ITU Telecommunication Standardization Study Group 15

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

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TITLE : LAN Addressing Plan In H.323

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1. Scope

The purpose of this document is to propose an addressing plan for the H.323 . The H323, unlike the H.320 or the H.324 is not homogeneous environment. These multiple environments are totally different. In each network there are currently different address scheme.

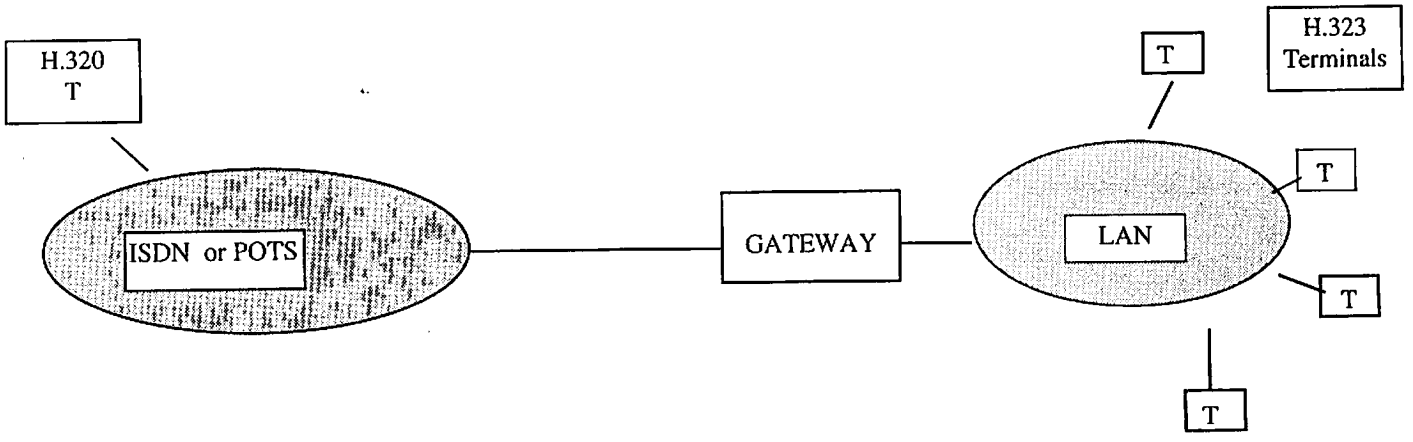
The requirement, as specified in the ITU-T May meeting was to enable the following connections.:

a. H.323 terminal to H.323 terminal
b. H.323 terminal to gateway to H.320/H.321/H.322 terminal.
c. H.323 terminal to gateway to H.324 terminal.

In addition it is required also to enable an incoming call and to have a fourth and fifth connection type :

d. H.320, H.322, H.321 to gateway to H.323 terminal.
e. H.324 to gateway to H.323 terminal

Figure 1 describes (partially) the environment of the calls.



In order to define the addressing plan in each of the above connections we should look on the addressing plans in each network environment:

2. WAN addressing

H.320, H.324 and H.322 use the ITU-T E.164 . It is well defined and users are used to it. It is important to say that the E.164 specifies that the ten digits 0-9 will be used on this

network and based on that most of the "telephone" equipment, including current H.320 videoconference stations support 10 digits for the dialing (plus the # and the *).

3. LAN addressing

The LAN addressing has two major plans. The IP addressing and the IPX. The difference between the two is:

a. IP addressing is unique and it specifies the "location" of the address owner.
   IPX may not be unique.

b. IP address use the 10 digits plus the "." Symbol
   IPX may use the whole alphabetic character set.

4. Addressing Plan

The addressing plan shall meet the requirements for the five connection types specified in section 1. As all the previous suggestion were to use the E.164 for the WAN portion in connection types b, c, d, and e (in section 1) the main issue is what will be the address plan in the LAN.

A basic assumption is that a single terminal should not have two addresses, one that is used internally (h.323 to h.323 communications) and another - externally (say from h320 terminals).

The following are the options in each of the connection types:

4.1. H.320 terminal to gateway to H.323 terminal

The Gateway is the connection between the two networks. The Gateway may be viewed as a PBX (for the purpose of the connection), meaning it should receive from one network the address to the terminal on the other network. Sometimes this address is the direct address and sometime it is a pointer (to a list) to the address The H.323 terminals are viewed as extensions.

As mentioned above the H.320 (and probably the H.324) supports 10 digits and the "#" and "*" keys on their dialing pad. Therefor it is possible to enter these digits only. The non-numeric symbols are used sometimes by the network for special functions.

An H.320 terminal, calling an H.323 terminal via an H.323 Gateway should provide the Gateway with the H.323 terminal internal number (extension number). This is possible via the ISDN/POTS number (outband) or via the information channel (inband), after the connection between the H.320 and the gateway was established. The latter requires a

change in the H.320. Assuming that such a change is not applicable now, the H.320 to Gateway to H.323 terminal connection should use the out-of band mechanism.

The ISDN provides outband services to define an extension number:

a. Sub-addressing
b. Multiple subscriber Number (MSN)
c. Direct Dial In (DDI)

All the above services require to address the internal station as a number using the 10 numeric digits. The size of the number and its structure depends on the size of the "other network" . It is not possible to specify an alphanumeric address and even the "." Symbol is not available. Therefore, direct addressing of IP or IPX is impractical. This leads us to the conclusion that:

Each H.323 terminal should have numeric address to enable H.320 (H.322, H.321) to gateway to H.323 connection.

The Gateway or the gatekeeper may use this number to address the H.323 terminal by a conversion table (from a phone number to IP/IPX address) .

In POTS there is no out of band signaling channel but it is possible to continue the dialing after a "dialing tone" was received.

4.2. H.323 terminal to H.323 terminal

Section 4.1 describes why we need to have a phone number for each H.323 terminal. It is possible to address an H.323 terminal from another H.323 terminal via the network address or any other address that have direct and well known conversion to network address (e-mail address to IP/IPX).

It might be true that most of the H.323 terminals are desktop PC based with alphanumeric keypad. However, this is not a requirement and we should assume that there will be other types of terminals. Current Room-units with H.323 interface and may be videophone with LAN connection.

If this is the case, direct IP/IPX addressing is not the ultimate solution even in the H.323 terminal to H.323 terminal connection. We have a phone number assigned to each H.323 terminal and we may use the same number also for this type of connection **the same way a PBX addressing plan works today for POTS.**

Another advantage of the phone number addressing is that there is no location binding. People are changing places, LAN networks change their topology and any direct addressing to the IP number will need to change whenever the terminal changes location.

There are some more advantages of the phone number over the direct network address like two phone numbers may specify two different sessions within one network address. In this case the phone number is not only an address but a service identifier.

The conversion table between the phone number and the network address may be done in the first gatekeeper or any other gatekeeper on the route from the source to the destination. Keeping the phone number may be used even to specify a route which is not the trivial route of regular DATA.

The structure of the phone number in H.323 terminal to H.323 terminal is as follows:

[S#] XX..X

S# - Service - This is an optional number of n digits followed by the #. The number is set by the user and it specifies in case of a "dumm" H.323 terminal a requested service (profile). A dumm H.323 terminal is a terminal without input mechanism to specify special parameters to a session like requested bandwidth.

XX..X - Any E.164 number. - the SN part of it.

The GW/S phone number is converted to Network number in the same way as H.323 terminal to H.323 terminal connection.

4.3. H.323 terminal to gateway to H.320 (h.324) terminal.

Based on the previous sections we recommend to use **one** phone number (again, the same as we do today in a PBX). The structure of the dialing (to an external user) is as follows:

OL- [GW/S]- XX..X

OL - Outside Line Indication. A digit(s) that indicates that this is a request to LAN-WAN connection It may be the "9" or any other number decided by the user.

GW/S - This is an optional number. It specifies the Gateway (or the type of service) required. If there are many outside connections and they are different (bandwidth, network type etc.).

XX..X - Any E.164 number including the CC, NDC, SN and the SA parts of the E.164 format.

The GW/S phone number is converted to Network number in the same way as H.323 terminal to H.323 terminal connection.