ITU Telecommunication Standardization Study Group 15

DOCUMENT: AVC-811

Experts Group for Video Coding and Systems in ATM and Other Network Environments

SOURCE : Eli Doron
RADVision
elid@radvision.rad.co.il
Tel: +972/3/647-6661
Fax: +972/3/647-6669

PURPOSE: Proposal

TITLE : Defining Session ID for H.323

DATE: Septeber 10, 1995

Table of Contents

Introduction

The subject of this submission is the need to have a unique, unambiguous Session ID for every A/V H.323 call. The current H.22z Draft (August 19, 1995) does not provide such an identifier. The RTP SSRC which is included in the H.22z Draft does not solve the problem since a single Session has multiple SSRCs.

The other, relevant topic covered in this Submission is that we recommend that the Session ID should be appended to every H.22z ÒFrameÓ.

2. Definitions

Session - Session, as used in this submission, is the Audio Visual communications between A/V Terminals that are participating in one call (point to point or Multipoint).

H.22z Frame - This is our proposal for a new name for what was called an H.22z packet (or sometimes and RTP packet) in the H.22z Draft.

3. The need for a Session ID

H.323 packet streams which are part of the same session may traverse different routes, and as a matter of fact, even for a point to point session, the data going in one direction may use a different route than the data going in the other direction.

The LAN is connection-less, and every device may accept multiple concurrent inputs.

LAN connected terminals may conduct multiple concurrent transactions, and need a simple way to associate between the Audio, Video, Data and Control of a specific A/V H.323 Session.

If we compare to H.320, we see the obvious difference. For any given H.320 Session, all the traffic flows via the same ISDN Links; and there is a clear association between the data and the terminals, and hence, a Session ID is not required. For H.320 calls, there is no problem in determining what data stream ÒbelongsÓ to a call and what not. Any networking device (e.g. a switch, I-Mux, MCU or any recording device) is directly connected to the ISDN bit stream.

(Comment relevant to H.320: There are some problems with 2B calls even on ISDN - where conflicts may occur. A terminal may accept two single B calls simultaneously and might assume them to be the first B of a 2B call.)

Examples of situations where a Session ID is needed:

a. Call Control

When one side disconnects without notifying the other terminal, the Gateways and Gatekeepers need to know to disconnect the data coming from the other Terminal (since there is no clear signaling between the end points);

b. Call Management of Multipoint Sessions, Voice Mail and similar services:

Whenever there is a change in the nature of the Call (say making a Point to Point into a Multipoint session), all the devices that participate in the session (all the Terminals, Gateways and MCUs - and in the future Video Recorders and Servers) need to be able to associate the change to the various packet streams;

c. Administration:

There will be a need to be able to log sessions (e.g. for call accounting). Since a specific call cannot be associated with a specific networking device (more than one Gateway or Router participates in a Session), the Session ID is the only way a Network Administrator may correlate the various logs generated in the different devices to a specific session. The Session ID will allow report generation, detail call accounting and other administrative functions.

4. Problem with the Current H.22z Proposal

The current H.22z Draft (August 19, 1995) is based in many parts on RTP and RTCP. The SSRC is the RTP mechanism which serves as a Òsession idÓ. The problem with the RTP mechanism is that since RTP is a unicast (one way) protocol, a given two way connection carries two different SSRCs per PDU type, and hence there is no clear, simple and unambiguous way to associate the various packets to a specific Videoconferencing Session. One session may have 8 SSRCs! (4 each way for Audio, Video, Data and Control).

The situation will become even more complicated once MCU functionality is being provided.

If the MCU is centralized, how will the MCU easily and simply be able to identify which of the various streams that are accessing the MCU belong to the specific session. The RTP SSRC is not unique to a session, and the MCU will not have a simple way to associate the streams.

If the MCU functionality is distributed, the problem is even more complex. How will any Terminal that wants to join the multi-party session know which RTP streams belong to the session?

5. Provide Session ID with every H.22z Frame

Our experience has shown that every LAN packet that participates in a session needs to be clearly associated with the packets of the same session for diagnostics. The LAN analyzers are able to collect all the LAN traffic and filter them based on some content fields. Such a filter allows the field engineer to collect the session specific packets. The only reasonable way to do so is by using a unique, unambiguous identifier which is associated to the specific session.

6. Session ID Determination and Administration

The following is a very simple mechanism for unambiguous Session ID generation.

6.1. *Session ID Creation*

The Session ID is defined and owned by the FIRST Terminal that participates in a call (the Originator, the one who calls first). The number has two fields; terminal_address and sequence_number.

The terminal_address is the IP address of the first device that is initiating the session (end point or gateway). Since IP addresses are unique, two sessions which are initiated by different terminals should not have the same session id.

The sequence number could be generated either as a random number, a sequential number or date_time. We feel that 4 decimal digits should suffice for all practical situations.

6.2. *How will other Terminals know the Session ID*

The Session ID should carried in all the H.22z Frames including H.245 control PDUs, and are received by the ÒcalledÓ Terminal (the one that gets the Call Request - ÒringÓ). The Receiver adopts this number, and associates it to the Session. From that point on, all the communications between the two Terminals carries the Session ID as part of the various Payloads. Any additional Terminal that joins the Session (multiparty sessions) gets the Session ID as part of the call set up negotiation. The joining process negotiations should include giving the Session ID to the new Terminal.

6.3. *Gatekeepers, MCUs and Gateways*

Gatekeepers, MCUs and Gateways will be able to identify and recognize the Session ID, since it is carried in every H.22z Frame.