



Preface

Revised: January 20, 2011, OL-1141-21

This preface describes the objectives, audience, organization, and conventions of this document. It also explains how to find additional information on related Cisco products and services and how to obtain technical assistance, should it be needed. It contains the following sections:

- [Document Objectives, page xv](#)
- [Audience, page xv](#)
- [Document Organization, page xvi](#)
- [Document Conventions, page xvi](#)
- [Syntax Conventions, page xvii](#)
- [Obtaining Documentation and Submitting a Service Request, page xx](#)
- [Summary History of Document Changes, page xxi](#)

Document Objectives

This document describes the information that you will need to create, implement, and deploy dial plans for the Cisco PGW 2200 Softswitch Release 9.

The document also contains tables and worksheets for you to use to create dial plans for your system.

Audience

The primary audience for this document is network operators and administrators who have experience in the following areas:

- Telecommunications network operations
- Data network operations
- SS7 protocols, switching, and routing
- Telecommunications hardware
- Data network hardware

In addition, the following audiences might also find this document useful:

- Software and hardware installers

- Network designers

Document Organization

This document contains the chapters listed in [Table 1](#):

Table 1 **Document Organization**

Chapter	Title	Description
Chapter 1	Dial Plan and Routing	This chapter describes the functions that the dial plan enables the Cisco PGW 2200 Softswitch to perform. It describes the information you will need before you can create a dial plan. This chapter includes the following information: <ul style="list-style-type: none"> • Dial Plan and Routing Introduction • Dial Plan Overview • Dial Plan Selection Overview • Pre-analysis Overview
Chapter 2	Preparing for Dial Plan Provisioning	This chapter describes the actual process of creating implementing, and deploying a dial plan.
Chapter	Provisioning Dial Plans with the Cisco VSPT¹	This chapter describes the VSPT graphical user interface provisioning procedures for dial plans.
Chapter 4	Provisioning Dial Plans with MML²	This chapter describes the MML commands and provisioning procedures for dial plans.
Appendix A	NOA and NPI Codes, CPC and TMR Values³	This appendix lists NOA codes and NPI codes for the result types described in Chapter 1 .
Appendix B	Cause and Location Codes	This appendix lists the cause and location codes for the result types described in Chapter 1 .
Appendix C	Dial Planning Worksheets	This appendix contains page-size copies of all the worksheets used in this guide.

1. VSPT=Voice Services Provisioning Tool
2. MML=Man-Machine Language
3. NOA=Nature of Address
NPI=Numbering Plan Indicator

Document Conventions



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



Note

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

**Tip**

Means *the following information might help you solve a problem.*

**Timesaver**

Means the *described action saves time.* You can save time by performing the action described in the paragraph.

Syntax Conventions

In [Chapter 4, “Provisioning Dial Plans with MML,”](#) the same command syntax conventions are used as those shown by MML itself when the **HELP** command is entered within an MML session. For MML commands, Backus-Naur conventions are used. For additional information on MML command syntax, see the *Cisco PGW 2200 Softswitch Release 9 MML Command Reference*.

Conventions used throughout this guide are shown in [Table 2](#).

Table 2 **Conventions**

Convention	Meaning	Description / Comments
Boldface	Commands and keywords you enter as shown.	offset-list
<i>Italics</i>	Variables for which you supply values.	command <i>type interface</i> You replace the variable with the type of interface. In contexts that do not allow italics, such as online help, arguments are enclosed in angle brackets (< >).
Square brackets ([])	Optional elements.	command [abc] abc is optional (not required), but you can choose it.
Vertical bars ()	Separated alternative elements.	command [abc def] You can choose either abc or def, or neither, but not both.
Braces ({ })	Required choices.	command { abc def } You must choose either abc or def, but not both.
Braces and vertical bars within square brackets ({ })	A required choice within an optional element.	command [abc { def ghi }] You have three options: nothing abc def abc ghi

Table 2 **Conventions (continued)**

Convention	Meaning	Description / Comments
Caret character (^)	Control key.	The key combinations ^D and Ctrl-D are equivalent: Both mean “hold down the Control key while you press the D key.” Keys are indicated in capital letters, but are not case sensitive.
A nonquoted set of characters	A string.	For example, when setting an SNMP community string to <i>public</i> , do not use quotation marks around the string; otherwise, the string will include the quotation marks.
System prompts	Denotes interactive sessions, indicates that the user enters commands at the prompt.	The system prompt indicates the current command mode. For example, the prompt <code>Router (config) #</code> indicates global configuration mode.
Screen font	Terminal sessions and information the system displays.	
Angle brackets (< >)	Nonprinting characters such as passwords.	
Exclamation point (!) at the beginning of a line	A comment line.	Comments are sometimes displayed by the Cisco IOS software.

Data types used in the Cisco PGW 2200 Softswitch system (such as in MML commands) are shown in [Table 3](#).

Table 3 **Data Type Definitions**

Data Type	Definition	Example
Integer	A series of decimal digits from the set of 0 through 9 that represents a positive integer. An integer may have one or more leading zero digits (0) added to the left side to align the columns. Leading zeros are always valid as long as the number of digits is less than or equal to ten digits. Values of this type have a range of zero through 4294967295.	123 000123 4200000000
Signed integer	This data type has the same basic format as the integer but can be either positive or negative. When negative, it is preceded by the sign character (-). As with the integer data type, this data type can be as many as ten digits in length, not including the sign character. The value of this type has a range of 0 minus 2147483647 through 2147483647.	123 -000123 -21000000001

Table 3 **Data Type Definitions (continued)**

Data Type	Definition	Example
Hexadecimal	A series of 16-based digits from the set of 0 through 9, a through f, or A through F. The hexadecimal number may have one or more leading zeros (0) added to the left side. For all hexadecimal values, the maximum size is 0xffffffff (eight hexadecimal digits).	1f3 01f3000
Text	A series of alphanumeric characters from the ASCII character set, where defined. Tab, space, and double quote (") characters cannot be used. Text can be as many as 255 characters; however, it is recommended that you limit the text to no more than 32 characters for readability.	EntityID LineSES_Threshold999
String	A series of alphanumeric characters and white-spaces. A string is surrounded by double quotes (" "). Strings can be as many as 255 characters; however, it is recommended that you limit the strings to no more than 80 characters for readability.	"This is a descriptive string."

Hexadecimal and integer fields in files may have different widths (number of characters) for column alignment.

Documentation Roadmap and Documentation Suite

Consult the following related documentation for information about the Cisco PGW 2200 Softswitch software and the solutions it supports, including the Cisco SS7 Interconnect for Access Servers Solution and the Cisco SS7 Interconnect for Voice Gateways Solution and the Cisco Packet Tandem Solution.

Documentation Roadmap

You can find the Cisco PGW 2200 Softswitch Documentation Map at the following URL:

http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/products_documentation_roadmaps_list.html

Hardware Documentation

- *Cisco PGW 2200 Softswitch Hardware Installation Guide*
- *Cisco Media Gateway Controller Release 9 Regulatory Compliance and Safety Information*

Software Installation and Configuration Documentation

- *Cisco Media Gateway Controller Software Release 9 Installation and Configuration Guide*
- *Cisco PGW 2200 Softswitch Release 9 Provisioning Guide (through Release 9.7)*

- *Cisco Media Gateway Controller Software Release 9 Billing Interface Guide*
- *Cisco PGW 2200 Softswitch Release 9 MML Command Reference*
- *Cisco PGW 2200 Softswitch Release 9 Messages Reference*
- *Cisco PGW 2200 Softswitch Release 9 Operations, Maintenance, and Troubleshooting Guide*
- *Release Notes for Cisco PGW 2200 Softswitch Release 9.7(3)*
- *Cisco Media Gateway Controller Online Documentation Notice*
- *Cisco Media Gateway Controller SLT Documentation Notice*
- *Cisco Billing and Measurements Server User's Guide*

Gateway Documentation

Cisco DAS and H.323 VoIP Gateway Installation and Configuration Guide

Terminology

The following terms are used in this document:

- Cisco PGW 2200 Softswitch host—A Sun host server running Cisco PGW 2200 Softswitch software.
- Cisco PGW 2200 Softswitch node—An active and standby Cisco PGW 2200 Softswitch.
- Simplex Cisco PGW 2200 Softswitch node—A node that uses a single Cisco PGW 2200 Softswitch host. Typically, such nodes are used for solution evaluation tests or for small installations. In this configuration, any loss of service in the Cisco PGW 2200 Softswitch host disrupts all call traffic.
- Continuous-service Cisco PGW 2200 Softswitch node—A node that uses two Cisco PGW 2200 Softswitch hosts to prevent system downtime caused by failure of a single host. Calls in progress are maintained when one Cisco PGW 2200 Softswitch host fails. Continuous-service nodes use ITP-Ls to preprocess SS7 signaling and distribute signaling to both Cisco PGW 2200 Softswitch hosts. If a failover occurs, all stable calls are maintained. A continuous-service node may also be referred to as a fault-tolerant node or an active-standby PGW pair.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, 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>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

Summary History of Document Changes

Table 4 describes the document changes made after the initial release of the *Cisco PGW 2200 Softswitch Release 9 Dial Plan Guide (through Release 9.7)*.

Table 4 Summary History of Document Changes

Subject	Document Number and Change Date	Change Summary
Result Type Definitions	OL-1141-21, January 20, 2011	Updated Dataword1 values of the A_NUM_NPI_TYPE result type in Chapter 1, “Dial Plan and Routing.”
Note about software migration requirement.	OL-1141-19	Added note on software migration requirement to page 3-2.
Result Type Definitions	OL-1141-18, May 11, 2010	Updated parameter descriptions of result type IN_TRIGGER, in Chapter 1.
Cause analysis and location	OL-1141-17, April 9, 2010	Updated the “Cause Analysis” section on page 67, and the “Location” section on page 68 in Chapter 1, “Dial Plan and Routing.”
Result types and provisioning procedures	OL-1141-16, January 6, 2010	Added new and modified result types in Chapter 1, “Dial Plan and Routing,” and dial plan provisioning procedures in Chapter 4, “Provisioning Dial Plans with MML.”
Cause code value	OL-1141-15, December 15, 2009	Added the internal cause code, IC_IN_SERVICE_UNAVAILABLE in Appendix B “Cause and Location Codes.” Removed detailed parameter information in Chapter 4. The detailed parameter information can be found in <i>Cisco PGW 2200 Softswitch Release 9 MML Command Reference</i> .
Cause analysis	OL-1141-14, November 23, 2009	Updated the cause analysis description on cause codes and locations in Chapter 1. Updated Figure 1-3, Pre-analysis Stages .
Result Type Definitions	OL-1141-13, November 5, 2009	Updated Full Number Translations behavior option enhancement for result type NUM_TRANS, in Chapter 1.
Deleting a component from a dial plan	OL-1141-12, October 19, 2009	Updated the section, Deleting a Component from a Dial Plan, in Chapter 4.
Cause code and CPC code mapping updates	OL-1141-12, October 19, 2009	Updated cause code and Calling Party Category (CPC) code mapping in Appendix A and B.
CPC index updates	OL-1141-11, August 28, 2009	Added CPC index for the following variants in Appendix A, “NOA and NPI Codes, CPC and TMR Values” . <ul style="list-style-type: none"> Q.761 Danish variant CPC index Q.761_97Ver and Q.767 Russian variant CPC index

Table 4 **Summary History of Document Changes (continued)**

Subject	Document Number and Change Date	Change Summary
Release 9.7 features	OL-1141-10, November 17, 2007	Added information for Release 9.7 features.
Redirect Server feature	OL-1141-09, October 29, 2007	Added information for the Redirect Server feature.
Ring Back Service using CPC=3	OL-1141-09, August 23, 2007	<p>Added information to support the Ring Back Service using CPC=3 for Voice Messaging feature.</p> <p>Revised Figure 1-6 to add result numbers 45 and 46, which enable validation of dw2 in the CPMOD result type.</p> <p>Revised Appendix B, “Cause and Location Codes” to include updated cause codes for the SIP Support for Individual Cause Mapping feature.</p>
AMODDIG updates	OL-1141-08, August 12, 2005	<p>Added information regarding dataword4 for AMODDIG.</p> <p>Revised Figure 1-17, Figure 1-18, and Figure 1-20.</p> <p>Updated to include information for software Release 9.6(1), which includes adding B_NBR_MOD_MWI, LOC_LABEL, and OVERRIDE_CALLIM.</p>

Table 4 Summary History of Document Changes (continued)

Subject	Document Number and Change Date	Change Summary
Multiple feature updates	OL-1141-07, June 17, 2004	<p>Added the maximum number of dial plans to Table 4-4.</p> <p>Changed duration to playduration for the announcement command in Chapter 5.</p> <p>Changed the transmitted PRI cause code to ICPNormalUnspecified in Table B-13 for IC_MESSAGE_NOT_UNDERSTOOD, IC_SIGNAL_NOT_UNDERSTOOD, IC_SIGNAL_NOT_VALID, and IC_SIGNALLING_SYSTEM_INCOMPATIBLE.</p> <p>Added Deleting a Digit String Range and the following four examples in Chapter 4.</p> <p>Changed the internal cause in Table B-39 for code 400 to IC_TEMPORARY_FAILURE.</p> <p>Added a Note in Chapter 4 regarding the addition of the partial parameter.</p> <p>Added a Note in Chapter 4 regarding the setting of SysConnectDataAccess.</p> <p>Added a Note in Chapter 4 regarding provisioning the charge origin parameter.</p> <p>Revised the internal cause code value tables and the received Q.761 cause code value tables in Appendix B.</p> <p>Added information for software Release 9.5(2), including the following new result types: ATM_ORIG_PROFILE, ATM_TERM_PROFILE, REDIRECT, CHARGE_MODE_IND, CHARGE_IND, B_NBR_MOD_MWI, IN_SERVICE_KEY. Revised the description of the CALL_CUTOFF_TIMER, CHARGE, and IN_TRIGGER result types.</p>

Table 4 Summary History of Document Changes (continued)

Subject	Document Number and Change Date	Change Summary
	OL-1141-06, October 30, 2003	<p>Added CPC value of 107 in Appendix A.</p> <p>Added internal cause value 169 in Appendix B.</p> <p>Added a Note in Chapter 1 regarding result matching action.</p> <p>Added a Note in Chapter 4 regarding the DEFAULT value for cliprefix.</p> <p>Added information for software Release 9.4(1) including the following new result types: A_NUMNPI_TYPE, CG_PN_COPY, CG_SCREEN_IND, PNMODDIG, PN_NPI_TYPE, PN_NUMBER_TYPE, PN_PRES_IND, PN_SCREEN_IND, RMODDIG, and R_NUMBER_TYPE; along with SIP cause codes.</p> <p>Revised the description of “CC_DIG” section on page 24.</p>
	OL-1141-05, April 30, 2003	<p>Revised the reattempts definition under RETRY_ACTION.</p> <p>Added text under Adding a Cause (CAUSE) indicating that you can use either locationblock or setname, but not both.</p> <p>Added Provisioning the Announcement.</p>
	OL-1141-04, December 9, 2002	<p>Updated to include information for software Release 9.3(2).</p> <p>Revised the reattempt definition under RETRY_ACTION.</p>
	OL-1141-03, September 19, 2002	<p>Updated to include information for software Release 9.3(1).</p> <p>Added the following result types:</p> <ul style="list-style-type: none"> • NEW_DIALPLAN • A_NUM_DP_TABLE • MGCPDIALPKG • RETRY_ACTION <p>Added the following parameters:</p> <ul style="list-style-type: none"> • Ta1Timeperiod • Ta2Timeperiod • Ta3Timeperiod • ExpiryWarningToneDuration • ExpiryWarningToneType

Table 4 *Summary History of Document Changes (continued)*

Subject	Document Number and Change Date	Change Summary
	OL-1141-02, April 17, 2002	Updated for software Release 9.2.
	OL-1141-01, October 18, 2001	Initial release.

