ITU Telecommunications Standardisation sector
Study Group 15
Experts Group for Video Coding and Systems
in ATM and Other Network Environments

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Title: Report on European progress on AALs for Class A & B services
Source: UK (BT)
Purpose: For information

1. Introduction

This document reports on the progress within Europe on the development of AALs for Class A and Class B services in the context of support for Audio-visual and Multimedia Services (AMS). The attached documents from ETSI NA5 indicate current European support for the development of suitable AALs and highlight ETSI's priorities and preferences, namely:

- AAL Type 1 for Class A CBR AMS and
- AAL Type 2 (derived from AAL Type 1) for Class B VBR AMS.

The sentiments expressed in the two documents from ETSI NA5 are fully supported by BT. This contribution was agreed at the ETSI NA5 meeting in Stockholm on 3-7 October 1994. Therefore the purpose of this contribution is that SG15 Experts Group should take account of the ETSI decision to give priority to the development of AAL Type 1 and Type 2.

This document is also being presented to SG13 Q6 at their next meeting.

Attached:

1. An AAL for Class A services: CBR AMS — Source: ETSI NA5 (Network aspects for B-ISDN)
2. An AAL for Class B services: VBR AMS — Source: ETSI NA5 (Network aspects for B-ISDN)

LIAISON STATEMENT

To: ITU-T SG13 Q6.1 and Q6.2, and ITU-T SG15 Q2 AVC EXPERTS GROUP

From: ETSI NA5

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Subject: An AAL for Class A services: CBR AMS

Reference: Liaison statement "An AAL for Class B services"

The responsibility of the Support for Audio-visual and Multimedia (SAM) services working group of NA5 in conjunction with the Video Coding Matters (VCM) working group are to recommend AAL types suitable for audiovisual and multimedia services (AMS). The growing popularity of MPEG-2 audiovisual coding has resulted in this liaison addressing the mapping of CBR MPEG-2 signals onto ATM.

NA5 has identified two possible options for a suitable AAL for CBR AMS, namely:

1. Use AAL Type 1, or
2. Use AAL Type 5 with additional functionality provided by an AVSSCS layer.

After careful consideration, it is the majority opinion of NA5 that Option 1 (i.e. AAL Type 1) is the better approach, for the following reasons:

QoS aspects:

- AAL Type 1 supports timing recovery, cell loss detection and optionally cell loss correction, which have been identified as highly desirable functions in an AAL for AMS,

Interworking aspects:

- AAL Type 1 supports interworking with existing N-ISDN terminal, e.g. H.320 terminals, which will be connected through AAL Type 1, as specified in I.580,
- N-ISDN service support using circuit emulation over B-ISDN is currently performed by AAL Type 1,

Service Support:

- because of the features included in AAL Type 1, such as timing recovery, AAL Type 1 gives a basis for a broad range of services in one single multimedia terminal,

Efficiency:

- AAL Type 1 can provide a lower transmission overhead than AAL Type 5 (e.g. an important requirement for supporting low bit rate audio),

The overriding concensus is to agree to one world-wide standard for an AAL for CBR audiovisual multimedia services.

It should be noted that some ATM hardware manufacturers prefer Option 2, but this opinion is mainly based on the widespread availability of AAL Type 5 implementations. In the context of AMS, AAL Type 5 with a null SSCS (currently supported by the ATM Forum for a short term solution of CBR) could only support video-on-demand applications. This ATM Forum support is seen to have a long term market, and therefore cost implications. In order to support all CBR audiovisual and multimedia services over AAL Type 5 in the long term, an AVSSCS including the above functions would need to be developed and further technical work is needed to determine whether this is possible.

NA5 SAM/VCM will work on the development of AALs for both options but priority will be given to Option 1 (i.e. use of AAL Type 1).

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Subject: An AAL for Class B services: VBR AMS

The growing popularity of MPEG-2 audio-video coding has resulted in an increasing demand for an AAL to support Class B services (i.e. real-time, connection oriented, variable bit rate services), previously known as AAL Type 2. It is the responsibility of the Support for Audio-visual and Multimedia (SAM) services working group of NA5 to contribute to the development of an AAL for Class B services, together with the assistance of the Video Coding Matters (VCM) working group of NA5.

NA5 has identified two possible options for the development of a suitable AAL for Class B services, namely:

1. Produce an AAL Type 2 derived from AAL Type 1, or
2. Use the common part of AAL Type 5 with additional functionality provided by an AVSSCS layer.

After careful consideration, it is the majority opinion of NA5 that option 1 (i.e. AAL Type 2 derived from AAL Type 1) is the better approach, for the following reasons:

1. AAL Type 2 can provide a better Quality of Service, as AAL Type 5 cannot provide a sequence number on a cell basis,
2. From a long term prospective, AAL Type 2 eases the aspects of interoperability (refer to H.320 interworking, where I.580 specifies the use of AAL Type 1),
3. AAL Type 2 can benefit from the embedded functionality of AAL Type 1,
4. AAL Type 2 can provide a lower transmission overhead than AAL Type 5 (e.g. an important requirement for supporting low bit rate audio),
5. AAL Type 2 will be able to provide generic support for Class B services including, but not limited to, MPEG-2 video-server type services,
6. AAL Type 2 text can be developed from existing AAL Type 1 text and therefore reduce the effort neccessary to specify the protocol (and speed up the standardisation process).

The overriding concensus is to agree to one world-wide standard for an AAL for Class B services.

It should be noted that some ATM hardware manufacturers prefer Option 2, but this opinion is based solely on the widespread availability of AAL Type 5 implementations. In the context of AMS, AAL Type 5 with a null SSCS (currently supported by the ATM Forum for a short term solution of CBR) could only support video-on-demand applications. This ATM Forum support is seen to have a long term market, and therefore cost implications.

NA5 SAM/VCM will continue AAL development work on both options but priority will be given to Option 1 (i.e. AAL Type 2 derived from AAL Type 1).