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요 약

현재 ATM 망에서의 하드웨어간 연동을 위한 시험이 진행되고 있으며, AAL 1과 AAL 5를 이용하여 CBR MPEG-2 TS 서비스를 수용하려는 많은 연구가 진행중이다. 그러나 현재 CBR MPEG-2 TS를 AAL과 Interconnection 하는 데에 있어 문제점 및 그 의미가 정확하지 않은 점이 있다. AAL 5의 경우에는 지연, 지터, 그리고 타이밍 문제, AAL 1의 경우에는 방송형 서비스와 같이 Surece Traffic Rate가 동일한 경우에는 문제가 없지만, 다양한 Source Traffic Level을 갖는 Bi-directional 통신에서의 문제점등이 고려되어야 한다.

1. Introduction

Draft Recommendation H. 222 1 currently specifies both H. 222. 0 Program Stream(PS) and Transport Stream(TS). H. 222.1 together with H. 222.0, H 262 and AAL plays a role of providing audiovisual/multimedia services through ATM networks. Hardware experiments for verifying interoperability between ATM terminals are going on, and many experimental trials that support CBR MPEG-2 services using AAL type 1 and AAL type 5 are being made. However, for network adaptation between AAL and CBR MPEG-2 Transport Stream(TS), there are some providing

CBR MPEG-2 services using AAL 5, following points are to be considered:

- After checking CRC32 in AAL-PDU, it discards TS packets having multibit errors.
- For encapsulating 2 more than TS packets into AALS PDUs, jitters and TS packet reordering time should be considered at receiver sides.
- Time Stamp mechanism should be used for constant interarrival time

  In case of AAL1, except broadcasting service having same source traffic rate, it should be considered to support bi-directional communication having various source traffic levels.

2. Network adaptation for providing various traffic levels

Up to now, experimental field trials make progress for peer-to-peer communication having same specification in ATM network. In this case, adaptation protocol carrying CBR MPEG-2 TS service is contrained to AAL 1, and adaptive clock recovery scheme is used to send recovered data to H. 222.1. But in order to support various data traffic (CBR MPEG-2 TS) of transmit sides which have several levels in H. 262, it should be considered to accommodate traffic levels at the receiver side.

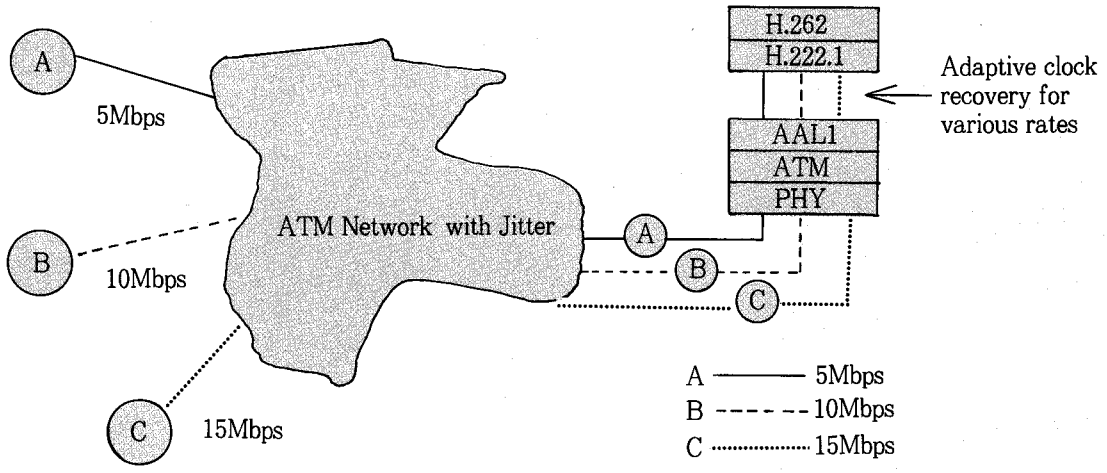
Rec. I. 363 describes the specification for video signal transport (distributive television services with error correction method)as follows;

- CBR rate at AAL service boundary is depending on MPEG-2.
- Source clock recovery is asynchronous adaptive scheme.
- Error correction method is long interleaver scheme,and so on.

The adaptive clock method is implemented at the AAL receiver side. The fill level of the receiver buffer is continuously measured and used to drive the PLL generating the local clock. Though it is possible to transfer the TS from AAL to H. 222.1 without source clock recovery, the degradation of video quality is expected due to the CDV and jitter in ATM network. However there is no problem for the peer-to-peer communication that has single source traffic. In case of processing various traffic rates through ATM network as figure 1, because of adaptive clock recovery driving PLL within the fixed range, dummy data are transmitted to H. 222.1 and it results in loss of synchronization in TS packets. Therefore in this case it is necessary to consider the meaning of adaptive clock recovery. And to prevent loss of synchronization of TS packets in case of bi-directional communication, during call set up procedure, call negotiation procedure should be considered to provide the source traffic rate to ATM terminals.

3. Conclusion

For the purpose of supporting various source traffic, this contribution proposes to consider network adaptation scheme (including adaptive clock recovery) for supporting various traffic rate between AAL 1 and H. 222.1.



(Figure 1) Various traffic scheme in ATM network

[References]

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TITLE : Proposal of amendment for continuity check functions in G.ATME−2

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ABSTRACT

This contribution proposes the amendment of VC(P)C continuity check functions Recommendation G.ATME-2

1. INTRODUCTION

G.ATME-2 provides functional requirements for the ATM equipment such as ATM crossconnector, ATM switch, and ATM multiplexer. It is structured according to G.ATME-1 which defines a general functional architecture of a B-ISDN Network Element. It addresses transfer functions, layermanagement functions, and plane management functions. Transfer functions include a VC(P)C continuity check which is recommended in I.610 and was updated at the meeting of the Study Group 13 held in Geneva, on 14-25 November 1994. We propose that it should be reflected in G.ATME-2.

2. DISCUSSION

Contents on Continuity Checks in the previous and present Recommendation I.610 are as follows.

Contents recommended at the meeting of the Study Group 13, held in Geneva on March 1994, are as following.

VC(P)C continuity check(03/94)

The continuity check cell is sent downstream by a VC(P)C end point when no user cell has been sent for a period of it, where Ts<t<2Ts and no VC(P)C defect is indicated. If the VC(P)C end-point does not receive any cell within a time interval Tr(Tr>2Ts), it will send VC(P)-RDI to the far-end. Further details of this procedure(e.g.activation/deactivation, Ts, and Tr)are for further study.

This mechanism can also be applied to test continuity across a VC(P)C segment. The need for supporting this mechanism for all VC(P)Cs simultaneously is for further study.

Contents recommended at the meeting of the Study Group 13, held in Geneva on Novmber 1994, are as following.

VC(P)C continuity check(11/94)

Continuity check(CC) can be simultaneously carried out end-to-end or Segment level on a certain number of selected active VC(P)Cs per interface(UNI, NNI) in each direction. The value of this number is outside the scope of this recommendation.

Continuity check can be activated either during connection establishment or at any time after the connection has been established.

Procedures for activation(and associated deactivation)are described in 6.2.3.

The possibility to activate the Continuity Check on all active VC(P)Cs Segments remains as an option.

NOTE : Although use of the Continuity Check is a network operator option, some administrations considered the ability to activate Continuity Check on some or all of the VC(P)C segments to be important. This is due to the fact that the Continuity Check is the only in -service mechanism able to continuously defect for ATM layer defects (as opposed to Physical Layer defects) in real-time. Also activation of the Continuity Check mechanism together sith the Performance Management process allows the performance to be assessed only during the available time of the VC(P)C / VC(P)C Segment according to ITU-T Recommendation I.356.

Two alternative mechanisms exist for the insertion of Continuity Check cells after the activation of the Continuity Check function:

1) A Continuity Check cell is sent downstream by a VC(P)C source-point or a VC(P)C segment source-point when no user cell has been sent for period of nominally 1 second.

2) Continuity Check cells can also be sent repetively with a periodicity of nominally 1 cell per second independent of the user cell flow.

When the VC(P)C sink-point with Continuity check activated does not receive any user cell or Continuity Check cell within a time interval of 3.5 seconds, with a margin of +/- 0.5 seconds, it will declare the VC(P)C-AIS state due to a Loss of Continuity(LOC) defect.

When the VC(P)C segment sink-point does not receive any user cell or Continuity Check cell within a time interval of 3.5 seconds, with a margin of +/- 0.5 seconds, it will declare a Loss of Continuity (LOC) defect and start transmitting VC(P)-AIS cells downstream. However, during an ZLOC defect, to avoid duplication of VC(P)-AIS cell flows this Segment sink-point shall not insert additional VC(P) -AIS cells if it already is receiving and forwarding VC(P)-AIS cells.

3. CONCLUSION

We propose to add the following text to G.ATME-2 or replace the existing text in G.ATME-2 with it.

(1)Segment F4 OAM cell insertion(VPST source function)

A VPC Continuity Check cell shall be generated and inserted into the cell stream by one of two alternative mechanisms in Recommendation I.610 when the VPC Continuity Check is activated by an activation request from TMN or a VP segment user and no user cells of the activated VP have been sent for a period of nominally 1 second. The format of a VPC Continuity Check cell and the procedure of the Activation/Deactivation are defined in Recommendation I. 610.

(2) Segment F4 OAM cell extraction and processing(VPST source function)

A vpc Continuity Check cell shall be generated and inserted into the cell stream by one of two alternative mechanisms in Recommendation I.610 when the VPC Continuity Check is activated by an activation request from TMN or a VP segment user and no user cells of the activated VP have

been sent for a period of nominally 1 second. The format of a VPC Continuity Check cell and the procedure of the Activation/Deactivation are defined in Recommendation I. 610.

(3) End-to-end F4 OAM cell insertion(VPCT source function)

A VPC Continuity Check cell shall be generated and inserted into the cell stream by one of two alternative mechanisms in Recommendation I.610 when the VPC continuity check is activated by an activation request from TMN or a VP end user and no user cells of a activated VP have been sent for a period of nominally 1 second.The format of a VPC Continuity Check cell and the procedure of the Activation/Deactivation are defined in Recommendation I.610.

(4)End-to-end F4 OAM cell extraction and processing(VPCT sink function)

A VPC Continuity Check is done by monitoring all cells of an activated VP when the VPC Continuity Check is activated by an activation request from TMN or a VP end user. A Loss of Continuity (LOC) is declared when any cell of the activated VP is not received within a time interval of 3. 5 seconds, with a margin of +/− 0.5 seconds. The LOC defect is removed when any cell of the VP is received. The procedure of the Activation/Deactivation is defined in Recommendation I.610.

(5)Segment F5 OAM cell insertion(VCST source function)

A VCC Continuity Check cell shall be generated and inserted into the cell stream by one of two alternative mechanisms in Recommendation I.610 when the VCC continuity check is activated by an activation request from TMN or a VC segment user and no user cells of the activated by an activation request from TMN or a VC segment user and no cells of the activated VC have been sent for a period of nominally 1 second. The format of a VCC Continuity Check cell and the procedure of the Activation/Deactivation are defined in Recommendation I.610.

(6) Segment F5 OAM cell extraction and processing(VCST sink function)

A VCC Continuity Check is done by monitoring all cells of an activated VC shen the VCC Continuity Check is activated by an activation request from TMN or a VC segment user. A Loss of Continuity (LOC) is declared when any cell of the activated VC is not received within a time interval of 3.5 seconds, with a margin of +/− 0.5 seconds. During a LOC defect, a VC-AIS cell is generated and sent to a vc end user. The LOC defect is removed when any cell of the VC is received. The procedure of the Activation/Deactivation is defined in Recommendation I.610.

(7)End-to-end F5 OAM cell insertion(VCCT source function)

A VCC Continuity Check cell shall be Generated and inserted into the cell stream by one of two alternative mechanisms in Recommendation I.610 when the VCC continuity check is activated by an activation request from TMN or a VC end user and no user cells of a activated VC have been sent for a period of nominally 1 second. The format of a VCC Continuity Check cell and the procedure of the Activation/Deactivation are defined in Recommendation I.610.

(8) End-to-end F5 OAM cell extraction and processing(VCCT sink function)

A VCC Continuity Check is done by monitoring all cells of an activated VC when the VCC Continuity Check is activated by an activation request from TMN or a VC end user. A Loss of Continuity (LOC) is declared when cell of the activated VC is not received within a time interval of 3.5 seconds, with a margin of +/−0.5 seconds. The LOC defect is removed when any cell of the VC is received. The procedure of the Activation/Deactivation is defined in Recommendation I.610.