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

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SOURCE : Japan
TITLE : Clock recovery for variable bit rate audiovisual coding
PURPOSE : Discussion

1. Introduction

According to Rec. I.363, CS for AAL type2 (Fig. 1) provides clock recovery function. However, it is not clear what kind of clock recovery is available. This paper listed up several types of clock recoveries to discuss what is needed for variable bit rate audiovisual coding.

2. The function of CS

Table 1 shows several possibilities for clock recovery function provided by CS, whose timing relationship is illustrated in Fig. 2.

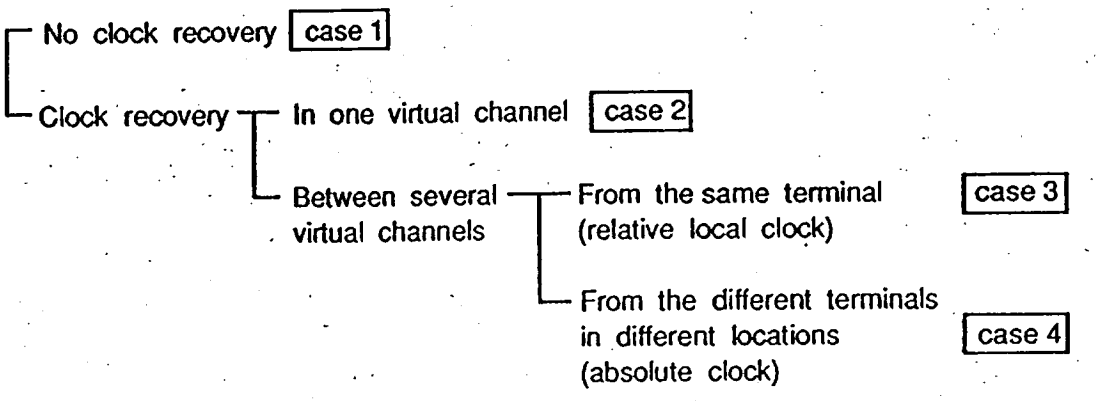


Table 1 Several possibilities for clock recovery function provided by CS

Case 1 : CS has no clock recovery function. (Fig. 2(a))
If some kind of synchronization between sending and receiving sides is needed, it must be achieved in the user layer. For example, video frame synchronization by means of Temporal Reference as used in H.261.

Case 2 : Clock recovery in one virtual channel. (Fig. 2(b))
If the head of CS-PDU corresponds to that of GOB, for example, video frame synchronization may be easy to achieve.

Case 3 : Clock recovery between virtual channels from the same terminal. (Fig. 2(c))

The multi-media synchronization may be easy to achieve even in such a case that different media are transmitted in different virtual channels. For example, one virtual channel for video signal and the other virtual channel for audio.

Case 4 : Clock recovery between virtual channels from different terminals in different locations. (Fig. 2(d))

Any kind of synchronization may be easy to achieve even in a case of multi-point videoconference. This function needs absolute clock in every location. Therefore realization of this function seems to be very difficult.

Discussion points :

Which is desirable case 1 - 4 for the function of CS?

3. Conclusion

Several possibilities for clock recovery function provided by CS are listed up to discuss what kind of clock recovery we need. Results of the discussion should be sent to SGXVIII.

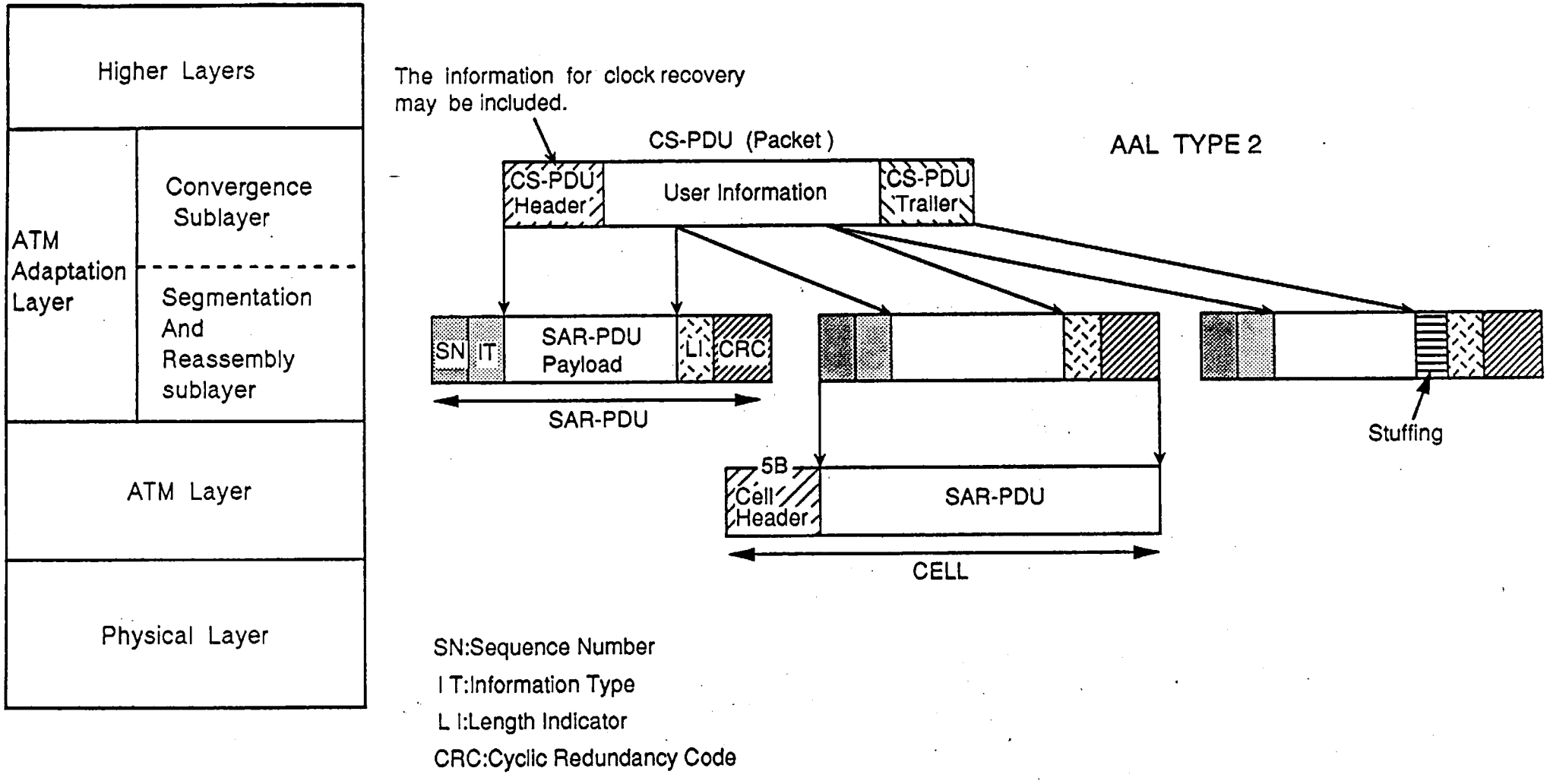
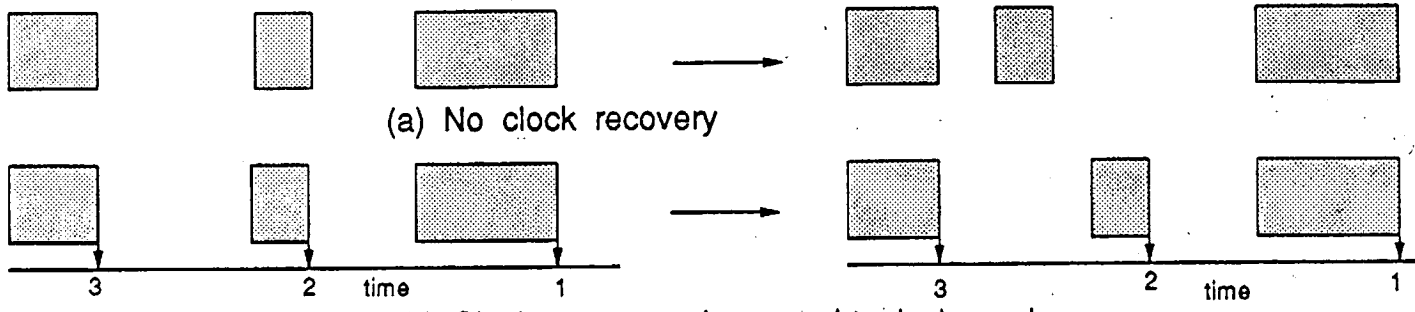
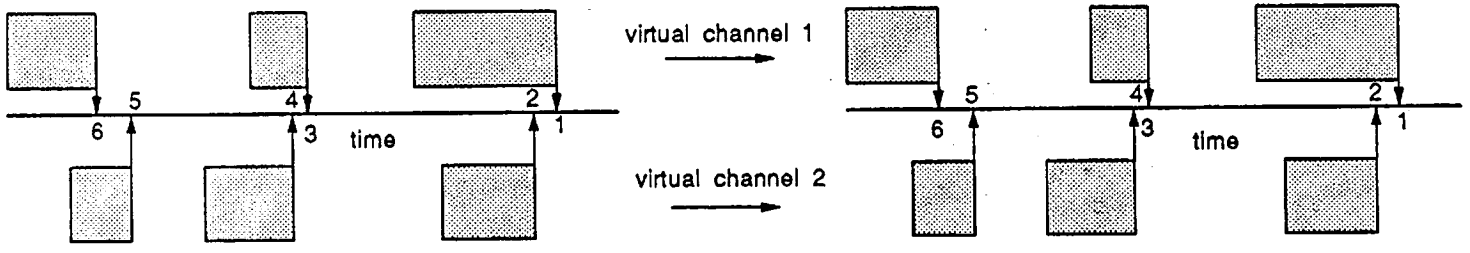


Fig.1 B-ISDN Protocol Model and AAL Type 2

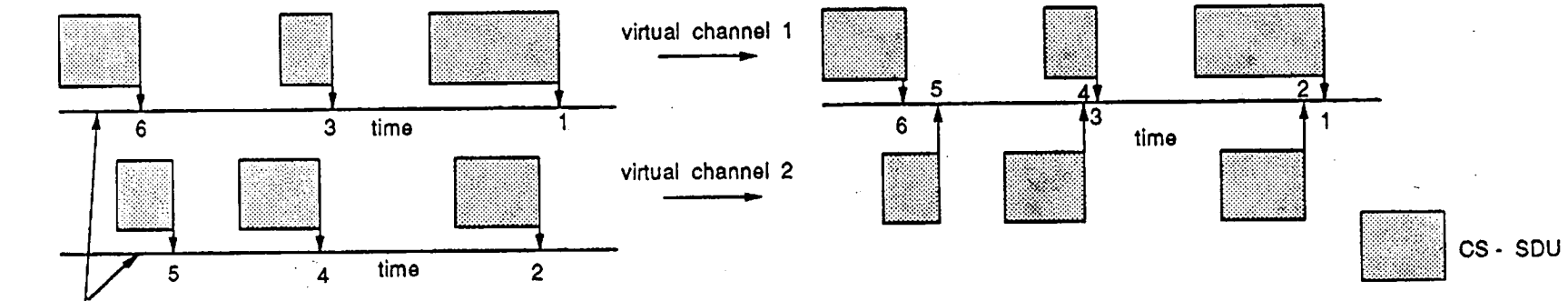


(a) No clock recovery

(b) Clock recovery in one virtual channel



(c) Clock recovery between virtual channels from the same location



The clocks at different location should be synchronized with each other. (absolute clock)

(d) Clock recovery between virtual channels from the different locations

Fig. 2 Several types of clock recoveries