METRE◉S

IP Communications Applications for Business Advantage

Metreos ActiveRelay®
CallManager Configuration Guide

Metreos Communications Environment 2.1.3

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Preface

This manual outlines the configuration required in order to integrate the Metreos ActiveRelay application for the Metreos Communication Environment, with Cisco CallManager.

It is assumed that ActiveRelay users to be configured using this document each have an extension on a legacy PBX, having not yet migrated to a Cisco CallManager. For IP phone configuration, instead reference <u>Metreos ActiveRelay CallManager Configuration for IP Phones.</u>

Intended Audience

This manual is intended for use by administrators or others wishing to install and configure Cisco CallManager for use with the Metreos ActiveRelay application.

Content of This Document

This manual describes:

- Cisco CallManager configuration procedures for the Metreos ActiveRelay application.

Style and Formatting Conventions

The following typographical components are used for defining special terms and command syntax:

Convention	Description
Bold typeface	Represents literal information such as • Information and controls displayed on screen, including menu options, windows dialogs and field names • Commands, file names, and directories • In-line programming elements, such as class names and XML elements when referenced in the main text
Italic typeface	Italics typeface is used to denote • A new concept • A variable element such as *filename*.**mca**. In this example, *filename* represents the filename and **.mca** is the extension. • A reference to a chapter or section heading
`Sans serif typeface`	Denotes code or code fragments
… (ellipsis)	Denotes omitted material
UPPERCASE	Denotes keys and keystroke combinations such as CTRL+ALT+DEL.

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Table of Contents

Metreos ActiveRelay

Metreos ActiveRelay lets you receive calls from your business contacts using a single number, regardless of your physical location. When a contact calls an ActiveRelay-enabled number, the application simultaneously rings all configured *Find Me* numbers, any of which can then be used to answer the call.

The call behaves as a normal call, not exhibiting the serial ring sequences common to legacy call forwarding applications.

This manual describes the specific configuration requirements of Cisco CallManager for use with Metreos ActiveRelay. For information on enabling ActiveRelay users for the MCE platform, please reference Metreos document Metreos Communications Environment 2.1, Application Suite Administrator Guide.

ActiveRelay Triggering and Call Routing Overview

Triggering Criteria

Metreos applications execute in the context of the Metreos Communication Environment (MCE). Metreos applications are triggered by configured specific system events, such as call control activity.

Triggering for the ActiveRelay application in particular is defined by configuring CallManager to route calls whose dialed numbers fall within a specified range, to servers hosting the Metreos Communications Environment. A CallManager route list will balance load across all configured MCE servers, each such server configured as an H.323 gateway.

Call Routing

CallManager *Route Patterns* are configured to effect routing of calls through the MCE, as explained under *Route Pattern Association* on page 14. Each number in such a route pattern will correspond to a configured user of ActiveRelay. When the call is received at the MCE, ActiveRelay looks up the *Find Me* numbers associated with the DN. It dials each of these *Find Me* numbers simultaneously by initiating H.323 calls back to the CallManager, allowing CallManager to then determine routing for the call.

The application exhibits somewhat different behavior depending on which Find Me number is answered. If you answer an ActiveRelay call on the Find Me number configured as your voice mailbox, the call behaves normally. However if you answer on any other *Find Me* number, ActiveRelay prompts you to accept the call by pressing a confirmation digit. This feature prevents your cellular or home voice mail from picking up if either you not answer, or your cell phone is off. Once the call has been accepted on the non-office phone, the call proceeds as a normal two-party call.

MCE Redundancy and Failover

Redundancy

A redundant architecture or course presupposes that more than one MCE is deployed to service a group of users. A *route list* is a CallManager feature which lets it disperse calls among any number of H.323 gateways. Since each such MCE is configured as an H.323 gateway with CallManager, the route list mechanism can be used to allow multiple MCE instances to service the same group of users concurrently. The configuration necessary to do so is simply to include the DID of each ActiveRelay user in a route pattern associated with this route list.

Since multiple MCEs will service the same group of users, each such MCE will share a common user database. The shared data store ensures that the same *Find Me* numbers and user preferences are used by ActiveRelay regardless of the MCE on which it is executing. The data sharing is accomplished by configuring the database in *publisher/subscriber* mode. The caveat here is that during any publisher outage, changes to user account information such as *Find Me* numbers cannot be made. However even if such an outage were to occur, most ActiveRelay functionality would continue to be available.
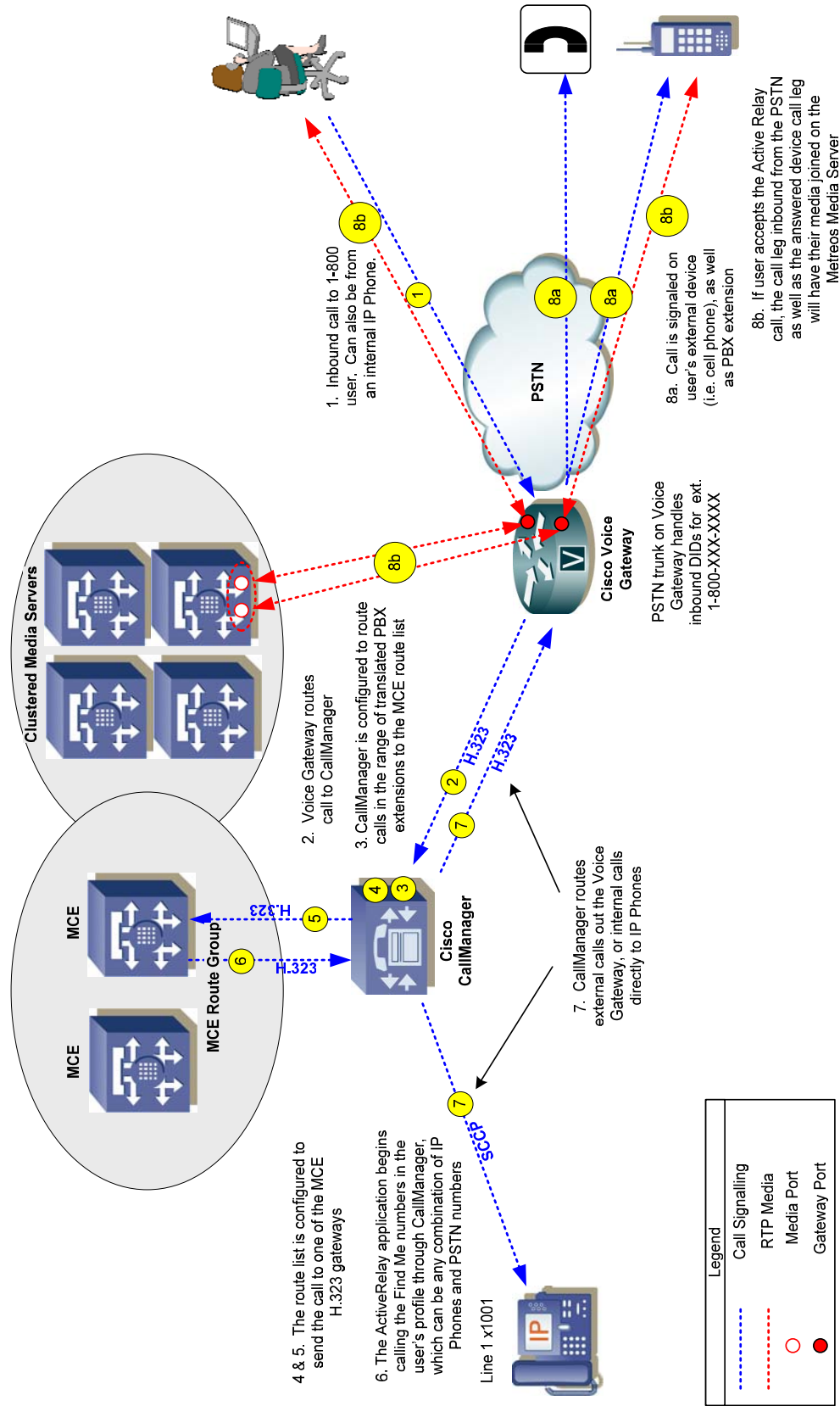
Metreos ActiveRelay Call Flow

Figure 1: Active Relay Call Flow

1. Inbound call to 1-800 user. Can also be from an internal IP Phone.

2. Voice Gateway routes call to CallManager

3. CallManager is configured to route calls in the range of translated PBX extensions to the MCE route list

4 & 5. The route list is configured to send the call to one of the MCE H.323 gateways

6. The ActiveRelay application begins calling the Find Me numbers in the user's profile through CallManager, which can be any combination of IP Phones and PSTN numbers

7. CallManager routes external calls out the Voice Gateway, or internal calls directly to IP Phones

8a. Call is signaled on user's external device (i.e. cell phone), as well as PBX extension

8b. If user accepts the Active Relay call, the call leg inbound from the PSTN as well as the answered device call leg will have their media joined on the Metreos Media Server

PSTN trunk on Voice Gateway handles inbound DIDs for ext. 1-800-XXX-XXXX

Cisco Voice Gateway

Cisco CallManager

Clustered Media Servers

MCE Route Group

MCE

MCE

PSTN

Line 1 x1001

Legend
Call Signalling	
RTP Media	
Media Port	
Gateway Port	

Call Flow Narrative

An ActiveRelay call will pass through a number of states within CallManager and the MCE. This section outlines this call flow.

Normal Call Flow

Throughout this section, please reference *Figure 1: Active Relay Call* Flow on page 10. Each distinct phase of the call is illustrated in detail in this diagram.

1. Incoming Call

Description: A call is placed to an ActiveRelay-enabled user. The number is PSTN-accessible.

Justification: A business application assumes that any business contact can reach the application user.

2. PSTN H.323 Gateway – Inbound

Description: The PSTN routes the call to a PSTN H.323 gateway, which in turn sends the call to a CallManager cluster.

Justification: Metreos ActiveRelay communicates directly with CallManager for notification of call events. The call to the ActiveRelay user must be bound to the CallManager environment in order that it can subsequently be routed to the MCE.

3. Route Pattern

Description: The route pattern matching the dialed number receives the call, defining the route list for subsequent routing.

Justification: A route pattern is the proscribed means of routing a call to a route list.

4. Route List

Description: The route list defines a single route group. This group will contain MCE H.323 gateways.

Justification: The route group, being a circular distribution, will balance load among any number of MCEs, as well as providing a means to route calls to remaining MCE servers if one or more MCEs were to become unavailable.

5. MCE H.323 Gateway – Outbound

Description: The MCE receives notification of the call via H.323 and initiates the ActiveRelay application.

Justification: H.323 is one of several call control interfaces via which the MCE can receive calls to trigger MCE applications. Using H.323 gateways permits ActiveRelay to offer a redundant load-balanced solution though the use of CallManager call route groups.

6. MCE H.323 Gateway – Inbound

Description: ActiveRelay dials each *Find Me* number.

Justification: H.323 lets the MCE specify Caller ID when placing a call, further allowing ActiveRelay to propagate the Caller ID present in the original call.

7. PSTN H.323 Gateway – Outbound

Description: A particular *Find Me* number may be routed over the PSTN.

Justification: ActiveRelay users may wish to be contacted at one or more PSTN-based numbers.

8. Outbound Call

Description: *Find Me* phones start to ring, requiring the answering party user to press a confirmation digit.

Justification: To consolidate all unanswered calls into company voice mail, ActiveRelay requires a user answering a call on any non-work phone to confirm that the call has been picked up by pressing a digit on the phone. Since a personal phone can often be answered by voice mail, this confirmation provides the means to give precedence to company voice mail.

Cisco CallManager Configuration

Prior to configuring the MCE appliance to route calls for ActiveRelay users, the following specific configurations must be completed in the CallManager.[1]

- Create a new recursion detection partition, the purpose of which is to prevent ActiveRelay from calling itself.
- Create a new CSS that will be applied to all Metreos H.323 gateways.
- Create an H.323 gateway to represent each MCE.
- Create a route group containing both MCE H.323 gateways.
- Create a route list containing this route group.
- Add one or more route patterns to route specific PSTN-originated calls to the MCE route list.
- Add one or more route patterns to block recursive dialing by ActiveRelay.
- Create a new partition, used to isolate the Voicemail CTI Route Point.
- Create a new CSS used to route only to the CTI Route Point defined following.
- Create a CTI Route Point, used to forward all calls received to voice mail.
- Add a translation pattern to route calls with a particular prefix pattern to the voice mail CTI Route Point.
- Configure the H225 TCP Timer, a CallManager service parameter.

Configuring the Recursion-Detection Partition

To prevent ActiveRelay from calling itself when *Find Me* numbers are configured in error, configure a partition with route patterns to intercept such calls as follows:

- *Partition Name* should be *Metreos Trump*
- *Description* should be *Blocks Recursive Calling for ActiveRelay*

Configuring the MCE H.323 Gateway Calling Search Space

In order to allow the Metreos H.323 gateway(s) to route inbound calls to ActiveRelay *Find Me* numbers, and to intercept recursive call attempts, create a Calling Search Space as follows:

- *Calling Search Space Name* should be *MetreosGateway*
- *Description* should be *Used by Metreos H.323 Gateways*
- *Available Partitions* should have the *Metreos Trump* partition as the first partition. The remaining partitions should be configured such that this CSS can route to any potential Find Me number.

Configuring the Metreos H.323 Gateway

Configure an H.323 gateway representing the MCE as follows:

- *Device Name* will be the IP address of the MCE.
- *Description* should be *Metreos H.323 Gateway*
- Configure *Calling Search Space* as *MetreosGateway*

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[1] CallManager supported versions are 3.3(x), 4.x

Note that you must reset the gateway (in CallManager) after adding it.

MCE Gateway Route Group

To provide redundancy for ActiveRelay, create a route list as follows:

- *Route Group Name* should be *Metreos Route Group*
- *Description should be Metreos ActiveRelay Route Group*
- *Distribution Algorithm* should be *Circular*
- *Current Route Group Members* should contain all MCE H.323 gateways created in as described in *Configuring the Metreos H.323 Gateway*, above.

Outbound Route List

The route group configured as described in the *MCE Gateway Route Group* should be used to configure a route list as follows:

- *Name* should be *Metreos Route List*
- *Description* should be *Metreos ActiveRelay Route List*
- *Metreos Route Group* should be the only listed route group

Note that you must reset the route list (in CallManager) after adding the route group.

Route Pattern Association

The ActiveRelay application begins operation when it recognizes an incoming call as being to an ActiveRelay extension. Use of a route pattern is the proscribed means of configuring CallManager to cause the MCE to assume control of the call when a particular number is dialed.

When creating this route pattern:
- Set *Route Pattern* to a range of numbers that represents ActiveRelay users' DNs
- Set *Partition* such that it is accessible to the CSS of the PSTN H.323 gateways accepting calls for ActiveRelay users.
    - o Specifically, this pattern will match the numbers inbound to CallManager from the PSTN
- Set the *Gateway or Route List* to the *Metreos Route List*
- Set the *Call Classification* to OnNet, indicating that numbers matching this pattern will terminate to a non-PSTN gateway
- Set *Provide Outside Dial Tone* to unchecked, so that CallManager does not supply an outside dial tone when dialing an ActiveRelay user.

Recursion-Detection Route Pattern Association

Because ActiveRelay initiates calls, and users configure what the number is that will be called, it is conceivable then that a user could mistakenly configure a Find Me number to dial back to their ActiveRelay number, thereby causing ActiveRelay to enter a recursive loop. Preventing such a situation is critical, but simple.

For every route pattern created in the above section, copy each, and change the following:
- Set *Route Pattern* to the same range of numbers as the original route pattern
- Set *Partition* to *Metreos Trump*
- Set *Description* to *Stops Blocks Recursive Calling for ActiveRelay*
- Set Route Option to *Block this pattern*, *No Error*

Forward To Voice Mail Partition

ActiveRelay users can configure a transfer number on their user account. During a call they can transfer the call to this number using a special key combination. The intended purpose of this transfer feature is to provide users the ability to forward the call to their voice mail box. Because the transferred call must route to a special CTI route point used to forward all calls to voice mail, the MCE H.323 gateways must be able to access this CTI route point.

Create the forward to voice mail partition as follows:
- *Partition Name* should be *Metreos_VM_prt*
- *Description* should be *Used by Metreos Voicemail CTI Route Point*

Forward-To-Voicemail Calling Search Space

In order to provide control over the set of calls which can be routed to the forward to voice mail CTI route point, a CSS must be created will have as its sole member the forward to voice mail partition.

The calling search space should be created as follows:
- *Calling Search Space Name* should be *Metreos_VM_CSS*
- Description should be *Used by Metreos Voicemail Translation Pattern*
- *Available Partitions* should have the *Metreos_VM_prt* as the only partition

Forward-To-Voicemail CTI Route Point

In order to route a call to a user's voice mail, the call must be forwarded to the voice mail system, rather than called directly. Because the MCE can call a CTI route point directly, a call forward all will be enabled on the CTI route point to send all such calls to voice mail.

The CTI route point should be created as follows:
- *Device Name* should be *Metreos_VM_Forward*
- *Description* should be *Forwards all calls to Voicemail*

One line should be created on the CTI route point as follows:
- *Directory Number* should be 1[2-9]XXXXXXXX
- *Partition* should be *Metreos_VM_prt*
- *Voice Mail Profile* should be such that it will route to the unified voicemail system
- *Forward All-Voicemail* should be checked

Forward-To-Voicemail Translation Pattern

When an ActiveRelay user uses the forward to voice mail feature, ActiveRelay will prepend a specific digit string (based on the configuration of the ActiveRelay application). Assuming that the prepend digit string is 888, the following steps should be taken when making this translation pattern:

- *Translation Pattern* should be 888.1[2-9]XXXXXXXXX
- *Partition* should be *Metreos Trump*
- *Description* should be *Forward to Voicemail for Metreos ActiveRelay*
- *Calling Search Space* should be *Metreos_VM_CSS*
- *Discard Digits* should be *PreDot*

Configure Service Parameter H225 TCP Timer

Should an MCE H.323 gateway stop processing calls for any reason, CallManager wait a configurable length of time before trying the next server in the route list. The wait time is determined by the H225 TCP Timer service parameter. If this value is too high, then it will either take a very long time to dial an ActiveRelay user, or the call will not route at all. Metreos suggests a value of between 2 to 5 seconds, inclusive. To check the value, navigate to:

- ccmadmin > Service > Service Parameters > Server [Publisher] > Service > Cisco CallManager > Clusterwide Parameters (Device – H323) > H225 TCP Timer > 2-5 seconds
- Note that the new value takes effect immediately upon updating