



# Support of Location Mapping

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## Document Release History

Publication Date	Comments
March 12, 2007	Initial version of the document.

## Feature History

Release	Modification
Release 9.7(3)	The Support of Location Mapping feature was introduced on the Cisco MGC software.

This document describes the Support of Location Mapping feature that allows mapping and modification of location values to new values defined in the Cause mapping table.

This feature is described in the following sections:

- [Feature Overview, page 1](#)
- [Supported Platforms, page 2](#)
- [Supported Standards, MIBs, and RFCs, page 2](#)
- [Prerequisites for Using This Feature, page 3](#)
- [Provisioning This Feature, page 3](#)
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## Feature Overview

The Support of Location Mapping feature on the PGW 2200 provides support for both cause code and location mapping with the ability to modify location values.

The PGW is currently able to map release cause information into different values by the use of the Cause mapping table, however it cannot map or modify location values that are required by some customers.

This feature gives the Cisco PGW 2200 the following functionality:

- Map to different cause and location values based on received cause values and location values
- Map to a different cause value based on the received cause value and location values

- Map cause value to new values without changing location values (existing)
- Map to a new cause value and location value based on received cause value
- Override the default location value with a new location value
- Use the default location value if no location value is set
- Map a location value to new values without changing cause values, with the use of wildcard of cause value

## Benefits

This feature provides a way to map received cause and location values to another cause and location value.

## Restrictions

Be aware of the following restrictions while you are provisioning the result table for this feature:

- The new location values override default location values.
- If no location value is set, the default value is used.

## Related Documents

This document contains information that is related 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](http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/tsd_products_support_series_home.html)

## Software Structural Changes

This section describes the structural changes to the MGC software for this feature. For information on the software structure of the rest of the MGC software, see the *Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guide*.

## Supported Platforms

The hardware platforms supported for the Cisco MGC software are described in the *Cisco Media Gateway Controller Hardware Installation Guide*.

## 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.

For more information on the MIBs used in the Cisco MGC software, see the *Cisco Media Gateway Controller Software Release 9 Management Information Base Guide*.

**RFCs**

No new or modified RFCs are supported by this feature.

## Prerequisites for Using This Feature

The Cisco Media Gateway Controller (MGC) software Release 9.7(3) is required for this feature. Prerequisites for this software release can be found in the *Release Notes for the Cisco Media Gateway Controller Software Release 9.7(3)*.

## Provisioning This Feature

You must start a provisioning session to enable this feature. See the *Cisco MGCP Provisioning Guide* for details on how to start a provisioning session.

## Provisioning Basics

The procedures in this section describe how to start a provisioning session and how to save and activate the changes you have made.

- [Starting a Provisioning Session, page 3](#)
- [Saving and Activating Your Provisioning Changes, page 4](#)
- [Ending a Provisioning Session Without Activating Your Changes, page 5](#)
- [Retrieving Provisioning Data, page 5](#)

For more detailed information about provisioning your Cisco MGC, see the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

## Starting a Provisioning Session

You may need to start a provisioning session as part of your system operations. To do this, log in to the active Cisco MGC, 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.




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**Note** If you do not know the name of your current configuration session, you can use the procedure described in the [“Retrieving Data on the Current Provisioning Session”](#) section on page 6.

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- *mod\_ver*—A new configuration version name that contains your provisioning changes.

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

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

Once a provisioning session is underway, you can use the **prov-add**, **prov-ed**, or **prov-dlt** MML command to add, modify, or delete components on your system. This document describes how to provision this feature. For more information on provisioning other components on your Cisco MGC, see the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.

There are two ways to close your provisioning session: saving and activating your provisioning changes, as described in the [“Saving and Activating Your Provisioning Changes”](#) section on page 4 or ending your provisioning session without saving and activating your changes, as described in the [“Ending a Provisioning Session Without Activating Your Changes”](#) section on page 5.

## Saving and Activating Your Provisioning Changes

When you have completed making provisioning changes in your session, you must 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

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

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The **prov-cpy** MML command is used to save and activate your changes on simplex Cisco MGC (single-host) systems.



### Note

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When you enter the **prov-cpy** command, your provisioning session is also automatically ended. If you want to make additional provisioning changes, you must start a new provisioning session as described in the [“Starting a Provisioning Session”](#) section on page 3.

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### Caution

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Do not use the **prov-cpy** command to save and activate your changes on a continuous-service Cisco MGC (active and standby hosts) system. Saving and activating using **prov-cpy** on such a system would require using the **prov-sync** MML command to synchronize the provisioning data on the active and standby hosts. The system does not indicate when the synchronization process fails, which would create problems when a switchover operation occurs.

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The **prov-dply** MML command is used to save and activate your changes on the active and standby Cisco MGCs in a continuous-service system. This command should not be used on a Cisco MGC in a simplex configuration.

**Note**

When you enter the **prov-dply** command, your provisioning session is also automatically ended, unless an error occurs during execution. If you want to make additional provisioning changes, you must start a new provisioning session, as described in the [“Starting a Provisioning Session” section on page 3](#).

## Ending a Provisioning Session Without Activating Your Changes

If you want to end a provisioning session without saving and activating the changes you have entered, enter the **prov-stp** MML command. This command ends your current provisioning session and your changes are not entered.

## Retrieving Provisioning Data

You can use the **prov-rtrv** MML command to retrieve information about your current provisioning settings. The ways you can use this command to retrieve provisioning data are described in the following sections:

- [Retrieving Data for an Individual Component, page 5](#)
- [Retrieving Data for All Components, page 5](#)
- [Retrieving Data for All Components of a Particular Type, page 6](#)
- [Retrieving Data on the Current Provisioning Session, page 6](#)
- [Retrieving Data on Supported Signaling Protocols, page 6](#)

### Retrieving Data for an Individual Component

You can retrieve provisioning data on any individual component on your system. To do this, log in to the active Cisco MGC, start an MML session, and enter the following command:

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

Where:

- *component*—The MML component type associated with the desired component. You can find a complete list of MML component types in the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide*.
- *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`, you would enter the following command:

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

The response to the command is dependent upon the component type associated with the desired component. For example, to view the properties for an SUA routing key called `suakey1`, you would enter the following command:

```
prov-rtrv:suakey:name="suakey1"
```

### Retrieving Data for All Components

You can retrieve data on all of the components provisioned on your system. To do this, log in to the active Cisco MGC, start an MML session, and enter the following command:

```
prov-rtrv:all
```

### Retrieving Data for All Components of a Particular Type

You can retrieve provisioning data on all components of a particular type on your system. To do this, log in to the active Cisco MGC, start an MML session, and enter the following command:

```
prov-rtrv:component:"all"
```

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

For example, to view the provisioning data for all SS7 signaling services, you would enter the following command:

```
prov-rtrv:ss7path:"all"
```

### Retrieving Data on the Current Provisioning Session

You can retrieve provisioning data on the current provisioning session. To do this, log in to the active Cisco MGC, start an MML session, and enter the following command:

```
prov-rtrv:session
```

The system returns a response similar to the following:

```
MGC-02 - Media Gateway Controller 2003-01-13 13:39:19
M  RTRV
   "session=jtest:session"
  /*
Session ID = mm11
SRCVER = active
DSTVER = jtest
*/
```

### Retrieving Data on Supported Signaling Protocols

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

```
prov-rtrv:variants
```

## Provisioning Examples

This section provides the following examples of dial plan provisioning for this feature. Additional examples of dial plan provisioning for the Cisco MGC software can be found in the *Cisco Media Gateway Controller Software Release 9 Dial Plan Guide*.

```
mml> numan-add:dialplan:custgrpid="Nat1"
mml> numan-add:service:custgrpid="Nat1",name="TollFree"
mml> numan-add:resultset:custgrpid="Nat1",setname="chCause"
mml> numan-add:resulttable:custgrpid="Nat1",setname="chCause",
resulttype="CAUSE",name="cause1",dw1=8,dw2=7
mml> numan-add:location:custgrpid="Nat1",locationblock=1,
blockvalue=2,setname=chCause"
mml> numan-add:cause:custgrpid="Nat1",causevalue=91,locationblock=1
```



**Note** For any causevalue that has no value entered in the Cause table, or has a value of 0, the default Cause table is used.

The following provisioning example shows how to map from SIP cause 408 and 504 to SS7 cause 20 (Subscriber Absent).

```
numan-add:resultset:custgrpid="Nat1",name="chgCause"
numan-add:resulttable:custgrpid="Nat1",name="SubAbsent",resulttype="CAUSE",dw1=91,
setname="chgCause"
numan-add:cause:custgrpid="Nat1",causevalue=40,setname="chgCause"
```



**Note** PGW internal cause and location values are used for provisioning. In this example, SIP cause 408 and 501 both map to PGW internal cause 40 IC\_RECOVERY\_ON\_TIMER\_EXPIRY. Internal cause 40 is mapped to internal cause 91 IC\_SUB\_ABSENT, which is cause 21 in SS7. For a complete list of all SIP, ISUP, and PGW internal cause and location values and how they are mapped to each other, see the *Cisco Media Gateway Controller Software Release 9 Dial Plan Guide*.

The following provisioning example shows how to map internal cause 1 (Unallocated Number) and location 3 to internal cause 36 (Number Changed).

```
numan-add:resultset:custgrpid="Nat1",setname="chCause"
numan-add:resulttable:custgrpid="Nat1",setname="chCause",resulttype="CAUSE",
name="cause1",dw1=36
numan-add:location:custgrpid="Nat1",locationblock=1,blockvalue=2,setname="chCause"
numan-add:cause:custgrpid="Nat1",causevalue=1,locationblock=1
```



**Note** The blockvalue in numan-add:location should be one less than the intended internal value.

The following provisioning example shows how to map all cause and location values of 3 to cause value 40 and location value 4.

```
numan-add:resultset:custgrpid="custid",name="chCause2"
numan-add:resulttable:custgrpid="custid",setname="chCause2",resulttype="CAUSE",
name="cause1",dw1=40,dw2=4
numan-add:location:custgrpid="custid",locationblock=1,blockvalue=2,setname="chCause2"
numan-add:cause:custgrpid="custid",causevalue="0",locationblock=1
```

The following provisioning example shows how to map cause value 1 with any location value to cause value 40 and location value 4.

```
numan-add:resultset:custgrpid="custid",name="chCause1"
numan-add:resulttable:custgrpid="custid",setname="chCause1",
resulttype="CAUSE",name="cause1",dw1=0,dw2=4
numan-add:cause:custgrpid="custid",causevalue="1",setname="chCause1"
```

The following Cause table and Location table entries are generated as the result of the previous two provisioning examples.

```
$cause
#locationIndex resultIndex (Every line below corresponds to a cause value, first line for
cause 0 and second for cause 1)
1 0 (Cause 0 maps to Location block 1, to further investigate location value)
0 217 (Cause 1 maps directly to result index 217, which is chCause1, regardless of
location value) ...
```

```

$location
#resultIndex (Every line below corresponds to a location value, first line for location 1,
second line for location 2.)
# block1 (This is location block 1. If multiple locationblock is used, there would be
multiple $location tables)
0 (Location 1, empty)
0 (Location 2, empty)
216 (Location 3, maps to result index 216, which is chCause2) ...
$resultTable
#type      dw1      dw2      dw3      dw4      nextResult
# result216      chCause2      (This is for result index 216, which is chCause2)
6          40          4          0          0          0
# result217      chCause1      (This is for result index 217, which is chCause1)
6          0          4          0          0          0

```

## Result Type Definitions

Result analysis provides the capability to group actions into result sets that can be attached at different points of analysis. The main attachment points are Pre-analysis, A-number analysis, B-number analysis, and Cause analysis.

The following result type definition is modified for this feature by adding dataword2 (location value). For information on other result type definitions for the Cisco MGC software, see the *Cisco Media Gateway Controller Software Release 9 Dial Plan Guide*.

Table 1 shows the result type modified for this feature.

**Table 1** Modified Result Type Definition

Result Number	Result Type	Dataword1	Dataword2	Dataword3	Dataword4	Analysis Points		Result Type Valid For			
						Intermediate	End Point	A-digit analysis	B-digit analysis	Cause	Pre-analysis
6	CAUSE	Cause value	Location value	0 (not used)	0 (not used)	X		X	X	C	

## Result Type Definitions

The following paragraphs contain definitions of the result type listed in Table 1.

### CAUSE

The Cause analysis data specifies what actions to take when a given cause code and location are presented to analysis. The cause may have been retrieved from a received message, set internally on the MGC, or delivered as a CAUSE result. Currently, the given cause value is passed into the Cause analysis process and determines whether or not to:

1. Reattempt, redirect, or reroute the call on an alternate route
2. Return an announcement (that is, route to the announcement server)
3. Clear the call down, writing the cause value returned into call context for protocol use

The cause value corresponds to any provisioned value that complies with the range of cause values permitted in call context. See the *Cisco Media Gateway Controller Software Release 9 Dial Plan Guide*, Appendix B, “Cause and Location Codes” for cause code values.

Valid dataword1 (cause) values are:

- 0 = No cause mapping (default). The 0 value is added to enable using a wildcard for the cause value. Provides a default value for cause values not manually provisioned. Use the received cause value.
- 1 through 173 = Cause mapping value.

Valid dataword2 (location) values are:

- 0 = No location mapping (default). The 0 value is added to enable using a wildcard for the location value. Use the default location value if no location is received.
- 1 through 15 = Location mapping value.



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**Note** Valid location mapping values are 1 through 13.

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The location value corresponds to any provisioned value that complies with the range of location values permitted in call context. See the *Cisco Media Gateway Controller Software Release 9 Dial Plan Guide*, Appendix B, “Cause and Location Codes” for location values.

## Command Reference

This section documents new, modified, or deleted Man-Machine Language (MML) commands. All other MML commands are documented in the *Cisco Media Gateway Controller Software Release 9 MML Command Reference Guide*.

### Modified MML Commands

This section contains the MML commands that were modified for this feature. A new result type has been added to the following commands:

- NUMAN-ADD:resulttable
- NUMAN-DLT:resulttable
- NUMAN-RTRV:resulttable
- NUMAN-ADD:cause
- NUMAN-DLT:cause
- NUMAN-RTRV:cause

## NUMAN-ADD:resulttable—Provision the Result Table

Purpose:	This MML command provisions the CAUSE result type to map the received cause and location value into the user's preferred cause and location value.
Syntax:	<code>numan-add:resulttable:custgrpid="customer group ID",name="result name", Resulttype=CAUSE,dw1="Cause value",dw2="Location value", setname="ResultSet Name"</code>
Input Description:	<p><i>custgrpid</i>—The customer group ID, which is a previously defined 4-digit alphanumeric string.</p> <p><i>name</i>—The result table index name.</p> <p><i>resulttype</i>—The result type, which is CAUSE for this feature module.</p> <p><i>dw1</i>—The cause value. Integers 1–173.</p> <p><i>dw2</i>—The location value. Integers 1–15. Default is 0.</p> <ul style="list-style-type: none"> <li>– 0—When no location is entered, the default value is used. The default value is different for the SS7 protocol variants. For example, for SS7-ANSI, the default value is LOCATION_TRANSIT, and for Q.761, the default value is LOCATION_INTERWORKING.</li> <li>– 1–15—This value overrides the received location value.</li> </ul> <p><i>setname</i>—The result set name.</p>
Output Description:	Varies
Example:	<code>numan-add:resultset:custgrpid="Nat1",setname="chCause" numan-add:resulttable:custgrpid="Nat1",setname="chCause", resulttype="CAUSE",name="cause1",dw1=91,dw2=7 numan-add:cause:custgrpid="Nat1",causevalue=40,resultset="chCause"</code>
Comments:	Performance Impact Category: A

The following MML commands are used when the incoming cause value is unchanged and all location values are changed to another location value:

```
numan-add:resultset:custgrpid="Nat1",setname="chCause"
numan-add:resulttable:custgrpid="Nat1",setname="chCause",resulttype="CAUSE",
name="cause1",dw1=0,dw2=2
numan-add:cause:custgrpid="Nat1",causevalue=0,setname="chCause"
```

The following MML commands are used when the incoming cause value is unchanged and one location value is changed to another location value:

```
numan-add:resultset:custgrpid="Nat1",setname="chCause"
numan-add:location:custgrpid="Nat1",locationblock=1,blockvalue=2,setname="chCause"
numan-add:resulttable:custgrpid="Nat1",setname="chCause",resulttype="CAUSE",
name="cause1",dw1=0,dw2=2
numan-add:cause:custgrpid="Nat1",causevalue=0,locationblock=1
```

## NUMAN-DLT:resulttable—Delete the Result Table

Purpose:	This MML command deletes the cause and location value; default values are used instead.
Syntax:	<code>numan-dlt:resulttable:custgrpid="customer group ID",name="result name",Resulttype=CAUSE,setname="ResultSet Name"</code>
Input Description:	<p><i>custgrpid</i>—The customer group ID, which is a previously defined 4-digit alphanumeric string.</p> <p><i>name</i>—The result table index name.</p> <p><i>resulttype</i>—The result type, which is CAUSE for this feature module.</p> <p><i>setname</i>—The result set name.</p>
Output Description:	Varies
Example:	<pre>numan-dlt:resultset:custgrpid="Nat1",setname="chCause" numan-dlt:resulttable:custgrpid="Nat1",setname="chCause", resulttype="CAUSE",name="cause1" numan-dlt:cause;custgrpid="Nat1",causevalue=40,resultset="chCause"</pre>
Comments:	Performance Impact Category: A

## NUMAN-RTRV:resulttable—Retrieve the Result Table

Purpose:	This MML command retrieves the Result table.
Syntax:	<pre>numan-rtrv:resulttable:custgrpid="customer group ID",name="result name"  or  numan-rtrv:resulttable:custgrpid="customer group ID","all"</pre>
Input Description:	<p><i>custgrpid</i>—The customer group ID, which is a previously defined 4-digit alphanumeric string.</p> <p><i>name</i>—The result table index name.</p>
Output Description:	Varies
Example:	<code>numan-rtrv:resulttable:custgrpid="Nat1",name="cause1"</code>
Comments:	Performance Impact Category: A

## NUMAN-ADD:CAUSE-Provision CAUSE Table

The locationblock and the setname cannot be provisioned at the same time.

Purpose:	This MML command adds one entry to the cause table.
Syntax:	<pre>numan-add:cause:custgrpid="customer group ID",causevalue="x", locationblock=x numan-add:cause:custgrpid="customer group ID",causevalue="x", setname="ResultSet Name"</pre>
Input Description:	<p><i>custgrpid</i>—The customer group ID, which is a previously defined 4-digit alphanumeric string.</p> <p><i>name</i>—The result table index name.</p> <p><i>causevalue</i>—The cause value, an integer, where x = 1–173. The 0 value is added to enable use of a wildcard for the cause value. A cause value of 0 is the default cause value.</p> <p><i>locationblock</i>—The location block number.</p> <p><i>setname</i>—The result set name.</p>
Output Description:	Varies
Example:	<pre>numan-add:cause:custgrpid="Nat1",causevalue=0,locationblock=1 numan-add:cause:custgrpid="Nat1",causevalue=3,setname="chCause"</pre>
Comments:	Performance Impact Category: A

## NUMAN-ED:CAUSE-Provision CAUSE Table

The locationblock and the setname cannot be provisioned at the same time.

Purpose:	This MML command edits one entry in the cause table.
Syntax:	<pre>numan-ed:cause:custgrpid="Nat1",causevalue=0,locationblock=1 numan-ed:cause:custgrpid="Nat1",causevalue=3,setname="chCause"</pre>
Input Description:	<p><i>custgrpid</i>—The customer group ID, which is a previously defined 4-digit alphanumeric string.</p> <p><i>name</i>—The result table index name.</p> <p><i>causevalue</i>—The cause value, an integer, where x = 1–173. The 0 value is added to enable the use of a wildcard for the cause value. A cause value of 0 is the default cause value.</p> <p><i>locationblock</i>—The location block number.</p> <p><i>setname</i>—The result set name.</p>
Output Description:	Varies

Example: `numan-add:cause:custgrpId="Nat1", causevalue=0, locationblock=1`  
`numan-add:cause:custgrpId="Nat1", causevalue=3, setname="chCause"`

Comments: Performance Impact Category: A

## NUMAN-DLT:CAUSE-Provision CAUSE Table

The locationblock and the setname cannot be provisioned at the same time.

Purpose: This MML command deletes one entry in the cause table.

Syntax: `numan-dlt:cause:custgrpId="Nat1", causevalue=0, locationblock=1`  
`numan-dlt:cause:custgrpId="Nat1", causevalue=3, setname="chCause"`

Input Description: *custgrpId*—The customer group ID, which is a previously defined 4-digit alphanumeric string.  
*name*—The result table index name.  
*causevalue*—The cause value, an integer, where  $x = 1-173$ . The 0 value is added to enable the use of a wildcard for the cause value. A cause value of 0 is the default cause value.  
*locationblock*—The location block number.  
*setname*—The result set name.

Output Description: Varies

Example: `numan-dlt:cause:custgrpId="Nat1", causevalue=0`  
`numan-dlt:cause:custgrpId="Nat1", causevalue=3`

Comments: Performance Impact Category: A

## Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, 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. It is located at

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

# Glossary

Table 2 contains acronym expansions used in this feature module.

**Table 2 Acronym Expansions**

Acronym	Expansion
MGC	Cisco Media Gateway Controller
PGW	PSTN Gateway

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