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

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Study Group 15 - CONTRIBUTION

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TITLE: Computer Infrastructure Implications on AMS Function Placement

ABSTRACT: When looking at a typical computer system, there are several possible ways of incorporating the communications and codec functions. As we contemplate the placement of functions such as jitter removal, timebase/clock recovery, etc. into either an AAL5 VASSCS or into an H.22x specific component, the implications of these alternatives must be accommodated.

The end-to-end QOS that must be maintained for multimedia communication is from codec-to-codec. Jitter removal should be done only once and must accommodate all sources of jitter between the source of the MPEG-2 stream and the target codec.

The H.32x definition must not dictate a specific implementation and should accommodate all relevant end system configurations. After examining the various end system configuration alternatives, jitter removal should be identified as an H.22x specific function and performed by the codec.

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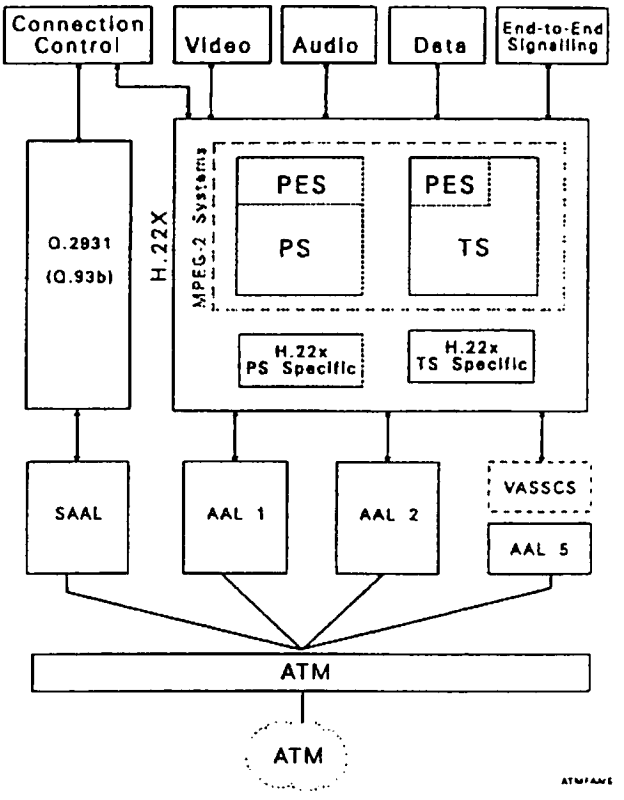
Computer Infrastructure Implications on AMS Function Placement

The AVC System Structure identifies both an AAL5 Video and Audio Service Specific Convergence Sublayer (VASSCS) and a H.22x Specific component.

AVC System Structure



When looking at a typical computer system, there are several possibilities for incorporating the communications and codec functions.

The following figure identifies 4 possible alternatives:

1. A combined codec and ATM communication subsystem

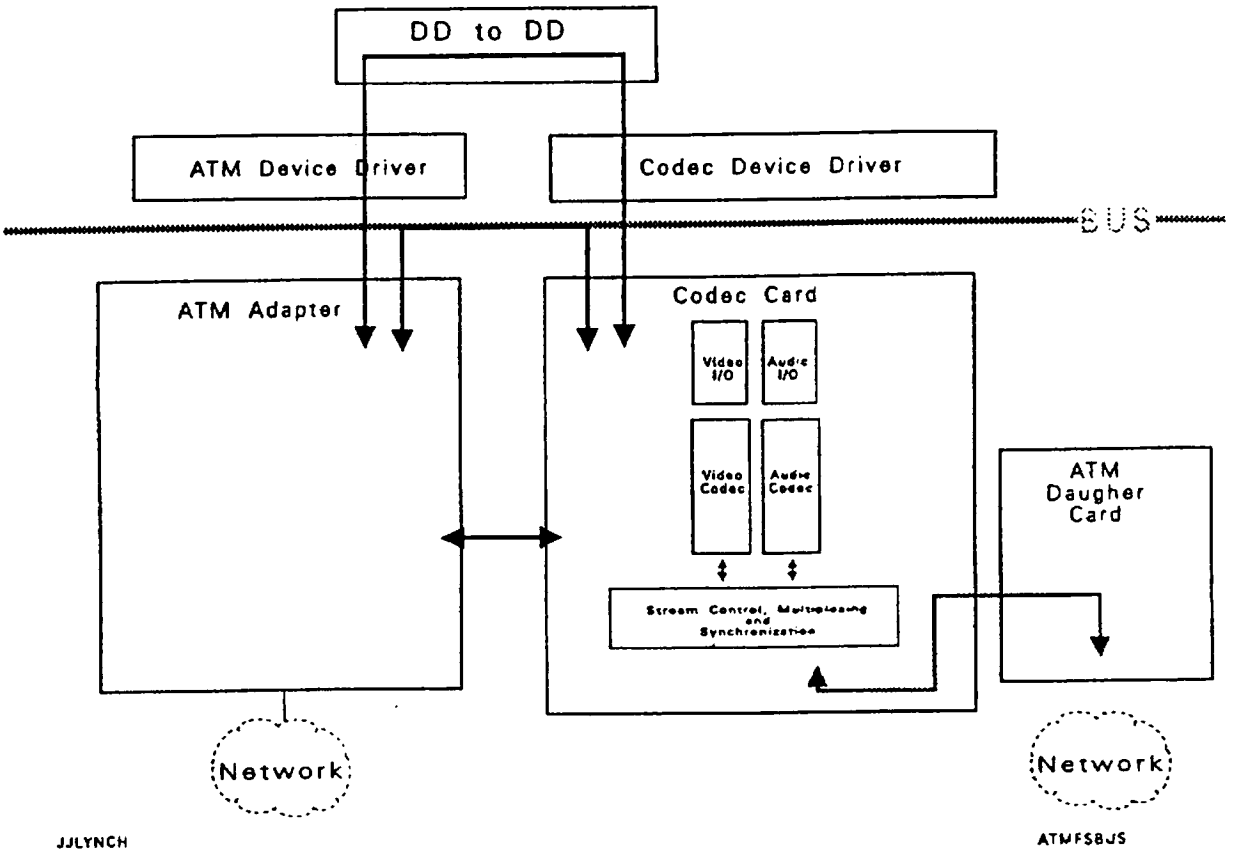
    a. single card solution (both functions on same adapter card)
    b. adapter card with daughter card

2. Separate codec and ATM communications adapters physically and electrically connected via a "top card connector" such as MVIP

3. Separate codec and ATM communications adapters both capable of communicating with each other directly over the system BUS.

4. Separate codec and ATM communications adapters with all communication between the two adapters passing through the CPU under software control.

Computer Infrastructure



We can expect to see, each of these alternatives offered in the marketplace. As we contemplate the placement of functions such as jitter removal, timebase/clock recovery, etc. into either an AAL5 VASSCS or into an H.22x specific component, the implications of these alternatives must be accommodated.

If we take the need for jitter removal as an example, the MPEG-2 TS packets must be presented to the Systems Layer with most or all of the jitter removed. As pointed out in a prior contribution, ATM_Forum/94-0239, "A Reference Model for Modeling Jitter in ATM Networks" (IBM - Bou-Chung Lin, Raif Onvural, Jeff Lynch, Phil Chimento), jitter is also introduced by the end station itself. Moving the MPEG packets from the communications logic to the codec can/will introduce jitter. In alternatives 1 and 2, this jitter can (probably) be designed out but in alternatives 3 and 4, the system bus and or system software will introduce additional queueing points, thus additional jitter that must be removed. The end-to-end QOS that must be maintained for multimedia communication is from codec-to-codec. Jitter removal should be done only once and must accommodate all sources of jitter between the source of the MPEG-2 stream and the target codec.

The H.32X definition must not dictate a specific implementation and should accommodate a relevant end system configurations. Each of the functions identified by the AVC structure must be examined on a case-by-case basis but to accommodate alternatives 3 and 4, jitter removal should be identified as an H.22x specific function and performed by the codec.