



Routing Based on Redirecting Number

Document Release History

Publication Date	Comments
June 26, 2007	Initial version of the document.

Feature History

Release	Modification
9.6(1)	The Routing Based on Redirecting Number feature was introduced on the Cisco MGC software.

This document describes the Routing Based on Redirecting Number (RBRN) feature for Release 9.6(1) of the Cisco MGC Software and explains how to use it.

This feature is described in the following sections:

- [Understanding the Routing Based on Redirecting Number Feature](#)
- [Provisioning Tasks](#)
- [Provisioning Example](#)
- [Software Changes for This Feature Module](#)
- [Obtaining Documentation, Obtaining Support, and Security Guidelines](#)
- [Glossary](#)

Understanding the Routing Based on Redirecting Number Feature

The RBRN feature enhances PGW 2200 routing capability by enabling number analysis and route selection based on the redirecting number contained in the H.323 Setup or SIP Invite message.

The feature is used to route a call from a PBX to its closest local or national TDM switch based on the redirecting number. This feature ensures that calls forwarded from one country to another use the correct dial plan by routing based on the redirecting number rather than the original calling party number.



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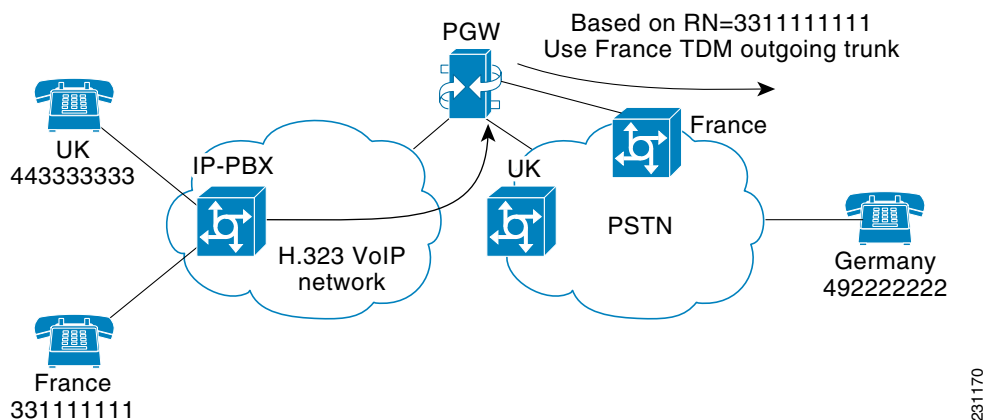
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Call Flow Example

Figure 1 shows how this feature can be used. In the figure, the service provider uses CLI prefix screening to select a customer-specific dial plan, and the calling party number to select an outgoing country dial plan. (Outgoing calls must utilize the TDM switch in their own country.)

In the figure, if a UK customer calls a party in France, the call is completed normally. However, if the party in France forwards the call to Germany, the proper outgoing TDM trunk cannot be selected based on the calling party number (UK). Instead, the PGW must determine the outgoing TDM trunk for the call based upon the redirecting number (France) in order to establish the call between the UK and Germany.

Figure 1 Routing Based on Redirecting Number Example



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Feature Interactions

Routing Based on Redirecting Number (RBRN) has the following feature interactions:

- Redirecting Number CLI Screening within A Digit Analysis feature is ignored.

If this feature is enabled, call screens using the redirecting number during A Digit Analysis are ignored because RBRN already uses the redirecting number (instead of the original A number) for the dial plan process.
- New call screening design. The new screen design behaves as follows:
 - If the feature is enabled and the initial message contains a redirecting number, the PGW screens calls based on the redirecting number and can modify the redirecting number.
 - If the feature is enabled and the initial message does not contain a redirecting number, the PGW screens calls based on the calling party number (A number) and can modify the calling party number.
 - If the feature is disabled, call screens are based on calling party number (A number) and the calling party number (A number) can be modified during the A number analysis stage.
 - If this feature is enabled, screens in the A number analysis stage are based on the redirecting number.

- If this feature is enabled, screens based on redirecting number before A number analysis are ignored.
- If this feature is enabled, screens in the B number analysis stage are based on the original calling party number (A number) or RN according to the MDLANumberScreening property settings.
- The Redirecting Number Modification and Advanced A Number Normalization feature introduces two ingress trunk group properties which control whether to process A and B number normalization. If the Anumnormalise property is set, the PGW normalizes the A Number or redirecting number (if present). Since this modification is processed before analysis and before the new feature takes effect, the modification is applied as normal.

Prerequisites

The RBRN feature has the following prerequisites:

- You must have MGC software Release 9.6(1) installed on the PGW. Prerequisites for this release can be found in the *Release Notes for the Cisco Media Gateway Controller Software Release 9.6(1)*.
- You must have completed initial configuration of the PGW.

Limitations

The RBRN feature has the following limitations:

- RBRN is supported in Call Control mode only
- RBRN is supported on H.323 and SIP ingress trunks only.

The following limitations exist for this feature if it is enabled and the incoming call setup message contains a redirecting number:

- PGW cannot screen calls based on calling party number in the A number analysis stage because the A number contains the redirecting number instead of the calling party number.
- The Redirecting Modification analysis return result is ignored, except for redirecting number normalization. Redirecting number normalization is enabled by the PGW Sigpath property. A number modification is also applied to the redirecting number.
- Any change in the dial plan based on an Adigittree or ADigTTimes-ten database lookup is against the redirecting number and not calling party number.
- Calling party number modification during the number analysis stage is ignored. A number modification during the number analysis stage is applied to the redirecting number instead of the calling party number. Calling party number modification during the number analysis stage is ignored.
- There is limited compatibility with HSI and Cisco Call Manager (CCM). Cisco HSI and Cisco CCM provide limited support for this feature. Currently HSI and CCM support the redirecting number in the nonstandard part of the H.323 Setup Message only.

Currently CCM supports only a single instance of a redirecting number in a call flow. If a call is redirected more than once, the PGW does not modify the redirecting number from the original value.

In some instances an H.323 endpoint connected to the HSI might not provide the nonstandard portion of the H.323 setup message, in which case the PGW cannot retrieve the redirecting number.

Related Documents

This document contains information that is related strictly to this feature. The documents that contain additional information related to the Cisco Media Gateway Controller (MGC) are at the following url:
http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/tsd_products_support_series_home.html

Provisioning Tasks

The following sections describe the provisioning tasks related to this feature.

Provisioning Prerequisites

This section lists the information you need to provision this feature. For more information on planning to provision the Cisco MGC software, refer to the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

Collecting Provisioning Data

You need the following data in order to provision this feature:

- MML name of the signaling service
- Property name
- Property value

[Table 2 on page 10](#) lists the properties that you can configure for this feature.

Provisioning Procedures

The following sections summarize the procedures for making provisioning changes on your Cisco PGW 2200 system.

- [Starting a Provisioning Session, page 4](#)
- [Saving and Activating Your Provisioning Changes, page 5](#)
- [Ending a Provisioning Session Without Activating Your Changes, page 6](#)
- [Retrieving Provisioning Data, page 6](#)
- [Modifying a Signaling Service Property, page 7](#)
- [Deleting a Signaling Service Property, page 8](#)

For more information about how to provision the Cisco PGW 2200, refer to the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

Starting a Provisioning Session

To open a provisioning session to the Cisco PGW 2200, log in to the active PGW, start an MML session, and enter the following command:

```
prov-sta:srcver="curr_ver",dstver="mod_ver"
```

Where:

- *curr_ver*—The name of the current configuration version. In place of the name of the current configuration version, you can also enter:
 - new—A new default session configuration; no existing source configuration is available.
 - active—Selects the active configuration as the source for configuration changes.



Note If you do not know the name of your current configuration version, refer to [“Retrieving Data on the Current Provisioning Session, page 7.”](#)

- *mod_ver*—A new configuration version name for the configuration version that contains your provisioning changes.

For example, to use a configuration version called ver1 as the basis for a version to be called ver2, enter the following command:

```
prov-sta:srcver="ver1",dstver="ver2"
```

Once a provisioning session is underway, you can use the **prov-add**, **prov-ed**, and **prov-dlt** MML commands to add, modify, and delete components on your system. For more information on provisioning other components on your Cisco PGW 2200, refer to the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

There are two ways to close a provisioning session:

- Save and activate your provisioning changes as described in the [“Saving and Activating Your Provisioning Changes” section on page 5](#)
- End your provisioning session without saving and activating your changes as described in the [“Ending a Provisioning Session Without Activating Your Changes” section on page 6](#).

Saving and Activating Your Provisioning Changes

When you have completed making provisioning changes in your session, you can enter a command to save and activate your changes. There are two different provisioning MML commands that do this: **prov-cpy** and **prov-dply**.



Caution

Using the **prov-cpy** or **prov-dply** MML command can severely impact your system’s call processing performance, depending on the extent of your provisioning changes. We recommend that you issue these commands during a maintenance window when traffic is minimal.

The **prov-cpy** MML command saves and activates your changes on simplex (single-host) Cisco PGW 2200 systems.

The **prov-dply** MML command saves and activates your changes on the active and standby PGW in a continuous-service system. Do not use this command on a Cisco PGW 2200 in a simplex configuration.



Note

When you enter the **prov-cpy** or **prov-dply** command, the provisioning session ends automatically, unless an error occurs during execution. To make additional provisioning changes, you must start a new provisioning session as described in the [“Starting a Provisioning Session” section on page 4](#).

**Caution**

Do not use the **prov-cpy** command to save and activate your changes on a continuous-service Cisco MGC system (one with active and standby hosts). Saving and activating using **prov-cpy** on such a system requires that you use the **prov-sync** MML command to synchronize the provisioning data on the active and standby hosts. The system does not issue an alert if there is a synchronization process failure, which could create problems when a switch-over operation occurs.

Ending a Provisioning Session Without Activating Your Changes

To end a provisioning session without saving and activating your changes, enter the **prov-stp** MML command. This command ends the current provisioning session and discards your changes.

Retrieving Provisioning Data

Use the **prov-rtrv** MML command to retrieve information about your current provisioning settings. The following sections describe how to use the **prov-rtrv** command:

- [Retrieving Data for an Individual Component, page 6](#)
- [Retrieving Data for All Components, page 6](#)
- [Retrieving Data for All Components of a Particular Type, page 7](#)
- [Retrieving Data on the Current Provisioning Session, page 7](#)
- [Retrieving Data on Supported Signaling Protocols, page 7](#)

Retrieving Data for an Individual Component

To retrieve provisioning data on an individual component in your system, enter the following command within an MML session on the active PGW:

```
prov-rtrv:component:name="MML_name"
```

Where:

- *component*—The MML component type for the desired component. The *Cisco Media Gateway Controller Software Release 9 Provisioning Guide* contains a complete list of MML component types.
- *MML_name*—The MML name for the desired component. You can determine the MML names for the various components using the **prov-rtrv:all** MML command.

For example, to view the provisioning data for an SS7 signaling service called `ss7svc1`, enter the following command:

```
prov-rtrv:ss7path:name="ss7svc1"
```

Retrieving Data for All Components

To retrieve data on all of the components provisioned on your system, enter the following command within an MML session on the active PGW:

```
prov-rtrv:all
```

Retrieving Data for All Components of a Particular Type

To retrieve provisioning data on all components of a particular type on your system, enter the following command within an MML session on the active PGW:

```
prov-rtrv:component:name="mml-name"
```

Where *component* is the MML component type associated with the desired component group. The *Cisco Media Gateway Controller Software Release 9 Provisioning Guide* contains a complete list of the MML component types.

For example, to view the provisioning data for all SIP services, enter the following command:

```
prov-rtrv:sigsvccprop:name="sip-path"
```

Retrieving Data on the Current Provisioning Session

To retrieve provisioning data on the current provisioning session, enter the following command within an MML session on the active PGW:

```
prov-rtrv:session
```

The system returns a response similar to the following:

```
MGC-02 - Media Gateway Controller 2004-01-13 13:39:19
M  RTRV
   "session=jtest:session"
  /*
Session ID = mml1
SRCVER = active
DSTVER = jtest
  */
```

Retrieving Data on Supported Signaling Protocols

To retrieve protocol data for the current provisioning session, log in to the active Cisco MGC, start an MML session, and enter the following command:

```
prov-rtrv:variants
```

Modifying a Signaling Service Property

To modify a Cisco PGW 2200 signaling service property, enter the following command within an MML session on the active PGW:

```
prov-ed:sigsvccprop:name="name","propertyname"
```

Where:

- *name*—MML name of the previously defined signaling service to be modified
- *value*—An integer value of 0 or 1 through 32

For example, to modify the Cisco PGW 2200 signaling service property RedirNumForAnalysis to 1, enter the following command:

```
mml> prov-ed:sigsvccprop:name="sip-path",redirnumforanalysis="1"
```

Deleting a Signaling Service Property

To delete a Cisco PGW 2200 signaling service property from your PGW configuration, enter the following command within an MML session on the active PGW:

```
prov-dlt:sigsvccprop:name="name","propertyname"
```

Where:

- *name*—MML name of the previously defined signaling service to be modified
- *propertyname*—A valid signaling service property name

For example, to delete the Cisco PGW 2200 signaling service property RedirNumForAnalysis, you enter the following command:

```
mml> prov-dlt:sigsvccprop:name="sip-path","redirnumforanalysis"
```



Note

Deleting a signaling service property does not remove the property but sets it back to the default value.

Provisioning Example

The following is a provisioning example that includes commands to add, modify, and delete the RedirNumForAnalysis property on SIP and H.323 trunks. For additional provisioning examples for the Cisco MGC software, refer to the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

```

; Adding a dial plan
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:dialplan:custgrpId="DP00",OVERDEC="NO"

; Configuring SIP service and a SIP link
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-add:sipPath:NAME="sip-path",DESC="SIP path",MDO="IETF_SIP"
prov-add:siplnk:NAME="sip-link",DESC="SIP link",SVC="sip-path",IPADDR="IP_Addr2",
PORT=5060,PRI=1

; Adding a trunk for the E-ISUP sig path
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-add:trnkgrp:name="9700",type="IP",svc="eisup-hsi",clli="hsi-a"

; Adding an outgoing SIP trunk group
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-ADD:trnkgrp:NAME="3",CLLI="sip-path",SVC="sip-path",TYPE="IP_SIP",SELSEQ="LIDL",
QABLE="N"
prov-add:trnkgrpprop:name="3",custgrpId="DP01",MGCDomain="10.0.57.90",
mgcsipversion="sip/2.0",Localport="5060"
prov-add:siprttrnkgrp:name="3",url="10.0.20.112",srvrr=0,sipproxyport=5060,version="2.0",c
utthrough=1,extsupport=1
prov-add:rttrnk:name="rg3",trnkgrpnum=3
prov-add:rtlist:name="rlst3",rtname="rg3"

```

```

; Adding an outgoing E-ISUP trunk group
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-add:trnkgp:name="9700",type="IP",svc="eisup-hsi",clli="hsi-a"
prov-add:rttrnkgp:name="9700",type=4,reattempts=3,queuing=0,cutthrough=1, resincperc=0
prov-add:rttrnk:weightedTG="OFF",name="eisup-rt9700",trnkgpnum=9700
prov-add:rtlist:name="eisup-rtlist-4",rtname="eisup-rt9700",distrib="OFF"

-----

; Configuring a Dial Plan (DP00)
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:dpsel:custgrpid="DP00",newdp="DP01"
numan-add:digmodstring:custgrpid="DP00", name="digmoda", digstring="456222"
numan-add:resultset:custgrpid="DP00",name="SwToDP1"
numan-add:resulttable:custgrpid="DP00", name="moda", resulttype="AMODDIG", dw1="1",
dw2="6", dw3="digmoda", setname="SwToDP1"
numan-add:resulttable:custgrpid="DP00",name="SwitchDP1",resulttype="NEW_DIALPLAN",dw1="DP0
1",dw2="0",setname="SwToDP1"
numan-add:resultset:custgrpid="DP00",name="SwToDP2"
numan-add:resulttable:custgrpid="DP00",name="SwitchDP2",resulttype="NEW_DIALPLAN",dw1="DP0
2",dw2="0",setname="SwToDP2"
numan-add:adigtrees:custgrpid="DP00",callside="originating",digitstring="476",setname="SwTo
DP1"
numan-add:adigtrees:custgrpid="DP00",callside="originating",digitstring="40",setname="SwToD
P2"

-----

; Adding the RedirnumForAnalysis property to a SIP Ingress Trunk
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-add:sigsvccprop:name="sip-path",redirnumforanalysis="1"

-----

; Adding the RedirnumForAnalysis property to an H.323 Ingress Trunk
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-add:sigsvccprop:name="eisup-hsi",redirnumforanalysis="1"

-----

; Modifying the RedirnumForAnalysis property on a SIP Ingress Trunk
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-ed:sigsvccprop:name="sip-path",redirnumforanalysis="1"

-----

; Modifying the RedirnumForAnalysis property on an H.323 Ingress Trunk
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-ed:sigsvccprop:name="eisup-hsi",redirnumforanalysis="1"

-----

; Deleting the RedirnumForAnalysis property from a SIP Path
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-dlt:sigsvccprop:name="sip-path","redirnumforanalysis"

-----

; Deleting the RedirnumForAnalysis property from an H.323 Path
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
prov-dlt:sigsvccprop:name="eisup-hsi","redirnumforanalysis"

```

Software Changes for This Feature Module

Feature Summary

CSCsg37231 introduced software changes in the PGW 2200 to support the Routing Based on Redirecting Number feature.

New, Modified, and Deleted Elements

Parameters:

- RedirNumForAnalysis

Related reference material:

- [Properties, page 10](#)

Properties

Table 1 lists the parent object for the property that is used to support the Routing Based on Redirecting Number feature.

For information on other properties for the Cisco MGC software, refer to the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

Table 1 Software Property Related to this Feature

Property Name	Parent Object																			
	AVM	DPNSS	EISUP	IOCC	ISDNPRI	MGCP	RLM	SESSION	SGCP	SIP	SS7-ANSI	SS7-China	SS7-ITU	SS7-Japan	SS7-UK	TALI-IOCC	TCAPOverIP	TrunkGroup	VSI	
RedirNumForAnalysis			X							X										

Table 2 lists the properties used by the RBRN.

Table 2 Properties Used by the RNRN Feature

Property	Definition
RedirNumForAnalysis	<p>This is an integer that indicates whether the PGW performs number analysis based on redirecting number (where applicable).</p> <p>0 indicates that the PGW does not use the redirecting number for number analysis. 1 indicates that the PGW uses the redirecting number for number analysis.</p> <p>Valid values: 0, 1</p> <p>Default value: 0</p>



Note

Modifications to the value of the RedirNumForAnalysis take effect without a system restart.

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Glossary

Table 3 contains expansions of acronyms and technical terms used in this feature module.

Table 3 *Acronym Expansions*

Acronym	Expansions
A number	Also known as calling party number, the telephone number of the party that initiates a call.
B number	The telephone number of the party receiving a call
Calling party number	See A number
CCM	Cisco Call Manager
CLI	Caller Line Identification
DTMF	dual-tone multi-frequency
E-ISUP	extended ISUP, an extension of the ISUP protocol for TCP/IP
H.323	An ITU standard commonly used for IP telephony
MGC	Media Gateway Controller
MML	Man-Machine Language
NOA	nature of address
PBX	private Branch Exchange
PGW	PSTN Gateway
PSTN	public Switched Telephone Network
RBRN	Routing Based on Redirecting Number
redirecting number	The number of the party redirecting a call.
SIP	Session Initiation Protocol, an IETF signalling protocol for IP telephony
TDM	time-division multiplexing
VOIP	voice over IP

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