



# Provisioning Overview

The provisioning process described in this document applies to all solutions running Release 7 media gateway controller (MGC) software.

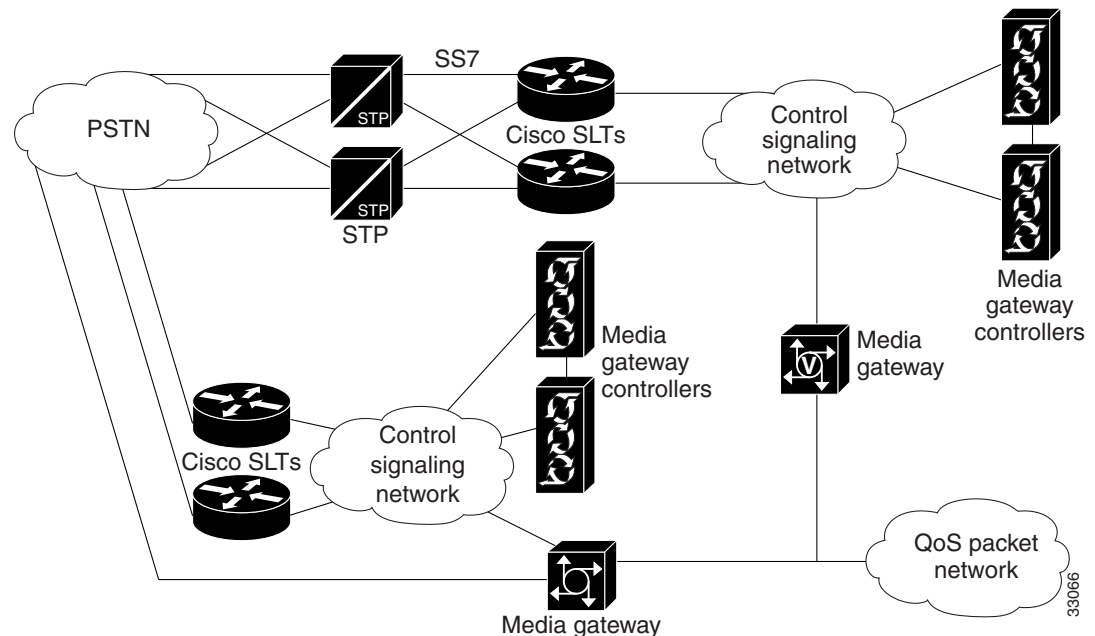
The provisioning overview prepares the Cisco MGC platform using the Cisco MGC software to communicate with the Signaling System 7 (SS7) network and with the media gateway controller exchange components that control bearer-traffic routing. This chapter contains the following sections:

- [Provisioning Prerequisites, page 1-1](#)
- [Configuring the Media Gateway Controller, page 1-11](#)

## Provisioning Prerequisites

This section describes the tasks that must be completed before provisioning and describes the configuration information for the major components shown in [Figure 1-1](#) that you need before you get started.

**Figure 1-1** Provisioning Major Components for the Media Gateway Controller Software



## Task Checklist

The following task checklist presents the steps you should have performed before using this guide.

<b>Step 1</b>	Plan your network configuration. A detailed network diagram is very helpful when provisioning.	<ul style="list-style-type: none"> <li>Refer to the respective solution overview document.</li> </ul>
<b>Step 2</b>	Set up your hardware components and install all required software.	<ul style="list-style-type: none"> <li><i>Cisco Media Gateway Controller Hardware Installation Guide</i></li> <li><i>Cisco Media Gateway Controller Software Release 7 Installation and Configuration Guide</i></li> <li><i>Cisco Media Gateway Controller Online Documentation Notice</i></li> <li><i>Cisco Media Gateway Controller SLT Documentation Notice</i></li> <li><i>Cisco SS7 Interconnect for Access Servers and Voice Gateways Solutions Media Gateway Guide</i></li> </ul>
<b>Step 3</b>	Complete provisioning worksheets, including filling in names and IP addresses of machines, names, attributes, and properties of components, and other necessary information.	<ul style="list-style-type: none"> <li><a href="#">Chapter 1, “Provisioning Overview”</a> (this chapter)</li> <li><a href="#">Chapter 2, “Planning for Provisioning”</a></li> </ul>

## Prerequisite Tasks

Before you start the provisioning process, you should prepare the Cisco MGC hardware and software as described in the following manuals:

- Cisco Media Gateway Controller Hardware Installation Guide*
- Cisco Media Gateway Controller Software Release 7 Installation and Configuration Guide*

## Prerequisite Overview

The following list identifies one possible sequence of events for provisioning:

- Adding external nodes for each device connected to the network
- Adding point codes (OPC, DPC, and APC)
- Adding the interface cards
- Adding SS7 signaling service
- Adding gateway signaling service
- Adding linksets
- Adding C7 IP links (redundant)
- Adding IP links

- Adding SS7 routes
- Adding SS7 subsystem
- Adding trunks (x24 or x31)

This guide provides worksheets to be copied and filled in with information specific to your system. Keep in mind that the steps described and the procedures performed will vary depending on your specific system.

## Prerequisite Provisioning Information

Before you can complete the provisioning planning tables in Chapter 2, you must collect the following information:

- Device addresses
- SS7 point codes
- Media gateway controller interface card information
- Trunk identification data

## Collecting External Device Addresses

For the control signaling network, each device attached to the network that has a unique IP address assigned to it must be listed in [Table 1-1](#). In addition to the device IP address, a device name, and a description should also be provided.

**Table 1-1 External Device Worksheet Example**

Device IP Address (x.x.x.x)	Device Name	Description
10.15.7.34	as5300-34	Media Gateway 5300-34

## Collecting SS7 Point Code Data

The SS7 point codes are SS7 network addresses that uniquely identify every switch, Signal Transfer Point (STP), and MGC node on the SS7 network. To communicate with the SS7 network, you must get the SS7 point codes for your Cisco MGC and for every SS7 network device with which you are to communicate. At a minimum, you need at least one origination point code (OPC) for the MGC node and one destination point code (DPC) for the remote switch. If you plan to connect the Cisco MGC to STPs, you need an adjacent point code (APC) for every STP to which you connect.



**Table 1-3 Media Gateway Controller Network Interface Card Types (continued)**

Card	Type Designation	Card Slot Location	Action	Description
Ethernet interface card	EN			Used for connections to Cisco SLTs and MGWs. This is the normal configuration for Dial Access.
ATM interface card	ATM_NIC			Reserved for future use.

**Table 1-4 Media Gateway Controller Interface Card Worksheet Example**

Card Type	Name	Card Slot <sup>1</sup>	System Variable	IP Address	Description
EN	en-1	0	IP_Addr1	214.135.233	Ethernet IF 1
EN	en-2	1	IP_Addr2	214.135.235	Ethernet IF 2

1. Ethernet cards do not need a slot number.

## Collecting SS7 Signaling Service Data

When configuring connections between the Cisco MGC and the SS7 signaling network, you must be ready to enter the following information about the SS7 service for the link to be created.

- Service type
- Name
- Description
- Protocol type
- Side (MGC side or SS7 side)

This SS7 signaling service link information can be listed in [Table 1-5](#).

**Table 1-5 SS7 Signaling Service Worksheet Example**

Service Type	Name	Description	Protocol	Side
SS7	ss7-135034	SS7 path to MGC1	ANSISS7_STANDARD	SS7

**Table 1-5 SS7 Signaling Service Worksheet Example (continued)**

Service Type	Name	Description	Protocol	Side

## Collecting NAS Signaling Service Data

The signaling service between the Cisco MGC and the media gateway (MGW) needs to be defined for each pair attached to the network. You must be ready to enter the following information about the MGW signaling service:

- Service type
- Device
- Description
- Protocol service
- Side

This NAS signaling service link information can be listed in [Table 1-6](#).

**Table 1-6 NAS Signaling Service Worksheet Example**

Service Type	Device	Description	Protocol	Side
MGCP	MGW1	NAS1 from MGW1	BELL_1268_C3	MGC

## Collecting Linkset Data

The linkset must be defined for each link between the Cisco MGC and the adjacent STP. If there are two adjacent STPs, you need to create two linksets (for example, LS01 and LS02). A linkset can contain from 1 to 16 links. You must be ready to enter the following information about each linkset:

- Point code
- Type of component
- Name
- Description
- Protocol
- IP transport type

This linkset information can be listed in [Table 1-7](#).

**Table 1-7 Linkset Worksheet Example**

Point Code	Type of Component	Name	Description	Protocol	IP Transport Type
ls-stpa	APC	stpa	LS01 to STPA	SS7-ANSI	IP
ls-stpb	APC	stpb	LS02 to STPB	SS7-ANSI	IP

## Collecting Cisco SLT Data

A link must be defined for each path from the Cisco SLT to the Cisco MGC. There must be one link (two maximum) for each Ethernet card in the Cisco MGC. The link corresponds to the linksets you previously created. You will create a linkset pair for each linkset that exists in your system. For example, if your system has two linksets, you will create two links for each linkset, resulting in your creating a total of four links. You must be ready to enter the following information about each Cisco SLT linkset:

- Description
- Linkset name
- Card interface type
- Linkset type
- Linkset rate
- Protocol family variant
- Cisco SLT IP address
- MGC IP address

This linkset information can be listed in [Table 1-8](#).

**Table 1-8 Cisco SLT Linkset Worksheet Example**

Description	Linkset	Card Interface	Linkset Type	Linkset Rate	Protocol	Cisco SLT IP Address	MGC IP Address
Signaling Link 2 to SLT1	ls-stpa	T1	A link	64 kbps	SS7-ANSI	10.15.7.5	10.15.7.8
Signaling Link 2 to SLT1	ls-stpb	T1	A link	64 kbps	SS7-ANSI	10.15.7.5	10.15.7.8

## Collecting C7 IP Link Data

A C7 IP link needs to be defined for each physical SS7 link that is connected to the SS7 network by the Cisco SLT. The C7 IP links correspond to linksets you previously created. You must be ready to enter the following information about the C7 IP link:

- Description
- Line interface
- IP address
- Port number
- Priority
- Peer IP address
- SLC
- Linkset
- Time slot

This C7 IP link information can be listed in [Table 1-9](#).

**Table 1-9 C7 IP Link Worksheet Example**

Description	Line Interface	IP Address	Port Number	Priority	Peer IP Address	SLC	Linkset	Time slot
Signaling link 1 to SLT1	en-1	IP_Addr1	7000	1	10.15.7.5	1	ls-stpa	0
Signaling link 2 to SLT1	en-1	IP_Addr1	7000	1	10.15.7.5	1	ls-stpb	1

## Collecting IP Link Data

An IP link needs to be defined from the MGW to the Cisco MGC (MGC path), from the Cisco MGC to the SLT (SS7 MTP3 backhaul path), from one Cisco MGC to another Cisco MGC (EISUP path), and from each NAS to the Cisco MGC. You must be ready to enter the following information about the IP link:

- Description
- Line interface
- IP address
- Port number
- Priority
- Peer IP address
- Peer port field



- Service

This IP link information can be listed in [Table 1-10](#).

**Table 1-10 IP Link Worksheet Example**

Description	Line Interface	IP Address	Port Number	Priority	Peer IP Address	Peer Port Field	Service
MGC-lnk34	en-1	IP_Addr1	2427	1	10.15.7.5	2427	mgcp-34

## Collecting SS7 Route Data

You must define an SS7 route for each signaling route from the Cisco MGC to the PSTN switch. There must be an SS7 route for each linkset. You must be ready to enter the following information about the SS7 route to be created:

- Name
- Description
- Signal DPC
- Linkset
- OPC

This SS7 route information can be listed in [Table 1-11](#).

**Table 1-11 SS7 Route Worksheet Example**

Name	Description	DPC	Linkset	OPC
rt1-stpa	Route direct to STPA	stpa	ls-stpa	opc
rt1-stpb	Route direct to STPB	stpb	ls-stpb	opc

## Collecting SS7 Subsystem Data

An internal SS7 subsystem must be defined that connects each mated pair of STPs. This allows the Cisco MGC to route traffic over the C-links between the STPs. Thus if one STP fails, the Cisco MGC can route traffic over a C-link to the other STP. You must be ready to enter the following information about the SS7 subsystem:

- Name
- Description
- APC
- Mated APC
- Protocol family
- Priority
- Subsystem number
- STP-to-SCP index (not required for mating STP pairs)
- Transport protocol (not required for mating STP pairs)

This SS7 subsystem information can be listed in [Table 1-12](#).

**Table 1-12 SS7 Subsystem Worksheet Example**

APC	Mated APC	Description	Protocol Family	Priority	Subsystem Number	STP-SCP Index	Transport Protocol
LNP-1	stpa	LNP to STPA	SS7 ANSI	1	0	1	SCCP
LNP-2	stpb	LNP to STPB	SS7 ANSI	1	0	1	SCCP

## Collecting Trunk Data (Nailed)

During the provisioning process, you must define all of the bearer trunks that connect remote switches to the media gateway. Each remote switch is identified by its DPC, and each trunk is identified by the trunk ID. [Table 1-13](#) provides space for you to provide the following information for the trunks coming from remote switches:

- Trunk ID
- Source signaling service
- Source span
- Source span ID
- Source time slot/CIC (1)
- Destination signaling service



**Figure 1-2 Major Configuration Components for the Media Gateway Controller Software**

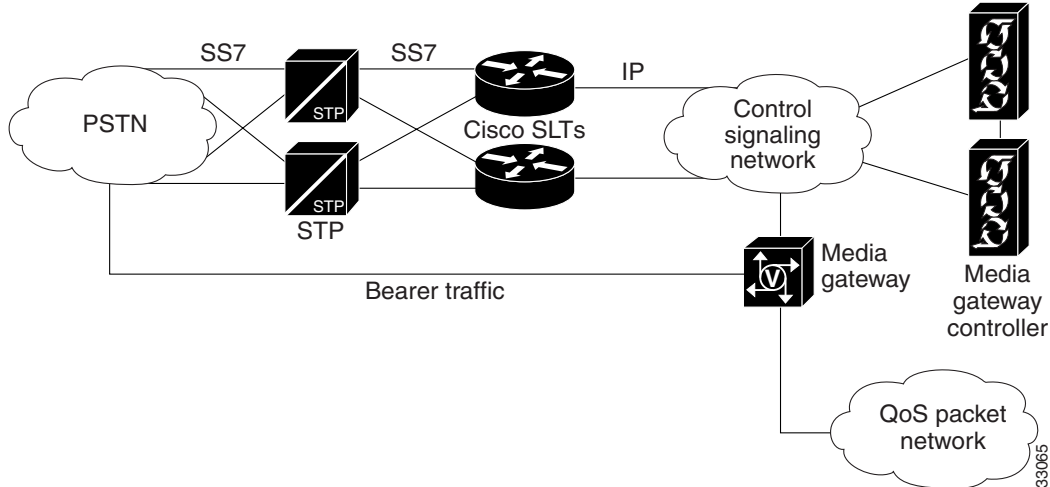


Figure 1-2 is a simplified view of the Cisco MGC; it does not show all system components and interdevice links. Most of the links shown represent multiple connections between devices.

The Cisco MGC shown in Figure 1-2 is the device that runs the Cisco MGC software. When you provision the Cisco MGC software, you are configuring communications between the Cisco MGC and at least one external SS7 Signaling Point (SP). Service Switching Points (SSPs) and Signal Transfer Points (STPs) are two types of SPs to which the Cisco MGC can connect. The Cisco MGC connects to SSPs directly using fully associated links (F-links) or indirectly through STPs using access links (A-links).

Within the media gateway, you must also provision the Cisco MGC connections to the MGW and define the bearer trunks that connect to the MGW. The connections between the Cisco MGC and the MGW are used to exchange signaling information between the SS7 network and the signaling protocol used on the quality of service (QoS) packet network. The bearer trunks transport call traffic between the remote switch and the Cisco MGC. This call traffic passes through the gateway to destinations on the QoS packet network.

To provision the Cisco MGC, you define software components for each of the entities shown in Figure 1-2. To define the connections between entities, you specify parameters for each component. Planning for provisioning is important, because many components cannot be configured until others have been provisioned. For example, you cannot provision links between two devices until you have provisioned the individual devices. Chapter 2, “Planning for Provisioning,” explains these dependencies and how to plan for provisioning in the correct sequence.

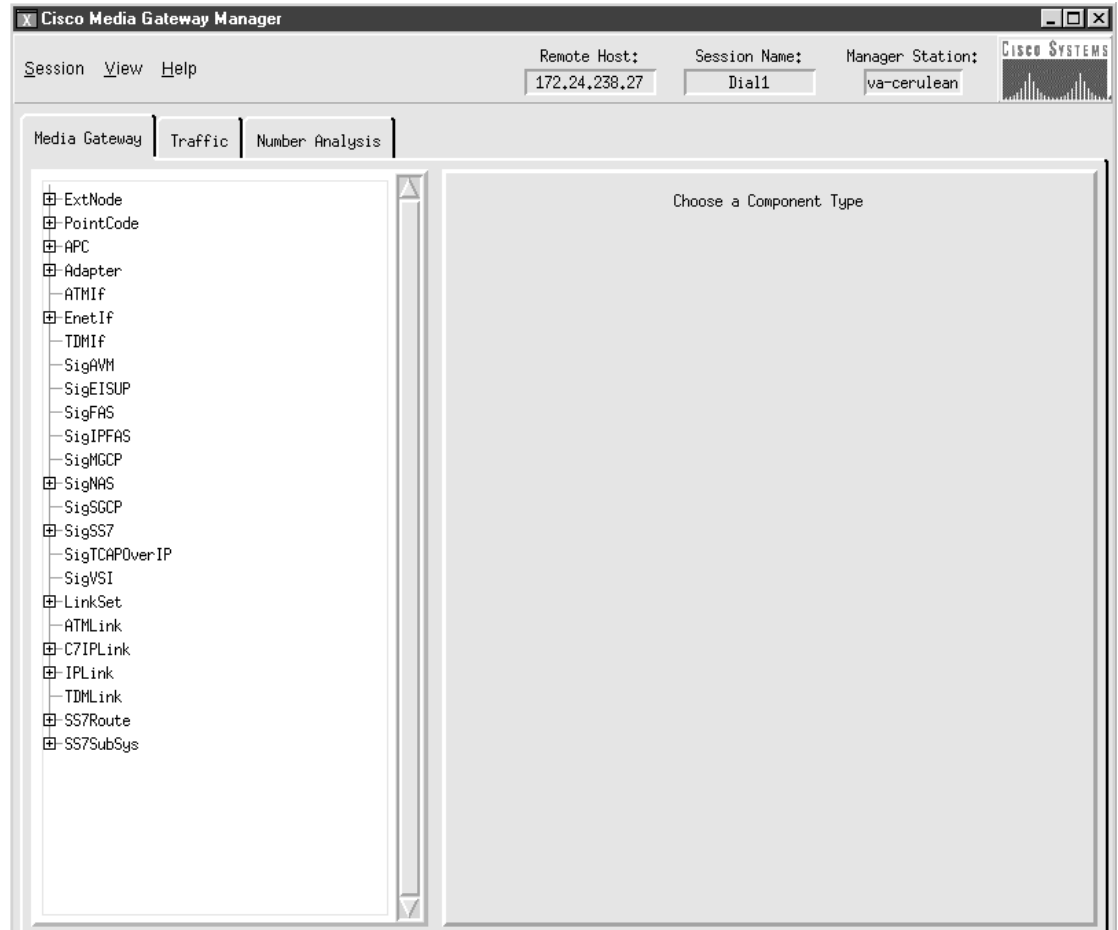
## Provisioning Tools

The Cisco MGC includes two tools that you can use to provision the software:

- The Telephony Controller Manager (TCM) graphical user interface (GUI) application for Release 7.3(x) or the Cisco Media Gateway Controller Manager (CMM) GUI application for Release 7.4(x).
- The Man-Machine Language (MML) command-line interface (CLI) application.

Figure 1-3 shows a sample CMM window that you can use to provision Cisco MGC components. CMM makes provisioning easier for less-experienced administrators by listing all the components that must be configured and by providing windows that display all configuration parameters for each component. Instructions for provisioning with TCM can be found in Chapter 3, “TCM Provisioning Procedures for Release 7.3(x)” and Chapter 3, “CMM Provisioning Procedures for Release 7.4(x).”

**Figure 1-3** Sample Cisco Media Gateway Controller Manager Window



Example 1-1 shows a sample MML script, which is a collection of individual MML commands. Although MML provisioning requires more keystrokes, quick provisioning updates can sometimes be made faster with MML commands, because you don't have to go through the process of launching CMM. When you enter MML commands into a batch file, you can copy and paste configuration commands to speed command entry, and you can copy and modify MML scripts to configure additional SSPs. For information on provisioning with MML, refer to Chapter 5, “Configuring with MML.”

**Example 1-1** Sample MML Script

```
numan-add:bdigtree:custgrpId="t001",index=18,digit=5,resultindex=4
numan-add:bdigtree:custgrpId="t001",index=17,digit=5,nextnode=18
numan-add:bdigtree:custgrpId="t001",index=16,digit=5,nextnode=17
numan-add:bdigtree:custgrpId="t001",index=15,digit=0,nextnode=16
```

You can use both CMM and MML to provision the Cisco MGC; however, only one configuration session can be supported at one time by either CMM or MML. [Table 1-14](#) lists some of the features of CMM and MML and provides guidelines for selecting between the two tools.

**Table 1-14 CMM, Voice Service Provisioning Tool, and MML Features**

Specification/Feature	CMM	Voice Service Provisioning Tool	MML
System Basics	X-windows GUI front end, SNMP back end	X-windows graphical user interface (GUI) front end.  <b>Note</b> Any client software supporting X-windows, such as Reflection for remote management, can be used.	CLI that interacts directly with Cisco MGC
System Hardware/Software Requirements	Sun Sparc station running Sun Solaris 2.6 OS  <b>Note</b> Running the CMM on the same server as the Cisco MGC can adversely impact performance. Cisco recommends using a separate server.	Sun Sparc station running Solaris 2.6 or greater  <b>Note</b> Running the Voice Service Provisioning Tool on the same host as the MGC can adversely impact performance. Cisco recommends using a separate server.	Runs on the Cisco MGC host server.
Batch File Support	No	No	Yes
Best Used For	<ul style="list-style-type: none"> <li>Setting up a single configuration or few configurations on individual machines.</li> <li>Modifying an existing configuration.</li> </ul>	Some experience required; easy to use.	<ul style="list-style-type: none"> <li>Creating batch files to configure many Cisco MGC servers or retrieve measurements.</li> <li>Modifying configurations.</li> <li>Scaling large configurations.</li> <li>Troubleshooting.</li> </ul>

The remaining chapters in this book describe how to plan for provisioning and provide sample provisioning plans for different Cisco MGC configurations (solutions). In [Chapter 2, “Planning for Provisioning,”](#) you will see component names listed for CMM and MML provisioning (these names are sometimes different). When you begin provisioning, you will provision components using the name that applies to the provisioning tool you are using.