
Question 2/15

STUDY GROUP 15 - CONTRIBUTION

SOURCE* : France Telecom
TITLE: Proposal for amendment of H310, H32x DRAFT RECOMMENDATIONS

1. Introduction

This contribution shows possible cases of communications where undefined clocked synchronization have to be clarified in case of interworking. Possible cases of interworking and existing standards are described. Finally, the conclusion suggests that amendments are made as soon as possible on clock issues.

In band signalling provided through H 221 frame assumes that phase shifts don't occur frequently over international calls. Phase shifts appear for links between two networks which are operated at different clocks. To limit the number of phase shifts, ITU-T G.823 defines objectives for a long period (i.e. days and months). For H.221 based terminals, each phase shift will lead to a loss of frame alignment. As far as the customer is concerned, the audio becomes bad for a few hundred of milliseconds and the video might need a few seconds to be refreshed.

2. Interworking schemes

2.1. Clock Reference for a Point to Point Communication

ITU-T Rec. I.580 describes the interworking functions to interconnect the N-ISDN to the B-ISDN for 64 kbit/s services. To transport the Nx64 kbit/s in the U-plane, AAL1 is recommended by ITU-T. The gateway named Interworking Functions (IWF) does not carry the B-ISDN clock, as explained : "if the IWF receives a clock from the 64 kbit/s based ISDN side, it ignores the SRTS information of the B-ISDN side to send user information to 64 kbit/s based ISDN".

ATM forum document, referenced AF-SAA-0032.0, describes the CES services to interconnect PABX or structured services at Nx64 kbit/s. This IWF must provide a 2.048 Mhz reference clock as a requirement. By this way, the common reference clock is possible for a communication if both terminals (e.g. Term. B & Term. C) synchronize their flow on the N-ISDN network clock, provided by terminal B.

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In addition, a communication could be started by a H.323 terminal (terminal E) which uses an AAL5 to a ISDN H.320 terminal. Since a such kind of exchange will use a public network, a gateway will be used to adapt the AAL5 flow to AAL1.

2.2. Multipoint Communication

A Multipoint Control Unit (MCU) is used to establish a multiparty conference. The main functions of a MCU have been described in H.331 and H.243. In order to mix the audio, the MCU assumes that the input audio signals are at the same bit rate. Since most of the MCU implementations broadcast the H261 signal, this assumes that the source video bit rate is used for the MCU output video rate which leads to identical clocks for sending and receiving at all the MCU ports or to draft a new stuffing mechanism.

These documents are focusing on the N-ISDN connections but take into account a possible connection from a B-ISDN terminal calling this multipoint. (see fig. 1).

For this reason, H.231 states that the bitrate of a MCU communication has to be the same for all primary terminals. H.243 states also that all terminals must synchronize their receiving and sending clock on the MCU unit clock.

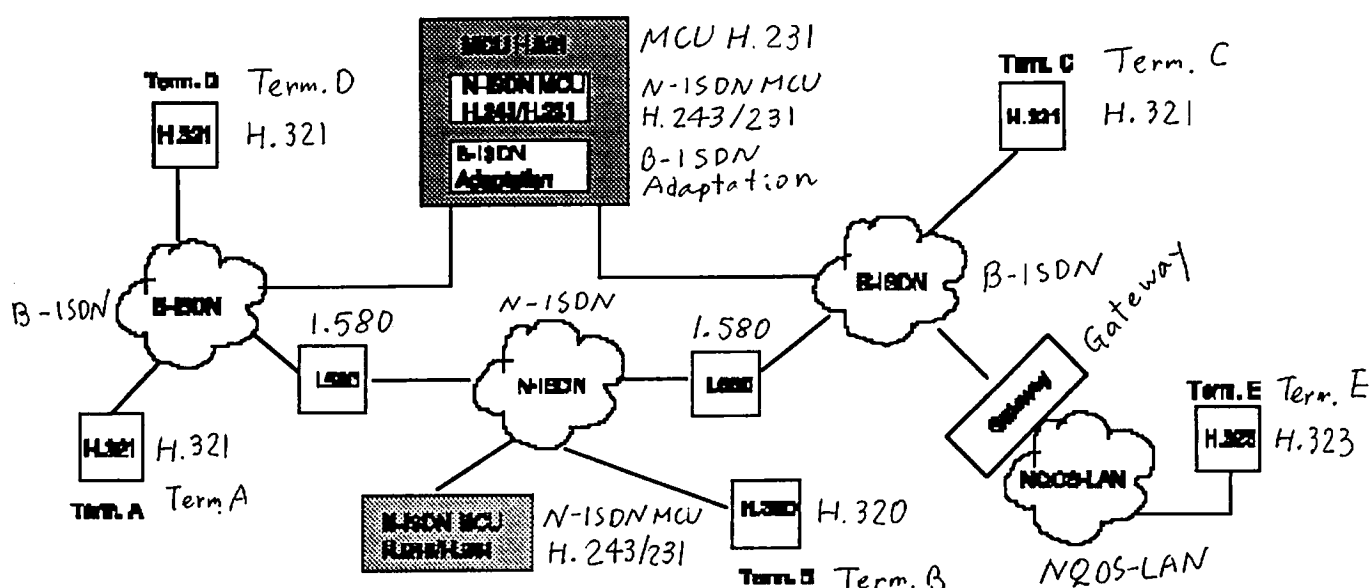


Figure 1: Internetworking of terminals between B-ISDN & N-ISDN

Since all kinds of intercommunications through different networks should be possible some configuration could affect the correct working of the service.

A possible way of implementing synchronisation is to use some control mechanism for cases where it is compulsory such as for multipoint conference. These means might be provided via in-band signalling or via network signalling. For the time being, it is proposed that terminals should be designed to work in a synchronised way.

3. Conclusion

In order to allow the interworking of current MCUs with ATM and LAN endpoints, some means are to be provided to synchronise the various bit rates for audio and video. For the time being, it is proposed that the H310, H32x recommendations under approval are amended to request that terminals should be designed to work in a synchronised way. In a second step, it is proposed to clarify synchronization mechanisms in order to define to which clock the mastership should be allocated.