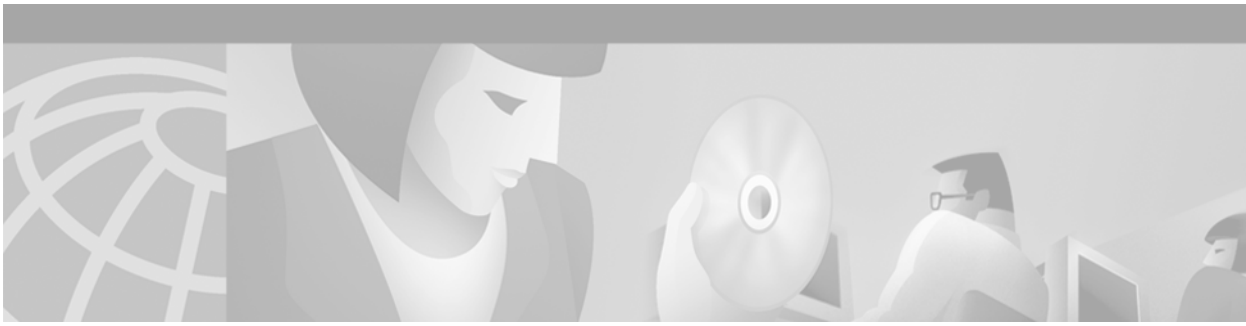


Location Confirmation Enhancements for Alternate Endpoints

Feature History

Release	Modification
12.1(1)T	Cisco gateway support for alternate endpoints was introduced.
12.1(5)XM	The **endpoint alt-ep h323id** command to configure alternate endpoints was introduced.
12.2(2)XA	The LCF Enhancements for Alternate Endpoints feature was introduced.

This feature module describes the Location Confirmation (LCF) Enhancements for Alternate Endpoints feature in Cisco IOS 12.2(2)XA. It includes the following sections:

Feature Overview

The LCF Enhancements for Alternate Endpoints feature allows a Cisco IOS Gatekeeper (GK) to collect additional routes to endpoints that are indicated by multiple LCF responses from remote GKs, and convey a collection of those routes to the requesting (calling) endpoint. Currently, the originating GK sends Location Request (LRQ) messages to multiple remote zones. Remote GKs in the zones return LCF responses to the originating GK. The LCF responses indicate alternate routes to the remote GK's endpoints. The consolidation of LCF responses to multiple LRQs can provide many alternate routes to reach a given destination. An endpoint can have up to 20 alternate endpoints.

The remote GK zones have been configured in the originating GK using the **zone remote** command, specifying the cost and priority to each remote zone. After receiving the LCF responses, the originating GK determines the best route to an endpoint based on the cost and priority of remote zones returning the responses. The originating GK then forwards route information to the requesting endpoint in the admission confirmation (ACF) message, which contains an ordered list of alternate endpoints.

The LCF Enhancements for Alternate Endpoints feature allows the originating GK to discover and relay more possible terminating endpoints to the requesting endpoint, therefore providing alternate routes to endpoints that can be used if the best route is busy or does not provide any alternate routes. The endpoint receiving the list of alternate endpoints tries to reach them in the order in which the alternate endpoints were received. The LCF Enhancements for Alternate Endpoints feature can be used on GKs that originate LRQs and directory GKs that forward LRQ messages.

The LCF Enhancements for Alternate Endpoints feature allows you to choose the number of alternate routes you want the GK to collect during the existing LRQ timer window. When the timer expires or the best response is received and sufficient alternates are received, the resolved address and alternate endpoints from all the LCFs received by the GK are consolidated in a single list. The address and endpoints are sent as alternate endpoints in the Admission Confirmation (ACF) or LCF messages from the GK. If this feature is not enabled, the GK stops collecting routes after the LRQ timer expires, then chooses the best LCF and sends it in the ACF message. After you enable the feature, the GK stops collecting routes after the LRQ timer expires, then consolidates the endpoints from all LCF messages received.

Note Annex G border element (BE) interaction is not affected. The LCF responses from BEs are treated like any remote gatekeeper LCF.

Benefits

- Provides additional alternate routes to endpoints obtained from LCFs
- Allows the Cisco IOS Gateways (GWs) to attempt to connect a call using all available routes in situations where the more preferred route is temporarily unavailable

Restrictions

The current GK limitations apply:

- Ten LRQs can be sent by the GK; therefore, there is a limit of 10 remote zones that are handled by the GK.
- The ACF and LCF messages can carry up to 20 alternate endpoints.

Related Features and Technologies

- Cisco VoIP
- H.323 on Cisco GWs

Related Documents

- *Cisco IOS Voice, Video, and Fax Configuration Guide, Release 12.2:*

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgcr/fvvfax_c/index.htm
- *Cisco IOS Voice, Video, and Fax Command Reference, Release 12.2:*

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgcr/fvvfax_r/index.htm
- *Cisco H.323 Version 2:*

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122limit/122x/122xa/122xa_2/pulh323.htm
- *Cisco High-Performance Gatekeeper:*

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121limit/121x/121xm/121xm_5/ft_0394.htm
- *Cisco H.323 Scalability and Interoperability Enhancements:*

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122limit/122x/122xa/122xa_2/ft323sca.htm

Supported Platforms

- Cisco 2500 series
- Cisco 2600 series
- Cisco 3600 series
- Cisco 7200 series
- Cisco MC3810 access concentrator

Platform Support Through Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Feature Navigator. Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at http://www.cisco.com/register.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. As of May 2001, Feature Navigator supports M, T, E, S, and ST releases. You can access Feature Navigator at the following URL:

http://www.cisco.com/go/fn

Supported Standards, MIBs, and RFCs

Standards

No new or modified standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

To obtain lists of MIBs supported by platform and Cisco IOS release and to download MIB modules, go to the Cisco MIB website on Cisco.com at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

RFCs

No new or modified RFCs are supported by this feature.

Prerequisites

- Configure Voice over IP. For more information about configuring Voice over IP, see “Related Documents” on page 3.
- Configure H.323 Gatekeepers, gateways, and proxies as needed, including dial peers. For more information about configuring these H.323 components, see “Related Documents” on page 3.
- Configure local and remote zones on the Cisco IOS Gatekeeper.

Configuration Tasks

See the following sections for configuration tasks for this feature. Each task in the list is identified as either optional or required.

- Configuring Alternate Endpoint Collection (required)
- Verifying Alternate Endpoint Collection (optional)

Configuring Alternate Endpoint Collection

To configure alternate endpoint collection, enter the following commands in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# gatekeeper`	Enters gatekeeper configuration mode.
Step 2	`Router(config-gk)# endpoint alt-ep collect` *value* `[distribute]`	Configures the number of alternate routes to consolidate from various LCF responses before ending the collection process and sending the LCF to the requesting endpoint. The **value** keyword indicates the number of routes. Valid values for the **value** keyword are 1 through 20. The default value is 0, which indicates that alternate route consolidation is not enabled. When the feature is not enabled, the GK gets alternates from only one LCF (the best LCF with the least cost routing). The GK ignores the alternates present in other LCFs even if they are present and there is no consolidation. The **distribute** keyword causes the GK to include alternate routes from as many LCF messages as possible in the consolidated list. Use of this keyword allows the GK to give fairness to the information of alternate routes present in various LCFs.

Verifying Alternate Endpoint Collection

You cannot use the show command to verify endpoint collection because there is no resource configured on the GK as a result of adding this feature, nor are resources on GK changed. This feature is a functionality modification only.

Configuration Examples

This section provides the following configuration examples:

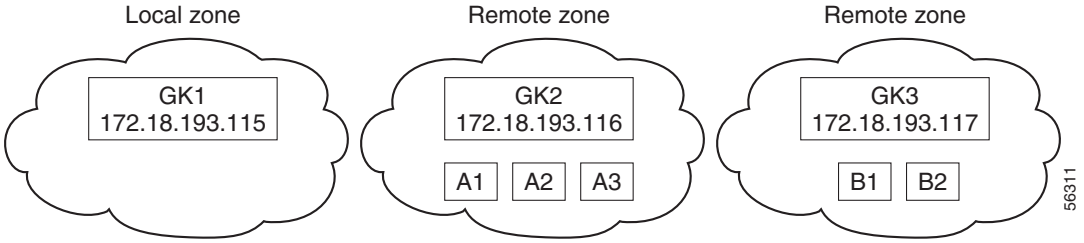
- Alternate Endpoint Collection

Alternate Endpoint Collection

In the following example, the LCF Enhancements for Alternate Endpoints feature is used on GK1. GK1 knows GK2 and GK3. GK2 has 3 alternate endpoints configured: A1, A2, and A3. GK3 has 2 alternate endpoints configured: B1 and B2.

Figure 1 shows an illustration of this example.

Figure 1 Alternate Endpoint Collection Example



The following example shows the configuration of GK1:

```
Router(config-gk)# zone local Gk1 172.18.193.115
Router(config-gk)# zone remote Gk2 172.18.193.116 cost 10
Router(config-gk)# zone remote Gk3  172.18.193.117 cost 60
Router(config-gk)# zone prefix 408....... Gk2
Router(config-gk)# zone prefix 408....... Gk3
Router(config-gk)# endpoint alt-ep collect 4
```

When GK1 sends an LRQ asking for routes to 408....., the gatekeepers GK2 and GK3 respond with LCFs containing 3 and 2 alternate endpoints respectively. The resulting consolidation is A1, A2, A3, B1; notice that B2 is omitted, because the GK collects only the best 4 routes. The best routes are the routes with the least cost; for example, the 3 routes to GK2's alternate endpoints have a cost of 10. The 2 routes to GK3's alternate endpoints have a cost of 60, so they have a higher cost and only the first endpoint (B1) is collected by GK1.

The following example shows the configuration of GK1 using the **distribute** keyword:

```
Router(config-gk)# zone local Gk1 172.18.193.115
Router(config-gk)# zone remote Gk2 172.18.193.116 cost 10
Router(config-gk)# zone remote Gk3  172.18.193.117 cost 60
Router(config-gk)# zone prefix 408....... Gk2
Router(config-gk)# zone prefix 408....... Gk3
Router(config-gk)# endpoint alt-ep collect 4 distribute
```

In the above configuration, the consolidation is A1, B1, A2, B2, which gives fair chance to alternates from GK2 and GK3, ignoring the cost difference.

Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.1 command reference publications.

New Commands

- **endpoint alt-ep collect**

endpoint alt-ep collect

To configure collection of alternate routes to endpoints, use the **endpoint alt-ep collect** gatekeeper configuration command. To disable alternate route collection, use the **no** form of this command.

endpoint alt-ep collect *value* **[distribute]**

no endpoint alt-ep collect

Syntax Description

value	Configures the number of alternate routes to endpoints for the GK to collect before ending the collection process and sending the LCF to the requesting endpoint. The **value** keyword indicates the number of routes. Valid values for the *value* argument are 1 through 20.
distribute	The **distribute** keyword causes the GK to include alternate routes from as many LCF messages as possible in the consolidated list. Use of this keyword allows the GK to give fairness to the information of alternate routes present in various LCFs.

Defaults

The default value is 0, which indicates that alternate route collection is not enabled.

Command Modes

Gatekeeper configuration

Command History

Release	Modification
12.2(2)XA	This command was introduced.

Usage Guidelines

Use this command to force the GK to collect an identified number of alternate routes to endpoints and create a consolidated list of those alternate routes to report back to the requesting endpoint.

Examples

The following example shows that 15 alternate routes to endpoints should be collected:

```
Router(config-gk)# endpoint alt-ep collect 15
```

Related Commands

Command	Description
endpoint alt-ep h323id	Configures an alternate endpoint on a GK, including endpoint ID, IP address, and port.
show gatekeeper endpoints alternates	Displays information about alternate endpoints.