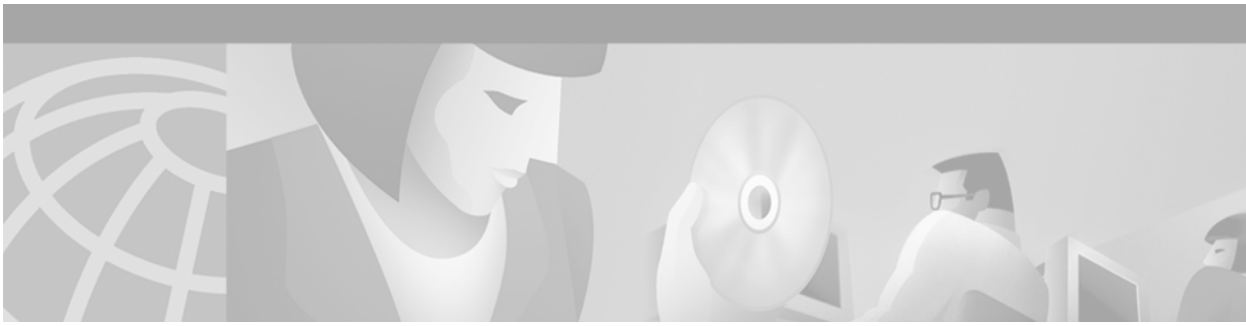

H.323 Multizone Enhancements Addendum

This document describes the H.323 Multizone Enhancements feature that was introduced in Cisco IOS Release 12.0(7)T. This document contains the following sections:

Overview

The H.323 Multizone Enhancements feature allows additional information to be transported to and from the gateway. The enhancements include:

- Inclusion of additional information fields from the primary rate interfaces (PRIs) in registration, admission, and status (RAS) messages, which allows greater interoperability between the Cisco H.323 Gateway and a customer's application software.
- Support for the "canMapAlias" field in admission request (ARQ) and location confirmation (LCF) messages for call rerouting.
- Support for the pass through of request in progress (RIP) messages to the end point by gatekeeper to extend timers.

These enhancements were introduced as a feature in Cisco IOS Software release 12.0(7)T. The feature is described in the *Cisco H.323 Multizone Enhancements* document.

This addendum is intended for use by third-party vendors and partners who are developing gatekeepers that will interoperate with the Cisco H.323 Gateway. It provides an in depth explanation of the changes that have been made.

ARQ and LRQ Extensions

Several fields have been added to the ARQ and location request (LRQ) messages to allow the application software that is running in a customer's gatekeeper to determine whether to provide standard address translation or a new destination E.164 address to the originating Gateway. These fields are included as a non-standard field.

All non-standard fields are properly defined and encoded per ASN1 before they are placed in the data octet stream of the NonStandardParameters.

New ARQ Fields

Table 1 lists the fields have been added to the ARQ message. For some of these fields, the value is determined by the contents of the incoming ISDN SETUP message. For others, the value is set by the Cisco H.323 Gateway itself.

Table 1 New ARQ Fields

Field	Description
RedirectIEInfo	This field contains the same value as the redirectIE field of the ISDN SETUP message. It is used to interpret the value of the redirectReason. There are two possible values: 0x73, which is the Nortel "Original Called Number" information element, and 0x74, which is the standard ID defined by Q.931.
CallingOctet3a	This field contains the same value as the CallingOctet3a field in the ISDN SETUP message. If the CallingOctet3a field is not present in the ISDN SETUP message, then this field is not included in the ARQ message.
displayInformationElement	This field contains the same value as the displayIE field in the ISDN SETUP message.
interfaceSpecificBillingId (Implemented in Cisco IOS Software release 12.1(1)T)	This field contains the hard-coded billing ID, which matches the voice-port identifier. For T1/E1 interfaces, the billing ID indicates the span on which the call was received.
interfaceDescription (Implemented in Cisco IOS Software release 12.1(1)T)	This field contains the description that configured for the voice-port through the command line interface (CLI). This field can be used to provide customer-specific information that is meaningful to a third-party gatekeeper or billing server, such as the corresponding Carrier Identification Code (CIC) for each T1 span. If no description was configured, this field is not included in the ARQ.

New LRQ Fields

Table 2 lists the fields have been added to the LRQ message. The contents of these fields is determined by the ARQ message from the originating Gateway.

Table 2 New LRQ Fields

Field	Description
callIdentifier	This field contains the same value as the callIdentifier field in the ARQ message.
RedirectIEInfo	This field contains the same value as the RedirectIEInfo field in the ARQ message.
CallingOctet3a	This field contains the same value as the CallingOctet3a field in the ARQ message. If the CallingOctet3a field is not present in the ARQ, then this field is not included in the LRQ message.

Field	Description
gatewaySrcInfo	This field contains the same value as the srcInfo field in the ARQ message. It is used to allow the remote gatekeeper to determine the calling party number.
displayInformationElement	This field contains the same value as the displayInformationElement field in the ARQ message.

Example

The following illustrates the NonStandardIdentifier (as defined by H.225.0.2) that is contained in the ARQ/LRQ nonStandardParameter.

```
NonStandardIdentifier :: = CHOICE
{
object OBJECT IDENTIFIER,
h221NonStandard H221NonStandard,
}
ARQnonStandardInfo ::= [2] SEQUENCE
{
        sourceAlias             SEQUENCE OF AliasAddr, -- of calling proxy
        sourceExtAlias          SEQUENCE OF AliasAddr, -- of calling endpoint
        ...,
        redirectIEinfo             RedirectIEinfo OPTIONAL,
        callingOctet3a             INTEGER(0..255) OPTIONAL,
        displayInformationElement  IA5String (SIZE (1..128)) OPTIONAL,
        interfaceSpecificBillingId IA5String (SIZE (1..128)) OPTIONAL,
        interfaceDescription       IA5String (SIZE (1..128)) OPTIONAL
}

LRQnonStandardInfo ::= [4] SEQUENCE
{
ttl    INTEGER(1..255),
...,
callIdentifier             CallId OPTIONAL,
redirectIEinfo             RedirectIEinfo OPTIONAL,
callingOctet3a             INTEGER(0..255) OPTIONAL,
gatewaySrcInfo             SEQUENCE OF AliasAddr OPTIONAL,
 displayInformationElement  IA5String (SIZE (1..128)) OPTIONAL
}
```

Note The ttl field was already included in the nonStandard field prior to this release.

Enhancements to Call Re-routing

This version of the H.323 software enhances the call re-routing capabilities by allowing a gatekeeper to provide additional destination information. To achieve this:

- The Cisco H.323 Gateway sets the canMapAlias field in the originating call ARQ to TRUE. This allows the connecting gatekeeper to modify the destinationInfo field that is returned in the addmission confirmation (ACF) message.
- The Cisco H.323 Gatekeeper then forwards the contents of this field in the LRQ that it sends to the customer's gatekeeper.

- With the canMapAlias set, the customer's gatekeeper is allowed to overwrite the E.164 address of the destinationInfo field in the LCF.
- The Cisco H.323 Gatekeeper returns the updated destinationInfo field to the gateway in an ACF.

When the canMapAlias field is set to TRUE in the original ARQ and the returned ACF contains an IP address other than 0.0.0.0, the gateway places a setup call to the IP address specified in the ACF. The SETUP is encoded as described in the H.225.0.2 specification.

When the canMapAlias field is set to TRUE in the original ARQ and the returned ACF contains an IP address of 0.0.0.0, the gateway attempts to re-route the call based on the dial-plan configured in the gateway using the altered/existing E.164 address contained in the destinationInfo field of the ACF. This action can result in hair-pinning back to the public switched telephone network (PSTN).

RIP Pass Through

In previous releases of Cisco IOS Software, the Cisco H.323 Gatekeeper sends a RIP message to the originating gateway when it receives the request and prior to sending the LRQ to the far-end gatekeeper. By default, the delay specified in the RIP is 9 seconds. However, address translations can be time-consuming. So the Cisco H.323 Gatekeeper has been modified to also transparently pass any RIP message that it receives from the far-end gatekeeper. This allows the remote gatekeeper to extend the timeout from the default value to a longer value.