



CHAPTER 2

Preparing for Dial Plan Provisioning

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This chapter describes the prerequisite tasks you need to perform before you can begin provisioning a dial plan. It also describes the tools you will use, and provides detailed information on the dial plan parameters and syntax conventions that you will need to be familiar with as you create your dial plan. This chapter includes the following sections:

- [Provisioning Prerequisites, page 2-1](#)
- [Provisioning Tools, page 2-3](#)
- [Creating a Dial Plan, page 2-5](#)
- [Dial Plan Text File, page 2-6](#)



Note

The Cisco PGW 2200 Softswitch uses, an active system and a standby system, for maximum reliability. The dial plans discussed in this chapter apply to both the active and standby Cisco PGW 2200 Softswitches. You need only create one dial plan and deploy that dial plan on both the active and standby Cisco PGW 2200 Softswitches.



Tip

[Appendix C, “Dial Planning Worksheets,”](#) provides a set of blank worksheet forms you can use to create your dial plan. When you start creating your dial plan, copy these forms and write on the copies. This way you can make additional copies of the forms if you need them.

The following sections describe recommended practices to assist you in provisioning dial plans for the Cisco PGW 2200 Softswitch.

Provisioning Prerequisites

This section describes the tasks that must be completed and the information that you need before you start dial plan provisioning.

Prerequisite Tasks

The following steps describe the tasks you should perform prior to using this dial plan guide.

Step 1 Plan and diagram your network configuration in detail.

A detailed network diagram is essential when creating a dial plan. *Refer to the respective solution overview and provisioning documentation for detailed information about a particular solution.*

Step 2 Set up the hardware components used in your solution and install all required software.

Before you start the dial planning process, you should prepare the Cisco PGW 2200 Softswitch hardware and software as described in the following manuals:

- *Cisco PGW 2200 Softswitch Hardware Installation Guide*
- *Cisco PGW 2200 Softswitch Regulatory Compliance and Safety Information*
- *Cisco PGW 2200 Softswitch Hardware Installation and Configuration Guide*¹
- *Cisco PGW 2200 Softswitch Release 9 Installation and Configuration*
- *Cisco PGW 2200 Softswitch Release 9 Provisioning Guide*

You should also see the solution specific provisioning guide for your solution.

Step 3 Complete all provisioning worksheets, including filling in the names and IP addresses of all devices, attributes, properties of components, circuit designations, and all other necessary information.

For blank copies of the necessary provisioning worksheets see the *Cisco PGW 2200 Softswitch Release 9 Provisioning Guide*.

Prerequisite Information

This guide provides a set of blank worksheets in [Appendix C, “Dial Planning Worksheets,”](#) that you can copy and fill in with the dial plan information specific to your system. Before you can complete the dial plan provisioning worksheets, you must collect provisioning information about all the available trunks.

During the provisioning process, all the bearer trunks that connect remote switches to all the media gateways attached to the *Cisco PGW 2200 Softswitch* were defined. Each remote switch is identified by its destination point code (DPC), and each trunk is identified by its trunk ID or Circuit Identification Code (CIC).

[Table 2-1](#) provides space for you to enter the following information:

- **Trunk ID**—Designation assigned to a trunk.
- **Source Signaling Service**—MML name of the previously defined source signaling service. Valid signaling services are ISDN PRI, DPNSS, or any SS7 signaling service.
- **Source Span**—Number of circuits assigned to the source span (range 0 through 65535).
- **Source Span ID**—Identification assigned to the source span (range 0 through 65535).
- **Source Time Slot/CIC**—Time slot or Circuit Identification Code (CIC) (range 0 through 31).
- **Destination Signaling Service**—MML name of a previously defined destination signaling service. Valid signaling services are ISDN PRI, DPNSS, or any SS7 signaling service.
- **Destination Span**—Number of circuits assigned to the destination span (range 0 through 65535).
- **Destination Span ID**—Identification assigned to the destination span (range 0 through 65535).
- **Destination Time Slot/CIC**—Time slot or Circuit Identification Code (CIC) (range 0 through 31).
- **Line Type**—T1 or E1.

1. Refer to the *Hardware Installation and Configuration Guide* for the media gateway used in your solution.

- **Multiple Trunk Field**—Number of trunks per span (greater than 0, but less than or equal to 31).
- The ingress and egress trunk IDs must match the corresponding trunk IDs used on the remote switches. The circuit identification codes (CIC) are the SS7 values representing the trunks and must also match the CIC values defined at the remote switches.
- The destination span ID and destination time slot must match the trunk configuration values defined during *Cisco PGW 2200 Softswitch* configuration. The destination span ID is defined when configuring T1 and E1 controllers and must match the value of the `nfas_int` parameter. T1 spans use channels (time slots) 1-24 and E1 spans use time slots (channels) 0-31.
- To save space, you might want to specify ranges of trunk IDs for each T1 or E1 connection. For large installations, you should make copies of this table or create your own worksheet with these columns.
- For more information on media gateway configuration, see the *appropriate Media Gateway Installation and Configuration Guide for your solution*. Keep in mind that some of the procedures performed might vary depending on the configuration of your solution.

Table 2-1 Trunk Worksheet Example

Trunk ID	Source Signaling Service	Source Span	Source Span ID	Source Time slot/CIC	Destination Signaling Service	Dest Span	Dest Span ID	Dest Time Slot/CIC	Line Type	Multiple Trunk Field
101	ss7srv	fixed	ffff	1	signal-1	fixed	0	1	T1	24

Provisioning Tools

The Cisco PGW 2200 Softswitch includes two tools that you can use to provision the dial plan:

- The Voice Services Provisioning Tool (VSPT), a graphical user interface (GUI) application.
- The Man-Machine Language (MML), a command-line interface (CLI) application.

You can use both the VSPT and MML to provision the dial plan for a Cisco PGW 2200 Softswitch; however, only one provisioning session can be supported at one time by either the VSPT or MML.

Voice Services Provisioning Tool

The VSPT can be used to provision Cisco PGW 2200 Softswitch dial plan components. The VSPT makes provisioning easier by listing all dial plan components that must be configured in the Number Analysis tab and by providing dialog boxes that display all configuration parameters for each dial plan component.

- For detailed instructions for launching and using the VSPT, see the *Cisco PGW 2200 Softswitch Release 9 Provisioning Guide*.
- For more information on provisioning a dial plan with VSPT, see [Chapter 3, “Provisioning Dial Plans with the Cisco VSPT.”](#)

Provisioning with MML Commands

[Table 2-2](#) lists the major MML commands used to provision and deploy dial plans as well as the corresponding VSPT command names.

Table 2-2 MML Commands

MML Command Name	VSPT Command Name	Description
numan-add	Number analysis add	Adds an element to the dial plan table.
numan-dlt	Number analysis delete	Deletes an element from the dial plan table.
numan-ed	Number analysis edit	Edits an element in the dial plan table.
numan-rtrv	Number analysis retrieve	Retrieves an element from the dial plan table.
prov-add	Provisioning add	Adds provisioning data.
prov-dply	Provisioning deploy	Deploys the provisioning data (dial plan).
prov-cpy	Provisioning copy	Commits the provisioning data (dial plan).
prov-exp	Provisioning export	Creates a dial plan export file in MML format for each configured dial plan.

Although MML requires more keystrokes, quick dial plan updates can sometimes be made faster using MML commands, because you do not have to go through the process of launching the VSPT and navigating to the proper screen. When you enter MML commands into a batch file, you can copy and paste commands to speed entry. You can also copy and modify MML scripts, which are collections of individual MML commands, to configure additional dial plans.

After you create a dial plan or add information to an existing dial plan, you must enter a **prov-cpy** command.

For more information on provisioning a dial plan using MML commands, see [Chapter 4, “Provisioning Dial Plans with MML.”](#)

You may see different dial plan component names used in the VSPT and MML tools. When you begin provisioning, provision components using the name that applies to the provisioning tool you are using.

You can use VSPT and MML to provision the Cisco PGW 2200 Softswitch; however, only one configuration session can be supported at one time by MML. Table 2-3 lists some of the features of VSPT and MML and provides some guidelines for selecting between the two tools.

Table 2-3 Voice Service Provisioning Tool, and MML Features

Specification/Feature	Voice Service Provisioning Tool	MML
System basics	X Window System GUI front end Any client software supporting the X Window System, such as Reflection, can be used.	CLI that interacts directly with Cisco PGW 2200 Softswitch
System hardware/software requirements	Sun SPARCstation running Solaris 2.6 OS or later Running VSPT on the same host as the Cisco PGW 2200 Softswitch can have an adverse impact on performance. We recommend using a separate server.	Runs on the Cisco PGW 2200 Softswitch host server
Best used for	Some experience required; easy to use	<ul style="list-style-type: none"> • Creating batch files to configure MGCs or retrieve measurements • Modifying configurations • Scaling large configurations • Troubleshooting

Creating a Dial Plan

The remaining sections in this chapter describe how to plan for dial plan provisioning and provide sample dial plans for Cisco PGW 2200 Softswitch software Release 9.3(2).

Dial Plan Creation Rules

The dial plan is used to identify and analyze unique calling number (A-number) or called number (B-number) digit strings. Keep in mind the following issues when creating your dial plan:

- Each number (calling or called) is a unique digit string
- The number is either an A-number (calling number) or a B-number (called number)
- You must create a subset string before creating a superset string

Dial Plan Provisioning Sequence

The order in which you provision dial plan tables is important. Many tables see other tables that must be defined first. When you create the tables described in Chapter 1, create them in the order described.

The following list identifies the recommended sequence for dial plan provisioning:

1. Create the dial plan file (unique CustGrpID)

2. Provision Digit Modification
3. Provision the Service
4. Provision the Result and Result Sets
5. Provision the A-numbers and B-numbers
6. Provision CPC
7. Provision TMR analysis
8. Provision B-number NOA and NPI analysis
9. Provision TNS
10. Provision NANP B-number normalization
11. Provision the Location value
12. Provision the Cause value
13. Provision the A and B Whitelist and Blacklist screening files

**Note**

When provisioning dial plans, the `*.SysConnectDataAccess` property (in `XECfgParm.dat`) must be set to **true** to allow database access for A-number screening, LNP, and other dial plan functions. Refer to the *Cisco PGW 2200 Softswitch Release 9 Installation and Configuration Guide* for more information on software configuration settings.

Dial Plan Text File

After planning your dial plan, you can create a dial plan text file containing all the MML commands for use as a batch file.

Here is a sample batch file for your reference.

For more details on creating and executing a batch file, see the [“Creating a Batch File”](#) section and the [“Executing a Batch File”](#) section in the *Cisco PGW 2200 Softswitch Release 9.8 Provisioning Guide*.

**Note**

The MML commands in the sample file are for illustration purposes.

```
prov-add:rttrnkgrp:name="1111",type=0
prov-add:rttrnkgrp:name="2222",type=0,reattempts=5,queuing=2,cutthrough=3
prov-add:rttrnk:name="route1",trnkgrpnum=1111,weightedtg="ON"
prov-ed:rttrnk:name="route1",trnkgrpnum=2222,weightedtg="ON"
prov-ed:rttrnk:name="route2",trnkgrpnum=2222
prov-ed:rttrnk:name="route3",trnkgrpnum=2222
prov-add:rtlist:name="routelist1",rtname="route2",distrib="OFF"
prov-add:rtlist:name="routelist2",rtname="route1",distrib="ON"
prov-add:rtlist:name="routelist3",rtname="route3",distrib="OFF"
numan-add:dialplan:custgrpId="dpl1"
numan-add:resultset:custgrpId="dpl1",name="set1"
numan-add:resulttable:custgrpId="dpl1",name="route",resulttype="ROUTE",dw1="routelist1",
setname="set1"
numan-add:bdigtrees:custgrpId="dpl1",callside="originating",digitstring="0",setname="set1"
numan-add:bdigtrees:custgrpId="dpl1",callside="originating",digitstring="1",setname="set1"
```