

CCITT SGXV

Document #468

Working Party XV/1

March 1989

Specialists Group on Coding for Visual Telephony

Source: JAPAN

Title: Contribution to first meeting of CCITT SGXV concerning negotiation procedures

The contribution document attached as an annex is to be presented at the first meeting of the CCITT SGXV to be held at Geneva next week for the purpose of considering early standardization of AV.242 for videophone services. This contribution, which proposes a principle for multi-facility negotiation procedures and the extension of the scope of AV.242, may be summarized as follows.

- (1) Capability should be defined in a facility-oriented manner.
- (2) Negotiation procedures should be performed on a facility-by-facility basis.
- (3) The scope of AV.242 should be extended up to the primary rate.

International Telegraph and
Telephone Consultative Committee

(CCITT)
Period 1989 - 1992

Question 4/XV

COM XV-

March 1989
Original:English

STUDY GROUP XV - CONTRIBUTION No.

Source: JAPAN

Title: Multi-facility Negotiation Procedure and Extension of Scope to
Higher Bitrates in Draft Recommendation AV.242

1. INTRODUCTION

This document describes a principle of the multi-facility negotiation procedure for multi-facility services, particularly for videophones, which has not yet been clearly specified in draft recommendation AV.242 (ANNEX5 to question 4/XV), and also proposes extension of the scope to higher bitrates. Since AV.242 is planned to be recommended in accordance with the schedule of videophone recommendations (1990, see Report of Audiovisual joint rapporteurs' meeting), detailed specifications should be worked out this year, taking into account requirements from other services such as Audiographic Teleconferencing as well.

2. MULTI-FACILITY NEGOTIATION PROCEDURE

2.1 Current AV.242

AV.242 has been drafted on the basis of recommendation G.725 which specifies communication procedures for audio terminals. Therefore, it seems that the current draft AV.242 has not yet been sufficiently modified or extended for multi-facility terminals.

2.2 Multi-facility terminal capability

In H.221, BAS codes for terminal capability are orthogonally defined in a facility-oriented manner in order to provide for the future possibility of AV services. For example, Videophone is not specified as a terminal capability, but a terminal having audio and video capabilities will be defined as Videophone in recommendation AV.3xx. (from this viewpoint, AV terminals, not Videophone, should be defined in Higher Layer Compatibility, HLC).

Based on this approach, each facility type should be specified in AV.242 rather than a terminal type.

2.3 Negotiation procedures

According to the above, initial negotiation procedures for multi-facility terminals should be performed on a facility-by-facility basis. This means that the procedures for audio, video, data and transfer rate are performed serially in a certain order. Considering that not all terminals have all four facilities and taking future expansibility and compatibility with existing terminals into account, the following rules seems basically adequate for the initial negotiation procedures.

- (1) Terminal capabilities are to be indicated in the order of audio, video, data, and transfer rate. Terminals not having a certain facility skip the indication of the corresponding capability.
- (2) When the negotiation of a certain facility is completed, the terminal advances to the negotiation of the next facility.
- (3) When the terminal, having indicated a certain capability and awaiting the corresponding remote capability, receives a capability of a 'higher rank' facility, it will transfer to indicate a capability of the same or higher rank than the received facility.
- (4) A terminal, having indicated a certain capability, will not change when it receives a capability of a 'lower rank' facility.
- (5) The terminal will not respond to an indication of a facility with which it is not equipped.
- (6) Each facility is to start with the default mode (G.711 for Audio, etc)??.

2.4 Hierarchical approach

In order to minimize the number of capabilities and maximize intercommunicability, it is desirable to define the types of each facility in a hierarchical manner. For example, transfer rate capability should be as follows.

1B (=TYPE0) < 2B (=TYPE1) < 2Bsync* (=TYPE2) <

*This type should be defined in capability BAS codes.

However, in some cases it seems preferable to define capability independently. For example, a simple 1B videophone, which must be inexpensive, cannot have both 16kbit/s and G.722 audio codec. In this case, the two audio types should not be defined hierarchically.

2.5 Harmonization with other SGs

Since AV.242 is intended to cover all the audiovisual systems under responsibility of various SGs, it is suggested that a liaison activity be initiated according to the result of Audiovisual Rapporteur's meeting (see Section 5 of the meeting report).

3. EXTENSION TO HIGHER BITRATES

3.1 Necessity of extension

The scope of video codec recommendation H.261 is to be enlarged in order to cover the range from 64kbit/s to the primary rate, aiming at a unique video codec standard for the current (narrow-band) ISDN to ensure maximum intercommunicability. In accordance with this approach, the scope of AV.242 should be extended to higher bitrates, i.e., the primary rate.

3.2 Call set-up for plural channels

When a communication utilizes plural channels (nxB or mxH0), a call set-up is performed for each channel. Considering the channel identification and charge problem, it may be simplest to set up the individual calls sequentially, not in parallel.

3.3 Synchronization of channels

Synchronization or TSSI of channels can be achieved by providing FAS in each channel and activating a multiframe numbering. This consists of 4 bits (modulo 16) and permits 16x10x8 msec delay differences among channels.

4. EXAMPLE

Two examples of an initial negotiation based on the above-mentioned principle are indicated below.

(a) Initial negotiation between two 2Bsync Videophones

- 1 B1 established (audio starts with G.711)
- 2 H.221 frame sync. established (both directions)
- 3 Indication of audio capability starts
- 4 Remote audio capability received
- 5 Audio mode switched to AV.25x
- 6 Indication of video capability starts
- 7 Remote video capability received
- 8 Video starts
- 9 Indication of transfer rate capability starts
- 10 Remote transfer rate capability received
- 11 Call set-up for B2 starts
- 12 B2 established
- 13 Frame sync. in B2 established (both directions)
- 14 TSSI established
- 15 Transfer rate mode switched to 2B

(b) Initial negotiation between 2Bsync (having G.722 Audio) Videophone and G.725 type2 Audio terminal (view from the Videophone)

- 1 B1 established (audio starts with G.711)

- 2 H.221 frame sync. established (both directions)
- 3 Indication of audio capability starts
- 4 Remote audio capability received
- 5 Audio mode switched to G.722
- 6 Indication of video capability starts
- 7 Time-out
- 8 Indication of transfer rate capability starts
- 9 Time-out

5. CONCLUSION

The principles for multi-facility negotiation procedures and the extension of the scope are proposed for AV.242, summarized as follows.

- (1) Capability should be defined in a facility-oriented manner.
- (2) Negotiation procedures should be performed on a facility-by-facility basis.
- (3) The scope of AV.242 should be extended up to the primary rate.

Early standardization of AV.242 is highly desirable for a videophone service.