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Introduction

The current mechanism for logical addressing and address resolution in the H.323 standard is to utilize aliases (e.g. E.164 or h323ID) and a mapping mechanism supported by a Gatekeeper. The format of the E.164 address and its usage has direct applications in the SCN. There are however more appropriate labels and existing usage models for Inter/Intranet usage.

In addition to destination addressing, there are some issues with source addressing. The source of a call SETUP message must identify itself so that Gatekeepers can make the appropriate admission control decision. There are cases where the endpoint would have no assigned aliases and its only form of self addressing is the transport address (in this case the IP address). The rest of this document will cover these two areas and their usage.

Background

The Internet has almost always had a logical naming context as supplied by the Domain Naming System (DNS). This allows a logical dynamic mapping, from hosts (individual computers - clients or servers) to IP addresses. These IP addresses in turn map to physical MAC addresses. DNS acts as a hierarchical directory assistance for Internets and Intranets. Networks have this in place today - along with all of the management and maintenance tools.

All Internet messaging systems (Email) utilize DNS to find the host machines which service a particular recipients mail. In additions Intranet messaging systems that are exchanging mail with other Intranets (via the Internet) by definition, must use DNS also. All internal corporate users that receive Internet mail, have some form of a DNS label associated with them; more specifically they have an RFC822 formatted address which falls within the context of DNS.

The mechanism by which email would travel to *jtoga@ibeam.intel.com* would occur along the following outline. The sending source (mail service) would query a DNS server to find the host of *ibeam.intel.com*. In all likelihood it would resolve to getting the address of *intel.com*. In reality this address references a machine which hosts *intel.com* (meaning it can return information about the domain - it may have nothing more to do with related computing resources...). Any machine may in fact, host many domains; domains may also map to multiple machines for rendundancy. Once the host machine is found, a number of standard information records can be retrieved that are associated with the domain In this case, there is a record which indicates the address of a potentially different machine which handles email duties (e.g. MX record). All of this leverages off of the extensive infrastructure that is in place to support DNS-IP mapping.

H.323/DNS Addressing

A similar procedure can, and should be used by the H.323 implementations. An H.323 endpoint should have as one of its aliases, an email address. This would allow a number of benefits:

- Use existing, deployed infrastructure for navigation and contact
- Leverage off of 'knowledge' that users already have
- Physical location independent mechanism for rendezvous
- Reduce the number of 'contact' details to be remembered (phone, fax, email, 323ID....)

In order for this scheme to be useful, Gatekeepers would have to recognize that the alias was of an 'email format' (i.e. fit within the rfc822 definition). If a Gatekeeper was asked to resolve an email address (via an ARQ) it could either directly interact with a DNS service itself, or access another service which handles the DNS details. In any case, the H.323 signaling protocol is unaffected.

For the purposes of this discussion, we define an H.323 *Proxy,* as a form of an H.323 gateway (As defined in the H.323 specification). A proxy supports H.323 connections on both sides of it - it accomplishes many of the same actions that a protocol Gateway must; namely 'connect' the two sides of a 'call' and provide for media 'bridging'.

ep1@foo.com wants to call **ep2@bar.com**. The ARQ goes to his Gatekeeper, which detects the rfc822 address. It resolves the domain '**bar.com**' as being on the outside of a Gateway[1] and returns the IP address to the Gateway. The endpoint fills in the SETUP with both the **Bar.com** alias and the IP address of the Gateway - it sends this to the Gateway. The Gateway receives this SETUP and issues its own ARQ to its Gatekeeper (which may be the same one as the endpoint). At this point the Gatekeeper can resolve the actual IP address of the **Bar.com** (either via DNS interactions or by some local means) H.323 Gateway/Proxy. The **Foo** proxy can now forward the SETUP to the **Bar** Proxy. The mechanism by which the Bar proxy resolves the **ep2@Bar.com** would be the exact opposite of what happened on the **Foo** side. When the Bar Gatekeeper saw the ARQ with **ep2@Bar.com** it would recognize that as a local domain and resolve only the '**ep2**' portion.

Changes Needed

There are two areas of changes needed to support the preceding scenarios. Additional types are added to the Alias definition to allow the Gatekeeper to determine the addressing context. The following italic text shows the changes.

```
AliasAddress            ::=CHOICE
{
    e164                IA5String (SIZE (1..128)) (FROM ("0123456789#*,")),

    h323_ID             BMPString (SIZE (1..256)),      -- Basic ISO/IEC 10646-1
  (Unicode)

    ...
    url_ID              IA5String (SIZE (1.. 512))
    transport_ID        TransportAddress
}
```

In addition to the above additions text should be added to the H.225.0 standard, as to refining the usage of the SETUP message. The user-user portion of the Q.931 Setup PDU (Setup-UUIE) contains two forms of destination addressing information. Both the `destCallSignalAddress` field and the `destinationAddress` are optional values. The intent was to allow for LAN/WAN addressing to be flexible (`destinationAddress`: Alias Addresses either H323ID or E.164) or to allow for explicit network addressing to be utilized (`destCallSignalAddress`: TransportAddress). There is a strong functional and interoperable argument to be made for utilizing both fields when both types of information is available. The traversal across H.323 Gateways and interoperability between manufacturers will be inconsistent in not impossible.

[1] Note that the term Gateway in this context implies an Intra-Internet Gateway. Namely there is H.323 protocol on both sides - also termed a Proxy. This proxy will most likely be combined with firewall in many implementations.

"Note 2: When both address types (destinationAddress/destCallSignalAddress) are available, both values should be utilized by the sender. For example, this would occur as the result of an ACF returning the destCallSignalAddress. "