ATIS-1000625.1993(R2013)

Integrated Services Digital Network (ISDN) – Calling Line Identification Presentation and Restriction Supplementary Service

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Integrated Services Digital Network (ISDN) – Calling Line Identification Presentation and Restriction Supplementary Services

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Abstract

The ISDNsupplementary service called Calling Line Identification Presentation and Calling Line Identification Restriction are defined in three parts: (1) a description from the user's point of view, (2) an abstract analysis of the functional capabilities needed in network and user equipment, and (3) a precise specification of access and interexchange signaling capabilities that can be used to implement Calling Line Identification Presentation and Calling Line Identification Restriction.

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AMERICAN NATIONAL STANDARD **ATIS-1000625.1993** (R2013)

American National Standard
for Telecommunications –

Integrated Services Digital Network (ISDN) – Calling Line Identification Presentation and Restriction Supplementary Services

1 Scope, purpose, and application

1.1 Scope and purpose

This standard contains the specifications of two supplementary services: Calling Line Identification Presentation (CLIP), and Calling Line Identification Restriction (CLIR). The associated switching and signaling specifications are also provided.

CLIP is a supplementary service offered to a called party that provides the Calling Line Identification to that called party. The CLI information may not include the calling party's number due to interworking, or because of an interaction with the CLIR supplementary service.

CLIR is a supplementary service offered to a calling party that restricts presentation of that party's Calling Line Identification to the called party.

The purpose of this standard is to allow maximum compatibility among public- and user- owned telecommunications equipment. This standard is one of a series that defines and describes supplementary services within the context of an Integrated Services Digital Network (ISDN). The standard also includes a description of the interaction of CLIP and CLIR with other T1 standards. The CLIP and CLIR supplementary services may be provided on a subscription basis or they may be made generally available.

1.2 Application

The CLIP and CLIR supplementary services are applicable to both the Basic and Primary Rate ISDN interfaces. CLIP and CLIR should be used in conjunction with other American National Standards for ISDN supplementary services for a complete understanding of the interactions between these and other services.

These supplementary services are applicable to all circuit mode bearer services (see ANSI T1.620-1991). In addition, CLIP and CLIR are applicable to both intra- and inter-LATA (Local Access and Transport Area) calls.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI T1.113-1992, *Telecommunications – Signaling System No. 7 (SS7) – Integrated Services Digital Network (ISDN) User Part*

ANSI T1.607-1990, *Telecommunications – Integrated services digital network (ISDN) – Layer 3 signaling specification for circuit-switched bearer service for digital subscriber signaling system number 1 (DSS1)*

ANSI T1.608-1991, *Telecommunications – Integrated services digital network (ISDN) – Signaling specification for X.25 Packet-switch bearer service for digital subscriber signaling system number 1 (DSS1)*

ANSI T1.610-1990, *Telecommunications – Digital Subscriber Signaling System No. 1 – Generic Procedures for the Control of ISDN Supplementary Services*

ANSI T1.613-1991, *Telecommunications – Integrated Services Digital Network (ISDN) – Call Waiting Supplementary Service*

ANSI T1.616-1992, *Telecommunications – Integrated Services Digital Network (ISDN) – Call Hold Supplementary Service*

ANSI T1.619-1992, *Telecommunications – Integrated Services Digital Network (ISDN) – Multi-level Precedence and Preemption (MLPP) Service Capability*

ANSI T1.620-1991, *Telecommunications – Integrated Services Digital Network (ISDN) – Circuit-Mode Bearer Service Category Description*

Bellcore Document SR-TSV-002275, *BOC Notes on the LEC Networks – 1990, Issue 1, March 1991, Section 3, on Numbering Plan and Dialing Procedures*[1)]

CCITT Recommendation E.164, *Numbering Plan for the ISDN Era,1991* [2)]

CCITT Recommendation E.165, *Timetable for Coordinated Implementation of the Full Capability of the Numbering Plan for the ISDN Era (Rec. E.164)* [2)]

CCITT Recommendation I.334, *Principles Relating ISDN Numbers/Subaddresses to the OSI Reference Model Network Layer Addressing* [2)]

CCITT Recommendation X.213, *Network Service Definition for Open Systems Interconnection for CCITT applications* [2)]

3 Definitions

There are many terms and definitions, associated with the CLIP and CLIR supplementary services, that have special meaning to the telecommunications industry. The following are definitions of terms used in this standard.

3.1 Calling Line Identification (CLI): At a minimum, the Calling Line Identification includes a single Calling Party Number. It may also include a second Calling Party Number, a Calling Party Subaddress, and Redirecting Number Information. Calling Line Identifica-tion may not include any Calling Party Number due to interworking, or because of an interaction with the CLIR supplementary service.

3.2 Calling Party Number (CPN): A set of digits and related indicators (Type of Number, Numbering, Plan Identification, Screening Indicator, Presentation Indicator) that provide numbering information related to the calling party.

3.3 Calling Party Subaddress (CPS): A set of information other than CPN that is associated with the originator of the call. The CPS information may, for example, be encoded as IA5 characters, ASCII characters, or BCD digits. (CPS information also includes a Type of Subaddress indicator and an Odd/Even indicator.)

3.4 national number: The number identifying a customer line within an area designated by a country code.

3.5 network: In this description, “Network” refers to all telecommunications equipment that has any part in processing a call or a supplementary service for the user referred to. It may include Local Exchanges, Transit Exchanges, and NT2s but does not include the ISDN terminal and is not limited to the “Public network” or any other particular set of equipment.

3.6 Network Provided Number (NPN): An ISDN number, supplied by the calling user’s or the redirecting user’s network, which is associated with the calling user or the redirecting user. It is possible that the NPN may have the same value as the User Provided Number (UPN) especially in cases where delivery of two Calling Party Numbers is supported. The NPN may also be accompanied by a subaddress.

3.7 network validated number: A network validated number is either a valid UPN or an NPN when the UPN is absent, invalid, or unscreened.

3.8 North American Numbering Plan (NANP): A plan for the allocation of unique 10-digit address numbers. The numbers consist of a 3-digit area (numbering plan area) code, a 3-digit office code, and a 4-digit line number. The plan also extends to

format variations (e.g., 3-digit and 7-digit address), prefixes (e.g., 1, 0, 01, and 011), and special code applications (e.g., Service Access Codes). See Bellcore document, SR-TSV-002275.

3.9 Redirecting Number (RN): A set of digits and related indicators (Type of Number, Numbering, Plan Identification, Screening Indicator, Presentation Indicator) that provide numbering information related to the redirecting party.

3.10 Redirecting Number Information (RNI): Can be one or two redirecting numbers; and may include one redirecting subaddress that is associated with the original redirecting number; and one redirecting subaddress that is associated with the last redirecting number; or both.

3.11 Redirecting Subaddress (RS): A set of information other than RN that is associated with the redirecting party. The RS information may, for example, be encoded as IA5 characters, ASCII characters, or BCD digits. (RS information also includes a Type of Subaddress indicator and an Odd/Even indicator.)

3.12 service provider: This is a company, organization, business, etc. that sells, administers, maintains, charges for, etc. the service. The service provider may or may not be the provider of the network.

3.13 User-Provided Number (UPN): An ISDN number, supplied completely or partially by the calling user or the redirecting user, that is associated with the calling user or the redirecting user. The UPN may also be accompanied by a subaddress.

3.14 world numbering plan: A plan created by the International Telegraph and Telephone Consultative Committee (CCITT) that provides each telephone subscriber with a unique number. Each world telephone number consists of a country code followed by the national number. By international agreement, the number of digits in the country code plus national number is limited to a total of 12 digits currently, with a recommendation to increase the maximum length to 15 digits at the end of 1996. (See CCITT Recommendations E.164 and E.165.)

3.15 World Zone 1 (WZ1): The group of countries in the World Numbering Plan that are identified by the single-digit country code “1”. World numbering Zone 1 is defined in CCITT Recommendation E.164, and includes the following countries:

> Canada; United States of America, including Puerto Rico and the Virgin Islands; Jamaica; Antigua and Barbuda; Cayman Islands; British Virgin Islands; Bermuda; Bahamas (Commonwealth of the); Dominican Republic; Grenada; Montserrat; St. Kitts; St. Lucia; and Saint Vincent and the Grenadines.

The North American Numbering Plan is consistent with the World Numbering Plan and applies to World Zone 1.

4 Description of the CLIP and CLIR services from the user’s perspective

This clause defines the CLIP and CLIR services in terms of procedures and other aspects that are visible to the user or users without regard to the means of implementation. It describes interworking with non-ISDNs and the interaction between the CLIP, CLIR and other ISDN supplementary services. This clause does not suggest how the required functions should be divided between customer-owned and public equipment. It does not address the protocol needed for implementing these services in a standard way. It provides a prose description and a diagrammatic description of the CLIP and CLIR supplementary services in the form of a Specification and Description Language (SDL) Diagram. In case of conflict between the following text and the SDL, the text takes precedence.

Subclauses 4.1 and 4.2 contain the descriptions of CLIP and CLIR, respectively.

4.1 Description of CLIP

4.1.1 Description

When the CLIP service is applicable and activated, the destination network provides the called party with the Calling Line Identification at call set-up on all incoming calls.

It is assumed that the originating network is capable of transmitting at least 15 digits of Calling Party Number digits. It is also assumed that the originating network is capable of transmitting a Calling Party Subaddress if provided by the calling party.

For Network Validated Numbers, the calling party’s network should transmit enough numbering plan digits to allow other networks and users to identify the calling line.

It is assumed that the redirecting network is capable of transmitting at least 15 digits of Redirecting Number digits. It is also assumed that the redirecting network is capable of transmitting a redirecting subaddress, if provided by the redirecting party.

For Network Validated Numbers, the redirecting network should transmit enough numbering plan digits to allow other networks and users to identify the redirecting party.

Subaddress information is information other than CPN or RN that identifies a particular party in a call. It is intended as end-user information, to be generated and processed by user equipment, and transferred by the network from one user to another without screening. Examples of the use of subaddress are:

a) Extension number of a station behind a PBX;

b) Identification of a specific terminal address;

c) Convey all or part of an OSI Network Service Access Point (NSAP) address or N-Entity Title (see CCITTRecommendations X.213 and I.334).

4.1.2 Procedures

4.1.2.1 Provision/withdrawal

The CLIP service may be provided on a subscription basis or may be generally available. The CLIP service may be withdrawn at the request of the subscriber or by the service provider for administrative reasons.

As a service provider option, CLIP may be offered with several subscription options. It is a service provider option as to how subscription options are applied; (e.g., per ISDN Number and Bearer Service).

Subscription options are summarized in table 1.

4.1.2.2 Normal procedures

The normal procedures for CLIP for the originating and terminating sides of the network are described below and shown in figures 1 and 2, respectively as dynamic descriptions (Specification and Description Language (SDL)).

4.1.2.2.1 Activation/deactivation

Activation and deactivation of CLIP are achieved through subscription or are generally available.

4.1.2.2.2 Invocation and operation: Origi-nating network

The originating user may provide Calling Line Identification to the originating network as part of basic call setup. If the calling party has not provided a Calling Party Number, a network default number shall be provided by the originating network. This network default number shall be marked as a “Network-Provided Number”.

Where either the complete Calling Party Number or part of the Calling Party Number is initially provided by the calling user, the originating network may optionally screen the number to check its validity. When screening applies, the network shall determine whether or not the digits provided by the calling user are valid. When screening occurs in a public exchange, only 7- or 10-digit North American Numbering Plan numbers shall be treated as valid.

If, as a result of screening, the user-provided number is determined to be valid, that number should be marked as a “User-Provided, Verified and Passed” number. If, as a result of screening, the user-provided number is determined to be invalid, that number should be marked as a “User-Provided, Verified and Failed” number. If the originating network does not screen the user-provided number, that number should be marked as a “User-Provided Not Screened” number. In the latter two cases (“User-Provided, Verified and Failed” and “User-Provided, Not Screened”) the originating network shall also provide the network default number for the calling user access, and mark that number as a “Network-Provided Number”.

The service provider has the option to send one or two numbers. If the service provider elects not to screen UPNs, then the service provider should select the option to send two numbers.

If the service provider option is to send only one number, the following treatment shall apply. If no UPN is available, the NPN alone shall be sent. If a valid UPN is available, that UPN alone shall be sent.

If an invalid UPN is available, or an un-screened UPN is available, the NPN alone shall be sent .

If the service provider option is to send two numbers, the following treatment shall apply. If no UPN is available, the NPN alone shall be sent. If a valid UPN is available, that UPN alone shall be sent. If an invalid UPN is available, or an unscreened UPN is available, the NPN shall be sent as the first number and that UPN shall be sent as the second number.

In each case, indications shall be provided by the originating network to signify whether the Calling Party Number is “user provided” or “network provided”, and, if “user provided”, whether the number is “unscreened”, “verified and passed”, or “verified and failed”.

Redirecting Number Information received from the redirecting user or the redirecting user’s network should be processed as part of the supplementary services that require call redirection.

4.1.2.2.3 Invocation and operation: Redi-recting network

The redirecting user or the redirecting user’s network may provide Redirecting Number Information as part of the supplementary services that require call redirection. Rules for redirecting number screening should be the same as the rules for Calling Party Number screening. Redirection services may also include restriction of Redirecting Number Information from presentation to the called user. Details on the provision and restriction of Redirecting Number Information may be defined as part of the supplementary services providing call redirection (e.g., Call Forward-ing, Call Transfer).

4.1.2.2.4 Invocation and operation: Termi-nating network

The terminating network may receive the Calling Line Identification as part of basic call setup. This CLI may include CPNs, a CPS, RNs, and RSs. The delivery treatment for the CPS and RS is given in the next subclause.

One of the Calling Party Numbers shall be a Network Validated Number for the access of the calling party. The other Calling Party Number, if present, shall be an unvalidated User Provided Number from the access of the calling party. The called user, by the Calling Party Number Delivery (CPND) subscription option, may select either between the single- number delivery option or the two-number delivery option. If single-number delivery is specified, only the Network Validated Number shall be presented. If two-number delivery is specified, and only one number is available, the Network Validated Number shall be presented. If two number delivery is specified, and two numbers are available, the Network Provided Number shall be presented and, additionally, the unscreened or invalid User Provided Number shall be presented. If Calling Party Number Delivery is not subscribed (i.e., the “no delivery” option applies), no CPN value shall be presented.

Indications shall be provided by the terminating network to signify whether each Calling Party Number is “user provided” or “network provided”, and, if “user provided”, whether the number is “unscreened”, “verified and passed”, or “verified and failed”. The origin of the numbers can be determined, in cases where two numbers are presented, by the presence of the detailed screening indicators accompanying the numbers.

The network shall deliver the Network Pro-vided Number as the first number and the User Provided Number, either verified and failed or unscreened, as the second number.

When Redirecting Numbers are received, each redirecting number (RN) shall be associated with separate occurrences of call redirection. When one redirecting number is received, that RN shall identify the number of the last party that redirected the call. When two redirecting numbers are received, the first RN shall identify the number of the first party that redirected the call, (i.e., the original called party), and the second RN shall identify the access of the last party that redirected the call. The called party, by Redirecting Number Identification Delivery (RNID) subscription option, may select either the “No delivery” option or the “Delivery” option. If “No delivery” is specified, no RN information shall be presented. If “Delivery” is specified, the following treatment shall apply. If no RN information is available, then no RN information shall be presented. If only one RN is available, then that RN alone shall be presented. If two RNs are available, both RNs shall be presented. The RN associated with the first redirecting party shall be presented first, and the RN associated with the last redirecting party shall be presented second.

Indications shall be provided by the terminating network to signify that each Redirecting Number is “user provided” or “network provided”, and, if “user provided”, whether the number is “unscreened”, “verified and passed”, or “verified and failed”. The origin of the two numbers can be determined, in cases where two numbers are presented, by the ordering of the RNs in the sequence in which the call was redirected.

Note that the terms “redirecting” and “redirected”, as used here, are used generically and do not apply only to the Call Diversion services. The redirection of a call to a CLIP subscriber may result in the delivery of RN information to that subscriber, even though no Call Forwarding was involved.

4.1.2.2.5 Subaddress processing

The processing of the subaddress information provided by the calling party shall be as follows:

a) *Originating network:* At call setup, the calling party may provide Calling Party Subaddress information when providing the Calling Party Number. Alternatively, the calling party may provide Calling Party Subaddress information at call setup without providing the Calling Party Number.

When a Calling Party Subaddress is sent by the calling user, the treatment applied by the originating network shall depend on one of the following network options for Calling Party Subaddress information transfer :

1) *Conditional acceptance:* Accept and transfer a Calling Party Subaddress but only if UPN is also present, and that UPN is sent forward by the network.

2) *Unconditional acceptance:* Accept and transfer a Calling Party Subaddress independent of the presence of UPN, and independent of whether a UPN is sent forward by the network.

An originating network may support one or both of these options . When both options are supported, the service provider may elect to make the value of this option conditional, unconditional, or settable on a per user basis (e.g., per interface or per ISDN number/bearer service).

If a calling party provides Calling Party Sub-address information and does not provide the Calling Party Number, and the “conditional acceptance” option applies, then the originating network shall ignore the Calling Party Subaddress information. The call setup information shall be processed as if no Calling Party Subaddress information had been provided by the calling party. The conditional acceptance option is not recommended for the CMD bearer service categories.

If a calling party provides Calling Party Subaddress information and does not provide the Calling Party Number, and the “unconditional acceptance” option applies, then the originating network shall accept the Calling Party Subaddress information. The default ISDN number assigned to the access shall be used as the Calling Party Number in this case.

If the calling party provides address information that includes both the Calling Party Number and the Calling Party Subaddress, then the following treatment shall apply:

The originating network shall:

1) Send the Calling Party Subaddress information when the UPN is screened and passed;

2) Send the Calling Party Subaddress information when the network option is to send two CPNs and the UPN is screened and failed or not screened;

3) Discard the Calling Party Subaddress information when Conditional Accep-tance applies, the network option is to send one CPN, and the UPN is screened and failed or is not screened;

4) Send the Calling Party Subaddress information along with the NPN, when Unconditional Acceptance applies, the network option is to send one CPN , the UPN is screened and failed or is not screened.

b) *Terminating network*: When the Calling Party Subaddress information and the Calling Party Number information (i.e., one or two Calling Party Numbers) are delivered to the terminating network and the terminating network determines that the called party is a CPND subscriber, then the treatment shall depend on the following subscription options for Calling Party Subaddress Delivery:

1) No delivery;

2) Conditional delivery;

3) Unconditional delivery.

A terminating network should support the unconditional delivery option, and may also support the conditional delivery option. The service provider may elect to make the value of this option settable on a per user basis (e.g., per interface or per ISDN number/bearer service). The conditional delivery option is not recommended for the CMD bearer service category.

The terminating network shall:

– Send the Calling Party Subaddress information to the called party, when there is no UPN and Unconditional CPS Delivery ap-plies;

– Withhold the CPS information and deliver the NPN to the called party, when there is no UPN and conditional CPS Delivery ap-plies;

– Send the Calling Party Subaddress information to the called party when the UPN is screened and passed and unconditional CPS delivery applies.

– Send the Calling Party Subaddress information to the called party when the UPN is screened and passed and the UPN is marked as “Presentation Allowed” and conditional CPS delivery applies;

– Withhold the Calling Party Subaddress information from the called party and deliver only the NPN, when single number delivery is provided, the UPN is indicated as “not screened” or as “failed screening”, and conditional CPS delivery applies;

– Send the Calling Party Subaddress information to the called party along with the NPN, when single number delivery is provided, the UPN is indicated as “not screened” or as “failed screening”, and Unconditional CPS Delivery applies;

– Send the Calling Party Subaddress to the called party along with the UPN, when two number delivery is provided and two Calling Party Numbers were delivered to the terminating network.

NOTES

1 When Conditional CPS Delivery applies, restriction of the UPN Calling Party Number information shall be treated as applying to both Calling Party Number information and to Calling Party Subaddress information.

2 When Unconditional CPS Delivery applies, restriction of the Calling Party Number information (either the NPN or UPN or both) shall be treated as applying only to Calling Party Number information and shall not apply to Calling Party Subaddress information.

When the Calling Party Subaddress information and the Calling Party Number information are delivered to the terminating network and the terminating network determines that the called party is not a CPND subscriber, neither the Calling Party Number information nor Calling Party Subaddress information shall be delivered to that called party.

When both RN information and Redirecting Subaddress (RS) information are provided to the terminating network, and the terminating network determines that the called party subscribes to Redirecting Number Information Delivery as part of the CLIP service, the following treatment shall apply. When only one RN and one RS are available, the terminating network shall send this last RN to the called party followed by the RS. If two RNs and two RSs are available, both RNs and both RSs shall be presented. The two RNs shall be presented as described above. Following the RNs, the RS associated with the first redirecting party shall be presented first, followed by the RS associated with the last redirecting party.

When two RNs and one RS are available (for example, when a call is forwarded from an ISDN line to a non-ISDN line and then to a CLIP subscriber), the terminating network shall assume that the received RS is associated with the RN of the first redirecting party. The terminating network may then generate an additional, “dummy” instance of RS information for association with the RN of the last redirecting party. When generated, the “dummy” instance of RS information shall comprise an explicit indication that there is no RS information associated with the last redirecting party’s RN, and that the other instance of RS information is associated with the first redirecting party’s RN. When generated, the addition of the dummy RS to the existing RN and RS information shall serve to confirm the association of the first redirecting party’s RS information with the first redirecting party’s RN information.

The terminating network shall then deliver both RNs, the network-received RS, and the network-generated “dummy” RS (when supported) to the RNID subscriber. The ordering of the RNs and the RSs shall be as follows: the first redirecting party’s RN, followed by the last redirecting party’s RN, followed by the RS from the first redirecting party (as received by the terminating network), followed by the dummy RS generated by the terminating network on behalf of the last redirecting party (when supported).

When two RNs and only one RS are delivered in this case (i.e., when the terminating network opts not to generate the dummy RS), the terminating CLIP RNID subscriber should assume that the delivered RS is associated with the RN of the first redirecting party.

4.1.2.3 Exceptional procedures

4.1.2.3.1 Activation/deactivation

None identified.

4.1.2.3.2 Invocation and operation

a) *Originating network:* Some originating networks may elect to send an unscreened UPN alone, when a UPN is available. In this case, the terminating network should deliver this unscreened UPN to the CPND subscriber.

b) *Terminating network:* There are two exceptions when the Calling Line Identifi-cation is not presented to the CLIP subscriber:

1) When the calling party (see definition of Calling Line Identification Restriction) or the redirecting party has an arrangement that presentation of his number is not allowed; or

2) When the Calling Line Identification is not available, e.g., due to interworking with the Public Switched Telephone Network (PSTN).

In cases where no number is presented, the called party shall receive an indication of the reason, i.e., either “presentation of number restricted” or “number unavailable”.

In cases where a calling party or redirecting party has an arrangement that presentation of their number is not allowed, there may be certain called parties that have the ability to override this restriction and have the Calling Line Identification presented (e.g., 911-Calls).

The only occasion when a called user subscribing to CLIP can take precedence over a calling user subscribing to CLIR is when the called user has an override capability. The only occasion when a called user subscribed to RNID as part of CLIP can take precedence over a redirecting user subscribed to CLIR (or the equivalent feature within the redirection service) is when the called user has an override capability.

4.1.3 Capabilities for charging

It shall be possible for the service provider to charge accurately for this service.

4.1.4 Interworking considerations

For interworking with non-ISDN networks and user equipment, both at the originating and terminating sides, other signaling systems besides DSS1 and SS7 may be employed, for example, Multi Frequency Signaling with Automatic Number Identification (ANI). In these cases, in which the incoming network signaling system does not carry a restriction indicator, the ISDN Service Provider will determine the handling of restrictions for privacy purposes at its own discretion.

For interworking on calls from a non-ISDN network or user, it may not be possible to receive a full Calling Party Number, an indication of Presentation Allowed or restricted, or a screening indication. In this case, the ISDN may act according to its own procedures, for example, it may present a partial number, a number unavailable indication with a screening indication of network provided, or it may prevent all presentation.

For interworking on calls to a non-ISDN, it may not be possible to send an indication of Presentation Allowed or restricted. For the case of restricted numbers, the ISDN, at the discretion of the service provider, may prevent the sending of the Calling Party Number to the subsequent network.

4.1.5 Interaction with other supplementary services

4.1.5.1 Call Waiting

If an ISDN User who has subscribed to the Call Waiting service at his or her terminating access has been given a Call Waiting indication and has subscribed to the CLIP service (CPND, RNID, or both), then the Calling Line Identification (CPNs, RNs, and RSs, when available, with the possible exceptions defined in 4.1.2.3) shall be presented to the ISDN User(s) at the time the

Call Waiting indication is given. The presentation of the Calling Line Identification information shall be the same as when the ISDN User at the terminating access receives normal call setup information.

4.1.5.2 Calling Line Identification Presentation

Not applicable.

4.1.5.3 Calling line identification restriction

In general, the CPN of the calling user shall not be presented if the calling user has an arrangement to inhibit the presentation of his or her CPN to the called party. The only occasion when a called user subscribed to CPND as part of CLIP can take precedence over a calling user subscribed to CLIR is when the called user has an override capability.

In addition, the RN of the redirecting user shall not be presented if that redirecting user has an arrangement to inhibit the presentation of his or her RN to the called party. The only occasion when a called user subscribed to RNID as part of CLIP can take precedence over a redirecting user subscribed to CLIR (or the equivalent feature within the redirection service) is when the called user has an override capability.

4.1.5.4 Call Hold

No interaction.

4.1.5.5 Multi-level precedence and preemption

No Interaction.

4.1.5.6 Message waiting indicator and control notification

No Interaction.

4.2 Description of CLIR

4.2.1 Description

When the CLIR service is applicable and activated, the originating network provides the destination network with a notification that the Calling Party Number is not allowed to be presented to the called party.

4.2.2 Procedures

4.2.2.1 Provision/withdrawal

The CLIR service can be provided on a subscription basis or be generally available.

The CLIR service may be withdrawn at the request of the subscriber or by the service provider for administrative reasons.

As a service provider option, the CLIR service can be offered with several subscription options. It is a service provider option as to how the subscription options are applied (e.g., per ISDN Number and Bearer Service).

Subscription options are summarized in table 2.

4.2.2.2 Normal procedures

The normal procedures for CLIR for the originating and terminating sides of the network are described in 4.2.2.2.1 and 4.2.2.2.2 and are shown in figures 1, 2, and 3 as dynamic descriptions (SDL).

4.2.2.2.1 Activation/deactivation

If subscribed to in the permanent mode, the CLIR service is always activated.

If subscribed to on a temporary basis with a default subscription option of Presentation Allowed, then the CLIR service may be activated upon explicit request for the service concurrent with a particular call setup and shall be deactivated after that call. If a calling user activates the CLIR service on a particular call, he may or may not provide CPN information in the call setup. If no CPN is provided, then the Network Provided Number shall be sent from the originating network with the presentation indicator set to Presentation Restricted. If the CPN is provided and the UPN is valid, the UPN shall be sent from the originating network with the presentation indicator set to Presentation Restricted. If the UPN is invalid or unscreened and the network option is to send one number, the NPN shall be sent from the originating network with the presentation indicator set to Presentation

Restricted. If the UPN is invalid or unscreened and the network option is to send two numbers, the UPN shall be sent from the originating network with presentation indicator set to Presentation Restricted, and the NPN shall be sent from the originating network with presentation indicator set to Presentation Restricted.

If subscribed to on a temporary basis with a default subscription option of Presentation Restricted, then the CLIR service may be deactivated upon explicit request for the service concurrent with a particular call request and shall be reactivated after that call. If a calling user deactivates the CLIR service on a particular call, he may or may not provide CPN information in the call setup. If no CPN is provided, then the Network Provided Number shall be sent from the originating network with the presentation indicator set to Presentation Allowed. If the CPN is provided and the UPN is valid, the UPN shall be sent from the originating network with the presentation indicator set to Presentation Allowed. If the CPN is invalid or unscreened and the network option is to send one number, the NPN shall be sent from the originating network with the presentation indicator set to Presentation Restricted. If the CPN is invalid or unscreened and the network option is to send two numbers, the NPN shall be sent from the originating network with presentation indicator set to Presentation Restricted, and the UPN shall be sent from the originating network with presentation indicator set to Presentation Allowed.

For the CLIR service temporary mode, if the CLIR service is not activated or deactivated by an explicit request, the default value shall apply for both the UPN (when available) and the NPN.

Table 3 provides an identification of the Calling Party Numbers and the corresponding Presentation Indicators passed through the network for the various combinations of CLIR subscription options and the information supplied by the calling party. The rows on the table are for all combinations of CLIR subscription options and contents of the Presentation Request in the SETUP. The columns are specified for all combinations of the User Provided Number being absent, valid, or invalid, and the network option being to deliver one or two numbers.

Table 3 also applies for the delivery of CPN to the called party at the terminating exchange with two exceptions. In the terminating exchange case, the columns represent the called party CPND subscription options of “Single Number Delivery” and “Two Number Delivery”, rather than the originating network Transport options of “One Number Transport” and “Two Number Transport”. In addition, when the Presentation Indicator for a Verified Number (VN) is indicated as “restricted”, the corresponding table entry should indicate “NPN (No digits), PR” in the NPN case and “UPN (No digits), PR” in the UPN case. When the Presentation Indicator for an Unverified Number (UN) is indicated as “restricted”, the corresponding table entry should indicate “UPN (No digits), PR” in this UPN case.

When screening occurs in a public exchange, only 7- or 10-digit North American Numbering Plan numbers should be treated as valid.

4.2.2.2.2 Invocation and operation

If the called party subscribes to the Calling Party Number Delivery service and the calling party has CLIR activated, the called party shall receive an indication that the Calling Party Number is restricted. If the called party subscribes to the Redirecting Number Information Delivery service and the redirecting party has CLIR activated (or the equivalent feature within the redirection service), the called party shall receive an indication that the Redirecting Number is restricted.

4.2.2.3 Exceptional procedures

4.2.2.3.1 Activation/deactivation

If a CLIR subscriber who subscribes to the permanent mode attempts to deactivate the CLIR service on a per call basis, the network may respond to the request with an error indication and shall process the call as if the request were not made (i.e., the originating network shall still set the presentation indicator for the Calling Party Number to Presentation Restricted) and the call setup shall be made as if the permanent mode override had not been attempted.

If a non-CLIR subscriber attempts to activate the CLIR service on a per-call basis, the network may respond to the request with an error indication and shall process the call as if the request were not made (i.e., the originating network shall still set the presentation indicator for CLI to Presentation Allowed) and the call setup shall be made as if the CLIR activation had not been attempted.

4.2.2.3.2 Invocation and operation

The service provider of the destination network may define categories of subscribers that have the ability to override the presentation restriction and have the Calling Party Number or Redirecting Number (or both) presented (e.g., 911 calls).

The only occasion when a called user subscribed to CPND as part of CLIP can take precedence over a calling user subscribed to CLIR is when the called user has an override capability. The only occasion when a called user subscribed to RNID as part of CLIP can take precedence over a redirecting user subscribed to CLIR (or the equivalent feature within the redirection service) is when the called user has an override capability.

4.2.3 Capabilities for charging

It shall be possible for the service provider to charge accurately for this service.

4.2.4 Interworking considerations

On calls to or via non-ISDNs, it cannot be ensured that a CLIR indication can be carried to the destination network. The service provider of the originating network may restrict any information identifying the calling party from being forwarded to the destination network when CLIR is applicable. The service provider of a redirecting network may restrict any information identifying the redirecting party from being forwarded to the destination network when CLIR (or the equivalent feature within the redirection service) is applicable. If a destination network receives a Calling Party Number or Redirecting Number (or both) without any indication of Presentation Allowed or Restricted, the destination network (the host network) shall act according to the procedures of the service provider.

4.2.5 Interaction with other supplementary services

4.2.5.1 Call Waiting

If an ISDN user who has subscribed to the Call Waiting service at their terminating access has been given a Call Waiting indication and has subscribed to the CPND service and the calling party has CLIR active, then this called party shall receive an indication that the Calling Party Number information is restricted at the time the Call Waiting indication is given.

If an ISDN user who has subscribed to the Call Waiting service at their terminating access has been given a Call Waiting indication and has subscribed to the RNID service, and a redirecting party has CLIR active (or the equivalent feature within the redirection service), then this called party shall receive an indication that the Redirecting Number is restricted at the time the Call Waiting indication is given.

4.2.5.2 Calling Line Identification Presentation

The number of the calling user shall not be presented if the calling user has an arrangement to inhibit the presentation of his or her number to the called party, except when the called user has an override capability.

4.2.5.3 Calling Line Identification Restric-tion

Not applicable.

4.2.5.4 Call Hold

No interaction.

4.2.5.5 User-to-user signaling

No interaction.

4.2.5.6 Message waiting indicator control and notification

No interaction.

4.2.5.7 Multi-level precedence and preemption

No interaction.

5 Functional capabilities and information flows for CLIP and CLIR

This clause identifies a way of dividing the overall functionality for CLIP and CLIR into functional units, each of which could be placed in one location. The overall functionality results from communication between the functional units (called entities) using information flows, which are also identified in this clause. An information flow is an abstraction that is subsequently realized in clauses 6 through 8 by means of additions to existing signaling system messages or by new messages. Finally, this clause identifies one or more specific ways in which the functional entities of CLIP and CLIR can be located in specific user or network equipment.

5.1 Functional entity model for CLIP and CLIR

This subclause identifies a way of partitioning the CLIP and CLIR functionality into functional entities and identifies actions that occur in each functional entity. Each functional entity is an abstract representation that could be implemented in more than one kind of telecommunication equipment (e.g., in terminal equipment, in a local switching machine, or in a database). Functional entities may be combined in a single piece of telecommunication equipment. Figure 4 shows the CLIP and CLIR functional model.

5.1.1 Description of Functional Entity 1

Functional Entity 1 (FE1) provides the following functionality in support of the calling user and Functional Entity 3 (FE3):

a) Interprets calling user requests to override the subscribed default value of Presen-tation Restricted or allowed. Sends a request to FE3 regarding override of the subscribed default value;

b) Receives indications, if appropriate, regarding the success or failure of the override request;

c) Optionally initiates an information flow containing the User Provided Number to FE3.

5.1.2 Description of Functional Entity 2

Functional Entity 2 (FE2) provides the functional support of a possible NT2 connection for FE1. FE2 may or may not exist, depending upon the allocation of equipment scenario for which the CLIP/CLIR service is applied. When FE2 does exist, the CLIP/CLIR service, as applicable, is still subscribed to at FE3. Functional Entity 2 provides the following functionality in support of Functional Entity 3 (FE3):

a) Interprets calling user requests to override the subscribed default value of Presen-tation Restricted or allowed. Sends a request to FE3 regarding override of the subscribed default value;

b) Receives indications, if appropriate, regarding the success or failure of the override request;

c) Optionally initiates an information flow containing the User Provided Number to FE3.

5.1.3 Description of Functional Entity 3

Functional Entity 3 provides the following functionality in support of Functional Entities 1 or 2 and 4 or 5:

a) Determines if the user has subscribed to the CLIR service;

b) Receives explicit privacy override request from FE2 (or FE1). Sends an indication, if appropriate, of success or failure to FE1 (or FE2) about the result of the override request. When the indication is sent, another indication is sent at the time of call clearing;

c) Receives the User Provided Number, if available, from FE2 (or FE1);

d) Optionally performs screening of the User Provided Number;

e) Optionally initiates an information flow containing the User Provided Number or a Network Provided Number, or both, as appropriate, as the Calling Line Identifi-cation information.

5.1.4 Description of Functional Entity 4

Functional Entity 4 provides the following functionality in support of Functional Entity 3 and Functional Entity 5 (FE5) :

a) Receives Calling Line Identification information from FE3;

b) Sends Calling Line Identification information to FE5.

5.1.5 Description of Functional Entity 5

Functional Entity 5 provides the following functionality in support of FE3 or FE4 and FE6 or FE7:

a) Receives Calling Line Identification information from FE3 or FE4;

b) Checks the appropriate Calling Number Delivery subscription information and, based on this information, initiates an information flow to FE6 or FE7 containing zero, one or two Calling Party Numbers as Calling Line Identification information.

5.1.6 Description of Functional Entity 6

Functional Entity 6 provides the functional support of a possible NT2 connection for FE7. FE6 may or may not exist, depending upon the allocation of equipment scenario for which the CLIP/CLIR is applied. When FE6 does exist, the CLIP/CLIR service, as applicable, is still subscribed to at FE5. Functional Entity 6 provides the following functionality in support of FE5:

a) Receives Calling Line Identification information from FE5;

b) Processes the received Calling Line Identification.

5.1.7 Description of Functional Entity 7

Functional Entity 7 provides the following functionality in support of FE5 and the called user:

a) Receives Calling Line Identification information from FE5;

b) Presents the Calling Line Identification information to the called user.

5.2 Information flow diagram

The Calling Line Identification information provided by the CLIP and CLIR service capabilities is normally carried in the messages used to establish the call.

The Calling Line Identification will be delivered to the called party by the local exchange or NT2 during call establishment if the Calling Line Identification is available and presentation is allowed.

The Calling Line Identification is made up of a number of information units:

– *Type of Number*
  a) international number;
  b) national number;
  c) subscriber number;
  d) abbreviated number;
  e) unknown;
  f) network specific number.

– *Numbering Plan Identification*
  a) ISDN (E.164);
  b) data (X.121);
  c) private;
  d) unknown.

– *number/digits*

In addition to the Calling Line Identification, the following information may be given:

– *Presentation indicator (PI) showing:*
  a) presentation allowed, or (A);
  b) presentation restricted, or (R);
  c) number not available due to interworking (NA).

– *Screening indicator (SI) showing:*
  a) user provided, verified and passed, or (UP);
  b) user provided, verified and failed, or (UF);
  c) user provided, not screened, or (UN);

d) network provided.

Figure 5 shows the information flow for CLIP and CLIR.

5.3 Allocation of functions to equipment

This subclause identifies a number of different plans, call “scenarios”, for allocating the functional subdivision of CLIP and CLIR Services to specific network or user equipment (see table 4). Each scenario implicitly identifies what protocol is impacted by the CLIP and CLIR service information flows. Functional Entities 2, 4, and 6 may or may not exist for the identified scenarios.

5.3.1 Scenario 1

One representation of this scenario would be an ISDN terminal (supported at FE1) connected via either a point-to-point or a multi-point data link on a Basic Rate Interface to an ISDN PBX (supported at FE2). The ISDN terminal is the calling user, and the ISDN PBX initiates a call for the ISDN terminal to a public ISDN. The Local Exchange (supported at FE3) provides the originating network functions for the CLIP and CLIR service. When initiating the call, the ISDN terminal or the ISDN PBX may provide the Calling Line Identification information, and either the ISDN terminal or the ISDN PBX may set a presentation restriction indication.

A second representation of this scenario would be an ISDN PBX (an NT2 supported at FE2) connected via a point-to-point data link on either a Basic or Primary Rate Interface to a Local Exchange (supported at FE3). The ISDN PBX is a calling user (e.g., establishing a call for a non-ISDN terminal), and the Local Exchange is the network provider providing the CLIP and CLIR originating network service functions. When initiating the call, the ISDN PBX may provide the Calling Line Identifica-tion information, and may set a presentation restriction indication.

5.3.2 Scenario 2

One representation of this scenario would be an ISDN terminal (supported at FE1) connected via either a point-to-point or a multi-point data link on a Basic Rate Interface to a Local Exchange (supported at FE3). The ISDN terminal is a calling user, and the Local Exchange is a network provider providing the CLIP and CLIR originating network service functions. When initiating the call, the ISDN terminal may provide the Calling Line Identification information, and may set a presentation restriction indication.

5.4 Explicit Association of information flows to protocol message

Figure 6 shows the explicit relationship of the CLIP and CLIR information flows to the protocol messages that implement them for scenarios 1 and 2.

6 Switching and signaling specifications for CLIP and CLIR at the user/network interface

6.1 Formats and codings for CLIP and CLIR

6.1.1 Messages

All messages used in these protocols are described in detail in ANSI T1.607 and T1.610.

6.1.1.1 SETUP message

Message type: SETUP
Significance: global
Direction: both

6.1.1.2 INFOrmation Message

Message type: INFOrmation
Significance: Local
Direction: Both

Refer to 3.1.6 of ANSI T1.607 for the definition and coding of this message. The Cause Information Element has been added to the INFOrmation message to support the CLIR activation procedures as described in 6.2.8.2. The Feature activation and Information Request Information Elements are added to this message to support the CLIR procedure described in 6.2.5.5.

6.1.1.3 SETUP ACKnowledge Message

Message type: SETUP ACKnowledge
Significance: Local
Direction: N -> U

Refer to ANSI T1.607 for the coding of the SETUP ACKnowledge message. The Feature indication and Information Request Information Elements are added to this message to support the CLIR procedures described in 6.2.5.5.

6.1.1.4 CALL PROCeeding Message

Message type: CALL PROCeeding
Significance: Local
Direction: N -> U

Refer to ANSI T1.607 for the coding of the CALL PROCeeding message. The Feature indication and Information Request Information Elements are added to this message to support the CLIR procedures described in 6.2.5.5.

6.1.1.5 ALERTing Message

Refer to ANSI T1.607 for the coding of the ALERTing message. The Feature Indication Information Element is optionally included in this message.

6.1.1.6 CONNect Message

Refer to ANSI T1.607 for the coding of the CONNect message. The Feature Indication Information Element is optionally included in this message.

6.1.1.7 DISConnect Message

Refer to ANSI T1.607 for the coding of the DISConnect message. The Feature Indication Information Element is optionally included in this message.

6.1.1.8 RELease Message

Refer to ANSI T1.607 for the coding of the RELease message. The Feature Indication Information Element is optionally included in this message.

6.1.1.9 RELease COMplete Message

Refer to ANSI T1.607 for the coding of the RELease COMplete message. The Feature Indication Information Element is optionally included in this message.

6.1.1.10 NOTIFY message

Message type: NOTIFY
Significance: access
Direction: N->U

Refer to ANSI T1.607 for the coding of the NOTIFY message. If CLIP and CLIR interact with other supplementary services, such as Call Transfer and Call Forwarding, and the user has subscribed to CPND or RNID, the NOTIFY message may be sent to the user depending on the requirements given in 6.2.7.2.

6.1.2 Codesets

The only codeset used in this standard is codeset zero as described in ANSI T1.607.

6.1.3 Information elements

6.1.3.1 Calling Party Number Information Element

The purpose of the Calling Party Number Information Element (CPNIE) is to identify the origin of a call. See 4.5.9 of ANSI T1.607 for the coding of the Calling Party Number Information Element. The Calling Party Number Information Element may take the following values:

Type of Number (Octet 3):

Unknown
International number
National number
Network Specific number
Subscriber number
Abbreviated number

Numbering Plan Identification (Octet 3):

Unknown
ISDN/telephony numbering plan (CCITT Recommendation E.164)
Data Numbering Plan (CCITT Recommendation X.121) (see note)
Private Numbering Plan

Presentation indicator (Octet 3a):

Presentation Allowed
Presentation Restricted
Number not available

Screening indicator (Octet 3a):

User provided, not screened
User provided, verified and passed
User provided, verified and failed
Network provided

NOTE – The Numbering Plan Identification of Data Numbering Plan is valid largely for packet-mode calls (i.e., case A and case B as described in ANSI T1.608). However, some networks may also present this coding for calls originating outside the national network, for purposes of interworking with circuit switched public data networks.

6.1.3.2 Calling Party Subaddress Information Element

The purpose of the Calling Party Subaddress Information Element is to identify the subaddress associated with the origin of a call. See 4.5.10 of ANSI T1.607 for the coding of the Calling Party Subaddress Information Element.

6.1.3.3 Cause Information Element

To indicate an error condition has occurred, when a user attempts to change the presentation indicator using stimulus procedures, the Cause Information Element, as defined in 4.5.11 of ANSI T1.607, shall be used with the US National codepoint defined in table 5.

6.1.3.4 Feature Activation Information Element

Refer to ANSI T1.610 for the definition and coding of this Information Element.

6.1.3.5 Feature Indication Information Element

Refer to ANSI T1.610 for the definition and coding of this information element.

6.1.3.6 Information Request Information Element

Refer to ANSI T1.610 for the definition and coding of this information element.

6.1.3.7 Redirecting Number Information Element

The purpose of the Redirecting Number Information Element is to identify the number from which a call diversion was invoked. The maximum length of this information element is network dependent.

Type of Number (octet 3) (see note 1)

Bits
765

000 unknown (see note 2)
001 international number (see note 3)
010 national number (see notes 3, 5)
011 network specific number (see note 4)
100 subscriber number (see note 3)
110 abbreviated number
111 reserved for extension

All other values are reserved.

NOTES

1 For the definition of international, national, and subscriber number, see CCITT Recommendation I.330.

2 The Type of Number “unknown” is used when the user or the network has no knowledge of the Type of Number, e.g., international number, national number, etc. In this case, the number digits field is organized according to the network dialing plan; e.g., prefix or escape digits might be present.

3 Prefix or escape digits shall not be included.

4 The Type of Number “network specific number” is used to indicate administration/service number specific to the serving network.

5 For calls between the United States of America and other countries within World Zone 1 (see CCITT Recommendation E.164 for assignment of country codes) where the Numbering Plan Identification is “ISDN/Telephony numbering plan”, “Type of Number” is coded as “national number”.

Numbering Plan Identification (octet 3)

Numbering plan (applies for Type of Number = 000, 001, 010 and 100)

Bits
4321

0000 unknown (see note 1)
0001 ISDN/Telephony numbering plan
(CCITT Recommendation E.164)
0011 data numbering plan (CCITT Recommendation X.121) (see note 2)
1001 private numbering plan
1111 reserved for extension

All other values reserved.

NOTES

1 The numbering plan “unknown” is used when the user or the network has no knowledge of the numbering plan. In this case, the number digits field is organized according to the network dialing plan; e.g., prefix or escape digits might be present.

2 The Numbering Plan Identification of Data Numbering Plan is valid largely for packet-mode calls (i.e., case A and case B as described in ANSI T1.608). However, some networks may also present this coding for calls originating outside the national network, for purposes of interworking with circuit-switched public data networks.

Presentation indicator (octet 3a)

Bits
76

00 Presentation Allowed
01 Presentation Restricted
10 number not available
11 reserved

NOTE – At the redirecting user–network interface, the presentation indicator is used for indicating the intention of the redirecting user for the presentation of the redirecting party number to the called user. This may also be requested on a subscription basis. If octet 3a is omitted, and the network does not support subscription information for the redirecting party number information restrictions, the value “00 – Presentation Allowed” is assumed.

Screening indicator (octet 3a)

Bits
21
00 user provided, not screened
01 user provided, verified and passed
10 user provided, verified and failed
11 network provided

NOTE – If octet 3a is omitted, “00- user-provided, not screened” is assumed.

Reason for redirection (octet 3b)

Bits
4321
0000 unknown
0001 call forwarding busy or called DTE busy
0010 call forwarding no reply
1001 called DTE out of order (see note)
1010 call forwarding by the called DTE
(see note)
1111 call forwarding unconditional or systematic call redirection
All other values reserved.

NOTE – These codepoints are valid only for packet-mode calls (i.e., Case A and Case B as described in ANSI T1.608)

Number digits (octets 4, etc.)

This field is coded with ASCII characters, according to the formats specified in the appropriate numbering/dialing plan.

6.1.3.8 Redirecting Subaddress Information Element

This information element identifies the subaddress associated with the forwarding ISDN number. For the definition of subaddress see CCITT Recommendation I.330.

Type of Subaddress (octet 3)

Bits
7 6 5
0 0 0 NSAP (X.213/ISO 8348 AD2)
0 1 0 User specified
All other values are reserved.

Odd/even indicator (octet 3)

Bit
4
0 even number of address signals
1 odd number of address signals

NOTE – The odd/even indicator is used when the type of subaddress is “user specified” and the coding is BCD.

Subaddress Information (octet 4, etc)

The NSAP X.213/ISO8348AD2 address, shall be formatted as specified by octet 4 which contains the Authority and Format Identifier (AFI). The encoding is made according to the “preferred binary encoding” as defined in X.213/ISO 8348AD2. For the definition of this type of subaddress, see CCITT Recommendation I.334.

For user-specified subaddress, this field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with X.25 networks BCD coding should be applied.

NOTES

1 It is recommended that users apply the NSAP subaddress type since this subaddress type allows the use of decimal, binary, and IA5 syntax in a standardized manner.

2 When the IDI format is “Local”, the AFI field is coded “50” in BCD. IA5/ISO 646-character syntax DSP is then represented by converting each character to a number in the range 32–127 using the T.50/ISO 646 encoding, with zero parity and the parity bit in the most significant position, yielding a binary octet in the range 0010 0000 to 0111 1111. See CCITT Recommendation I.334.

3 It is recommended that users apply the Local IDI format when the subaddress is used for terminal selection purposes. In this case, the IA5 character syntax using only digits 0 to 9 shall be used for the DSP. See CCITT Recommendation I.334.

6.1.4 Codepoints

All codepoints used in these protocols are described in detail in ANSI T1.607 and T1.610. For messages and information elements, see 6.1.1 and 6.1.3 of this standard, respectively.

6.2 Procedures for CLIP and CLIR

Figures 7, 8, and 9 show the originating network processing for Calling Party Number screening and CLIR, terminating network processing for CLIP, and the CLIR service process, respectively.

6.2.1 Support assumptions

6.2.1.1 Network

The originating network maintains subscription parameters for CLIR in accordance with 4.2.2.1. The destination network maintains subscription parameters for CLIP in accordance with 4.1.2.1.

6.2.1.2 Terminal

There are no special terminal requirements. Terminals used with the CLIP and CLIR supplementary services must support basic call control procedures as specified in ANSI T1.607. Terminals may have display capabilities to display the Calling Party Number.

6.2.1.3 Applicable protocol classes

Protocol is specified for CLIP and CLIR using the functional and stimulus protocol class of messages and information elements.

At NT2-LE (see clause 5 for definitions of NT2 and LE) interfaces, only the Functional Signaling procedures should apply at this time.

6.2.2 Service states and timers

There are no additional states or timers associated with the operation of CLIP or CLIR.

6.2.3 Activation/deactivation

6.2.3.1 Activation/deactivation of CLIP

Activation or deactivation of the CLIP supplementary service is by subscription. Users may subscribe to either one- or two-number delivery. The two-number delivery subscription option is a network provider’s option and may not be supported by all networks.

6.2.3.2 Activation/Deactivation of CLIR

Activation and deactivation of the CLIR supplementary service may be by subscription or by explicit request on a per call basis, depending on the selection of the subscription options defined in 4.2.2.1.

6.2.4 Invocation

6.2.4.1 Invocation of CLIP

No explicit action is necessary by either the calling or called user to invoke CLIP. The calling user need not have subscribed to the CLIP supplementary service. The calling user may optionally submit a Calling Party Number Information Element and additionally a Calling Party Subaddress Information Element with the call establishment information.

6.2.4.2 Invocation of CLIR

No explicit action is necessary by the calling or called user to invoke CLIR. The calling user may subscribe to either the permanent or the temporary CLIR service.

If the calling user has subscribed to the CLIR supplementary service permanent mode, any presentation indicator received in the SETUP or successive INFOrmation message(s) shall be ignored by the originating network, and that network shall always set the presentation indicator to restricted.

If the calling user has subscribed to the CLIR supplementary service temporary mode, the user may optionally override the subscribed default value with an explicit request to either Allow Presentation, or Restrict Presentation, as described in 6.2.6.4 and 6.2.6.5. This explicit request may be included in either the SETUP message or successive INFOrmation message(s).

If the calling user has not subscribed to any mode of the CLIR service, the presentation indicator received in the SETUP or successive INFOrmation message(s) shall be ignored by the originating network, and that network shall always set the presentation indicator to allowed.

6.2.5 Normal operation at the originating switch

The call establishment information received from the calling user may have included any of the following:

a) a user-provided Calling Party Number, in a Calling Party Number Information Element. The calling user may provide only a partial number in the digits information;

b) a Calling Party Subaddress in a Calling Party Subaddress information element;

c) a presentation indicator value, in a Calling Party Number Information Element, or Feature activation information element, or one or more Keypad information elements.

6.2.5.1 Screening of the User Provided Number

If there is a User Provided Number, it is a network option whether or not that number should be screened to determine if it is a valid number by which the calling user can be addressed. The network shall disregard any value of the screening indicator, if received from the user.

If the network does not screen the User Provided Number, the number is given a Screening indicator value of “User provided, not screened”.

If the network screens the User Provided Number, the number is allocated to the access, and the number is a valid E.164 number, the number is given a Screening indicator value of “User provided, verified and passed”.

If the network screens the User Provided Number, and the number is not a valid E.164 number, the number is given a Screening indicator value of “User provided, verified and failed”.

If the user provides only partial Calling Party Number information (i.e., does not include some leading digits such as the area code) and the partial number is within the range of numbers allocated to the calling user, the network shall complete the number as appropriate and give the number a Screening indicator value of “User provided, verified and passed”.

When screening applies, the network shall screen any User Provided Number digits when the Numbering Plan Identification equals E.164 and the Type of Number equals subscriber or national. For other values of the Type of Number and Numbering Plan Identification, the network should fail the screening of the Calling Party Number digits and treat the User Provided Number as a failed screened number. Note that some users may support signaling of E.164 numbers using the unknown Type of Number and Numbering Plan Identification. In this case, some networks may screen these E.164 numbers as well.

6.2.5.2 Presentation restriction

If the calling user has not subscribed to the CLIR service, the Network Provided Number and the User Provided Number, if any, are given a Presentation indicator value of “Presentation Allowed”.

If the user has subscribed to CLIR, the Presentation indicator values shall be allocated according to the user's subscription option, as shown in 6.2.5.3 to 6.2.5.5.

6.2.5.3 Permanent mode

The Network Provided Number and the User Provided Number, if any, are given a Presentation indicator value of "Presentation Restricted".

6.2.5.4 Functional signaling procedures

6.2.5.4.1 Temporary mode; Default – Presentation Restricted

If the Calling Party Number Information Element with a presentation indicator value of "Presentation Allowed" is included in the SETUP message, then:

a) If the Number Digits are not included in the SETUP message, then Network Provided Number is given a presentation indicator value of "Presentation Allowed";

b) If the Number Digits are included in the SETUP message, and the User Provided Number passed screening, then the User Provided Number is given a presentation indicator value of "Presentation Allowed";

c) If the Number Digits are included in the SETUP message, and the User Provided Number failed the screening or was not screened then;

- the User Provided Number, when sent, is given a presentation indicator value of "Presentation Allowed"; and
- the Network Provided Number is given a presentation indicator value of "Presentation Restricted".

If the network receives no presentation indicator information from the calling party, the network should still accept for processing a User Provided Number. However, neither provision of a User Provided Number nor the screening result for that number shall affect the setting of the presentation indicator value for the call. The value of the presentation indicator will be "Presentation Restricted" (subscribed default value).

6.2.5.4.2 Temporary Mode; Default – Presentation Allowed

If the Calling Party Number Information Element with a presentation indicator value of "Presentation Restricted" is included in the setup message, the Network Provided Number and the User Provided Number, if any, are given a presentation indicator value of "Presentation Restricted".

If the network receives no presentation indicator information from the calling party, the network should still accept for processing a User Provided Number. However, neither provision of a User Provided Number nor the screening result for that number will affect the setting of the presentation indicator value for the call. The value of the presentation indicator will be "Presentation Allowed" (subscribed default value).

6.2.5.5 Stimulus signaling procedures

6.2.5.5.1 Temporary Mode; Defaults of Presentation Restricted and Presentation Allowed

For the case of Temporary Mode with a default of Presentation Restricted, to indicate a request to change the presentation indicator, the terminal shall send a Feature Activation Information Element, coded as "feature activator=Presentation Allowed" in either a SETUP message or a successive INFOrmation message (provided called party digits have not previously been sent to the network), using the call reference of the existing call. If the Feature activator corresponds to the ISDN Number/Bearer Service of the call, the network should then perform the requested change to the presentation indicator, taking into account any User Provided Number information and screening success or failure. The resulting presentation indicator values for the call will be as for the functional signaling procedures of 6.2.5.4.1. When that change is completed, the network will return a Feature indication information element, coded as "feature activator=Presentation Allowed" with status indicator of activated in an INFOrmation message as appropriate for the call. A CALL PROCeeding, ALERTing, or CONNect message may also be used for this purpose.

For the case of Temporary Mode with a default of Presentation Allowed, to indicate a request to change the presentation indicator values for a call, the terminal shall send a Feature Activation Information Element, coded as a "feature activator=Presentation Restricted" in either a SETUP or a successive INFOrmation message (provided called party digits have

not previously been sent to the network). If the feature activator corresponds to the ISDN Number / Bearer Service of the call, the network should then perform the requested change to the presentation indicator, taking into account any User Provided Number information and screening success or failure. The resulting presentation indicator values for the call will be as for the functional signaling procedures of 6.2.5.4.2. When that change is completed, the network will return a Feature indication information element, coded as “feature activator=Presentation Restricted” with status indicator of activated, in an INFOrmation message as appropriate for the call. The CALL PROCeeding, ALERTing, or CONNect message may also be used for this purpose.

When the call is eventually cleared, the network will send a second Feature Indication Information Element to the terminal in an appropriate call clearing message (DISConnect, RELease, or RELease COMplete). The Feature Indication Information Element will be coded as “feature activator=Presentation Restricted” for the default of Presentation Allowed, or as “feature activator=Presentation Allowed” for the default of Presentation Restricted, with the status indicator deactivated to indicate the signaled presentation indicator value is no longer applicable for calls.

Alternatively, dial access procedures may be used, by the user, by utilizing the Keypad Facility Information Element as described in ANSI T1.610.

If the Keypad Facility Information Element containing the access code to request change of presentation indication or the Feature Activation Information Element is present in a SETUP message, or subsequent INFOrmation message(s) sent by the calling user to the network, and no called party number information is included, the network shall invoke the Information request procedures, as described in 4.5.2.2 of ANSI T1.610.

If the network receives a feature request in a SETUP message, but no called party address information is contained in the SETUP message, the network should include an Information Request Information Element, coded to prompt the user for address digits, in the SETUP ACKnowledge message that is returned to the user.

If the network receives a SETUP message with no destination information, or feature request, it will return a SETUP ACKnowledge message to the user. If in this case the network receives a feature request contained in one or more INFOrmation messages, but with no called party address, then the network should invoke the information request procedure by including an Information Request Information Element in an INFOrmation message sent back to the calling user. The information request should be coded to prompt the user for address digits.

Upon receipt of the complete called party address, in both of the above cases, the network should include the Information Request Information Element, coded to indicate that the request for supplemental information has been completed, in the CALL PROCeeding message returned to the calling user.

It should be noted that the feature request to change the presentation indicator, in the above two cases, may come in the form of a dial access, or a feature activator, feature request. In the dial access case, the Keypad Facility Information Element may be contained in one or more INFOrmation messages, or in a SETUP message. In the feature key management case, the Feature Activation Information Element should be contained in a SETUP, or a subsequent INFOrmation message.

6.2.6 Sending calling line identification to the destination switch

It is an originating switch option whether one or two Calling Party Numbers shall be sent towards the destination switch (note that the originating and destination switch may be the same switch). It is also an originating switch option whether the Calling Party Subaddress shall be accepted from the calling user and sent towards the destination switch. At the destination switch, users can subscribe to one-number delivery or two-number delivery, and to delivery of CPS information.

6.2.6.1 Conditional CPS acceptance

6.2.6.1.1 Single-number transfer option

If there is no User Provided Number, the Calling Party Subaddress, if available, shall be ignored, and only the Network Provided Number shall be sent with a Screening indicator value of “Network provided”.

If there is a User Provided Number, and it has a Screening indicator value of “User provided, verified and passed”, the User Provided Number alone shall be sent. If the user also provided a Calling Party Subaddress, it shall be sent transparently through the network.

If there is a User Provided Number, and it has a Screening indicator value of “User provided, verified and failed” or “User provided, not screened”, the Network Provided Number shall be sent. If the user also provided a Calling Party Subaddress, it shall not be sent by the network.

6.2.6.1.2 Two-number transfer option

If there is no User Provided Number, the Calling Party Subaddress, if available, shall be ignored, and only the Network Provided Number shall be sent with a Screening indicator of “Network provided”.

If there is a User Provided Number, and it has a Screening indicator value of “User provided, verified and passed”, only the User Provided Number shall be sent. If there is a User Provided Number, and it has a Screening indicator value of “User provided, verified and failed” or “User provided, not screened”, both the User and the Network Provided Numbers shall be sent. The first number shall be the Network Provided Number with a Screening indicator of “Network provided”. The second number shall be the User Provided Number with the Screening indicator value of either “User provided, verified and failed”, or “User provided, not screened”. If the calling user also provided a Calling Party Subaddress, it shall be sent transparently through the network.

6.2.6.2 Unconditional CPS acceptance

6.2.6.2.1 Single-number and two-number transfer options

The single-number and two-number transfer procedures for unconditional acceptance are the same as for conditional acceptance except in the following situations:

If there is no User Provided Number, the Calling Party Subaddress, if available, shall be accepted, and shall be sent transparently through the network along with a Network Provided Number that is coded with a Screening indicator value of “Network provided”.

For the single-number transfer option, if there is a User Provided Number, and it has a Screening indicator value of “User provided, verified and failed” or “User provided, not screened”, the Network Provided Number shall be sent and, if available, the Calling Party Subaddress shall also be sent by the network.

6.2.7 Normal Operation at the destination switch

6.2.7.1 Calling Party Number and Subaddress Information Elements

It is a destination switch option whether one or two Calling Party Numbers shall be delivered to the called user, when that called user is a CPND subscriber. It is also a destination switch option whether the Calling Party Subaddress shall be delivered to the called user, when that called user is a CPND subscriber. At the destination switch, called users can subscribe to one-number or two-number delivery, and to delivery of CPS information.

6.2.7.1.1 Conditional CPS delivery

When the destination exchange receives a network setup request, basic call control procedures occur. If the called user has subscribed to CLIP, the destination exchange shall check to see if the Calling Party Number is available.

If the Calling Party Number parameter or information element is not available, the Type of Number and the Numbering Plan Identification shall be set to “Unknown”, the Presentation indicator shall be set to “Number not available” and the Screening indicator shall be set to “Network provided”. The Calling Party Number Information Element(s) shall not contain the Calling Party Number digits. For the remaining situations involving SS7 and DSS1 interworking, the SS7 and DSS1 parameter, information element and screening indicator mappings, as given in 8.1.2, should be followed. Additional clarification is provided in this subclause with respect to the DSS1 handling of the presentation, Type of Number, and numbering plan indicators in the cases of one- and two-number delivery.

If the Calling Party Number parameter or information element, and the ISUP Generic Address Parameter or user-provided Calling Party Number Information Element, are available then, depending on the delivery option, the first one or two Calling Party Number Information Elements shall be included in the SETUP message with the Type of Number, Numbering Plan, Presentation, and Screening indicators coded as received at the called user’s switch. If the Calling Party Number parameter or information element is available but the ISUP Generic Address Parameter or second DSS1 Calling Party Number is not also available, the Calling Party Number Information Element shall be included in the SETUP message with the Type of Number, Numbering Plan, Presentation, and Screening indicators coded as received at the called user’s switch. If the Presentation

indicator is coded “Presentation Restricted”, and the called user is not authorized for Presentation Restriction Override, the Number digits field of the Calling Party Number Information Element shall be empty, and the Calling Party Subaddress Information Element, if available, shall not be sent. Otherwise, the Number digits field of the Calling Party Number Information Element shall contain the digits as received at the called user’s switch.

If the Presentation indicator is coded “Presentation Restricted” and the called user is authorized for Presentation Restricted override, then the Presentation indicator shall be coded Presentation Restricted and the Calling Party Number digits are sent in the Calling Party Number Information Element to the called user.

If the called user has subscribed to “single number delivery”, the network shall send one Calling Party Number Information Element. This Calling Party Number Information Element shall contain the User Provided Number, if its Screening indicator is coded “User provided, verified and passed”, or the Network Provided Number with a Screening indicator value of “Network provided”.

If the called user has subscribed to “two number delivery”, the network shall send both Network and User Provided Numbers, if available. The first number shall be the Network Provided Number with a Screening indicator of “Network provided”. The second number shall be the User Provided Number with the Screening indicator value of either “User provided, verified and failed”, or “User provided, not screened”.

Indications shall be provided by the terminating network to signify whether each Calling Party Number is “user provided” or “network provided”, and, if “user provided”, whether the number is “unscreened”, “verified and passed”, or “verified and failed”. The origin of the numbers can be determined, in cases where two numbers are presented, by the presence of the detailed screening indicators accompanying the numbers.

If a User Provided Number is sent to the called user and the Calling Party Subaddress information is available, a Calling Party Subaddress Information Element, coded with the information as received at the called user’s switch, shall be included in the SETUP message.

6.2.7.1.2 Unconditional CPS delivery

The single- and two-number delivery procedures for unconditional CPS delivery are the same as for conditional CPS delivery except in the following situations:

The Calling Party Subaddress, if available, shall be delivered regardless of the presentation indicator setting of the user provided or network provided Calling Party Number Information Element.

For the single number delivery option, if there is a user provided Calling Party Number Information Element, and it has a Screening indicator of “User provided, verified and failed”, or “User provided, not screened” or a second Calling Party Number Information Element is unavailable, the Calling Party Subaddress Information Element, if available, shall also be delivered by the network. Therefore, in unconditional delivery, a Calling Party Subaddress Information Element may be delivered with a network-provided Calling Party Number Information Element.

6.2.7.1.3 No CPS delivery

The single- and two-number delivery procedures for No CPS Delivery are the same as the delivery procedures for conditional CPS delivery, except that the Calling Party Subaddress shall not be delivered to the called user.

6.2.7.2 Redirecting Number and Redirecting Subaddress Information Elements

If Redirecting Number(s) are available and the user has subscribed to RNI delivery, the Redirecting Number Information Element(s) shall be included in the SETUP or NOTIFY message as appropriate for the interaction with other supplementary services such as call transfer and call forwarding. The Type of Number, numbering plan, and presentation and screening indicators shall be coded as received at the called user’s switch. If redirecting subaddress(es) are available and the user has subscribed to RNID delivery, the Redirecting subaddress information element(s) shall be included in the SETUP or NOTIFY message as appropriate for the interaction with the other supplementary services such as call transfer and call forwarding.

When only one RN and one RS are available, a single Redirecting Number Information Element (RNIE) and a single Redirecting Subaddress Information Element (RSIE) shall be included in the SETUP or NOTIFY message. When two RNs and two RSes are available, two RNIEs and two RSIEs shall be included in the SETUP or NOTIFY message. In this 2 RN/2 RS case, the ordering of the RNIEs and the RSIEs in the SETUP or NOTIFY message shall be as follows: the RNIE containing the

first redirecting party's RN, followed by the RNIE containing the last redirecting party's RN, followed by the RSIE containing the first redirecting party's RS, followed by the RSIE containing the last redirecting party's RS. The terminating network shall allow the first RSIE to contain a dummy RS, the second RSIE to contain a dummy RS, and both RSIEs to contain dummy RSes, based on the information received from the forwarding network. The format of the dummy RS is defined in 6.1.3.8.

When two RNs and one RS are available, the terminating network shall assume that the received RS is associated with the RN of the first redirecting party. The destination network may then generate an additional, "dummy" instance of RS information for association with the RN of the last redirecting party. When generated, the "dummy" instance of RS information shall comprise an explicit indication that there is no RS information associated with the last redirecting party's RN, and that the other instance of RS information is associated with the first redirecting party's RN. When generated, the addition of the dummy RS to the existing RN and RS information shall serve to confirm the association of the first redirecting party's RS information with the first redirecting party's RN information.

When two RNs and one RS are available, two RNIEs and at least one RSIE shall still be included in the SETUP or NOTIFY message. In this 2 RN/1 RS case, the ordering of the RNIEs and the RSIEs in the SETUP or NOTIFY message shall be as follows: the RNIE containing the first redirecting party's RN, followed by the RNIE containing the last redirecting party's RN, followed by the RSIE containing the first redirecting party's RS (as received by the destination network), followed by the RSIE containing the dummy RS (as generated by the destination network on behalf of the last redirecting party) (when supported).

When two RNs and only one RS are delivered in this case (i.e., when the terminating network opts not to generate the dummy RS), the terminating CLIP RNID subscriber should assume that the delivered RS is associated with the RN of the first redirecting party.

The coding of the dummy RS in the RSIE shall be as specified in 6.1.3.8 of this document.

If the presentation indicator for an individual RN is coded "Presentation Restricted", and the called user is not authorized for "Presentation Restricted Override", the number digits field of the corresponding Redirecting Number Information Element shall be empty. Otherwise, the number digits field of the corresponding Redirecting Number Information Element shall contain the digits as received at the called user's switch.

6.2.8 Error handling

6.2.8.1 Functional signaling procedures

There are no special error handling procedures exclusively associated with the functional signaling of the CLIP and CLIR service. The CLIP and CLIR service capabilities utilize the same error handling procedures as basic call control.

6.2.8.2 Stimulus signaling procedures

6.2.8.2.1 Feature key management procedures

An error condition will occur if the Feature Activation Information Element, coded as a "feature activator=Presentation Allowed" for the Temporary mode of Presentation Restricted or coded as a "feature activator=Presentation Restricted" for the Temporary mode of Presentation Allowed, is sent by the terminal after any one of the following events has occurred:

a) The terminal has begun to send called party address digits, using Keypad Facility Information Elements;

b) The terminal has sent called party address digits, using the Called Party Number Information Element.

If the above error condition occurs, the network will ignore the Feature activator request and send a national-specific Cause Value 53 "service operation violated" with diagnostic "short-term denial" in an INFOrmation or STATUS message to the calling user.

If the feature activator provided is not allocated to the ISDN Number / Bearer Service (or allowed combination of Bearer Services for the ISDN Number) of the calling party, then the network will ignore the feature activator request and send a national-specific Cause Value 53 "service operation violated" with diagnostic "long term denial" in an INFOrmation or STATUS message to the calling user.

Since a call must be in existence according to the service definition, if the feature activator is provided in an INFOrmation message that has a null call reference value, an error condition exists. For this case, the network will ignore the feature

activator request and send an INFOrmation message to the calling user, using a null call reference value, and containing a Feature Indication Information Element with the status indicator field set to the current status.

6.2.8.2.2 Dial access procedures

An error condition will occur if the dial access code in a Keypad Facility Information Element(s) is sent by the terminal after any one of the following events has occurred:

a) The terminal has begun to send called party address digits, using the Keypad Facility Information Element(s);

b) The terminal has sent called party address digits using the Called Party Number Information Element.

In addition, other error conditions are described in 4.5.2.3 of ANSI T1.610.

The action taken by the network in these situations is as described in 4.5.2.3.1 of ANSI T1.610, except the network will not prompt the user to re-input the required information.

6.3 Interactions

6.3.1 Basic call

The operation of the CLIP and CLIR service capabilities do not affect basic call procedures.

6.3.2 Other services

6.3.2.1 Call Waiting

The presentation of the Calling Line Identification information shall be the same as when the ISDN user receives a normal call. Procedures of 6.2.7, Normal Operation at the Destination Switch, apply.

6.3.2.2 Call Hold

No interaction.

6.3.2.3 User-to-user signaling

No interaction.

6.3.2.4 Multi-level precedence and preemption

No interaction.

6.3.2.5 Message waiting indicator and control notification

No interaction.

7 Switching and signaling specification for CLIP and CLIR at interexchange interfaces

7.1 Formats and Coding for CLIP and CLIR

7.1.1 Messages

The Calling Line Identity (CLI) is included in the Initial Address Message (IAM). The format of this message is found in chapter 3 of ANSI T1.113.

7.1.2 Parameters

The format and coding of the following parameters are shown in chapter 3 of ANSI T1.113.

- Access Transport;
- Calling Party Number;
- Charge Number;
- Generic Address;
- Original Called Number;
- Redirecting Number.

7.2 Procedures for CLIP and CLIR

Figures 10 and 11 show the message se-quence diagram for CLIP and CLIR, respectively.

7.2.1 CLIP

7.2.1.1 Procedures at the Originating Exchange for Including the Calling Party Number (CPN) Parameter in the IAM

The originating exchange will include the CPN parameter, if available, in the IAM for all calls.[2)] In the case where the calling party is served by a PBX, the network may send the number of the PBX attendant operator or the user-provided Calling Party Number as the CLI.

When the CLI is provided by the user or PBX it may be 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.

a) If the user-provided CLI is valid, the Calling Party Number Parameter field should contain the CLI in the Address Signal with the Screening indicator set to “user provided, screening passed”;

b) If the user-provided CLI is not valid or not screened, the originating exchange shall default to the network-provided CLI for the Address Signal of the Calling Number Parameter field with the Screening indicator set to “network provided”, and shall discard the user-provided CLI unless the option is supported to transfer this number information using the Generic Address Parameter as described in 7.2.1.2.

The information included in call control messages will vary depending on the source of the CLI, and whether the calling party has indicated a request to use the CLIR facility for this call. If CLIR has been invoked for this call, the Address Presentation Restricted indicator should be set to “Presentation Restricted.” Otherwise, this indicator should be set to “Presentation Allowed”.

7.2.1.2 Procedures at the originating exchange for including the Generic Address Parameter (GAP) in the IAM

When the CLI is provided by the user or PBX, it may be 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. If the number is not screened or fails screening, the GAP should be included in the IAM at the option of the network as follows:

a) If the user-provided CLI is not screened, the Generic Address Parameter field contains the CLI in the Address Signal with the Type of Address set to “supplemental user provided calling address – not screened”.

b) If the user-provided CLI fails screening, the Generic Address Parameter field contains the CLI in the Address Signal with the Type of Address set to “supplemental user provided calling address – failed network screening.”

The call control procedure and the information included in call control messages vary depending on whether the GAP 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. If CLIR has been invoked for this call, the address presentation restricted indicator should be set to “Presentation Restricted.” Otherwise, this indicator should be set to “Presentation Allowed.”

7.2.1.3 Procedures at the Originating Exchange for Including Subaddress Infor-mation in the Access Transport Parameter (ATP) in the IAM

When the CLI is provided by the user or PBX, it may be accompanied by a subaddress. If the user-provided CLI is not screened or fails network screening, the network does not support the transport of two numbers, and conditional CPS acceptance is applicable, then the subaddress shall not be transported. Other-wise, this subaddress shall be included in the ATP, in its original access protocol format.

7.2.1.4 Procedures at the Destination Exchange

In the case where the destination exchange receives only part of the CLI, 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.

The CLI in the CPN parameter, and possibly the additional CLI in the GAP, Redirecting Number, and Original Called Number, will be passed to the called party based on the called party’s subscription options, the setting of the address Presentation

Restricted indicator, and the network option to support two CLI. In the case where the destination exchange receives the “Presentation Restricted” in the Address Presentation Restricted indicator, the CLI is not forwarded to the called party.

If a subaddress is present in the ATP, it is assumed to be associated with a user-provided number when conditional CPS delivery is applicable. In this case, if only the CPN parameter is present, and this is network provided, the Calling Party Subaddress field should be discarded. In addition, if the CPN is user provided, passed screening, the subaddress is delivered only if the CLI in the CPN is delivered. Moreover, if the GAP is present with one of the Type of Address settings in 7.2.1.2, the subaddress is delivered only if the CLI in the GAP is delivered.

When unconditional CPS delivery is applicable and a subaddress is present in the ATP, it should be associated with:

a) the network-provided CLI coded using the Address Signal of the Calling Number Parameter field with the Screening indicator set to “network provided” for the case of single-number delivery; or

b) the user-provided CLI coded using the Address Signal of the Calling Number Parameter field with the Screening indicator set to “user provided, screening passed” for the case of single-number delivery; or

c) the user-provided CLI coded using the Address Signal of the Generic Address Parameter with the Type of Address set to “supplemental user provided calling address – not screened” or set to “supplemental user provided calling address – failed network screening” for the case of two-number delivery.

When no Calling Party Subaddress delivery is applicable and a subaddress is present in the ATP, the subaddress should be discarded and should not be delivered.

7.2.1.5 Interworking

At an exchange where interworking from inband signaling to SS7 signaling occurs, the Automatic Number Identification (ANI) may be available on the incoming trunk. If so, this number may be included in the Charge Number (CHG) parameter in the outgoing IAM. The receiving network may optionally pass the CHG parameter to the destination exchange.

If the CHG parameter is received, it may be delivered to the called party as an alternate form of CLI. The presentation of this number is an option of the terminating network, as the address Presentation Restricted indicator is not available.

7.2.2 CLIR

7.2.2.1 Normal case

When the calling user indicates that they wish the CLI to be Presentation Restricted, the originating node shall provide the destination node with a notification that the Calling Line Identity is not allowed to be presented to the called party. The CLI shall not be included in the call offering to the called party, unless the called party has an override capability.

In this case, the CPN parameter will be marked as Presentation Restricted, in the address Presentation Restricted indicator. If the GAP is also to be transported, the setting of the address Presentation Restricted indicator will be the same as that of the CPN parameter, except in the case where the calling user subscribes to the ability to override CLIR on a call by call basis, with Presentation Restricted as the default. In this case, the CPN will be restricted, but the GAP will be Presentation Allowed.

For conditional CPS delivery, the subaddress will also be considered restricted at the terminating exchange, based on the settings of the Address Presentation Restricted indicator in the CPN parameter or GAP that is associated with the subaddress. For unconditional CPS delivery, the subaddress should be delivered independent of the Address Presentation Restricted indicator in the CPN or GAP parameter that is associated with the subaddress.

7.2.2.2 Abnormal case

7.2.2.2.1 Override category within an ISDN

As a network option, the terminating node can override the Address Presentation Restricted indicator and the CLI may be presented at the called subscriber for specific called party’s categories (e.g., Police).

7.2.2.2.2 Override category between ISDNs

When a call originates in one ISDN and terminates in another ISDN and CLIR is applicable, the rules and regulations of the destination (host) network should apply. For example, if an override category is not available in the originating network but is available in the destination network, the destination network can still override the Address Presentation Restricted indicator whenever CLI is available at this network.

As a network option the originating network can remove the CLI from the IAM if CLIR is applicable.

7.2.2.2.3 Interworking with non-ISDN or via non-ISDN

On calls to or via non-ISDNs, it cannot be guaranteed that the CLIR indication will be carried to the destination network.

As a network option, the originating network can remove the CLI from the IAM if CLIR is applicable.

If the destination network receives a CLI without any indication of Presentation Allowed or Restricted, i.e., with the Address Presentation Restricted indicator set to one of the spare values, or the CHG parameter, which does not have this indicator, the destination network will act according to its rules and regulations.

7.2.2.2.4 Restriction of additional address information

If conditional CPS delivery applies, any additional address information provided by the calling party, i.e., Calling Party Subaddress, will also be subject to the CLIR supplementary service as indicated in the address Presentation Restricted indicator in the CPN parameter or GAP that is associated with the subaddress.

If unconditional CPS delivery applies, any additional address information provided by the calling party, i.e., Calling Party Subaddress, will not be subject to the CLIR supplementary service as indicated in the address Presentation Restricted indicator in the CPN parameter or GAP that is associated with the Calling Party Subaddress.

7.3 Interactions for CLIP and CLIR

7.3.1 Interaction of CLIP with other supplementary services

The interactions with other ISDN supplementary services that affect SS7 are discussed.

7.3.1.1 Call Hold

No interaction.

7.3.1.2 Call Waiting

No interaction.

7.3.1.3 Calling line identification restriction

The calling line identification will not be presented, except to users with an override capability, if the calling user has an arrangement to inhibit the presentation of his number to the called party. The CPN, and possibly GAP parameters, with associated subaddress if any, shall be included in the IAM for call setup with the address Presentation Restricted indicator set to “Presentation Restricted.”

7.3.2 Interaction of CLIR with other supplementary services

The interactions with other ISDN supplementary services that affect SS7 are discussed.

7.3.2.1 Call Hold

No interaction.

7.3.2.2 Call Waiting

No interaction.

7.3.2.3 Calling Line Identification Presen-tation

Calling Line Identification Restriction will take precedence over Calling Line Identification Presentation.

The only occasion when a user subscribing to Calling Line Identification Presentation
can take precedence over Calling Line Identification Restriction is when the user has override category. This is a network option. The calling line identification will not be presented if the calling user has an arrangement to inhibit the presentation of his or her number to the called party. The CPN parameter, and possibly GAP, with associated subaddress if any, will be included in the IAM for call setup with the address Presentation Restricted indicator set to “Presentation Restricted.”

8 Specifications for protocol interworking

8.1 SS7/DSS1 Interworking

8.1.1 Messages Mapping

Both the IAM and the SETUP messages are used as the initial call establishment messages as shown in table 6.

8.1.2 Parameters/Information Elements Mapping

Table 7 shows the mapping between the parameters of the IAM message of SS7 and the information elements of the SETUP message of DSS1.

At the originating exchange, the DSS1 Type of Number field in the Calling Party Number Information Element shall be mapped into the SS7 Nature of Address field of the Calling Party Number Information Element or Generic Address parameter as appropriate. As the DSS1 Type of Number field does not indicate the uniqueness of a User Provided Number, and the SS7 Nature of Address field requires such an indication, the originating exchange shall assume a default value of “unique” if it has no other information regarding the uniqueness of the number. The exact mapping of codepoints is shown in table 8.

At the terminating exchange, both the unique and non-unique SS7 Nature of Address values shall be mapped into the corresponding DSS1 Type of Number value, with no indication of uniqueness sent to the called user. The exact mapping of codepoints is shown in table 9.

8.2 Public/private

No requirements.

8.3 Other networks

8.3.1 Non-ISDN

If a destination network (ISDN) receives a Calling Party Number without any indication of Presentation Allowed or restricted (e.g., interworking with PSTN), the destination network (host ISDN) shall act according to its own rules and regulations.

1) Available from Bellcore Customer Service, 60 New England Avenue, Piscataway, NJ 08854-4196.

2) Available from American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

2) The calling party number may be made available to other networks based on bilateral agreements.