All drawings contained in this Recommendation have been done in Autocad.

## Recommendation Q.730

### ISDN SUPPLEMENTARY SERVICES

## 1 General

1.1 This Recommendation describes the signalling procedures for Supplementary Services to be used in conjunction with the ISDN User Part defined in Recommendations Q.761—764, Q.766 and the Transaction Capabilities Applications Part (TCAP) defined in Recommendations Q.771—774.

Each Supplementary Service has been defined in separate sections each containing the complete procedures encompassing both the ISDN User Part and the procedures to be used on the top of TCAP where appropriate.

Each section contains a general paragraph giving details of the specific service with references to the Stage I and II descriptions defined in the relevant Recommendations of the I.200 and Q.80 Series. The call set—up procedures and the actions taken at originating exchanges, etc. are defined. Arrow diagrams showing the message flows for both successful and unsuccessful establishment of the service are generally included. The formats and codings aspects are not defined in this Recommendation but references are made to the appropriate ISDN User Part, TC or SCCP Recommendations.

1.2 *Information request/response*

The "information request/response" message interchange described in the calling line identity supplementary services uses a general request/response mechanism (e.g. INR/INF messages) which can be used in the future for supplementary services not currently defined (see Recommendation Q.764).

1.3 *Exceeding the maximum message length (e.g. ISDN User Part 272 octets)*

If for any reason the combination of basic plus supplementary service information causes the overall maximum length of the message (e.g. Initial Address Message) to be exceeded then the user—to—user supplementary service 1, if included, should be rejected (see § 2 covering interactions).

The combination of other services which may cause the message length to be exceeded will depend on the call state and the requested service.

1.4 *Layout of Recommendation Q.730*

§ 1 General

§ 2 User—to—user signalling (Note)

§ 3 Close user group

§ 4 Calling line identification (presentation and restriction)

§ 5 Direct dialling in

§ 6 Call forwarding (Note)

§ 7 Time—out table for supplementary services (requires further study)

*Note* — The text for the explicit invocation of the user—to—user signalling has been included as Annex A.

## 2 User—to—user signalling service

2.1 *General description of user—to—user service*

The user—to—user signalling supplementary service(s) provide(s) a means of communication between two users by using the ISDN User Part or SCCP protocols defined in Recommendations Q.711—714 and Q.761—764, 766. In order for the services to be usable, they also have to be provided in the access protocol.

User—to—user signalling is used to exchange I.257 information between two users to provide the user—to—user services described in Recommendation I.257. This section is specific to Signalling System No. 7. The general description for services 1—3 may be found in the last mentioned Recommendation and the functional description in Recommendation Q.87.

2.1.1 *User—to—user services*

Three user—to—user signalling services associated with circuit—switched calls that may be provided by the network users are:

*Service 1:* user—to—user signalling exchanged during the set—up and clearing phases of a call, within ISDN User Part call set—up and release messages as defined in Recommendation Q.763;

*Service 2:* user—to—user signalling exchanged during call set—up between the address complete or call progress messages and the answer or connect messages, within user—to—user information messages; and

*Service 3:* user—to—user signalling exchanged while a call is in the active state, within user—to—user information messages.

All three services may be used separately or in any combination within a single call. As an option at call set-up, users may be able to specify whether the requested user—to—user signalling service(s) is(are) essential or non-essential for the call (i.e. whether the call should be completed or not if user—to—user information cannot be passed). Up to 128 octets of user information may be transferred in a message in each of the three services[1)] . The 128 octets does not include the user—to—user information parameter name, the protocol control indicator or the length octets.

2.1.2 *Service request*

Service 1 may be requested implicitly by the presence of the user—to—user information parameter in the Initial Address Message. An implicit request is "non—essential" by default.

Explicit requests of Service 1 and 2 must be in the Initial Address Message. Service 3 may be explicitly requested in the Initial Address Message during call set—up. When there is an explicit request a single user—to—user indicators parameter will be used with one of the following indications for each of the three services:

— no information;

— requested, non—essential;

— requested, essential.

2.1.3 *Response (Confirmation)*

If explicit requests are used there should, in general, be explicit responses in a user—to—user indicators parameter with one of the following indications for each of the three services:

— no information;

— provided;

— not provided.

Implicit "not provided" responses occur when:

— Service 1 has been implicitly requested and no user—to—user information is received in call set—up or release messages; or

— Service 1, 2 or 3 has been explicitly requested and there is no indication of acceptance or rejection from call control.

2.1.4 *Flow control*

The exchange of user—to—user signalling is limited by flow control procedures provided on the access by either the user or network. The need for interexchange flow control procedures by the ISDN User Part for user—to—user signalling should be evaluated.

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1) During an interim period of time, networks may support a lesser number (e.g. 32 octets) due to protocol restrictions; 32 octets will always be supported. Restrictions may apply to calls requesting user—to—user information more than 32 octets.

2.2 *Procedures for user—to—user signalling associated with circuit—switched call*

The following sections only specify the signalling procedure used to implicitly invoke the Service 1. Signalling procedures defined to support the other services are specified in Annex A.

2.2.1 *User—to—user signalling, Service 1*

2.2.1.1 *General characteristics*

Service 1 allows users to communicate with user—to—user signalling by transferring user—to—user information within ISDN User Part messages during the call set—up and clearing phases. The user—to—user signalling service provided is not a guaranteed service. If for any reason the combination of the basic plus supplementary service information causes the overall maximum length of the message to be exceeded then if the User—to—user Signalling Service 1 is included, then the service should be rejected.

2.2.1.2 *User—to—user signalling in the call set—up phase — implicit service request*

Procedures for call set—up are as described in Recommendation Q.764, § 2, with the following changes:

Service 1 may be invoked by sending the user—to—user information parameter of variable length that is specified in Recommendation Q.763, § 3.34 in an Initial Address Message that is requested in a call set—up request from call control. This information parameter is transported across the network and delivered unchanged to the terminating call control for the called user. The user—to—user indicators parameter will not be sent.

The reception of a user—to—user information parameter in a call set—up or release request from the terminating call control is an implicit indication of the acceptance of Service 1.

The user or network may not be able to interpret incoming user—to—user information. In such situations, the user should discard this information without disrupting normal call handling. No specific signalling is provided by the network to accommodate this situation.

2.2.1.3 *Interworking*

In the case of interworking with a non—ISDN network, the “interworking” protocol control information will be returned to the originating exchange in the first appropriate message, e.g. an Address Complete Message. Two ISDN networks that interwork may have to retain knowledge of the service request until it is clear whether both can support the service.

2.2.1.4 *Rejection of implicit service requests*

Networks that cannot provide the service requested may not return a rejection indication.

2.2.1.5 *User—to—user signalling in the call clearing phase*

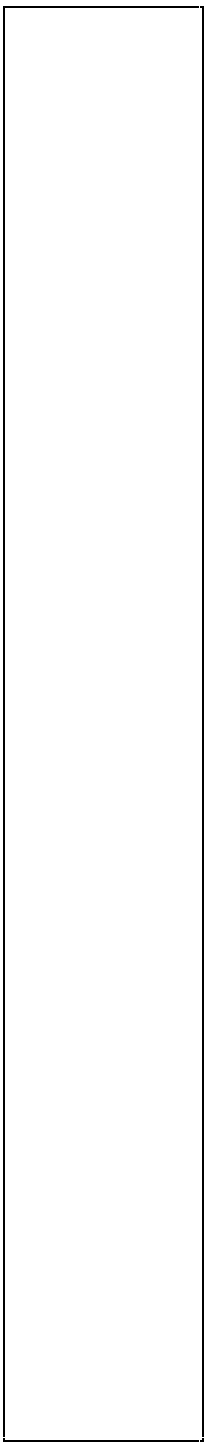
A user—to—user information parameter may be included in the Release Message. The user—to—user information parameter received at the distant exchange in the Release Message is passed to the call control for the remote user. In the case of simultaneous clearing of the call, the Release Message may not reach the distant local exchange and the user—to—user information will be lost.

2.2.1.6 *Message flow diagrams*

The message flow diagrams are shown in Figure 1/Q.730 as well as the use of user—to—user signalling service 1 when implicitly requested in a point—to—point configuration.

The messages shown with dashed lines are not part of the ISDN User Part protocol and are for information only. For detailed information on the access protocol user—to—user procedures the ISDN access protocol Recommendation should be examined.

Figure 1/Q.730 - T1115880-88



2.2.2 *Interaction with other supplementary services*

2.2.2.1 *Call forwarding services*

Interactions with the call forwarding services are shown in the call forwarding protocol sections.

2.2.2.2 *Call waiting service*

Interactions with the call waiting service are shown in the call waiting protocol sections. (Call waiting is for further study.)

2.2.2.3 *Other services*

There are no known interactions with services other than those listed.

2.2.2.4 *State transition diagrams*

The state transition diagrams may be found in Stage 2 descriptions of the user—to—user service.

## 3 Closed user group (CUG)

### 3.1 *General*

The closed user group (CUG) supplementary service enables a group of users to intercommunicate only among themselves or, as required, one or more users may be provided with incoming/outgoing access to users outside the group.

The stage I definition of the CUG service is given in Recommendation I.255, and its stage II service definition including network functions are given in Recommendation Q.85.

The realization of the CUG facilities is done by the provision of interlock codes and is based on various validation checks as defined in Q.85 at call set—up, determining whether or not a requested call to or from a user having a CUG facility is allowed. In particular, a validation check is performed by verifying that both the calling and called parties belong to the CUG indicated by the interlock code.

The data for each CUG that a user belongs to can either be stored at the local exchange to which the user is connected (decentralized administration of CUG data), or at dedicated point(s) in the network (centralized administration of CUG data).

In § 3.2 the call set—up procedure based on decentralized administration of CUG data is specified making use of the ISDN User Part as defined in Recommendations Q.761—764 and Q.766.

In § 3.3 the call set—up procedure based on centralized administration of CUG data is specified making use of the ISDN User Part as defined in Recommendations Q.761—764 and Q.766 and the Transaction Capabilities Application Part (TCAP) as defined in Recommendations Q.771—775.

Section 3.4 specifies the application service element (ASE), situated above the Transaction Capabilities Application Part (TCAP), and used for CUG validation check with centralized administration of CUG data.

### 3.2 *Call set—up procedure with decentralized administration of CUG data*

#### 3.2.1 *Originating exchange*

The actions at the originating exchange at call set—up from a user belonging to a CUG depend on the result of the validation checks performed there based on whether the user belongs to one or more CUGs and on the combination of CUG facilities that applies.

a) *CUG call without outgoing access*

If the result of the validation check indicates that the call should be dealt with as a CUG call, the interlock code of the selected CUG is obtained. The initial address message forwarded to the next exchange then includes the interlock code together with an indication that the call is a CUG call without outgoing access. The ISUP preference indicator of the forward call indicators parameter in the IAM is set to “ISUP required all the way”.

b) *CUG call with outgoing access*

If the result of the validation check indicates that the call should be dealt with as a CUG call with outgoing access, the interlock code of the selected CUG together with an outgoing access indication is obtained. The initial address message forwarded to the next exchange then includes the interlock code together with an indication that the call is a CUG call for which outgoing access is allowed. The ISUP preference indicator of the forward call indicators parameter in the IAM is set to “ISUP preferred all the way”, unless another service requires a more stringent setting.

c) *Non—CUG call*

If the result of the validation check indicates that the call should be dealt with as a non—CUG call, the initial address message forwarded to the next exchange then does not include an interlock code nor a CUG call indication.

d) *Call rejected*

If the result of the validation check indicates that the call is to be rejected, the call set—up is not initiated.

3.2.2 *Transit exchange*

With the possible exception of some gateway exchanges, each transit exchange sets up a CUG call as an ordinary call. The information related to the CUG facilities received from the preceding exchange, i.e. an interlock code, a CUG call indication — possibly with an indication that outgoing access is allowed — is forwarded to the succeeding exchange.

In the case of an international CUG call, no special functions are required at the gateway exchange provided that the international interlock code assigned to the international CUG concerned is used in the national network. However, in the case where a national interlock code other than the applicable international interlock code is used within a national network, interlock code conversion is required at the gateway (or corresponding) exchange.

In case of interworking with a network which does not support the CUG facility, the gateway exchange may release the call, depending on the contents of the CUG call indicator in the received IAM. The action at the gateway exchange, in this case, is indicated in Table 1/Q.730. In cases where a call is rejected as the result of the interworking, a release message including the cause parameter indicating ## 88 is sent towards the originating exchange.

3.2.3 *Destination exchange*

At the destination exchange a validation check of the acceptability of a call is made according to the rule specified in the Recommendation Q.85 where either the calling party (as indicated by a CUG call indication in the initial address message received) or the called party belongs to a CUG. The call set—up is continued only in cases where the information received checks with the information stored at the destination exchange. Table 2/Q.730 indicates the action to be taken by the destination exchange as the result of the validation check.

In cases where a call is rejected as the result of the validation check because of incompatible CUG information, a release message including the cause parameter indicating one of the following values is sent towards the originating exchange:

##55: Incoming calls barred within CUG

##87: Called user not member of CUG

##88: Incompatible destination

Figure 2/Q.730 illustrates example message flows for CUG calls with decentralized administration of CUG data.

3.3 *Call set—up procedure with centralized administration of CUG data*

In the local exchange an indication is stored, showing only whether the user has one or none of the closed user group facilities.

3.3.1 *Originating exchange*

The originating exchange requests the CUG validation check to the dedicated point by invocation of the "CUG check 1" operation through TCAP. This operation and associated parameters are described in § 3.4 of this Recommendation. The following actions at the originating exchange depend on the result of this validation check:

a) *CUG call indication*

If the result of the validation check for the calling user at the originating exchange indicates that the check for the calling user has been successful, the interlock code of the selected CUG possibly together with an outgoing access indication is obtained. The initial address message forwarded to the next exchange then includes the interlock code together with an indication that the call is a CUG call without outgoing access or a CUG call with outgoing access.

b) *Non—CUG call indication*

If the result of the validation check indicates that the call should be dealt with as a non—CUG call, the initial address message forwarded to the next exchange then does not include an interlock code nor a CUG call indication.

c) *Call rejected*

If the result of the validation check indicates that the call is to be rejected, the call set—up is not initiated.

3.3.2 *Transit exchange*

Refer to § 3.2.2.

3.3.3 *Destination exchange*

In the case of an incoming CUG call for which the validation check for the calling user has successfully been performed, the received initial address message includes the interlock code and CUG call indication possibly with an indication that outgoing access is allowed. The destination exchange then forwards the information received in the initial address message to the dedicated point for CUG validation check. In this case, the destination exchange invokes the "CUG check 2" operation through TCAP. This operation and associated parameters are defined in § 3.4 of this Recommendation.

a) Check successful indication

If the result of the validation check indicates that the check has been successful, the index of the CUG selected for the called user and possibly an outgoing access indication are obtained. The CUG call set—up request is forwarded to the called user with these indications.

b) Non—CUG call indication

If the result of the validation check indicates that the call should be dealt with as a non—CUG call, the set—up request of a non—CUG call is forwarded to the called user.

c) Call rejected

If the result of the validation check indicates that the call is rejected, the reason why the call has been rejected is obtained. A release message including the cause parameter indicating one of the values as listed in § 3.2.3 is sent towards the originating exchange.

3.3.4 *Dedicated point*

At the dedicated point, the CUG validation check is performed according to the rules defined in Recommendation Q.85. The procedures between the dedicated point and the exchange follow those as defined in the ASE part of this Recommendation.

Figure 3/Q.730 illustrates an example message flow for a CUG call with centralized administration of CUG data.

TABLE 1/Q.730

**Action at the gateway with a network without CUG capability**

| CUG call indicator in IAM | Action at the gateway exchange |
|---|---|
| CUG without outgoing access | Release the call with cause ##88 |
| CUG with outgoing access | Treat the call as an ordinary call [a)] |
| Non—CUG | Treat the call as an ordinary call |

[a)] Discard the interlock code parameter and change the CUG call indicator of the optional forward call indicator to indicate non—CUG call or discard the whole parameter if appropriate.

TABLE 2/Q.730

**Handling of a CUG call at the destination exchange**

<table>
<tr><td rowspan="3">CUG call indicator in IAM</td><td rowspan="3">CUG match check</td><td colspan="5">Class of called user</td></tr>
<tr><td colspan="2">CUG</td><td colspan="2">CUG + IA</td><td rowspan="2">No CUG</td></tr>
<tr><td>No ICB</td><td>ICB</td><td>No ICB</td><td>ICB</td></tr>
<tr><td rowspan="2">CUG with OA not allowed</td><td>Match</td><td>CUG call</td><td>Release cause ##55</td><td>CUG call</td><td>Release cause ##55</td><td rowspan="2">Release the call with cause ##88</td></tr>
<tr><td>No match</td><td colspan="2">Release the call with cause ##87</td><td colspan="2">Release the call with cause ##87</td></tr>
<tr><td rowspan="2">CUG with OA allowed</td><td>Match</td><td>CUG call</td><td>Release cause ##55</td><td>CUG+OA call</td><td>Non—CUG call</td><td rowspan="2">Non—CUG call</td></tr>
<tr><td>No match</td><td colspan="2">Release the call with cause ##87</td><td colspan="2">Non—CUG call</td></tr>
<tr><td>Non—CUG</td><td>—</td><td colspan="2">Release the call with cause ##88</td><td colspan="2">Non—CUG call</td><td>Non—CUG call</td></tr>
</table>

IA Incoming access

OA Outgoing access

ICB Incoming calls barred

Match The interlock code in the received IAM matches one of the CUGs to which the called user belongs.

No match The interlock code does not match any of the CUGs to which the called user belongs.

*Note* — As OA attribute of the called user is of no concern at the destination exchange, CUG+OA class is equivalent to CUG, and CUG/IA class is equivalent to CUG+IA in this table. Subscription of preferential CUG by the called user is also of no concern in this table.

Figure 2/Q.730 - T1119340-88

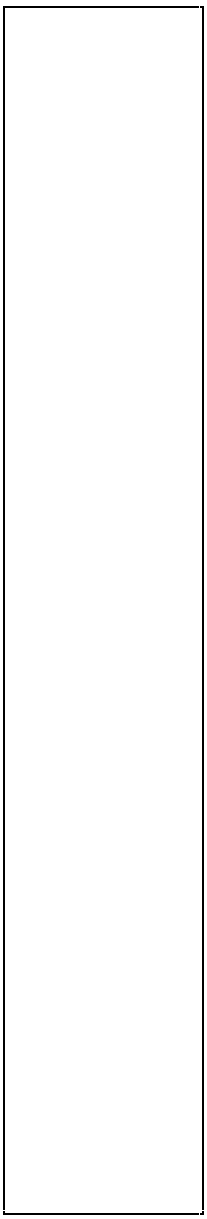
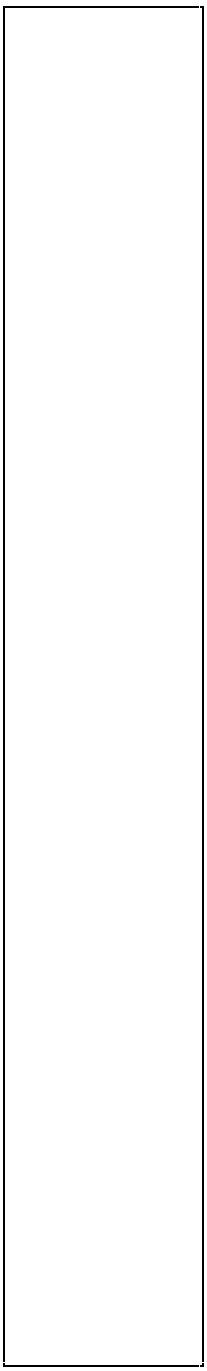


Figure 3/Q.730 - T1119350-88



3.4 *ASE for CUG service with centralized administration of CUG data*

3.4.1 *General*

The application service element (ASE) for CUG service with centralized administration of CUG data provides the procedures between the exchanges and the CUG management centers (CMC) for CUG validation check.

Two similar but different procedures are defined for CUG validation check. One is the procedure between the originating exchange of a CUG call and a CMC to check the qualification of the calling user to establish the present CUG call. The other is the procedure between the terminating exchange of a CUG call and a CMC to check the qualification of the called user to accept the present CUG call. One TCAP (Transaction Capabilities Application Part) operation is defined for each of these procedures.

3.4.2 *Procedures*

To check the qualification of the calling user the originating exchange initiates the transaction to the CMC by invocation of the CUG Check 1 operation with appropriate parameters. The CMC, in response to this invocation, terminates the transaction with the check result. The check result contains the interlock code and other parameters in case of successful check or an error cause in case of unsuccessful check. Figure 4/Q.730 shows the primitive flows between the ASE and the TCAP at the exchange and between the ASE and the TCAP at the CMC for this case. Table 3/Q.730 shows the result of the validation check which is performed by the CMC, according to various parameters, concerning the calling user.

To check the qualification of the called user, the terminating exchange initiates the transaction to the CMC by invocation of the CUG Check 2 operation with appropriate parameters. The CMC, in response to this invocation, terminates the transaction with the check result. The check result contains the index number for the called user and other parameters in case of successful check or an error cause in case of unsuccessful check. Figure 5/Q.730 shows the primitive flows between the ASE and the TCAP at the exchange and between the ASE and the TCAP at the CMC for this case. Table 4/Q.730 shows the result of the validation check which is performed by the CMC, according to various parameters, concerning the called user.

3.4.3. *Operations*

3.4.3.1 *Description of operations*

3.4.3.1.1 *CUG Check 1*

This operation is used between the originating exchange of a call and a dedicated point for CUG validation check of the calling user.

3.4.3.1.2 *CUG Check 2*

This operation is used between the terminating exchange of a call and a dedicated point for CUG validation check of the called user.

TABLE 3/Q.730

**Validation check of CUG call concerning the calling user**

| Calling user class | Indication from calling user | | | |
|---|---|---|---|---|
| | CUG call with index | CUG + OA call with index | CUG + OA call without index | Non—CUG call |
| CUG with pref. | CUG call [a) c)]<br>IC: specified CUG | CUG call [a) c)]<br>IC: specified CUG | CUG call [a)]<br>IC: preferential CUG | CUG call<br>IC: preferential CUG |
| CUG without pref. | CUG call [a) c)]<br>IC: specified CUG | CUG call [a) c)]<br>IC: specified CUG | Return Error<br>cause ##62 | Return Error<br>cause ##62 |
| CUG + OAI<br>with pref. | CUG + OA [a) c)]<br>IC: specified CUG | CUG + OA [a) c)]<br>IC: specified CUG | CUG + OA [a)]<br>IC: preferential CUG | CUG + OA [b)]<br>IC: preferential CUG |
| CUG + OAI<br>without pref. | CUG + OA [a) c)]<br>IC: specified CUG | CUG + OA [b) c)]<br>IC: specified CUG | Non—CUG call | Non—CUG call |
| CUG + OAE<br>with pref. | CUG call [a) c)]<br>IC: specified CUG | CUG + OA [b) c)]<br>IC: specified CUG | CUG + OA [b)]<br>IC: preferential CUG | CUG call [b)]<br>IC: preferential CUG |
| CUG + OAE<br>without pref. | CUG call [a) c)]<br>IC: specified CUG | CUG + OA [b) c)]<br>IC: specified CUG | Non—CUG call | Return Error<br>cause ##62 |
| No CUG | Return Error<br>cause ##50 | Return Error<br>cause ##50 | Return Error<br>cause ##50 | Non—CUG call |

OAE Outgoing access, explicit request required

OAI Outgoing access, implicit outgoing access for all calls

IC Interlock code of the CUG selected

*Note* — As IA (incoming access) attribute of the calling user is of no concern for this validation check, CUG + IA class is equivalent to CUG, and CUG + OA/IA class is equivalent to CUG + OA in this table.

a) In case of OCB (outgoing calls barred) within the CUG, Return Error with cause ##53.

b) In case of OCB within the CUG, the call is interpreted as a non—CUG call.

c) In the case where the specified index does not match any of the registered indices, Return Error with cause ##90.

TABLE 4/Q.730

**Validation check of CUG call concerning the called user**

<table>
<tr><td rowspan="2">CUG call indication in IAM</td><td rowspan="2">CUG match check</td><td colspan="5">Class of called user</td></tr>
<tr><td>CUG</td><td></td><td></td><td>CUG + IA</td><td></td></tr>
<tr><td></td><td></td><td>No ICB</td><td>ICB</td><td>No ICB</td><td>ICB</td><td>No CUG</td></tr>
<tr><td>CUG with OA not allowed</td><td>Match</td><td>CUG call</td><td>Return Error cause ##55</td><td>CUG call</td><td>Return Error cause ##55</td><td rowspan="2">Return Error cause ##88</td></tr>
<tr><td></td><td>No match</td><td colspan="2">Return Error cause ##87</td><td colspan="2">Return Error cause ##87</td></tr>
<tr><td>CUG with OA allowed</td><td>Match</td><td>CUG call</td><td>Return Error cause ##55</td><td>CUG + OA call</td><td>Non—CUG call</td><td rowspan="2">Non—CUG call</td></tr>
<tr><td></td><td>No match</td><td colspan="2">Return Error cause ##87</td><td colspan="2">Non—CUG call</td></tr>
<tr><td>Non—CUG</td><td>—</td><td colspan="2">Return Error cause ##87</td><td colspan="2">Non—CUG call</td><td>Non—CUG call</td></tr>
</table>

IA Incoming access

OA Outgoing access

ICB Incoming calls barred

Match The interlock code in the received IAM matches one of the CUGs to which the called user belongs.

No match The interlock code does not match any of the CUGs to which called user belongs.

*Note* — OA attribute of the called user is of no concern at the destination exchange, the CUG + OA class is equivalent to CUG, and CUG + OA/IA class is equivalent to CUG + IA in this table. Subscription of preferential CUG by the called user is also of no concern in this table.

Figure 4/Q.730 - T1119360-88

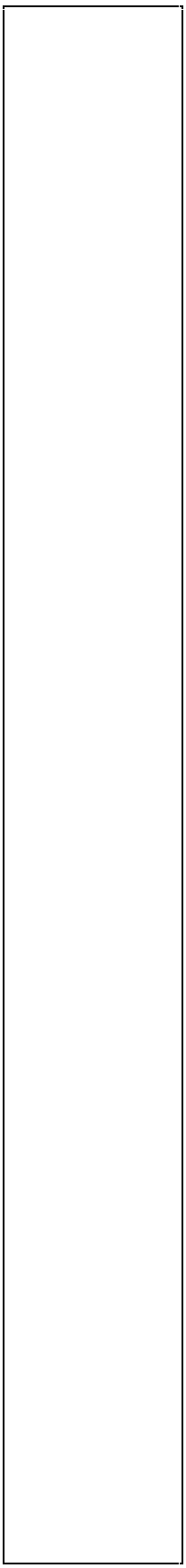
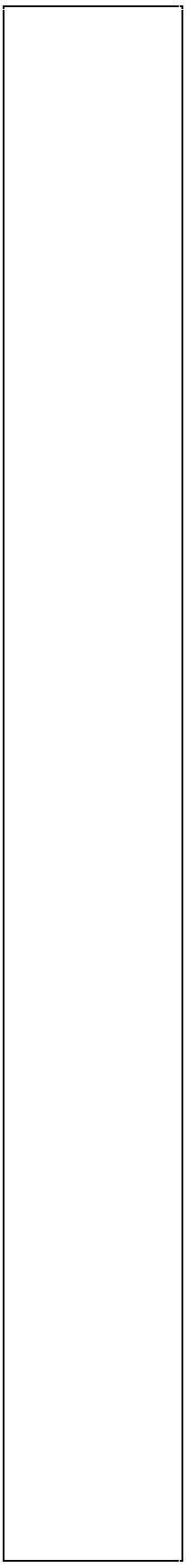


Figure 5/Q.730 - T1119370-88



3.4.3.2 *Parameters of operations and outcomes*

3.4.3.2.1 *CUG Check 1*

| CUG Check 1 | Timer = x seconds | Class = 1 | Code = 00000001 |
|---|---|---|---|
| Parameters with Invoke | | Optional/ Mandatory | Reference (§) |
| CallingUserIndex | | O | 3.4.3.3.1 |
| CUGCallIndicator | | M | 3.4.3.3.2 |
| CallingPartyNumber | | M | 3.4.3.3.3. |
| Parameters with Return Result | | | |
| CUGInterlockCode | | M | 3.4.3.3.5 |
| CUGCallIndicator | | M | 3.4.3.3.2 |
| Linked Operations | | | |
| Not applicable | | | |
| Errors | | | |
| UnsuccessfulCheck | | | 3.4.3.3.7 |

```
CUGCheck1     OPERATION
        PARAMETER   SEQUENCE      { CallingUserIndex OPTIONAL, CUGCallIndicator,
                                    { CallingPartyNumber }
        RESULT SEQUENCE     { CUGInterlockCode CUGCallIndicator }
        ERRORS              { UnsuccessfulCheck }
        ::= 1
```

3.4.3.2.2 *CUG Check 2*

| CUG Check 2 Timer = x seconds | Class = 1 | Code = 00000010 |
|---|---|---|
| Parameters with Invoke | Optional/ Mandatory | Reference (§) |
| CUGInterlockCode<br>CUGCallIndicator<br>CalledPartyNumber | M<br>M<br>M | 3.4.3.3.5<br>3.4.3.3.2<br>3.4.3.3.4 |
| Parameters with Return Result | | |
| CalledUserIndex<br>CUGCallIndicator | O<br>M | 3.4.3.3.6<br>3.4.3.3.2 |
| Linked Operations | | |
| Not applicable | | |
| Errors | | |
| UnsuccessfulCheck | | 3.4.3.3.7 |

CUGCheck2 OPERATION

PARAMETER SEQUENCE { CUGInterlockCode, CUGCallIndicator,
{ CalledPartyNumber }
RESULT SEQUENCE { CalledUserIndex OPTIONAL, CUGCallIndicator }
ERRORS { UnsuccessfulCheck }
::= 2

3.4.3.3 *Parameter coding*

3.4.3.3.1 The CallingUserIndex is the local index at the calling user to identify a particular CUG he belongs to.

| CallingUserIndex | Code = 10000001 |
|---|---|
| Contents | Meaning |
| IA5 Character String | One IA5 character represents one digit of the CUG index value |

CallingUserIndex ::= [1] IMPLICIT LocalIndex

LocalIndex ::= IA5 STRING

— — *The maximum number of digits is four.*

3.4.3.3.2 The CUGCallIndicator indicates whether the call is requested or designated as a CUG call and whether outgoing access is requested or allowed.

| CUGCallIndicator | Code = 10000010 |
|---|---|
| Contents | Meaning |
| 00000000 | Non—CUG call |
| 00000001 | Non—CUG call |
| 00000010 | CUG call with outgoing access |
| 00000011 | CUG call without outgoing access |

```
CUGCallIndicator ::=    [2] IMPLICIT CallIndicator
CallIndicator ::=       INTEGER {
                          NonCUGCall (0),
                          NonCUGCall(1),
                          outgoingAccessAllowedCUGCall (2),
                          outgoingAccessNotAllowedCUGCall (3) },
```

3.4.3.3.3 The CallingPartyNumber is the network (e.g. E.164) number of the calling party. It is expressed in the same manner as the ISUP Calling party number in § 3.8 of Recommendation Q.763. The code of this parameter is "10000011".

3.4.3.3.4 The CalledPartyNumber is the network (e.g. E.164) number of the called party. It is expressed in the same manner as the ISUP Called party number in § 3.7 of Recommendation Q.763. The code of this parameter is "10000100".

3.4.3.3.5 The CUGInterlockCode is the code to uniquely identify a CUG inside the network. It is expresed in the same manner as the ISUP CUG interlock code in § 3.13 of Recommendation Q.763. The code of this parameter is "10000101".

3.4.3.3.6 The CalledUserIndex is the local index at the called user to identify a particular CUG he belongs to. Refer to § 3.4.3.3.1. The code of this parameter is "10000110".

3.4.3.3.7 *Errors*

| UnsuccessfulCheck | Code = 00000001 |
|---|---|
| Parameters | |
| Cause | 3.4.3.3.8 |

```
UnsuccessfulCheck       Error
        PARAMETERS { Cause }
        ::= 1
```

3.4.3.3.8 The Cause indicates the reason why the CUG check is unsuccessful.

| Cause | Code = 10000111 |
|---|---|
| Contents binary (decimal) | Meaning |
| 00110010 (50) | Requested facility not subscribed |
| 00110101 (53) | Outgoing calls barred within CUG |
| 00110111 (55) | Incoming calls barred within CUG |
| 00111110 (62) | InconsistencyInDesignatedOutgoingAccessInformationAndSubscriberClass |
| 01011010 (90) | Non—existent CUG |
| 01010111 (87) | Called user not member of CUG |
| 01011000 (88) | Incompatible destination |
| 01101110 (110) | Inconsistency in data |

```
Cause ::=        [7] IMPLICIT CauseCode
CauseCode ::=    INTEGER {
                     requestedFacilityNotSubscribed(50),
                     outgoingCallsBarredWithinCUG(53),
                     incomingCallsBarredWithinCUG(55),
                     inconsistencyInDesignatedOutgoingAccessInformationAnd
                     SubscriberClass(62),
                     nonExistentCUG(90),
                     calledUserNotMemberofCUG(87),
                     incompatibleDestination(88),
                     inconsistencyInData(110) }
```

## 4 General description of the Calling Line Identity Presentation and Restriction service

Calling Line Identification Presentation (CLIP) is a supplementary service offered to the called party which provides the calling party's ISDN number, possibly with additional address information (i.e. sub—address), to the called party.

Calling Line Identification Restriction (CLIR) is a supplementary service offered to the calling party to restrict presentation of the calling party's ISDN number, possibly with additional address information (i.e. sub-address), to the called party.

The stage 1 definitions for the CLIP and CLIR services are given in the Recommendation I.254 and the stage 2 service definitions including network functions, are given in Recommendation Q.84. This stage 3 description of CLIP and CLIR use the ISDN User Part protocol as defined in Recommendations Q.761—764 and Q.766.

### 4.1 *Description of the Calling Line Identity Presentation (CLIP) service*

Calling Line Identity Presentation (CLIP) is a user facility that enables a user to be informed on incoming calls, of the address of the calling party. When provided the facility applies to all incoming calls except for when the calling party has the Calling Line Identity Restriction (CLIR) facility active [see § 4.2 below] or the complete number of the calling party is not available at the destination exchange.

The Calling Line Identity (CLI) is generally the ISDN number of the calling party (with possible additional address information, i.e. sub—address) which may be provided by the network or partly by the calling party.

In the case where a national network does not always provide the CLIP facility, the included CLI may be the known part of the ISDN number at the interworking point (e.g. Trunk Code).

In the case where a calling party is an ISPBX, the network may send the ISDN number of the PABX attendant operator or, if provided by the calling party, the DDI number of the extension as the CLI.

When the CLI is provided by the user or ISPBX it is verified or screened for validity by the network, i.e. the CLI provided by the user is within the known number range for that user.

i) If the user provided CLI is valid the Calling Number Parameter field contains the CLI in the Address Signal with the Screening indicator set to "user provided verified and passed".

ii) If the user provided CLI is not valid or screened the originating exchange defaults to the network provided CLI for the Address Signals of the Calling Party Number parameter field with the Screening indicator set to "network provided".

When the CLI is provided by the network the originating exchange includes the stored CLI set against the calling party and sets the screening indicator to "network provided".

The CLI sent to the called user should contain all the necessary digits to enable a call to be established in the reverse direction.

*Note* — This may not always be possible if, for example, the DDI extension of an ISPBX is not provided by the calling party.

Information indicating that a subscriber has the user access to the CLIP facility is available in the exchange to which the subscriber is connected.

4.1.1 *Call set—up procedure*

The call control procedure and the information included in Call Control Messages vary depending on whether the CLI is included in the Initial Address Message and also whether the calling party has indicated a request to use the CLIR facility for this call.

Two different call control procedures can be used to provide the CLIP facility. Both procedures are specified for international use, however, the first method is to be preferred.

4.1.1.1 *The Calling Line Identity is included in the Initial Address Message*

When the CLI is available for insertion in the IAM the systematic inclusion of this parameter, in the IAM, is recommended. However, it is realized that under certain interworking conditions the CLI may only be available subsequent to the transmission of the IAM.

In this situation, to avoid unnecessary unsuccessful requests for the CLI, the following procedures are recommended:

a) If the CLI cannot be included in the IAM (for any reason) but is available and may be requested with a good chance of receiving it, then the optional field "calling party number parameter" *should not* be included in the IAM.

b) If the CLI cannot be transferred (because it is not allowed to be passed or because the national network cannot provide the number), then the optional field "calling party number parameter" *should* be included in the IAM with the indication "presentation restricted" or "address not available" set as appropriate in the Address Presentation Restricted indicator.

The CLI is sent to the called party in accordance with the user—network interface protocol.

For calls between networks (e.g. an outgoing ISC as referred to in b) above) the outgoing gateway exchange may remove any CLI digits from the IAM and indicate in the calling party number parameter that presentation is restricted.

Interworking exchanges may generate only part of the CLI for inclusion in the IAM (e.g. trunk code). This will be indicated in the number incomplete indicator in the Calling Party Number Parameter field.

In the case where the destination exchange receives only part of the CLI, (it is assumed to be the most significant part), the CLI is forwarded to the called party with the appropriate indications set.

4.1.1.2 *The Calling Line Identity is not included in the Initial Address Message*

In the case where the CLIP facility is applied, and the IAM has indicated that the CLI may be available, an Information Request Message is sent towards the originating exchange with the Information Request Indicator Parameter field bit set to the calling party address requested.

When receiving the request for Calling Party Address and the CLI is available, the originating/interworking exchange sends an information message containing the Calling Party Number Parameter field with the appropriate indications and CLI included.

In the case where the identity of the calling party is not available or is not allowed to be forwarded outside the network, the response will be an Information message including the Information Indicators Parameter Field indicating the CLI is not available.

In the case where the destination exchange receives only part of the CLI, (it is assumed to be the most significant part), the CLI is forwarded to the called party with the appropriate indications set.

The CLI is sent to the called party in accordance with the user—network interface protocol.

In the case where the destination exchange receives the "presentation restricted" or an "address not available", in the Presentation Restriction indicator of the Information message, the calling party address is not forwarded to the called party.

4.1.1.3 *Message Sequence diagrams for CLIP*

Figures 6/Q.730 and 7/Q.730 describe the message flows for CLIP.

Figure 6/Q.730 - T1121490-89

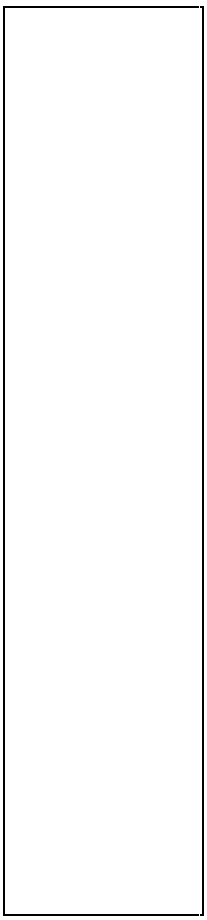
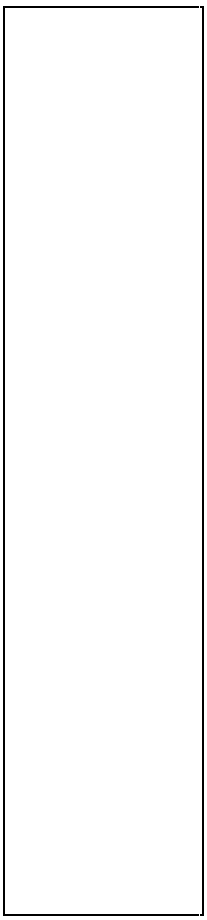


Figure 7/Q.730 - T1121500-89



4.2 *Description of the Calling Line Identity Restriction (CLIR) service*

Calling Line Identification Restriction (CLIR) is a user facility offered to restrict the presentation of the Calling Line Identity to the Called Party.

The Calling Line Identity (CLI) is the ISDN number of the calling party possibly with additional address information.

Information that a subscriber has the Calling Line Identity Restriction facility is available at the exchange to which the subscriber is connected.

4.2.1 *Normal Case*

When CLIR is applicable the originating exchange will provide the destination node with a notification that the Calling Line Identity is not allowed to be presented at the called party. In this case the Calling Line Identity will be marked as presentation restricted, in the Address Presentation Restricted Indicator, when it is passed across the network, in either an Initial Address Message or Information Message. In the case of CLIR the Calling Line Identity will not be included in the call offering to the called party's installation.

4.2.2 *Abnormal Case*

4.2.2.1 *Override Category within an ISDN*

As a national option the terminating exchange can override the presentation restriction indication and the CLI presented at the called subscriber for specific called party's categories (e.g. Police).