INTERNATIONAL TELECOMMUNICATION UNION

CCITT

M.3660

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

(10/92)

MAINTENANCE: ISDN

ISDN INTERFACE MANAGEMENT SERVICES

Recommendation M.3600

FOREWORD

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Recommendation M.3660 was prepared by Study Group IV and was approved under the Resolution No. 2 procedure on the 5th of October 1992.

CCITT NOTE

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Recommendation M.3660

ISDN INTERFACE MANAGEMENT SERVICES

(1992)

Abstract

This Recommendation provides Stage 1 descriptions of ISDN interface management services.

Keywords

– ISDN interface management services;

– management of ISDN;

– UNI.

1 General

1.1 *Scope*

ISDN interface management services are services provided to allow network management capabilities for the ISDN interface, which includes aspects of the subscriber installation (SI) and subscriber access (SA). Communication of management information for ISDN interface management services is across one DSS 1 interface between two peer protocol entities.

1.2 *Configuration*

The reference configuration for ISDN interface management sources may be found in Figure 6/M.3600 [1].

1.3 *Approach*

1.3.1 *General*

A three stage approach is used to describe ISDN interface management services. Stage 1 is a prose description of the management service. Stage 2 defines the information flow between the network and the customer management entities. In addition for management services the definition of managed objects used to represent the ISDN interface resources and services are defined in Stage 2. Stage 3 defines the protocols required to implement the particular management service.

1.3.2 *Division of work*

The Stage 1 definition for ISDN interface management services may be found in this Recommendation.

2 ISDN interface services

From the following list of ISDN interface management services, only service profile verification for basic rate (SPV-Basic), service profile verification for primary rate (SPV-Primary), and local loopback management are defined. The remaining services are for further study.

– Service profile verification-basic (SPV-Basic);

– Local loopback management (LLM);

– Service profile verification – primary (SPV-Primary);

– Service profile management – basic (SPM-Basic);

– Service profile management – primary (SPM-Primary);

– State change management (SCM).

3 Local loopback management (LLM) service

This Recommendation identifies an ISDN interface management service to allow either side of an ISDN User-Network Interface to request bearer channels to be looped back. This service is called Local loopback management (LLM), it is optional and is a component of fault management.

3.1 *Stage 1*

This loopback management service is intended to provide a base capability for other management services. These services would be used in support of the failure detection, fault localization, and fault correction verification maintenance phases. There are a number of potential services this loopback service may form a part of.

1) A "continuity check" – a loopback of ISDN user-network interface B-channels, initiated by the customer to test for a B-channel is carried on a facility separate from the D-channel. Additional work is required to define the use of this loopback for a continuity check.

2) Remote B-channel termination tests – a remote manager (manager other than the end-user) could use the loopback service from the network to the customer as part of a remote test of an ISDN user-network interface B-channel termination. Such a remote test requires additional work to define the means of remotely activating the loopback and definition of the tests to be applied.

This loopback service may also have applicability to other future services.

This Local loopback management service (LLM) provides a means for either side of an ISDN user-network interface to request activation and deactivation of loopbacks of the B-channel terminations of the ISDN user-network interface. This service is provided between loopback requesting points that are layer 3 peers of the ISDN user-network interface.

The loopbacks requested by this service are:

– in the ET toward the user;

– in the TE or TA toward the network;

– in the NT2 toward the network;

– in the NT2 toward the user;

– in the NT1 toward the user (controlled by the ET and requested by the TE or TA) for basic rate access only.

All loopbacks are on a per channel basis and are under the internal control of the functional group in which they reside (except for loopback C in the NT1, which is under the control of the ET). That is the loopback point and loopback control point are within the same functional group. The loopback requesting point is the other side of the ISDN user-network interface. Any bearer channel termination can be looped by this service. This service is deniable by the loopback control point. Figure 1/M.3660 shows the pairs of the loopback control and requesting points involved in this service.

3.2 *LLM rules and procedures*

The following summarizes the Stage 1 description rules and procedures proposed to govern the LLM messages. These procedures occur between the two-layer-3-peer entities at the two ends of a B-channel.

– the service should provide the ability to request activation and deactivation of the loopbacks discussed above;

– the service should provide positive confirmation from the loopback control point to the loopback requesting point that a loopback has been activated or deactivated;

– the service should provide the optional capability to report test results from the loopback requesting point to the loopback control point as part of the loopback deactivation;

– the service should provide optional reasons why a requested loopback activation or deactivation has not occurred;

– the service should provide notification from the loopback control point to the loopback requesting point if the loopback is deactivated autonomously by the loopback control point;

– loopback C may only be invoked with this service when the NT1 is in the same management domain as the ET.

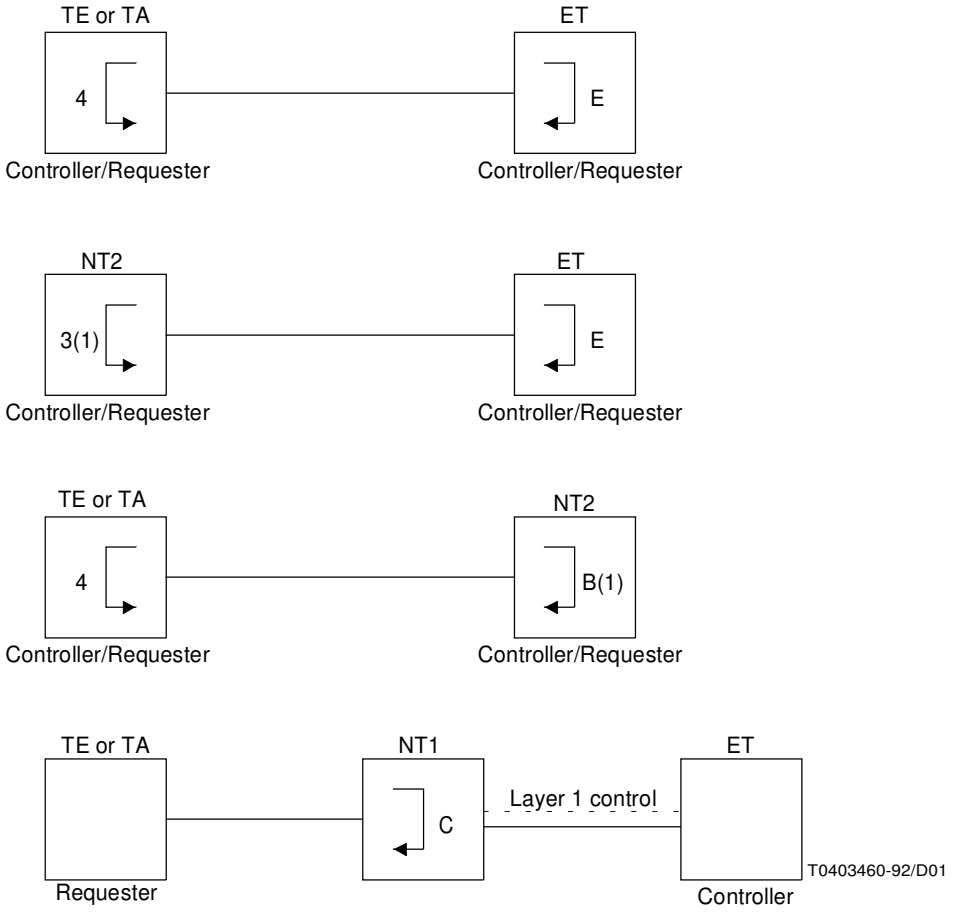

FIGURE 1/M.3660

Loopback control/requesting points

3.2.1 *Relationship to Recommendation Q.931 [2] states and procedures*

When a loopback is active on a channel, the channel should be considered as if a call was ACTIVE. A loopback request on a channel with an active call or in progress call should be denied with the appropriate reason information. This service does not directly cause call clearing. Active calls should be cleared by Recommendation Q.931 [2] procedures if necessary. Instead of disrupting an active call, it is preferable to monitor the state of the call and invoke the loopback after the call has cleared.

3.2.2 *Relationship to management states*

This service does not directly change ISDN management states. If a B-channel is in the active call state then the loopback request should be denied with the cause of busy traffic. The requesting point can then, at its option, either place the channel in a maintenance state (to keep the channel from being seized if the call on it clears) and either camp-on to wait for the call to clear or force the call down via Recommendation Q.931 [2] clearing.

4 Service profile verification (SPV) service

Service profile verification (SPV) is an optional, interface-specific ISDN management service, which provides the capability to read the service profile information across the ISDN user-network interface. This service is a component of configuration management.

4.1 Stage 1 for SPV on basic rate access

Successful operation of an ISDN exchange/network will require simple and dependable installation and verification of ISDN BRA terminal service profile parameter assignments by both customers and maintenance personnel. To meet this requirement, the ISDN exchange should provide the capability for providing basic service profile data to an ISDN terminal. No requirements are placed on the terminal for processing of the service profile data provided by the ET. However, some potential uses by the terminal (and/or personnel at the terminal) include

- terminal initialization, and
- verification that
  - correct Terminal endpoint identifier (TEI) or Service profile identifier (SPID)[1)] is being used;
  - Feature activators (FAs)[2)] are properly assigned to features; and
  - proper Directory numbers (DNs) and Bearer capabilities (BCs) are registered with the network.

4.1.1 *Elements of the service*

The element of the service is the terminal (TE/TA) requesting from the network that it sends the information contained in its profile.

The following lists the types of information which are transferred to the terminal. Additional information transfer is for further study.

- DNs;
- bearer capabilities;
- number of calls per DN BC pair;
- feature assigned to DN BC pair;
- feature key assignments.

4.1.2 *SPV rules and procedures*

The following summarizes the Stage 1 description of the rules and procedures proposed to govern the SPV messages. These procedures occur between the two-layer-3-peer entities at the two ends of an access loop.

1) The terminal should provide the capability to allow the user to start the procedure. (The ability of the network to start the procedure is for further study);

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1) The use of SPID is described in Recommendation Q.932 [3].

2) Features may be activated using Feature activators (FAs) using the procedures described in Recommendation Q.932 [3]. FAs may be mapped to a particular terminal feature key. The services which a particular FA maps to are agreed by the customer and network at subscription time.

2) SPV may only be invoked when a logical link has been established;

3) in the case of dynamic TEI, the terminal must have completed the terminal initialization procedure, to allow association to a specific service profile;

4) SPV will operate when a call is active at a particular terminal;

5) offering calls will not be affected by SPV being in progress.

4.2 *Stage 1 for SPV on primary rate access*

The complexity of service possible on ISDN primary rate access will require a means for the maintenance personnel to verify that the service profiles used by the NT2 and the ET are compatible. This verification may be needed by either customer installation or network maintenance personnel. To meet this need the SPV service on primary rate access should provide for either side of interface to initiate this service. No requirements are placed on either the ET or NT2 for processing the data provided by SPV. However, the NT2 may use the service profile data provided by the ET to initialize its side of the interface.

4.2.1 *Elements of the service*

The element of this service is one side of the interface (NT2 or ET) requesting the other side (ET or NT2) to send the information contained in its profile. The following lists some possible data that may be exchanged. A definitive list is for further study.

- Trunk group data:
  - B-channels in trunk group;
  - hunt direction;
  - service/bearer capabilities;
  - service options;
  - billing number (ET provided).
- Function group data:
  - test line numbers/characteristics.
- Routing data:
  - ordered list of trunk groups.

4.2.2 *Rules and procedures*

The following summarizes the Stage 1 description of the rules and procedures for SPV on primary rate access.

1) SPV may be invoked by either the user or the network.

2) SPV may only be invoked when the primary rate access logical link on the D-channel has been established.

3) SPV may be invoked when calls are active on the interface.

4) SPV will not interfere with normal call processing.

References

[1] CCITT Recommendation M.3600 *Principles for the management of ISDNs.*

[2] CCITT Recommendation Q.931 *ISDN user-network interface layer 3 specification for basic control.*

[3] CCITT Recommendation Q.932 *Generic procedures for the control of ISDN supplementary services.*