The definition of services in this bearer service category is for further study.

I.232.3User signalling bearer service category

This service is provided for the support of multiple capability terminals or single capability terminals.

For the speech mode of this bearer service the same applies as for the speech bearer service category. For the unrestricted mode of this bearer service category the same applies as for the unrestricted bearer service category.

I.231.5Circuit-mode 2 x 64 kbit/s unrestricted
8 kHz structured bearer service category

This bearer service category provides the unrestricted transfer of two 64 kbit/s user information flows over two B channels at the user network interface.

I.231.6Circuit-mode 384 kbit/s unrestricted
8 kHz structured bearer service category

This bearer service category provides the unrestricted transfer of 384 kbit/s user information over a Ho channel at the S/T reference point. The transfer of OAM information for reserved and permanent services may be provided over a D channel in the same or in another interface structure.

I.231.7Circuit-mode 1536 kbit/s unrestricted
8 kHz structured bearer service category

This bearer service category provides the unrestricted transfer of 1536 kbit/s user information over a H11 channel at the S/T reference point. Transfer of OAM information for reserved and permanent services may be provided via a D channel in another interface structure.

I.231.8Circuit-mode 1920 kbit/s unrestricted
8 kHz structured bearer service category

This bearer service category provides the unrestricted transfer of 1920 kbit/s user information over a H12 channel at the S/T reference point. The transfer of OAM information for reserved and permanent services may be provided over a D channel.

4.2Packet mode bearer service categories

I.232.1Virtual call and permanent virtual circuit bearer service category

This bearer service category provides the unrestricted transfer of user information in a packetized manner over a virtual circuit within a B or
D channel at the S/T reference point. Signalling information for virtual call and/or possibly OAM information for permanent virtual circuit services are transferred via a D or B channel as described in Recommendation I.462 (X.31).

I.232.2Connectionless packet-bearer service category

3) multiple subrate information streams multiplexed into 64 kbit/s by the user;

4) transparent access to an X.25 public network (I.462 case a).

User information is transferred over a B channel, signalling is provided over a D channel.

I.231.2 Circuit-mode 64 kbit/s, 8 kHz structured bearer service category usable for speech information transfer

This bearer service category is intended to support speech.

The digital signal at the S/T reference point shall conform to Recommendation G.711 (A-law or μ-law). The network may use processing techniques appropriate for speech such as analogue transmission, echo cancellation and low bit rate voice encoding. Hence, bit integrity is not assured. This bearer service category is not intended to support modem derived voice band data.

All CCITT Recommendations for the transfer of speech information in the network apply to this bearer service category.

I.231.3 Circuit-mode 64 kbit/s 8 kHz structured bearer service category usable for 3.1 kHz audio information transfer

This bearer service category corresponds to the service which is currently offered in the PSTN. This bearer service category provides for the transfer of speech and of 3.1 kHz bandwidth audio information such as voice band data via modems and facsimile group 1, 2 and 3 information. The digital signal at the S/T reference point shall conform to Recommendation G.711 (A-law or μ-law).

Connections provided for these services should offer the transfercapability for the information indicated above. (This means that the network may include speech processing techniques provided they are appropriately modified or functionally removed prior to non-speech information transfer). The control of echo control devices, speech processing devices etc., is only made by use of disabling tones (see Recommendation V.25). Bit integrity is not assured. The network may use analogue transmission.

All CCITT Recommendations for the transfer of speech information in the network apply to this bearer service category.

I.231.4 Circuit-mode alternate speech / 64 kbit/s unrestricted 8 kHz structured bearer service category

This bearer service category provides the alternate transfer of either speech or 64 kbit/s unrestricted digital information with the same call.

The request for this alternate capability and the initial mode desired by the user must be identified at call set-up time.

Recommended overall provision of bearer service categories

Circuit-mode bearer service categories

1) 64 kbit/s unrestricted E

2) Speech E

3) 3.1 kHz audio E

4) Alternate speech / 64 kbit/s unrestricted A

5) 2 x 64 kbit/s unrestricted A

6) 384 kbit/s unrestricted A

7) 1536 kbit/s unrestricted A

8) 1920 kbit/s unrestricted A

Packet-mode bearer service categories

1) Virtual Call and Permanent Virtual Circuit E

2) Connectionless FS

3) User Signalling FS

4.Prose definitions of bearer service categories

In order to give an overview of the bearer service categories identified, their definitions as given in Recommendations I.231 and I.232 are reproduced in this section.

4.1Circuite mode bearer service categories

I.231.1Circuit-mode 64 kbit/s unrestricted 8 kHz structured bearer service category)

This bearer service category provides unrestricted information transfer between S/T reference points. It may, therefore, be used to support various user applications. Examples include:

1) Speech;

2) 3.1 kHz audio;

mode, information transfer rate, type of information transfer capability and structure attributes. The recommended provision of services of this category is described as:

E an essential bearer service category to be made available internationally

A an additional bearer service category which may be available in some ISDNs and which may also be available internationally

FS the recommended provision of this bearer service category is for further study.

b) Within each bearer service category, a description of the agreed secondary attributes, i.e., establishment of communication, symmetry and information transfer configuration attributes. If an ISDN supports the bearer service category, the recommended provision of these secondary attribute combinations within this category are described as:

E an essential combination of attributes to be made available internationally (when an ISDN supports the particular overall bearer service category).

A an additional combination of attributes which may be available in some ISDNs and which may also be available internationally (when an ISDN supports the particular overall bearer service category).

FS the recommended provision of this combination of attributes is for further study.

c) Within each bearer service category a description of the agreed qualifying attributes, e.g. channel/rate and protocol access attributes for user information and for signalling OAM information. If an ISDN supports the bearer service category the recommended provision of these qualifying attributes within this category are described as:

E an essential access arrangement to be made available (when an ISDN supports the particular overall bearer service category)

A an additional access arrangement which may be available in some ISDNs (when an ISDN supports the particular overall bearer service category)

FS the recommended provision of this access arrangement is for further study.

Note 1 - During an evolutionary period, not all items marked "E" will be provided in all networks.

Note 2 - Attributes 10-13 are for further study.

Recommendations I.231 and I.232 give the recommended provision of bearer service categories and bearer services. The recommended overall provision of bearer service categories is reproduced in Table 1/I.230.

TABLE 1/I.230

The following circuit-mode bearer services categories have been identified so far:

I.231.164 kbit/s unrestricted, 8 kHz structured

I.231.264 kbit/s, 8 kHz structured, usable for speech information transfer

I.231.364 kbit/s, 8 kHz structured, usable for 3.1 kHz audio information transfer

I.231.4Alternate speech / 64 kbit/s unrestricted, 8 kHz structured

I.231.52 x 64 kbit/s unrestricted, 8 kHz structured

I.231.6384 kbit/s unrestricted, 8 kHz structured

I.231.71536 kbit/s unrestricted, 8 kHz structured

I.231.81920 kbit/s unrestricted, 8 kHz structured

The prose descriptions (step 1.1) and static descriptions (step 1.2) of these services are given in Recommendation I.231. A common dynamic description (step 1.3) for I.231.1, I.231.2, and I.231.3 is given in Recommendation I.220 for demand services only.

2.2Packet-mode bearer service categories

These bearer services involve packet handling functions.

The following packet-mode bearer service categories have been identified so far and are described in Recommendation I.232:

I.232.1Virtual call and permanent virtual circuit

I.232.2Connectionless (Note 1)

I.232.3User signalling (Note 1)

Note 1 - These services being identified need to be further studied and the descriptions are not yet included.

3Recommended provision of bearer services

In order to facilitate the development of compatible ISDNs and related user equipment, the tables in Recommendations I.231 and I.232 outline the recommended provision of bearer services defined in this Recommendation. The tables consist of three parts:

a) description of the service category by the dominant attributes, i.e., information transfer

Recommendation I.230 - Definition of bearer service categories

1.General

Recommendation I.210 describes the principles for defining telecommunication services supported by an ISDN, including the concept of bearer services, bearer capabilities and teleservices. It also provides the tools for the definition and description of such services.

The purpose of this Recommendation is to define a recommended set of bearer service categories that may be supported by an ISDN together with
their overall provision. These definitions form the basis for detailed descriptions of circuit mode bearer services as given in Recommendation I.231 and packet-mode bearer services as given in Recommendation I.232 and their associated bearer capabilities, which are used to define the network capabilities required.

Bearer services are fully described by prose definitions and descriptions, by attributes and by dynamic descriptions, which altogether define the service characteristics as they apply at a given reference point where the customer accesses the service. Recommendation I.140 and Recommendation I.210, Annex B describe the use of attributes for this purpose.

2.Definition of bearer services

This section defines several bearer services accessed via the standard network access provided by an ISDN. The identification of possible additional services such as subrate services is left for further study.

These possible additional services would not lead to any additional requirements to those already identified for physical characteristics of interfaces to be applied at reference points S and/or T (see Recommendation I.411).

The definition of bearer services is based upon the list of attributes as given in Figure B-2/I.210. The information transfer attributes numbers 1-4 are called "dominant attributes". They are used to identify a particular bearer service category. Information transfer attributes numbers 5-7 are called "secondary attributes". They are used to identify individual bearer services within one category. "Access attributes" as well as "general attributes" are used to further specify an individual bearer service. They are called "qualifying attributes". The principles of categorizing bearer services is presented in Figure 1/I.230.

2.1Circuit-mode bearer service categories

These bearer service categories are typically characterized by the provision of user information over one type of channel and signalling over another type of channel.

The use of the channel which conveys signalling information also to provide user-to-user information transfer is described in the user-to-user signalling supplementary service as given in Recommendation I.257.