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TITLE: CONSIDERATION ON PROTOCOL CONVERSION BETWEEN DIFFERENT NETWORK ADAPTATION PROTOCOL TYPES

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1. Introduction

Transport Streams or Program Streams are accomplished by multiplexing media, such as audio, video, data and control signals in Recommendation H.222.1 (multimedia multiplex protocol and procedure). Various terminal types exist in Recommendation H.310, uni-directional types are ROT-1,5 and SOT-1,5 and bi-directional types are RAST-1,5 and RAST-1 & 5. In order to interface to ATM network, H.310 needs various network adaptation functions that H.222.1 supports. This contribution proposes several considerations on protocol conversion between various network adaptation protocols.

2. Transport Stream packet handling into AAL 5 CPCS-PDU

Transport Stream Protocol Data Unit (TS-PDU) are formed through H.222.1. For network adaptation, H.222.1 makes use of ATM adaptation layer 1 or 5, in which TS-PDUs are packetized into ATM cell. There are two schemes for TS-PDUs mapping into AAL. One is using AAL type 1, and the other is using AAL type 5. When using AAL type 1, three methods exist as follows:

- AAL type 1 with no FEC and no interleaving
- AAL type 1 with FEC and no interleaving
- AAL type 1 with FEC and interleaving

In case of using AAL type 5, two methods are usually used.

- AAL type 5 with one TS-PDU
- AAL type 5 with two TS-PDUs

Among these methods using AAL type 1 or 5 modes, there are some cases that we should consider. For example, in order that AAL 5 (CPCS-PDU: 236 bytes) having one TS-PDU can interface to AAL 5 (CPCS-PDU: 384 bytes) with two TS-PDU, the AAL 5 receiver having two TS-PDU or gateway needs even number of TS-PDUs. So these AAL 5 receiver and gateway wait until the last TS-PDU is received. If a TS-PDU remains in the receiver's buffer of AAL5 with two TS-PDU, it causes several events as follows:

- when without consequent a TS-PDU, CPCS-PDU time out can occur.
- when communication restarts with other program number (PID), CPCS-PDU (384 bytes) may grouped with TS-PDU having different PID.

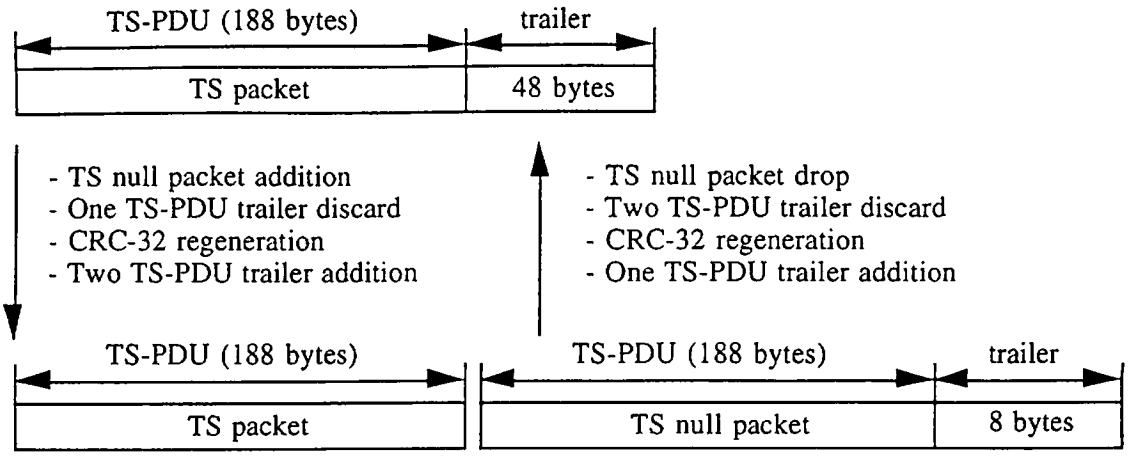
In order to resolve intercommunication problem between AAL 5 (CPCS-PDU: 236 bytes) with one TS-PDU and AAL 5 (CPCS-PDU: 384 bytes), protocol conversion functions are required as follows and figure 1 shows its protocol conversion scheme.

i) One TS-PDU into two TS-PDU

- For construction of CPCS-PDU (384 bytes), AAL 5 function (with two TS-PDU) or gateway discards one TS-PDU trailer (48 bytes).
- For construction of CPCS-PDU (384 bytes), AAL 5 function (with two TS-PDU) or gateway has TS null packet addition and CRC-32 regeneration function.

ii) Two TS-PDU into one TS-PDU

- For construction of CPCS-PDU (236 bytes), AAL 5 function (with one TS-PDU) or gateway has 40 byte padding and CRC-32 generating function.
- For construction of CPCS-PDU (236 bytes), AAL 5 function (with one TS-PDU) or gateway has TS null packet discarding and CRC-32 regeneration function.



(Figure 1) Protocol conversion function between different AAL 5 types

3. Proposal

When an AAL 5 (CPCS-PDU: 236 bytes) system interface with another AAL 5 (CPCS-PDU: 384 bytes), there is no definition for intercommunication points. This contribution proposes the consideration on intercommunication between different network adaptation protocol types in Recommendation H.222.1 or H.310 as follows:

- TS null packet addition and discard for CPCS-PDU (384 bytes)
- CPCS-PDU trailer discard and generation for each CPCS-PDUs
- CRC-32 regeneration for each CPCS-PDUs

END