CCITT SGXV
Working Party XV/1
Experts Group for ATM Video Coding

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SOURCE : Japan
TITLE : Consideration on multi-point communication in B-ISDN
PURPOSE : Information

1. Introduction

Several requirements for multi-point video communication in B-ISDN have been discussed in AVC-37 (Australia). This contribution also attempts to clarify the requirement for video codec in multi-point communications.

2. Several types of multi-point topologies

The following multi-point topologies can be considered (Fig.1);

a. Star with MCU : Signals are collected to and distributed through MCU.
b. Star with CN's : Signals are distributed through network Copy Node.
c. Bus : Signals are relayed trough the nearest terminal.
d. Mesh : Signals are sent directly to respective terminals.

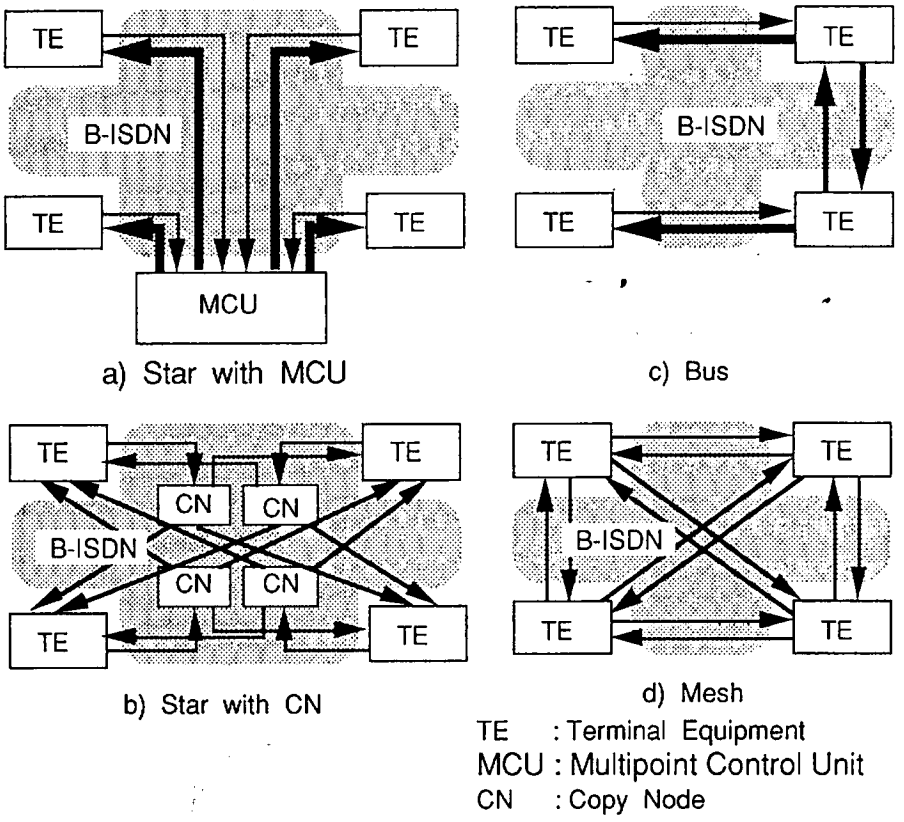


Fig. 1 Connections between Video Terminal Equipments

Bus topology (c) is not suitable excepts in special cases because of the increasing delay. On the other hand, if we assume the situation that each terminal includes only one audio codec, Star with MCU topology (a) is the most suitable topology.

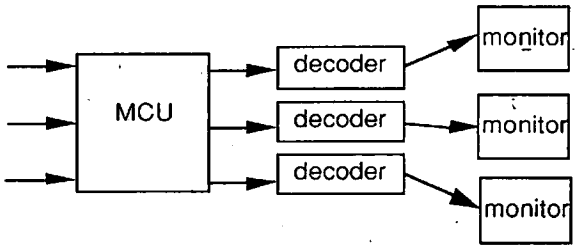
3. Requirement for video codec

If a user requires multiple pictures from several terminals without decoding/recoding at the MCU, three cases can be considered (Fig.2) ;

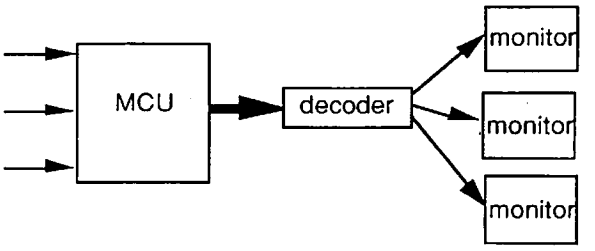
case 1 : A terminal has multiple decoders and monitors.

case 2 : A terminal has one decoder and multiple monitors. However a decoder should effectively work as multiple decoders. If intra-frame coding technique is used and dropping the picture frames is permissible, the decoding frequency can be reduced.

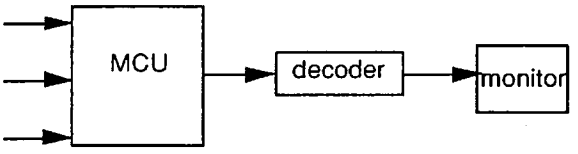
case 3 : A terminal has one decoder and a monitor. An MCU can reconstruct multiple video signals into one video signal without decoding. For example, it is possible if four CIF coded signals can be constructed into one SCIF coded signal.



(a) case 1 : multiple decoders and monitors



(b) case 2 : one decoder and monitors
a decoder acts as multiple decoders



(c) case 3 : one decoder and a monitor
An MCU can reconstruct multiple video signals into one video signals without decoding

Fig.2 Several cases to achieve multiple picture communication

If multiple pictures are required in multi-point communication, we must pay attention to how to achieve it. In some case, the coding technique may be affected (case 2 and case 3).

4. Conclusion

Some consideration on multi-point communication in B-ISDN has been done. We should pay attention to how to achieve multiple picture communication in multi-point environment.