ITU-T TELECOMMUNICATION STANDARDIZATION SECTOR
Study Group 15
Experts Group for Video Coding and Systems
in ATM and other Environments

(Rapporteur's Group on part of Q.2&3/15)

Document AVC-1041
October 1996

Study Group 15 - CONTRIBUTION

Question: 2&3/15

SOURCE: IBM and FVC

Purpose: Discussion

TITLE: Use of AAL5 for enabling H.320 over ATM

ABSTRACT: In extending H.321 to allow H.320 over ATM at AAL5 terminals, There are four broad areas that need to be addressed when enabling H.320 over AAL5. The four areas are interworking, Framing, Timing and Signalling

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Requirements for enabling AAL5 based H.321 terminals to communicate with both NISDN H.320 terminals as well as AAL1 based H.321 terminals.

Timing Issue

In the narrowband world, the network is assumed to be synchronous with a well defined network clock. We propose that in the broadband world the timing be provided via an adaptive clock recovery mechanism that uses the rate of data arrival to adjust itself. This eliminates the need for any higher level synchronization between clients or dependency on the network clock.

Framing Issue

The multiplexing scheme used in H.320/H.321 is H.221 which is based on the ability to obtain a CBR stream. However with a adaptive clock recovery stream, layering H.221 over a packetized format like AAL5 does not pose any significant issue. When attempting to packetize H.221 data, we still treat it as a stream and thus there is no need to standardize on a fixed a packet size. The packet size can be indicated at call setup (using the AAL5 CPCS SDU size negotiation), but once a packet size is chosen, it remains fixed for the duration of the call. AAL5 in message mode should be used, with no SSCS sub-layer (no SSCF and no SSCOP). The actions to be taken on a corrupted CPCS-PDU (bad CRC) are specified as requiring notification of a bad AAL5 frame. This is important for ensuring that missing data notification can be provided to the A/V system in order to handle the codecs. The cell rate is determined once the packet size and the data rate is fixed.

Signalling changes

There are very few changes required from the existing H.321 specification in order to accommodate using an AAL5 transport. The two IEs that would need to be indicated differently is the AAL type field in the ATM traffic descriptor and in describing the partially filled cells method filed in the AAL parameters. This signalling change is important once a gateway that can interwork between H.321 AAL1 clients and H.321 AAL5 clients.

Interworking

The goal of interworking is to allow and enable ubiquitous connectivity.

There are really four broad connectivity scenarios

- H.321 AAL5 - H.321 AAL1
- H.321 AAL5 - H.320 NISDN
- H.321 AAL5 - H.310 RAST-5
- H.321 AAL5 - H.310 RAST-1

These scenarios present different mapping requirements. In order to build a gateway and enable it to interwork various terminals requires some assumptions in terms of the client configuration. It is required that terminals within a single private network be homogenous in nature. i.e. use of a gateway should only be required if a client on one network is communicating with a client on a different network. This scenario could be whether private network client - private network client or private network client - public network client.

The signalling and media multiplexing mapping going from one terminal type to the other requires a minimal amount of remapping. Thus the clients/network must be able to register themselves as either AAL5 or AAL1 clients and additionally what protocols they support on AAL5/AAL1. This would allow a gateway to determine if the called party needed a call setup mapping between AAL5 and AAL1 and/or if the data stream needed to be mapped from AAL1 - AAL5.