUG index identifying a closed user group maps to the closed user group interlock code for that closed user group. If a closed user group match exists at the called side, the closed user group interlock code identifying a closed user group maps to the CUG index representing that closed user group. Closed user group interlock code is not an access concept, but is used to uniquely identify a CUG inside a given network.

1.3.5 CUG-only service: A user with CUG-only service is limited to making calls to, and receiving calls from, members of those CUGs of which the user is a member.

1.3.6 default number: An ISDN number registered within the public ISDN following prior agreement between the user and the public ISDN.

1.3.7 emulated N-ISDN service: A basic telecommunications service originally defined for N-ISDN, but supported in a B-ISDN environment.

1.3.8 incoming access: Incoming access allows a CUG user, in addition to the CUG only service (with or without incoming calls barred within the CUG), to receive calls from all other non-CUG users and also from those other CUG users that allow outgoing access. An incoming access arrangement applies to an ISDN number and not to a specific CUG.