

Title: General approach to H.32z
Source: UK
Purpose: Discussion

This contribution sets out our reasoning and conclusion on the general approach which should be adopted to produce ITU-T Recommendation H.32z.

1. Audio coding

H.320 provides audio over an end-to-end digital channel between the user terminals. There is a single pair of conversions between the analogue and digital forms. However, the speech coding algorithms G.711 and G.728 were designed to give adequate performance when the end to end connection consists of several digital and analogue sections in tandem. This factor, the relative ease of transcoding and the absence of significant delay implications mean that it is possible to countenance using different audio coding in H.32z from those available in H.320. Nevertheless, there does not seem to be any advantage to be gained by exploiting this opportunity.

2. Video Coding

We consider it mandatory that H.32z terminals can interwork with H.320 terminals. Unlike the audio situation considered above, video transcoding is likely to be relatively expensive, degrade picture quality and have delay implications. Thus there will be little scope for departing from Recommendation H.261. Additionally, there is no evidence that a significantly better algorithm is available, considering the composite of picture quality, bit rate, delay and wide support.

3. Multiplexing

H.320 terminals use H.221. Therefore this multiplex must be used by H.32z terminals or the gateway between the LAN and ISDN must perform a conversion.

4. Transmission

The transmission area is where the greatest differences between ISDN and LANs arise. Current LANs were designed for computer data and are not well suited to "real time" signals such as the audio and video components of the services using H.320. This is not a defect of H.320; it is a property of the target applications. Though it is possible to achieve some success on these LANs, as reported in AVC-595 [1], we believe such approaches will not be robust enough for regular every day use. We also consider that users will require a solution which permits MPEG-1 and MPEG-2/H.262 to be carried on their LANs. Thus, we are of the firm opinion that the technically correct way, and in the longer term the only viable way to put generic audiovisual services on LANs is to make fundamental changes to the LANs rather than to H.320, MPEG etc.

Fortunately, new LAN technologies with the required characteristics are appearing. Examples are Iso-Ethernet and ATM LANs. The former, described briefly in the Appendix, provides 96 'B' channels to each terminal.

5. Call set up signalling

We include this here for completeness and as a reminder that this functionality must be included. We do not think there are any great problems to be solved.

6. Conclusion

As a result of the above considerations, our view is that the best approach to H.32z is to provide the equivalent of ISDN transmission over the LANs and make the minimum of modifications to H.320. We recognise that other solutions may be useful in the short term, particularly on existing LANs. Where these provide interworking with H.320 terminals via a gateway unit between the LAN and ISDN they may remain as proprietary offerings but should not be ITU-T Recommendations.

Reference

1. AVC-595, "Video and Audio Communication System for CSMA/CD LAN", 21 October 1993, NTT.

Appendix. Iso-Ethernet.

Two factors have contributed to the birth of Iso-Ethernet:

1. There is a move away from installing ring wired LANs to radial wired ones. Note that this physical star structure with a hub at the centre may still be logically configured as a ring.
2. It is possible to extend the frequency range/bit rate on the wires beyond that used by conventional LANs.

Iso-Ethernet can be introduced as an evolutionary upgrade on hub LANs. The hub device needs some modifications to support the higher frequencies but the lower frequencies used by current network interface cards are left unchanged. Thus, the existing terminal hardware and software continue to function exactly as before.

New interface cards are installed in the terminals requiring the enhanced facilities. This can be a step by step procedure. One part of these cards selects the lower frequencies and functions in exactly the same manner as the existing cards. The higher frequencies are available to provide synchronous transmission channels. Because of the radial arrangement from the hub, each upgraded terminal has exclusive use of the wires to it and the contention problems of conventional LANs do not arise.

This is not just a paper concept. BT is aware of the involvement of an IC vendor and two manufacturers. Announcements are expected at CEBIT '94.

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