SAMSUNG

SMG-3200

SAMSUNG MEDIA GATEWAY

USER GUIDE

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EU Declaration of Conformity (LVD,EMC)

For the following product:

Product Name: **VoIP Media Gateway**
Model Name: **SMG-3200**

$\mathsf{C}\mathsf{E}$

Manufactured at:

Factory Name, Address: **Samsung Electronics Co., Ltd, 259 Gongdan-Dong, Gumi-City Kyungbuk, Korea 730-030**

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This declaration is valid for all samples that are part of this declaration, which are manufactured according to the production charts appendix.

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EMC : EN55022:1998, EN 61000-3-2:1995 inc+A1+A2:1998,
EN61000-3-3:1995, EN 55024:1998, AS/NZS3548:1995

2. Technical documentation kept at:

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which will be made available upon request.

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Before You Begin

This guide is intended for anyone who installs and uses the SMG-3200. It provides an introduction to the SMG-3200 system as well as network setup and maintenance.

Both the novice and expert user in switching systems should first read this guide before installing the SMG-3200 system, and pay particular attention to the precautionary notes.

This guide describes in detail the structure and the installation of the SMG-3200 system with illustrations to assist you.

Caution: Fatal problems, such as the loss of significant data or network service disconnection, may occur if you make modifications to the hardware and board configurations other than those described in this manual. If you have any inquiries or find any faults with the system, please contact your system supplier.

About This Guide

This guide comprises seven chapters and three appendices. It explains the functions and features of the system, and describes installation procedures. It is organized so that you can easily access information by topic of your choice.

It is best to read this guide from the beginning to the end for safe installation of the SMG-3200. Summaries of the chapters and appendices follow.

Chapter 1,   **Overview** describes the various functions of the system, and lists the advantages of the system.

Chapter 2,   **System Boards** explains the board types and board features.

Chapter 3,   **Installing the System** provides instructions for installing the system, placing the boards in the slots, and connecting the cables to the system.

Chapter 4,   **Configuring the System** shows how to set up the basic information to use the system.

Chapter 5,   **CLI (Command Line Interface)** describes the CLI that enables operational settings for the SMG-3200. An overview of menus followed by the functions of each menu and settings of submenus are given.

Chapter 6,   **Web-based Remote Management** explains how to log in to the web management interface of the SMG-3200.

Chapter 7,   **Using the CDR (Call Detail Record)** explains how to view or receive the call information through the CDR which is provided by the SMG-3200 system.

Appendix A, **Call Termination Code** describes the form of Call Termination Code and code information.

Appendix B, **System Information (DataBase) File Structure** provides the hierarchy and usage of the text file which enables backup, restore, and editing of SMG-3200 system information.

Appendix C, **Glossary** provides definitions of terms used in this guide.

Table of Contents

Chapter 1   Overview

This chapter describes the various functions of the SMG-3200 system, its component parts, and system specifications to provide you with a good understanding of the system.

Introduction to the SMG-3200

SMG-3200 VoIP (Voice over Internet Protocol) gateway system is a high performance H.323 compliant gateway optimized for voice communication over the Internet.

SMG-3200 enables transmission of both voice and FAX data from a PSTN (Public Switched Telephone Network) through real-time data compression and protocol conversion. Therefore, it enables seamless integration of voice and data networks, simple network architecture design and considerable cost reduction in network infrastructure construction. Also, it can provide long-distance and international telephone services at local telephone rates for users in an Internet or Intranet environment.

Since SMG-3200 is designed based on hardware and software modules, it is easy to install. Installation of trunks, subscriber lines or new software for additional features is possible, even during operation if necessary.

SMG-3200 provides local/remote CLI (Command Line Interface). To use SMG-3200 after installing the hardware, only a basic information configuration for system operation using CLI commands is needed, while the remaining operating environment configuration is automatically configured using default values. Providing conversational type CLI, SMG-3200 enables easier system configuration even if a user is not accustomed to the Gateway system.

SMG-3200 Features

The SMG-3200 system has the following major features.

PSTN Interfaces

The SMG-3200 system provides the following PSTN interfaces for interoperability with PSTN.

LOOP Analog Trunk Interface

E1/PRI, T1 Digital Station Interface (PBX, KTS Interface)

E&M Analog Station Interface (PBX, KTS Interface)

SLC Analog Interface

VoIP Interfaces

VoIP is a technology that enables simultaneous transmission of both voice and data over the Internet, and enables Internet telephony service. The SMG-3200 system offers the following VoIP interfaces.

H.323-V3 VoIP Interface

Gatekeeper Interface (RAS)

Real Time Internet Fax Support (FoIP)

Trunk Routing Functions

The SMG-3200 system offers the following trunk functions including trunk routing, trunk tandem, and access code control.

Trunk Routing

- LCR (Lease Cost Routing) code and route control
- Dynamic rerouting depending on the traffic load of PSTN and Internet Protocol state
- Routing Table

Trunk Tandem

- Various PSTN and VoIP trunks connection
- Interoperability among analog trunk, digital station, and VoIP network

Access Code Control

- IP address translation based on access code and prefix number

Call Processing Functions

The SMG-3200 system provides the following call processing functions.

R2 Signaling and DTMF Signaling

Caller ID Relay between PSTN and VoIP

DTMF Relay between PSTN and VoIP

CDR (Call Detail Record) Generation

RTP Traffic Channel Status Monitoring Functions (Delay, Loss, and Link Down)

System Management Functions

The SMG-3200 system provides a GUI interface, and a Standard Network Management Protocol (SNMP) for easier management. The SMG-3200 also provides the following system management functions.

Web-based Management

Program change by TFTP Loading

DHCP Client (IP address allocation by DHCP server)

FTP, Telnet Interface

CLI (Command Line Interface)

Components of SMG-3200

This section explains each component and function of the SMG-3200 system.

Front View of SMG-3200

There are 4 slots for board installation on the front of the SMG-3200 system.
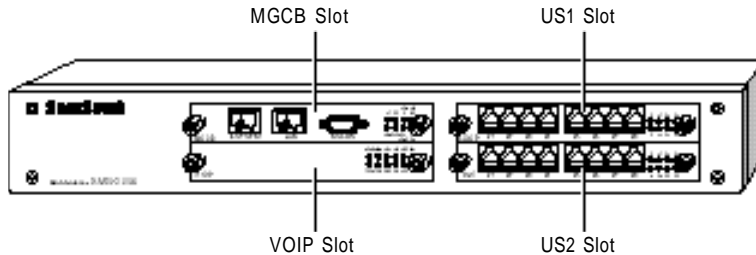
Slot	Description
MGCB	For the installation of the MGCB board that controls overall operation of the SMG-3200 system.
VOIP	For the installation of the VoIP board offering VoIP gateway functions.
US1	For the installation of Universal boards (LOOP, E&M, and SLC boards) offering trunk and subscriber terminal communication functions.
US2	

Rear View of SMG-3200

The rear side of the SMG-3200 system includes a ground terminal, power-in terminal, and power switch.
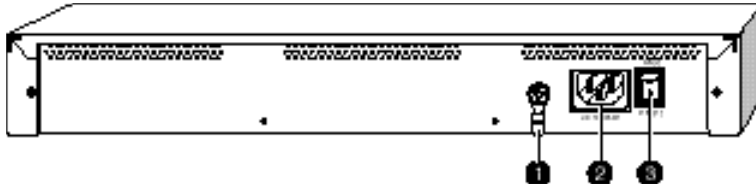
❶Ground Connector

Provides an external ground connection to protect user and system against lightning, static electric charges, spikes, sags, and surges.

❷Power Connector

Provides power supply cable connection. It requires AC 110-240V main power.

❸Power Switch

A switch to turn the system power on/off.

SMG-3200 System Specifications

This section describes hardware and software specifications of the SMG-3200 system.

Hardware Specifications

Feature		Description
System	Processor	MPC860 50MHz
	Memory	• Boot Flash ROM : 512KB • Flash Memory : 8MB • SDRAM : 16MB
	VoIP DSP	2 ~ 8 of Audio Codes AC4804
	Network	10Base-T/100 Base-TX
	Test Port	RS-232C
	Power	• Input : AC 110-240V • Output : -48V(25W), +5V(10W), +3.3V(15W)
Line Capacity	Analog	• Loop : 8/16 Channel • SLC : 8/16 Channel • E&M : 8/16 Channel
	Digital	• T1 : 24 Channel • E1 : 30 Channel • PRI : 30 Channel • R2 : 8 Channel • DTMF : 4 Channel

	VoIP	• 8/16/24/32 Channel
		  - G.723.1, G.729A,G.711
		  - Fax channel receives maximum of 8 channels.
		  - Fax channel receives maximum of 6 channels when G.711 codec is used.

Software Specifications

Feature	Description
OS	VxWorks
VoIP Protocol	ITU-T H.323-V3
VoIP Codec	G.723.1, G.729A, G.711
Audio Function	• Echo Cancellation (G.165) • Silence Suppression (VAD, CNG) • DTMF Detection/Generation(In/Outband) • Selectable A / u law • Gain/Volume Control • Dynamic Jitter Control
VoIP Function	• H.323-V3 Interoperability (RADVision) • G3 Internet FAX Relay (FRF.11, T.38) • External Gatekeeper RAS Interface • Internal Gatekeeper Functions (Control Code Translate/Add/Delete) • Flexible Numbering Plan • Caller ID (G/W ID, IP, ANI, Assigned Caller ID) • QoS Functions (Delay/Loss/Link Down Check, RTP Multiframe, IP TOS)

System Management	• DHCP Client Functions to Enable Automatic IP Address Allocation
	• Remote Program Upgrade
	• FTP, TFTP, Telnet Network Interface
	• Easy Install (Default Configuration)
	• Diagnostic and Alarm Report
	• Local/Network CLI Interface
	• System Maintenance Through NMS Manager Center
	  - GUI, SNMP, Web Management
	  - DB List and Change

VoIP Network Configuration Using SMG-2000

A VoIP network can be constructed using SMG-3200, PBX, and KTS as the following figure shows.

Tandem Gateway Mode

The SMG-3200 can be run in the tandem gateway mode. It connects the SMG-3200 to PBX or KTS, and uses the SMG-3200 as a gateway without internal subscribers.
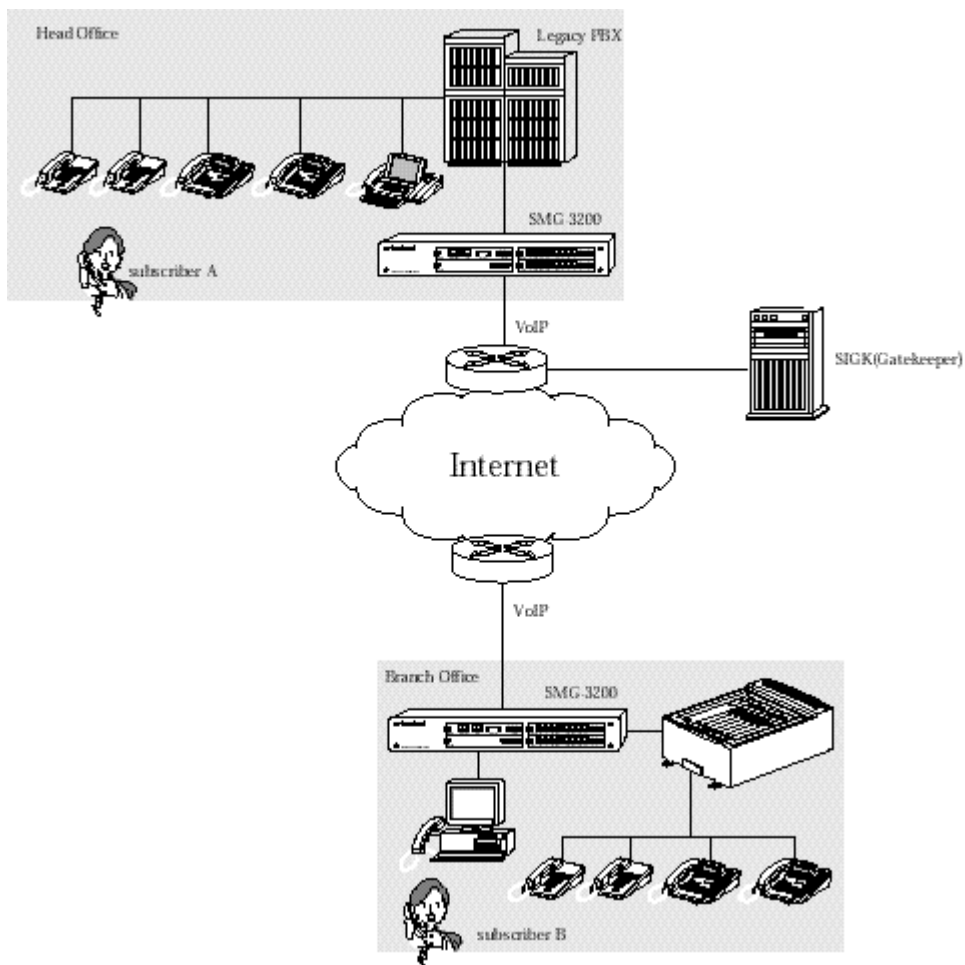
Standalone Gateway Mode

The SMG-3200 can be run in the standalone gateway mode. It connects a telephone to an SLC port on the SMG-3200 and uses the system as a VoIP Gateway with internal subscribers.
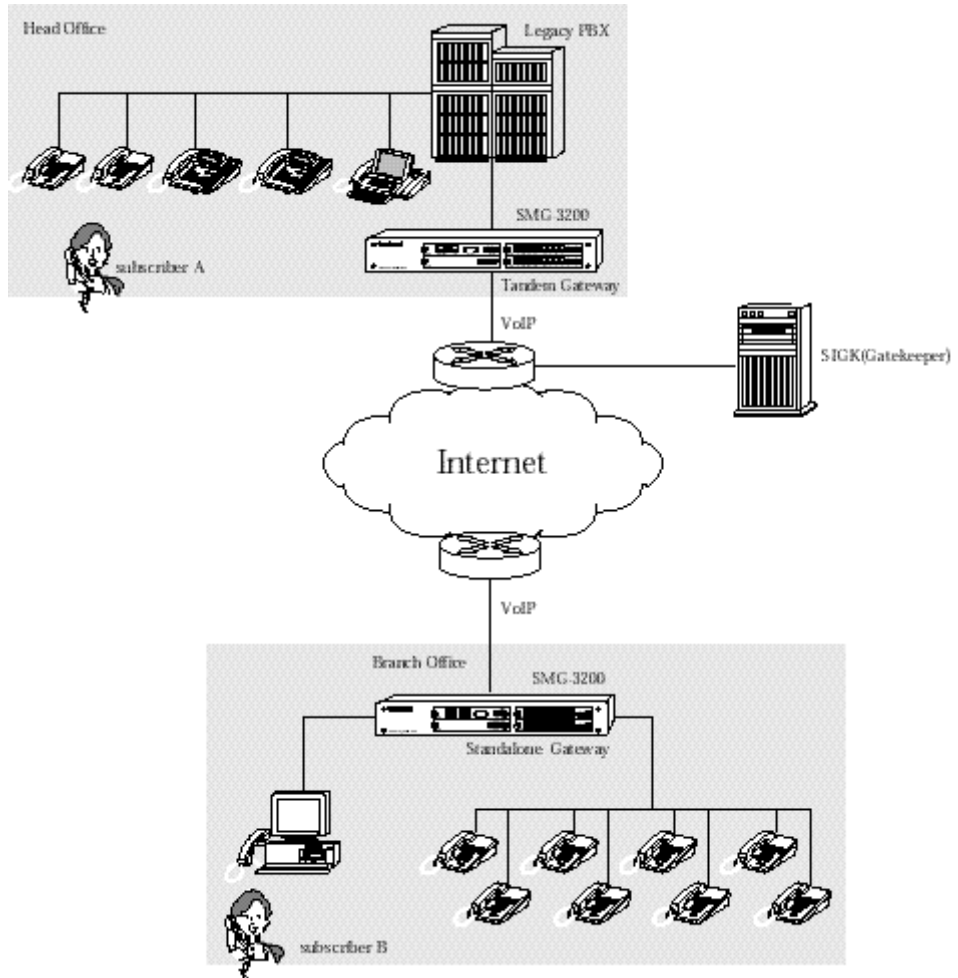
Chapter 2   System Boards

This Chapter describes the types of boards available for the SMG-3200, and the functions and features of each board.

Types of Boards

There are two types of boards available for the SMG-3200.

Common Boards

Common boards have to be installed in the SMG-3200 system. They provide important functions such as operational control of the system, and VoIP gateway functions. Common boards include the following two boards.

*MGCB (Media Gateway Control Board) board

*VOIP (Voice over Internet Protocol) board

Universal Boards

Universal board may be installed depending on the user's need. US1 and US2 system slot is intended for Universal boards. Universal boards include the following three boards.

*LOOP (Loop Start Trunk) board

*E&M (E&M Tie Trunk Module) board

*SLC (Subscriber Line Circuit) board

Common Boards

Common boards of the SMG-3200 system include the MGCB board and VOIP board. This section describes the features of each board.

MGCB Board

MGCB (Media Gateway Control Board) board controls the entire operation of the SMG-3200 system, and is installed in the MGCB system slot.

Three memories are installed in the MGCB board.

*512KB Flash Memory : Booting program is stored.

*8MB Flash Memory : Database used by the SMG-3200 system is saved in.

*16MB SDRAM : The place where the system software is run.

The features and functions of the MGCB board are as follows.

- Operational control of installed boards in the system

- Detection and generation of 16 DTMF

- Generation of 7 call progressing tones

- Offering 256x256 channel time slot

- Providing digital station interfaces and R2 signaling

- Offering a 10/100Mbps LAN port, and RS232C port

Front Panel and Structure of Board

There are E1/PRI, T1 ports, LAN port, RS-232C port, and system status LEDs on the MGCB board. There are 8 DIP switches on the board.
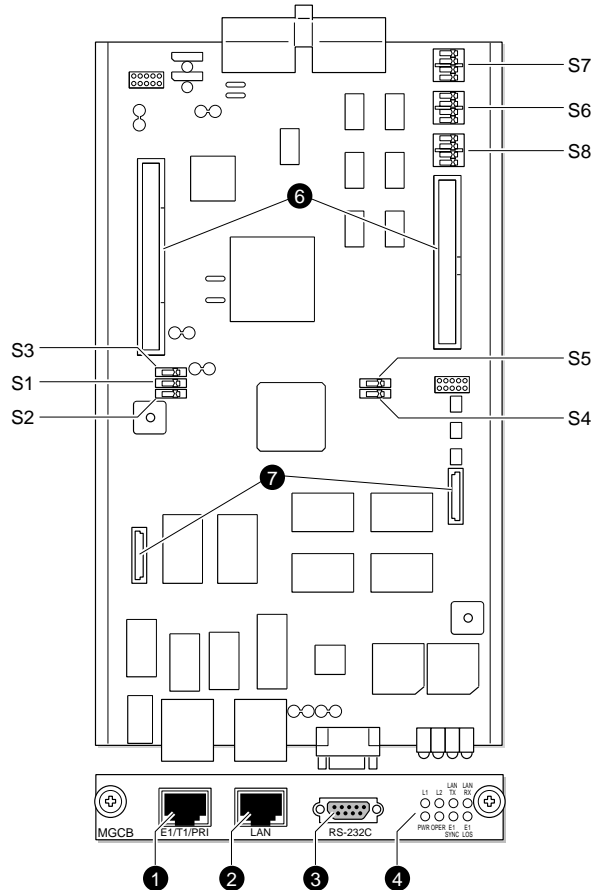
❶ **E1/PRI, T1 Port (RJ- 45)**: for E1/PRI, T1 station line connection.

❷ **LAN Port (RJ- 45)**: for 10/100Mbps Ethernet LAN connection. It is connected to network equipment such as a hub or switch.

❸ **RS- 232C Port**: for system setup and testing using CLI (Command Line Interface). It is usually connected to the serial port of a PC.

❹ LED Indicators

LED	Color	Description
L1		LED blinks during system initialization.
L2		LED blinks during normal system operation.
PWR		LED is on when power is normally supplied to system.
OPER	Green	LED blinks during system software operation.
LAN TX		LED blinks during data transmission through LAN port.
LAN RX		LED blinks during data reception through LAN port.
E1 SYNC		LED is on if D-TRK clock synchronization fails.
E1 LOS		LED is on if D-TRK signal is missing.

❺ DIP Switch

Switch	Default	Description
S1	OFF	Reserved
S2	OFF	Reserved
S3	OFF	Reserved
S4	OFF	For D-TRK clock signal input, set to ON. Set to ON state during an offline test (used in factory)
S5	OFF	For D-TRK signal data input, set to ON.
S6	ON OFF	1, 2 : BPS 0, 1 : 8bit operation
	ON	3 : IP 0 : MSR[IP] initial value is one
	OFF	4 : EARP 0 : Internal operation
S7	OFF ON	Reserved.
	OFF OFF	3, 4 : ISB 1, 0 : Base address 0xFF000000
S8	ON ON	Reserved.
	ON ON	3, 4 : DBPC 0, 0 : Debug Port Configuration

> **CAUTION**   If you change the S6,S7,S8 , the SMG- 3200 system doesn't work normally.

R2 Board Installation Slot

This slot is intended for the installation of the R2 board, a daughter board of the MGCB board. You can find detailed information about the R2 board in the following section.

E1/PRI, T1 Board Installation Slot

This slot is intended for the installation of the E1/PRI, T1 board, a daughter board of the MGCB board. You can find detailed information about the E1/PRI, T1 board in the following section.

Daughter Boards of MGCB Board

Daughter boards of MGCB board include the E1/PRI, T1 board and R2 board. This section describes the features of each daughter board.

R2 Board

The R2 board provides and 8 channels R2 signaling through a digital trunk (E1).
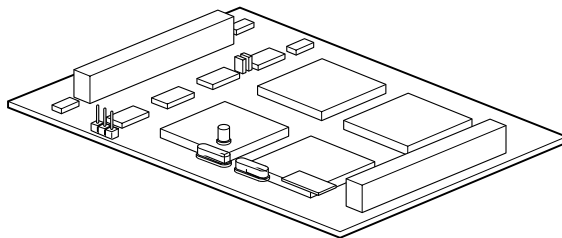
E1/PRI, T1 Board

The E1/PRI, T1 board provides interfaces to connect E1, ISDN PRI, or T1 station lines to an SMG-3200 system.

Configuring DIP switch and jumper executes the software for E1 or ISDN PRI service automatically. T1 board is also setup automatically by software when installed.

The E1 is a high-speed digital line with a data transmission rate of 2.048Mbps. The E1 offers 32 separated communication channels. 30 channels are used for PCM data communication at 64Kbps, and 2 channels are used for communication signaling.

The T1 is a high-speed digital line with a data transmission rate of 1.544Mbps. The T1 offers 24 separated communication channels. Each channel is used for PCM data communication at 64Kbps.

The PRI (Primary Rate Interface) includes T1, and E1 type stations, but the SMG-3200 only provides E1 type PRI. E1 type PRI offers 30B channels and 1D channel (30B+1D). Each channel provides 64Kbps data communication.
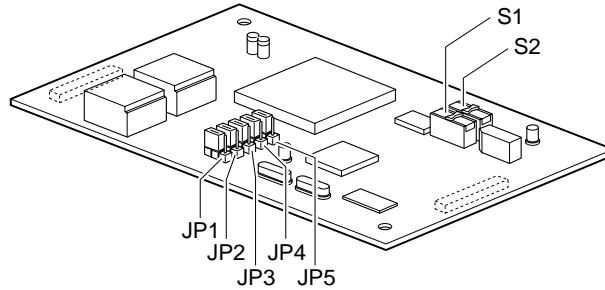
❶ DIP Switch

Switch	Description
S1 S2	S1 and S2 switches are intended to select Card ID according to the line type connected to the E1/PRI, T1 board. • To connect E1, ☞ Set both S1 and S2 switches to ON. • To connect T1, ☞ Set S1 switch to ON, and set S2 switch to OFF. • To connect E1 type PRI, ☞ Set S1 switch to OFF, and set S2 switch to ON.

❷ JP1 ~ JP5 Jumper

Jumper	Description
JP1 JP2 JP3 JP4 JP5	JP1~JP5 jumpers are intended to specify impedance mapping according to the type of line to be connected to the E1/PRI, T1 board. • To connect E1, ☞ Close pin #2-3 of all jumpers. • To connect T1, ☞ Close pin #1-2 of all jumpers. • To connect E1 type PRI, ☞ Close pin #2-3 of all jumpers.

VOIP Board

The VOIP board performs conversion of the voice data of PSTN into packet data that can be transmitted over IP networks. In other words, it provides H.323 V3-compliant VoIP Gateway functions to enable voice communication over the Internet. The VOIP board of the SMG-3200 system comes in a VOIP board with 8 Internet telephone channels.

On the VOIP board with 8 Internet telephone channels, up to 3 VOIP_Sub boards can be installed, and each VOIP_Sub board provides 8 Internet telephone channels. As a result, besides the 8 Internet telephone channels of the VOIP board, a maximum of 24 additional Internet telephone channels can be installed on a board.

The features and functions of the VOIP board are as follows.

- G.729A, G.723.1, G.711 audio codec support
- Internet FAX support
- Caller ID detection and generation function
- FAX/data auto-detection
- G.165 compliance, 16ms echo canceler
- DTMF detection and generation function
- u-Law/A-Law support
- Input/Output Gain Control
- VAD/CNG support

Front Panel and Structure of Board

There are LEDs indicating VOIP board status on the front panel of the VOIP board.

VOIP Board With 8 Channels
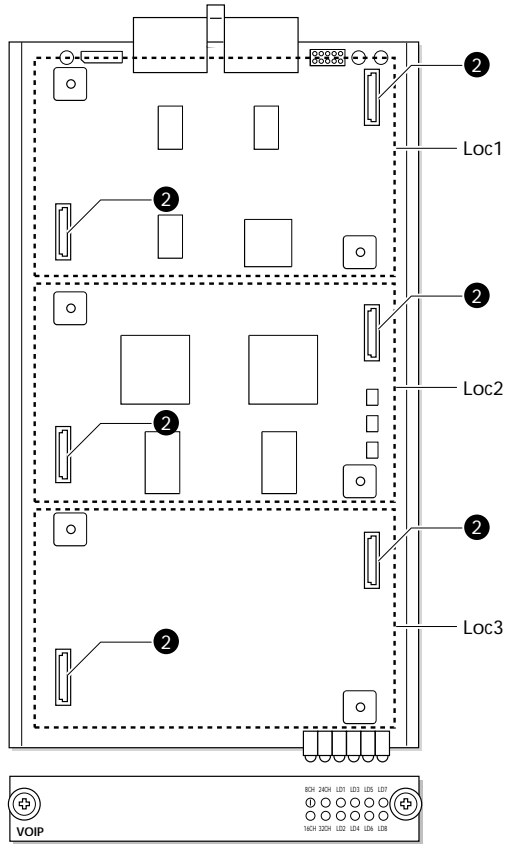
❶ LED Indicators

LED	Color	Description
8CH		LED is on when VOIP board is installed in system slot.
16CH		LED is on when the first daughter board is installed on VOIP board.
24CH	Green	LED is on when the second daughter board is installed on VOIP board.
32CH		LED is on when the third daughter board is installed on VOIP board.

(Continued)

LED	Color	Description
LD1	Green	LED blinks when VoIP software is in normal operation.
LD2		LED is on when it is connected with gatekeeper.
LD3		LED is on when major alarm occurs.
LD4		LED is on when minor alarm occurs.
LD5		Reserved.
LD6		Reserved.
LD7		LED blinks during VoIP channel service.
LD8		LED is on when the entire VoIP channel is in use.

Daughter Board Installation Slots

Daughter board installation slot is dedicated to the installation of a VOIP_Sub board, the daughter board of a VOIP board. The VOIP board has 3 daughter board installation slots. Therefore, up to 3 VOIP_Sub boards can be installed on the VOIP board.

Daughter Board of VoIP Board

The daughter board of the VOIP board that can be installed is called the VOIP_Sub board. This section describes the features of the VOIP_Sub board.

VOIP_Sub Board

The VOIP_Sub board is daughter board for VoIP channel extension, and provides 8 Internet telephone channels. A maximum of 24 additional Internet telephone channels can be installed on the VOIP board.
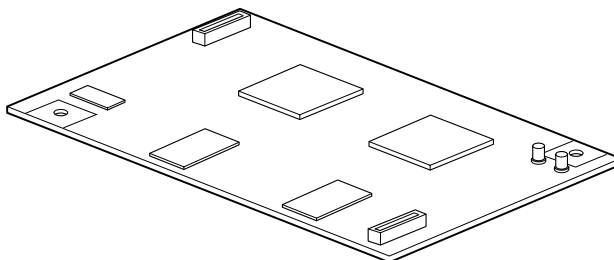
Universal Boards

The Universal board may be installed in the US1 and US2 slots of the SMG-3200 system depending on the user's need. There are two types of Universal boards, trunk board and subscriber board, which provide different services.

The following table shows the summary of each type of Universal board.

Card Type		Board Name
Trunk Board	Analog Board	LOOP
Subscriber Board	Analog Board	E&M SLC

In the following sections, detailed information about features, functions, front panel, and jumper settings for each type of Universal board will be presented.

LOOP Board

The LOOP (Loop Start Trunk) board provides the local extension trunk interface, and can be installed in the universal slot (US1, US2) of a system. The LOOP board for the SMG-3200 system comes in a LOOP board with 8 ports. It provides a connection to a private branch exchange (PBX), or the local telephone office.

The features and functions of the LOOP board are as follows.

- It provides the signal detection function.

- Impedance matching circuits are built in.

- It reads the status such as the HOS and Ring Detection, Tone Detection, and Polarity Reverse Signal etc.

- It converts the analog signal into a digital signal with the PCM method to send them to the control module. It also converts the digital signal with the PCM method into an analog signal.

- It protects the SMG-3200 system from lightening or high voltages, AC voltage crossing etc.

Front Panel

LOOP Board with 8 ports
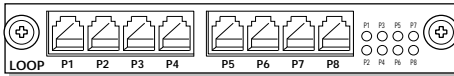
The following table shows the meaning of the LED indicators on the front panel of the LOOP board.

LED	Color	Description
P1 P2 P3 P4 P5 P6 P7 P8	Green	LED is on during each port in use.

E&M Board

The E&M (E&M Tie Trunk Module) board provides a 4-Wire E&M dedicated line for connection of SMG-3200 system and private branch exchange (PBX) or key telephone system (KTS), and can be installed in the universal slot (US1, US2) of a system. The E&M board for the SMG-3200 system comes in an E&M board or 4W E&M board with 8 ports.

The E&M board has two independent voice lines to send and receive the signal where this line is used as a dedicated line. The sending side consists of a Tip and Ring while the receiving side consists of a Tip1 and Ring1. Because signal and voice circuits are separated from each other, the transformer does not need the DC power feeding. The DC signal generated in M-LEAD and also detects in E-LEAD.

The E&M board is divided into the type 1 E&M and type 2 E&M according to the circuit ground way. The type1 is used in the case of grounding on the opposite side. The type 2 is used in the case of grounding on the access side of port.
The E&M board has 2 independent transformers to send/receive voice signal in each port. The board's hybrid is used for 4stage control gain in each port where the line interface controller provides the relay point to control the M-LEAD signal and read/write logic.

The features and functions of the E&M board are as follows.

- Transformer and impedance matching circuits are built in.
- It encodes the entered analog signal into the digital signal of the PCM method where the digital signal is decoded into the analog signal on the system through the PCM method.
- There is separate logic to the control port of the board.
- It has an outgoing signal control logic and incoming signal Detection logic.

Front Panel and Structure of Board
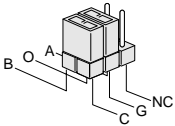
E&M Board with 8 ports
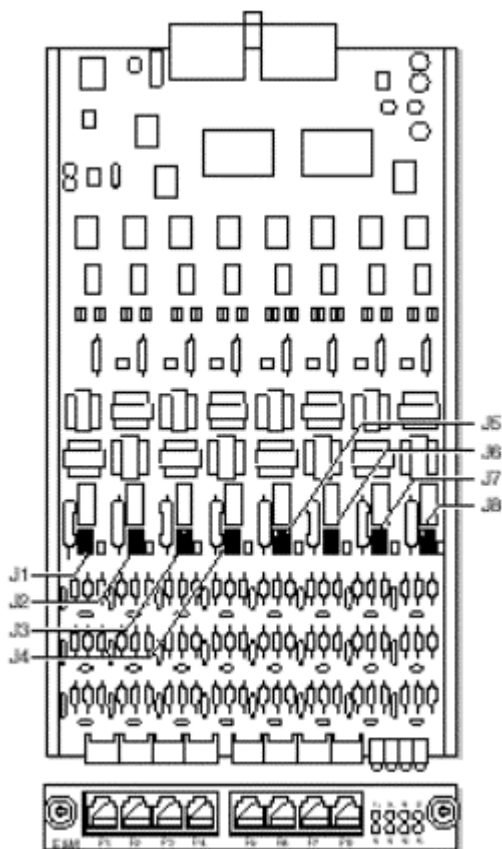
❶ LED Indicators

LED	Color	Description
P1 P2 P3 P4 P5 P6 P7 P8	Green	LED is on during each port in use.

❷ J1~J8 Jumper

LED	Default	Description
J1 J2 J3 J4 J5 J6 J7 J8		J1~J8 jumpers are intended to select signaling type for each port of E&M board. •To use TYPE I -Standard signaling, ☞ Close pin B-O and C-G. •To use TYPE I -Inverted signaling, ☞ Close pin B -C and G-O. •To use TYPE II –Standard signaling, ☞ Close pin A-O. •To use TYPE II -Inverted signaling, ☞ Open all pins.

CAUTION If the power of the connected system is not –48V, open the shunt pin of C- B.

SLC Board

The SLC (Subscriber Line Circuit) board provides the connection between a general analog telephone and the SMG-3200 system, and can be installed in the universal slot (US1, US2) of a system. The SLC board for the SMG-3200 system comes in a SLC board with 8 ports, and each port provides a connection to an analog telephone.

The features and functions of the SLC board are as follows.

- It provides a current of -48VDC for the connected subscriber telephone.
- It provides the ring signal that indicates the subscriber telephone is ringing.
- It reads the hook ON/OFF status, dial pulse, Ring trip, call answer status of the subscriber telephone.
- It protects the subscriber circuit and SMG-3200 system from lightening or high voltages, AC voltage crossing etc. that are generated from the subscriber line.
- It converts the analog signal into a digital signal with the PCM method to send them to the control module. It also converts the digital signal with the PCM method into an analog signal.
- It provides hybrid function to separate the sending path and receiving path from the analog voice signal.

Front Panel

SLC Board with 8 ports
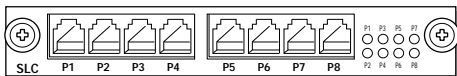
The following table shows the meaning of the LED indicators on the front panel of the SLC board.

LED	Color	Description
P1, P2, P3, P4 P5, P6, P7, P8	Green	LED is on during each port in use.

Chapter 3 Installing the System

This chapter provides SMG-3200 system installation procedures. First, step by step SMG-3200 system installation procedures are presented, and then environment configuration, board installation, and power cable connecting procedures are explained.

Procedures on Installing the System

Following steps must be taken to install the SMG-3200 system.

1. Prepare the place to set up the system.

2. Move the packed system product to the installation place and unpack.

3. Installing in a rack. (Option)

4. Connect the grounding line.

5. Set up the jumper and install the daughter board of the board you want to load.

6. Install the board in a slot.

7. Connect cables.

8. Turn on the system after running a prior checkup.

Here are the detailed explanations of steps one to eight.

Condition of the Installation Location

SMG-3200 system can be installed in a rack or on a table. To operate the SMG-3200 system securely, you have to find the location that satisfies the conditions described in this chapter before setting up the system.

> **ATTENTION** Please do not place the unit on a table with a table cloth, and do not cover the ventilation slots.

Space Condition

You have to select the location that satisfies the following conditions such as safety condition and temperature/humidity condition.

> **ATTENTION**
> • Installation is to be performed by qualified service personnel only.
> • To be installed in Restricted Access Areas.

Safety Condition

- Remove the objects that are sensitive to fires such as explosive gas and flammable objects in the exchange room.

- Before setting up the system, check that every condition is satisfied such as the power wiring, grounding, voltage, frequency, and etc.

- If the power switch or circuit breaker is open, be sure to remove the power supply line's blocking route.

- If the PSTN is connected with the system, set up the protection element in the MDF.

- If subscriber cable goes outside, set up the protection element in the MDF.

- Place a booklet that provides emergency measures, grate, artificial respiration and heart resuscitation information in the exchange room to prepare for emergency cases such as electric shock.

Temperature/Humidity Condition

- Maintain the consistent temperature and humidity.
  *Temperature : 0°C – 45°C
  *Humidity : 10% – 90% (non-condensing)

- Should be in a cool place not exposed to direct sunlight.

- During or after setting up the system, equip a fan in the room in order to maintain the system by preventing dust from going into.

Grounding Condition

You have to consider the followings when performing grounding operation.

- The connection hole, connected with the SMG-3200 grounding conductor, should be connected to the earth grounding through a fine earth-grounding medium.

- Overall, the power circulation status of the SMG-3200 system exposed electric conduction with the metal face and the rectifier power plug's grounding conductor should be exceedingly fine.

- A single contact point must be made to connect if the grounding of all of the exterior supplementary equipment are connected to the system's grounding.

- The SMG-3200 grounding conductor should never be connected with the pipe for the interior power wire.

- Power and ground standard must follow the national standard, and the installation office should check whether the standard is kept.

- Power and grounding standards should suit the national standard where this are certified by an installation organization.

Input Power Condition

The input power of the SMG-3200 system needs to be supplied with the AC power.

In the SMG-3200 input power, an AC 110-240V should be supplied normal alternating current AC power.

You should use the consent that supplies normal AC only for the SMG-3200 system. This consent should not be used parallel with other devices. This consent should be located at a safe place to prevent cutting off the power by mistake.

You should choose the power outlet suitable for the SMG-3200 capacity.

The standard of the SMG-3200 system is

- Input : AC 110-240V
- Output : -48V(25W), +5V(10W), +3.3V(15W)

Line Condition

You need to take careful note of the following when installing cables.

- When wiring at a place where there is high humidity, take steps to reduce this to acceptable levels before proceeding with the work.
- Take care of the cable to prevent it from being deformed or damaged.
- Make the line's curvature radius to be 6 times larger than the cable's circumference where there have no repeating curved points.
- You must take extreme precaution in the cable's insulation overlap cases where the copper wire are exposed and get entangled.
- The maximum allowable line's loop resister is not more than 1.8KOhm. The line's leak resistor must be over 20KOhm, the earth's leak resistor must be over 20KOhm. (These conditions may be ignored only in special cases.)
- Analog and Digital subscribers are recommended to use 24AWG line.
- Do not place the line near a high voltage power line.

Unpacking the System

After preparing the place to install the SMG-3200 system and finishing all the preparation work by meeting all the conditions, move the packed SMG-3200 system to the installation location.

Unpack the system and check if all the items are in the shipping carton. Basically, there should be the following items in the package.

  *SMG-3200 system that are separately packed

  *Various separately packed boards

  *2 Ferrite Core

  *Power cable

  *SMG-3200 User Guide

And, the remaining items can be different according to the orders. Compare closely the order form and the items that you have. Please contact the distributor where you had bought the SMG-3200 system if there is any missing item or different item from the order form.

CAUTION   When you use a sharp tool to open the package, the item may be damaged.

ATTENTION   Before open the top- cover, please make sure that the main cable is detached from power line.

Installing in a Rack

SMG-3200 system can be installed in a rack or on a table. Installation of SMG-3200 in a rack enables more convenient usage and management. This section provides procedures for SMG-3200 system installation in a rack. For the case of SMG-3200 system installation on a table, skip this section and refer to the following '**Connecting Ground Cable**' section.

Safety Precautions

To ensure general safety, always follow these precautions before stalling the SMG-3200 on a rack.

- **Elevated Operating Ambient Temperature-** The details should be provided so that consideration shall be give to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (45°C).

- **Reduced Air Flow-** Installation of the equipment in a rack shall be such that the amount of air flow required for safe operation of the equipment is not compromised.

- **Mechanical Loading-** Mounting of the equipment in the rack shall be such that a hazardous condition is not achieved due to uneven mechanical loading.

- **Circuit Overloading-** Consideration should be given to connection of the equipment to the supply circuit and the effect that overloading circuits may have on overcurrent protection and supply wiring. Appropriate consideration of the equipment nameplate rating should be used when addressing this concern.

- **Reliable Earthing-** Reliable earthing of the rack mounting equipment should be maintained.

Rack Requirements

Before installation of SMG-3200 system in a rack, you have to prepare a rack that meets the following requirements.

- Prepare a rack with standard electrical facilities.

- Ensure that the rack has appropriate ventilators, if it is closed type. A closed type rack should provide at least one ventilator with fan on the side of the rack in order to circulate cool air into the rack.

- Pay attention in a closed type rack as the ventilator may cause hot air from the lower system to rise up to the port opening of a system installed in an upper position in the rack.

- Ensure not to block up the port or fan of installed systems, if the rack is opened type.

- Ensure that the rack is equipped with an internal power bar, and is located near power supply units.

- Ensure that the rack has ventilators on the side as well as backside for smooth air circulation.

Required Tools

- Cross-shaped medium-size screwdriver

- L-shaped Bracket

- Screws
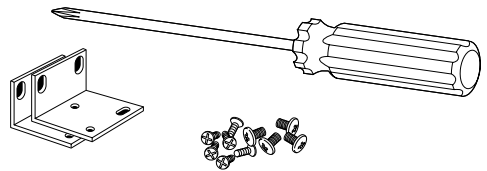
Installing in a Rack

1. Prepare two brackets and six screws.

2. Attach the brackets to each panel of the system by using the screws and fasten them on to the SMG-3200.
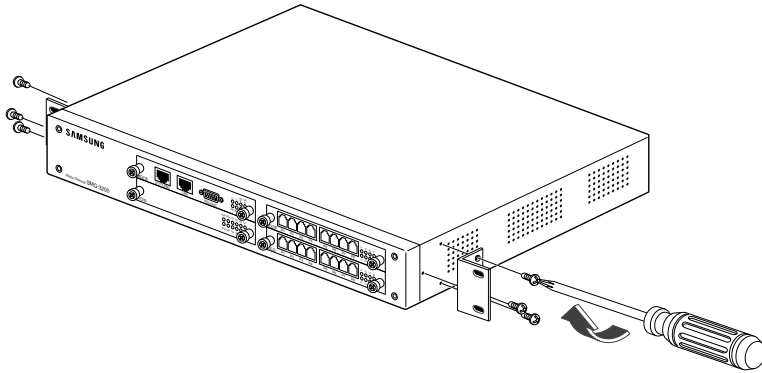
3. By using 4 other screws, install the SMG-3200 unit (with brackets) in a rack.
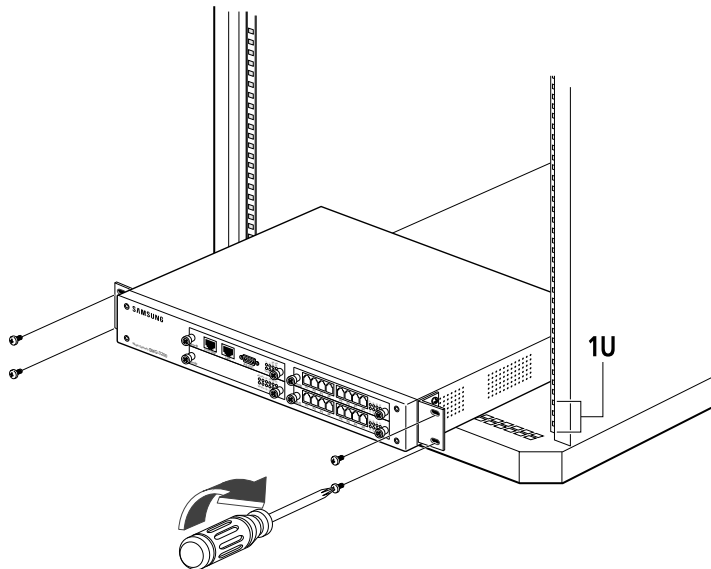
Connecting Ground Cable

The protective earth connection to the SMG-3200 is provided via three core mains lead. The earth wire in the mains cord (Green/Yellow) is connected in the factory to the earth terminal within the system. The Earth wire is connected directly to the ground connection on the rear panel of the system.

The protective earth (PE) is used for surge protection and for the electrical safety of the system. The system must be plugged into a GPO socket that is correctly earthed. The PE provided all system earthing requirements, a TRC is not required and should not be connected.
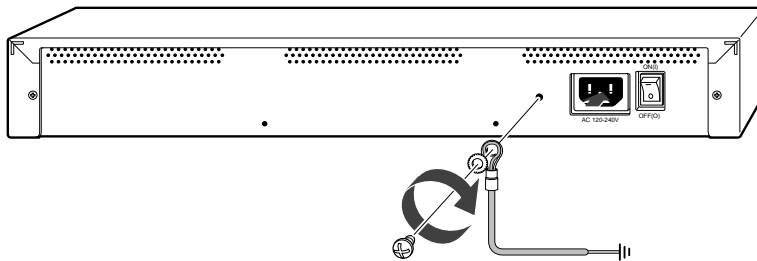
Before connecting ground cable, ensure that AC power supply cable is disconnected. With power cable connected, connecting ground cable may cause damage or possibly death.

Installing Boards

ATTENTION Before installing or changing the various universal boards, please make sure that the main cable is detached from power line and that all at telecommunication cables are deltached form telecommunication ports.

System Slots

MGCB board, VOIP board, and various Universal boards can be installed in the 4 slots on the front panel of the SMG-3200. For the installation slot of each board refer to the following table.
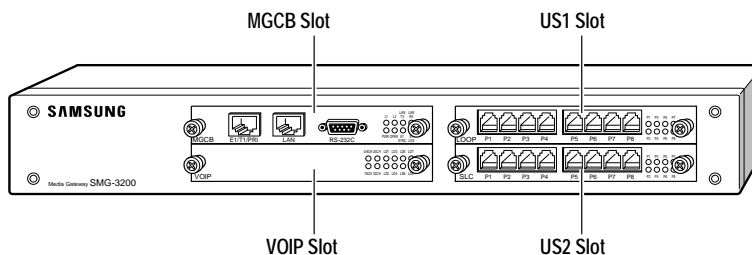
Board	Slot	Function
MGCB	MGCB	Controls the entire operation of the SMG-3200 system.
VOIP	VOIP	Provides H.323 V3-complient VoIP Gateway functions to enable voice communication over the Internet
LOOP	US1 US2	Provides the local extension trunk interface.
E&M	US1 US2	Provides a 4-Wire E&M dedicated line for connection of SMG-3200 system and PBX or KTS.
SLC	US1 US2	Provides the connection between a general analog telephone and the SMG-3200 system

Selecting Boards

The **MGCB** board and **VOIP** board have to be installed for system operation, whereas Universal boards may be installed if desired. The type of Universal board used in the SMG-3200 system is determined by the following conditions.

Tandem Gateway Mode

In case of using the SMG-3200 in tandem gateway mode, you can install following boards according to the connection method of PBX or KTS.

No	Connection	MGCB Slot	VoIP Slot	US1 Slot	US2 Slot	Dial Method
1	FXS/FXO	MGCB (-)	VOIP (16 ch) (8 ch)	SLC (8 ch) (Incoming)	LOOP (8 ch) (Outgoing)	DTMF
2	FXO	MGCB (-)	VOIP (16 ch) (8 ch)	LOOP (8 ch) (In/Out)	LOOP (8 ch) (In/Out)	DTMF
3	E&M	MGCB (-)	VOIP (16 ch) (8 ch)	E&M (8 ch)	E&M (8 ch)	DTMF PULSE
5	Digital Station Interface	MGCB (E1, 30 ch)	VOIP (32 ch)	-	-	DTMF R2MFC
6		MGCB (T1, 24 ch)	VOIP (24 ch)	-	-	DTMF DTMF
7		MGCB (E1-PRI, 30 ch)	VOIP (32 ch)	-	-	

NOTE In this current version, T1 type PRI is not provided.

Standalone Gateway Mode

In case of using the SMG-3200 in standalone gateway mode, you can install only SLC board in Universal slots.

No	MGCB Slot	VOIP Slot	US1 Slot	US2 Slot	Dial Method
1	MGCB	VOIP (8 ch)	SLC (8 ch)	-	DTMF
2	MGCB	VOIP (16 ch)	SLC (8 ch)	SLC (8 ch)	DTMF

> **CAUTION** You can not install digital board (E1/PRI, T1) and analog board (LOOP, E&M) in the slots on the system simultaneously.

Setting Jumper and Switch

Some boards have jumpers or switches to allow set according to the user's need and system construction. After determining the type of board and slot for installation, you have to set jumpers and switches on the board. The following boards have to be set before installation.

☞ **E&M Board**

☞ **E1/PRI, T1 Board**

Other boards can be installed in a slot without jumper or switch setting. This section provides jumper and switch setting procedures for each type of board.

E&M Board

E&M board has J1~J4/J1~J8 jumpers. The jumpers determine the kind of signaling for each port.

- To use the TYPE I- Inverted signaling,
  ☞ Close pin O and G, C and B.
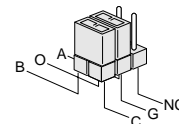
If the power of the connected system is not –48V, open the shunt pin of C-B.

- To use the TYPE I- Standard signaling,
  ☞ Close pin O and B, C and G.

- To use the TYPE II- Inverted signaling,
  ☞ Open all pins.
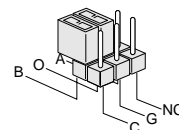
- To use the TYPE II- Standard signaling,
  ☞ Close pin A and O.

E1/PRI, T1 Board

There are S1 and S2 switches and JP1~JP5 jumpers on the E1/PRI, T1 board. All of these switches and jumpers are to select the kind of station line to be connected to the E1/PRI, T1 board. Prior to the installation of the E1/PRI, T1 board onto the MGCB board, set switches and jumpers according to following directions.

- To connect T1
  ☞ Close pin #1-2 of all jumpers.
  ☞ Set S1 switch to ON, and set S2 switch to OFF.
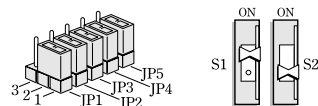
- To connect E1
  ☞ Close pin #2-3 of all jumpers.
  ☞ Set both S1 and S2 switches to ON.
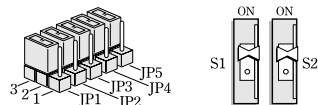
- To connect E1 type PRI
  ☞ Close pin #2-3 of all jumpers.
  ☞ Set S1 switch to OFF, and set S2 switch to ON.
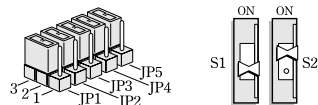
Installing Daughter Boards

Daughter board is installed according to user's need and system construction.
The following boards require daughter board installation prior to board installation.

☞ **MGCB Board**

☞ **VOIP Board**

Other boards can be installed in a slot without installation of a daughter board.
This section provides daughter board installation procedures for each type of board.

MGCB Board

On the MGCB board, the R2 board or E1/PRI, T1 board can be installed.

- To add 8 channel R2 signaling, install a R2 board.
  ☞ Install the R2 board.

- To connect to E1/PRI, T1 line
  ☞ Install an E1/PRI, T1 board.

Installing a daughter board on the MGCB board is relatively simple. Fit the daughter board into a Slot of the MGCB board, and firmly secure it. Slots for a R2 board and E1/PRI, T1 board installation are as follows.
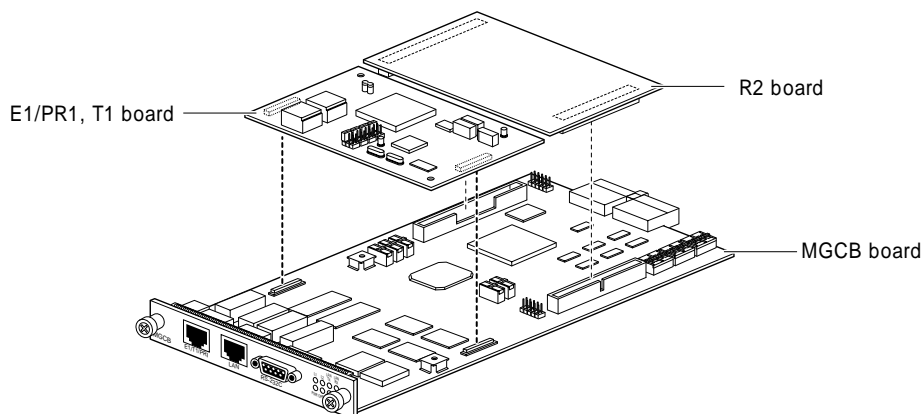
VOIP Board

On the VOIP board, up to 3 VOIP_Sub boards can be installed. Since each VOIP_Sub board provides 8 VoIP channels, as a result, a maximum of 24 additional VoIP channels can be installed on the VOIP board.

Although installing VOIP_Sub board on the VOIP board is the same as that of the MGCB board, you have to be sure of the location of the VOIP_Sub board for installation. From the slot near the edge connector, install VOIP_Sub boards by one by one.
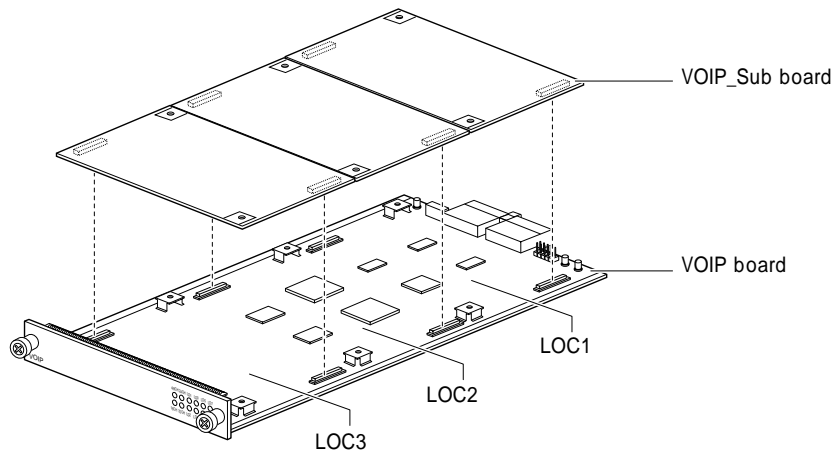
- To install 1 VOIP_Sub board
  ☞ Install in LOC1 slot.

- To install 2 VOIP_Sub board
  ☞ Install in LOC1 and LOC2 slots.

- To install 3 VOIP_Sub board
  ☞ Install in LOC1, LOC2, and LOC3 slots.

Installing Board in a Slot

Install a board in the slot of the SMG-3200 system, after procedures for daughter board installation is completed.

When installing the board, keep the followings in mind.

- The high voltage static-electric charge is easily accumulated in a human body. Deal with the board after removing all the accumulated electric charge by touching any equipment's device or the grounded part.

- Don't touch the Edge connector of the board and the jumper pin, if possible.

- You have to ground the surface of a workstation, on which the board is place, after wrapping it with conductor. And you also can put the Ground clip connected to the anti-static carrying bag to use the station.

- When you have to touch the board, it is recommended to put an anti-static strap on the wrist, if possible.

After understanding all these cautions, attach the boards on the slots in the following way according to the system. This section describes board installation procedures in a system slot in the case of the MGCB board. Other boards can be installed in the same method.

1. Prepare board to install, ensure there is no defect on the board, and ensure the jumper or switch configuration is correct.

2. Referring the above directions, select a slot for board installation based on the type of board.

3. Carefully fit the board into the slot following the guardrails on both sides.
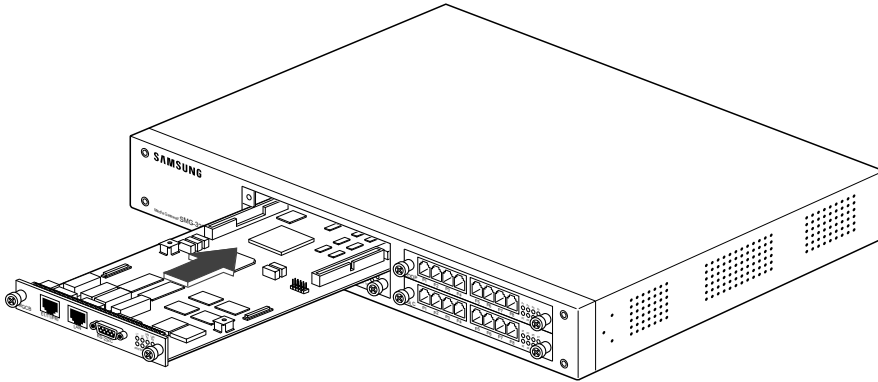
4. Press the center of the front panel of the board so that the board can be completely fit into the connector on the back-plane board.

5. After ensuring that the board is connected to the back-plane board, screw down the board.
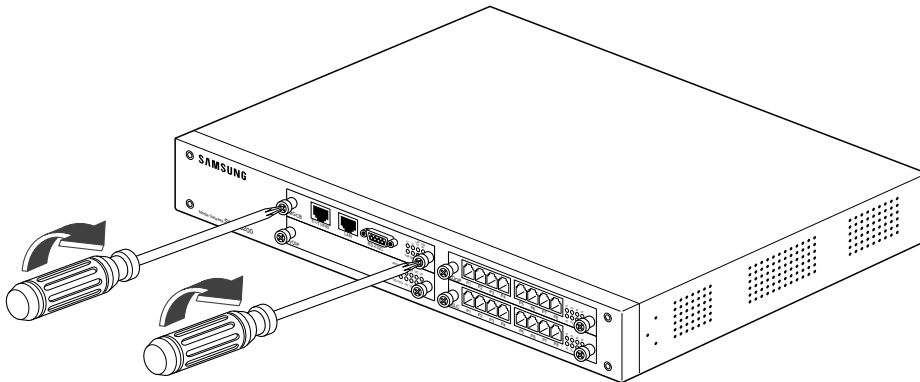
Connecting Cables

After all necessary boards are installed in the SMG-3200 system, connect cables to the ports of the boards to construct the VoIP network.

> **NOTE** In this section, the Pin Numbers of the PBX or KTS port are displayed according to the Samsung PABX INFOREX. For the case of connecting to other PBX or KTS, connect cables referring to the Pin Name.

1. To connect the SMG-3200 and PBX or KTS with general trunk, connect one end of a RJ-11 cable to the SLC port of the SMG-3200, and the other end to the LOOP port of the PBX or KTS.

SLC port of SMG- 3200		LOOP port of PBX or KTS	
Pin	Name	Name	Pin
3	Tip	Tip 0	1
4	Ring	Ring 0	26

2. To connect the SMG-3200 and PBX or KTS with SLC line, connect one end of a RJ-11 cable to the LOOP port of the SMG-3200, and the other end to the SLC port of the PBX or KTS.

LOOP port of SMG- 3200		SLC port of PBX or KTS	
Pin	Name	Name	Pin
3	Tip	Tip 0	1
4	Ring	Ring 0	26

3. To connect the SMG-3200 and PBX or KTS with E&M line, connect one end of a RJ-11 cable to the E&M port of the SMG-3200, and the other end to the E&M port of the PBX or KTS. At this time, connect E line of one and M line of the other, and connect M line of one and E line of the other.

E&M port of SMG- 3200		E&M port of PBX or KTS	
Pin	Name	Name	Pin
1	M	E	3
2	TxT	RxT	1
3	RxT	TxT	2
4	RxR	TxR	27
5	TxR	RxR	26
6	E	M	28

4. To connect the SMG-3200 and PBX or KTS with E1/PRI, T1 line, connect one end of a RJ-11 cable to the E1/PRI, T1 port of the SMG-3200, and the other end to the E1/PRI, T1 port of the PBX or KTS.

E1/PRI, T1 port of SMG- 3200		E1/PRI, T1 port of PBX or KTS	
Pin	Name	Name	Pin
1	Tx+	Rx+	2
2	Tx-	Rx-	27
4	Rx+	Tx+	1
5	Rx-	Tx-	26

5. To connect the SMG-3200 and analog terminal such as analog telephone or FAX machine, connect one end of RJ-11 cable to SLC port of the SMG-3200, and the other end to the port of analog terminal.

SLC port of SMG- 3200	
Pin	Name
3	Tip
4	Ring

6. Connect the SMG-3200 to the network of the site. Connect one end of a RJ-45 cable (Twisted pair category-5 straight-through) to the LAN port of the SMG-3200, and the other end of the cable to the Ethernet port of the hub or switch.

LAN port of SMG- 3200		Ethernet port of switch	
Pin	Name	Name	Pin
1	Tx+	Rx+	1
2	Tx-	Rx-	2
3	Rx+	Tx+	3
6	Rx-	Tx-	6

7. Connect console terminal. Connect one end of a serial cable to the RS-232C port of the SMG-3200, and the other end of the cable to the serial port of a PC.

RS- 232C port of SMG- 3200		9 Pin Serial port of PC	
Pin	Name	Name	Pin
2	Tx	Rx	2
3	Rx	Tx	3
5	GND	GND	5

Attaching Ferrite Cores

In order to reduce an electromagnetic waves emission, attach ferrite cores to the cable which it connects to the E1/PRI, T1 pot and the LAN pot.

When attaching ferrite cores, the cables after two wheel turnings with a ferrite core outer side, press the locks consecutively until the lock fasten securely.
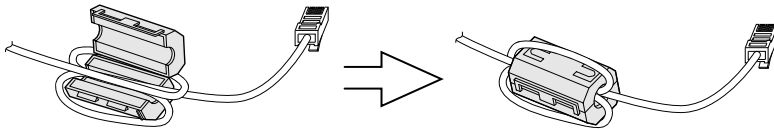
Connecting Power Cable

Before connecting the power cable to the SMG-3200, you have to be aware of the following guidelines.

• Do not connect other equipment to the AC outlet connected to the system to avoid malfunction or fire of the system due to electrical noise and low voltage.

• The AC power source to supply power must be stable and uninterruptible, since power outages during the night can cause malfunctioning of the system.

After checking the above guidelines, connect the power cable to the system as follows.

1. There is a power connector on the rear side of the SMG-3200.

2. Connect grounded outlet and the power connector on the rear side of the system with the power cable.
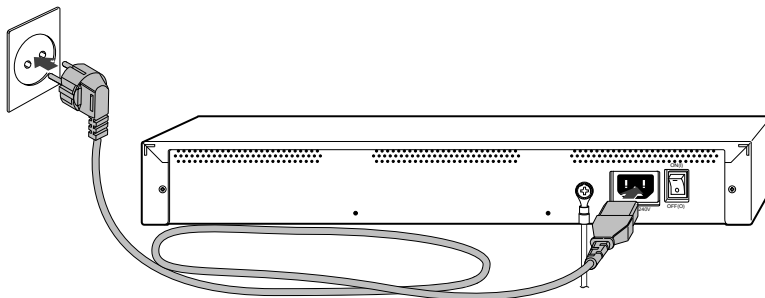
Chapter 4   Configuring the System

This chapter describes procedures for the configuration of the SMG-3200 operating environment with console terminal as well as the login procedure in console terminal.

Setting up the Terminal

Terminal setup methods differ according to terminal types and operating system. In this manual, we will using an example of how to use the hyper terminal on a PC running with a Windows 98 operation system.

Terminal Features

The user can connect an ASCII terminal such as a VT100 or VT220 or a PC installed with a terminal emulation program.

- Emulation   VT100/ANSI Compatible
- Bits per second   38400
- Data bit   8
- Parity   None
- Stop bit   1
- Flow control   Xon/Xoff

Setting up the Terminal

To set up a terminal, follow these steps.

1. Turn on the PC and boot with Windows98.

2. Click [Start] at the bottom and select Programs and select **Program ➔ Accessories ➔ Communication ➔ HyperTerminal**.

3. When the <HyperTerminal> window appears, double-click the **Hypertrm** icon.

4. When the <Connection Description> window appears, type the name of a hyper terminal in the **Name** box and select an icon displayed in the **Icon** box. Then, click [OK].

5. Then, the user will have the following <Phone Number> window appears, where the user can define a location to connect the hyper terminal. Since the terminal is directly connected to the SMG-3200 through a COM port, click the **Connect using** box and select a corresponding COM port.

6. Next, the user will the <COMx Properties> window appears, where the user can configure various options for the selected COM port. Configure each item as shown in the following and click [OK].

7. Next, a new hyper terminal where the user can set up the SMG-3200 by using console commands will pop up.

Starting SMG-3200

This section describes the login procedure using CLI, after turning on SMG-3200.

Turning on

While the hyper terminal window is on the screen, turn on the SMG-3200 with the power button in the rear of the system.
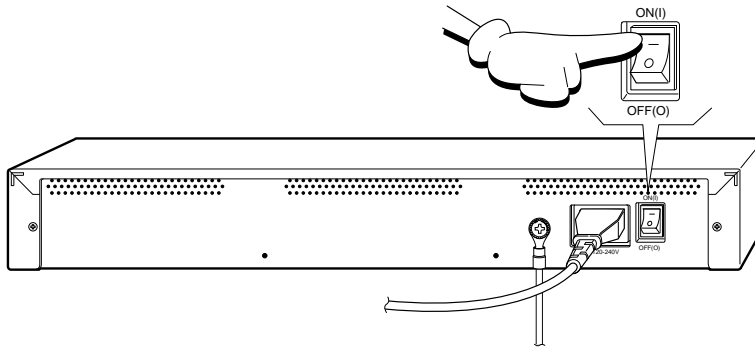
After the system turn on, system initialization proceeds approximately 60 seconds. The system POST (Power On Self Test) will be executed and the factory-preset configuration data will be loaded and shown on the terminal.

If booting of the SMG-3200 is successfully completed, then

- On the MGCB board,
    ☞ L2 LED and PWR LED are on in green.
    ☞ OPER LED blinks in green.

- On the VOIP board,
    ☞ 8CH LED is on in green
    ☞ LD1 LED blinks in green.

Logging in

1. After the SMG-3200 boots up, the login prompt will show the following.

```
SMG3200 Login:
```

2. Type 'smg3200' at the login prompt and press [Enter].

```
SMG3200 Login: smg3200
```

3. Type password at 'Password:' and press [Enter]. When logging in for the very first time, enter 'smg3200v1'. For the security purposes, the password will be not displayed on the terminal.

```
SMG3200 Login:smg3200
Password:smg3200v1
```

4. When the user successfully logs in, the following main screen will be displayed.

```
SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS   Welcome to
SSS        SS    SSSS    SSSSSS       SSS
SS   SSSSSSSSS  S SSS    SSSS   SSSSSSSS  SSSSS   SSSSS  SSSS     SSSS
SSS  SSSSSSSS   SS S S   SSS   SSSSSSSSS   SS      SS  SS SS   SS SS
SSSSS  SSSSSS   SSS SS   SS   SSSS    SS   SS      SS  SS SS   SS  SS
SSSSSSS  SSSS   SSSSSSS  SSS  SSSS   SSS   SS   SS SS SS  SS SS  SS
SSSSSSSS  SSS   SSSSSSS  SSSS SSS   SSS    SS SS     SS SS  SS SS  SS
SS        SSS   SSSSSSS  SSSSS     SS  SSSSS  SSSSS    SSSS     SSSS
SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS System
SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS Login Name: smg3200
SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS Program Version: 3200V2.2 :020307
SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS Copyright Samsung Electronics Co., Ltd.


help              Print This List
sysmenu           System Configuration
pstnmenu          PSTN Configuration
voipmenu          VoIP Configuration
clicmd            List Of CLI Command
quit              Logout

value = 1 = 0x1
SMG3200:165.213.81.230>
```

5. Press [Enter] to display the SMG3200 login prompt.

```
SMG3200:165.213.81.230>
```

Configuring the Operating Environment

To operate the SMG-3200, only the fundamental information configuration is required, and the detailed operation environment configuration is configured automatically by using default values.

The following 3 configurations are necessary for the operation of the SMG-3200. Other than these configurations, additional operation environment configurations are not normally used.

TCP/IP Configuration : IP address, subnet mask, default gateway

System Operation Mode : Gateway operation mode, PCM type

VoIP Configuration : VoIP table/gatekeeper configuration

This section describes how to configure the operating environment after turning on and logging in the SMG-3200.

> **NOTE** Messages displayed in the console terminal emulator in this section may differ according to the version of system software, and might be different from the actual messages you can see on the console terminal.

> **NOTE** During operation environment configuration, pressing [Enter] without input value in conversational mode is the same as configuration with the default value at the current step.

Configuring the TCP/IP

To use the TCP/IP protocol for Internet connection, you must configure network information such as IP address, subnet mask, and default gateway.

SMG-3200 provides the following two methods for TCP/IP configuration.

❶ Automatic Configuration

Configures TCP/IP information automatically using a DHCP (Dynamic Host Configuration Protocol) server.

❷ Manual Configuration

Specify the static IP address, subnet mask and default gateway of the SMG-3200.

Before configuring TCP/IP, determine whether automatically configure TCP/IP information or not.

• Automatic configuration requires DHCP service provided by a DHCP server.

• In case automatic configuration is not available, you have to know the following information for manual configuration of TCP/IP settings.

- IP address and subnet mask for the SMG-3200

- IP address of default gateway

Option ❶ Automatic Configuration

To set up TCP/IP information automatically using a DHCP server, configure the SMG-3200 as a DHCP client using the following directions.

1. At the SMG-3200 prompt, type 'sysmenu' and press [Enter].

```
        SMG3200:165.213.81.230> sysmenu
```

2. <System Configuration Menu> screen is displayed. Type '0' and press [Enter].

```
 <<<<< System Configuration Menu >>>>>


         [0] DHCP Client Setting
         [1] Network Configuration
         [2] Login ID Configuration
         [3] System Upgrade
         [4] Display System Version
         [5] Default DB Setting
         [6] Restart System
         [7] Exit


        Select ? 0
```

3. <DHCP Client Setting> screen is displayed. Enter the value as the following indication.

```
<<<<< DHCP Client Setting >>>>>


   + - - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - - - - - - +
   |  No   |              Items              |                  Value                  |
   + - - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - - - - - - +
   |   0   |         DHCP Client Set         |                   OFF                   |
   |   1   |            Class ID             |                                         |
   + - - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - - - - - - +
                                                              [ -  : Null, . : Exit ]
Configuration Item Number: 0
* Input '0'.

Set DHCP Client? (y: ON, n: OFF): ON - > y
                *Input 'y' to set the status of the DHCP Client On.

Good

Configuration Item Number: .
                *Input '.' to exit the configuration.

# System Configuration has changed. Restart? (y: Now, n: Later) - > y
                *Input 'y' to reboot the system.
```

4. Log in again on CLI after the system is restarted.

Option ❷ Manual Configuration

Referring to the following directions, specify static IP address, subnet mask, and IP address of default gateway for the SMG-3200.

1. At the SMG-3200 prompt, type 'sysmenu' and press [Enter].

```
SMG3200:165.213.81.230> sysmenu
```

2. <System Configuration Menu> screen is displayed. Type '1' and press [Enter].

```
 <<<<< System Configuration Menu >>>>>

            [0] DHCP Client Setting
            [1] Network Configuration
            [2] Login ID Configuration
            [3] System Upgrade
            [4] Display System Version
            [5] Default DB Setting
            [6] Restart System
            [7] Exit

            Select ? 1
```

3. <Network Configuration> screen is displayed. Type 'y' and press [Enter].

```
<<<<< Network Configuration >>>>

   +---+----------------------+--------------------------------+
   | No |          Items       |              Value             |
   +---+----------------------+--------------------------------+
   | 0  | IP Address           | 165.213.81.230                 |
   | 1  | Gateway Address      | 165.213.81.1                   |
   | 2  | Netmask              | 255.255.255.0                  |
   | 3  | TOS(Type Of Service) | 0x0                            |
   | 4  | MAC Address(Read Only) | SAMSUNG(00-00-F0)-AB-CD-0D   |
   +---+----------------------+--------------------------------+
                                                      [ . : Exit ]

Change Network Configuration? (y: Yes, n: No) -> y
```

4. The following message is displayed. Input the IP address of the SMG-3200 and press [Enter].

```
 IP Address (dot form): 165.213.81.230 -> 165.213.81.230
```

5. Input the IP address of default gateway and press [Enter].

```
Gateway Address (dot form): 165.213.81.1 -> 165.213.81.1
```

6. Input the subnet mask for the IP address of the SMG-3200 and press [Enter].

```
Netmask(dot form): 255.255.255.0 -> 255.255.255.0
```

7. TOS (Type Of Service) value is used to determine the priority of voice packets transmitted from the SMG-3200 on the network, which enables the network to provide better QOS (Quality Of Service). Input appropriate TOS value and press [Enter].

```
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
|                        TOS (Type Of Service) Field                        |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
|   7   |   6   |   5   |   4   |   3   |   2   |   1   |   0   |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
|            Priority           |   D   |   T   |   R   |   0   |   0   |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +

  D: if 0x10, Minimum Delay
  T: if 0x08, Maximum Throughput
  R: if 0x04, Maximum Reliability
  Range: 0x00 ~ 0xFF, Default: 0x00

TOS Value (Default: 0x00): 0x00 - > 0
```

> **NOTE** Consult with your network administrator about TOS configuration. To make TOS configuration effective, network routing equipment connected to the SMG-3200 have to be configured to support TOS in advance. You can configure TOS values, if necessary, regardless of DHCP server.

8. Configured network parameters and message asking you whether to restart system is displayed as follows. After confirming the parameters type 'y' and press [Enter].

```
Good
 >>> IP Address = 165.213.81.230
 >>> Gateway    = 165.213.81.1
 >>> Subnet Mask = 255.255.255.0
 >>> TOS         = 0

# System Configuration has changed. Restart? (y: Now, n: Later) -> y
```

9. Log in again on CLI after the system is restarted.

Configuring the System Operation Mode

You have to configure gateway operation mode and PCM type, after TCP/IP configuration. This section describes procedures for system operation configuration.

Setting up Gateway Operation Mode

SMG-3200 gateway operates in either of the following 2 operation modes.

Tandem Gateway : SMG-3200 communicates with PBX or KTS over PSTN trunk without subscriber phone connection.

Standalone Gateway : SMG-3200 communicates with analog telephone with PSTN trunk with subscriber phone connection through SLC port.

Configure gateway operation mode of SMG-3200 referring to the following directions.

1. At the SMG-3200 prompt, type 'pstnmenu' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu
```

2. <PSTN Configuration Menu> screen is displayed. Type '0' and press [Enter].

```
<<<<< PSTN Configuration Menu >>>>>

          [0] Gateway Operation Mode
          [1] PSTN Rerouting Insert Digit
          [2] PCM Method
          [3] Dial Method
          [4] SLC Signal
          [5] Trunk Signal
          [6] Call Control Method
          [7] Ring Cadence
          [8] System Tone Cadence
          [9] CO Tone Cadence
         [10] Gain Control
         [11] Diagnosis
         [12] MMC Port Block/UnBlock
         [13] Display Slot Configuration
         [14] Display Port Status
         [15] Save & Exit
         [16] Exit

         Select ? 0
```

3. To configure the gateway operation mode of the SMG-3200, type '0' and press [Enter].

```
<<<<< Gateway Operation Mode >>>>>
+-----+--------------------------------+-------------------+----------------+
| No  |             Items              |       Value       |    Default     |
+-----+--------------------------------+-------------------+----------------+
| 0   |      Gateway Operation Mode    |   Tandem Gateway  |  Tandem Gateway|
| 1   |      PSTN Inbound LCR Option   |      Disable      |    Disable     |
+-----+--------------------------------+-------------------+----------------+

                    <<<<< PSTN Inbound LCR Table >>>>>
+-----+-------------+-------------++----+-------------+-------------+
| No  | Inbound Prefix |  Max Digit || No  | Inbound Prefix |  Max Digit |
|     |                |    Count   ||     |                |    Count   |
+-----+-------------+-------------++----+-------------+-------------+
| 2   |             |      0      || 18  |             |      0      |
| 3   |             |      0      || 19  |             |      0      |
| 4   |             |      0      || 20  |             |      0      |
| 5   |             |      0      || 21  |             |      0      |
| 6   |             |      0      || 22  |             |      0      |
| 7   |             |      0      || 23  |             |      0      |
| 8   |             |      0      || 24  |             |      0      |
| 9   |             |      0      || 25  |             |      0      |
| 10  |             |      0      || 26  |             |      0      |
| 11  |             |      0      || 27  |             |      0      |
| 12  |             |      0      || 28  |             |      0      |
| 13  |             |      0      || 29  |             |      0      |
| 14  |             |      0      || 30  |             |      0      |
| 15  |             |      0      || 31  |             |      0      |
| 16  |             |      0      || 32  |             |      0      |
| 17  |             |      0      || 33  |             |      0      |
+-----+-------------+-------------++----+-------------+-------------+
                                         [ . : Exit, - : Null, Enter : Skip ]

Configuration Item Number: 0
```

4. Type the number of desired gateway operation mode and press [Enter].

```
Gateway Operation Mode (0:Tandem Gateway, 1:Standalone): Standalone -> 0
```

5. To close current screen, type '.' and press [Enter].

```
Configuration Item Number: .
```

6. Return to the <PSTN Configuration Menu> screen.

Setting up PCM Type

PCM (Pulse Code Modulation) is the most frequently used analog-to-digital encoding (A/D conversion technique to convert analog voice into digital signal). SMG-3200 provides 2 PCM types, which are A-law and U-law.

> A- law : A-law is an ITU-T (International Telecommunication Union) standard for analog-to-digital conversion in PCM. A-law is used in most of the telephone networks in Europe, and similar to U-law used in North America.

> μ - law : μ -law is an ITU-T (International Telecommunications Union)standard for analog-to-digital conversion in PCM. μ -law is used in most of the telephone networks in North America.

CAUTION SMG-3200 provides A-law type by default. To use μ -law type, trunk board and station board such as LOOP, SLC, E&M need to be changed.

Setting up the PCM type of the SMG-3200 using the following directions.

1. In the <PSTN Configuration Menu> screen, type '2' and press [Enter].

```
<<<<< PSTN Configuration Menu >>>>>

          [0] Gateway Operation Mode
          [1] PSTN Rerouting Insert Digit
          [2] PCM Method
          [3] Dial Method
          [4] SLC Signal
          [5] Trunk Signal
          [6] Call Control Method
          [7] Ring Cadence
          [8] System Tone Cadence
          [9] CO Tone Cadence
         [10] Gain Control
         [11] Diagnosis
         [12] MMC Port Block/UnBlock
         [13] Display Slot Configuration
         [14] Display Port Status
         [15] Save & Exit
         [16] Exit


         Select ? 2
```

2. <PCM Method> screen is displayed. Type '0' and press [Enter].

```
<<<<< PCM Method >>>>>

+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - + - - - - - - - - - - - - +
|  No  |                   Items                   |        Value          |       Default       |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - + - - - - - - - - - - - - +
|  0   |                  PCM Type                 |        A_LAW          |       A_LAW         |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - + - - - - - - - - - - - - +
                                                                                        [ . : Exit ]


Configuration Item Number: 0
```

3. Input the number of desired PCM type and press [Enter].

```
Configuration Item Number: 0
PCM Type (0:U_LAW, 1:A_LAW): A_LAW -> 1
```

4. To close current screen, type '.' and press [Enter].

```
Configuration Item Number: .
```

5. After returning to the <PSTN Configuration Menu> screen, type '16' and press [Enter].

```
<<<<< PSTN Configuration Menu >>>>>

           [0] Gateway Operation Mode
           [1] PSTN Rerouting Insert Digit
           [2] PCM Method
           [3] Dial Method
           [4] SLC Signal
           [5] Trunk Signal
           [6] Call Control Method
           [7] Ring Cadence
           [8] System Tone Cadence
           [9] CO Tone Cadence
          [10] Gain Control
          [11] Diagnosis
          [12] MMC Port Block/UnBlock
          [13] Display Slot Configuration
          [14] Display Port Status
          [15] Save & Exit
          [16] Exit

          Select ? 16
```

6. Message asking if you want to save the changed configuration in flash memory is displayed. Type 'y' and press [Enter].

```
# PSTN Configuration has changed. Save? (y: Yes, n: No) -> y
```

7. Changed data is saved in flash memory, and you are returned to the initial screen of the SMG-3200 CLI interface.

Configuring the VoIP

This section describes the procedures for the SMG-3200 VoIP configuration. The SMG-3200 VoIP configuration procedure is determined by the Gatekeeper service that translates terminal aliases such as telephone number in E.164 format, e-mail address, and H.323 ID into an IP address.

❶ When not using Gatekeeper

You have to create the VoIP table. To create the VoIP table, consult with the network administrator for required information.

❷ When using Gatekeeper

Register the information of Gatekeeper. The following information is required for registration.

- IP address and Alias (host name) of Gatekeeper
- H.323 ID and E.164 ID of the SMG-3200 to be registered in Gatekeeper

Option ❶ When not using Gatekeeper

Create the VoIP table according to the following directions.

1. At the SMG-3200 prompt, type 'voipmenu' and press [Enter].

```
SMG3200:165.213.81.230> voipmenu
```

2. <VoIP Configuration Menu> screen is displayed. Type '5' and press [Enter].

```
<<<<< VoIP Configuration Menu >>>>>

        [0] VoIP General Option
        [1] VoIP DSP Option
        [2] VoIP Gatekeeper Option
        [3] VoIP Routing Table
        [4] VoIP Caller ID Table
        [5] VoIP Remote IP Table
        [6] VoIP Remote IP Status
        [7] Save & Exit
        [8] Exit

        Select ? 5
```

3. Message as follows is displayed. Type '0' and press [Enter].

```
IP Table Index Number(Range: 0 ~ 31): 0
```

4. <VoIP Remote IP Table> screen is displayed. Type the number of the VoIP table to configure and press [Enter].

```
<<<<< VoIP Remote IP Table >>>>>

    + - - - - - + - - - - - - - - - - - - - - - - - - - + - - - - - + - - - - - - - - - - - - - - - - - - - +
    |  No  |         IP Address         |  No  |         IP Address         |
    + - - - - - + - - - - - - - - - - - - - - - - - - - + - - - - - + - - - - - - - - - - - - - - - - - - - +
    |   0  |      168. 213. 81. 230      |  16  |        0.  0.  0.  0        |
    |   1  |        0.  0.  0.  0        |  17  |        0.  0.  0.  0        |
    |   2  |        0.  0.  0.  0        |  18  |        0.  0.  0.  0        |
    |   3  |        0.  0.  0.  0        |  19  |        0.  0.  0.  0        |
    |   4  |        0.  0.  0.  0        |  20  |        0.  0.  0.  0        |
    |   5  |        0.  0.  0.  0        |  21  |        0.  0.  0.  0        |
    |   6  |        0.  0.  0.  0        |  22  |        0.  0.  0.  0        |
    |   7  |        0.  0.  0.  0        |  23  |        0.  0.  0.  0        |
    |   8  |        0.  0.  0.  0        |  24  |        0.  0.  0.  0        |
    |   9  |        0.  0.  0.  0        |  25  |        0.  0.  0.  0        |
    |  10  |        0.  0.  0.  0        |  26  |        0.  0.  0.  0        |
    |  11  |        0.  0.  0.  0        |  27  |        0.  0.  0.  0        |
    |  12  |        0.  0.  0.  0        |  28  |        0.  0.  0.  0        |
    |  13  |        0.  0.  0.  0        |  29  |        0.  0.  0.  0        |
    |  14  |        0.  0.  0.  0        |  30  |        0.  0.  0.  0        |
    |  15  |        0.  0.  0.  0        |  31  |        0.  0.  0.  0        |
    + - - - - - + - - - - - - - - - - - - - - - - - - - + - - - - - + - - - - - - - - - - - - - - - - - - - +
                                                                    [ . : Exit ]

Configuration Item Number: 1
```

5. Input IP address of opposite VoIP equipment to be connected to the SMG-3200 and press [Enter].

```
IP Address (dot form): 0.0.0.0 ->
```

6. To register the IP address of other VoIP equipment, repeat steps 4 ~ 5.

7. After VoIP table creation is completed, type '.' and press [Enter].

```
Configuration Item Number: .
```

8. To close current screen, type '.' and press [Enter].

```
IP Table Index Number(Range: 0 ~ 31): .
```

9. After returning to the <VoIP Configuration Menu> screen. Type '8' and press [Enter].

```
<<<<< VoIP Configuration Menu >>>>>

          [0] VoIP General Option
          [1] VoIP DSP Option
          [2] VoIP Gatekeeper Option
          [3] VoIP Routing Table
          [4] VoIP Caller ID Table
          [5] VoIP Remote IP Table
          [6] VoIP Remote IP Status
          [7] Save & Exit
          [8] Exit

          Select ? 8
```

10. Message asking if you want to save the changed configuration in flash memory is displayed.
    Type 'y' and press [Enter].

```
# VoIP Configuration has changed. Save? (y: Yes, n: No) -> y
```

11. Changed data is saved in flash memory.

Option ❷ When using Gatekeeper

Configure Gatekeeper information according to the following directions.

1. At the SMG-3200 prompt, type 'voipmenu' and press [Enter].

```
SMG3200:165.213.81.230> voipmenu
```

2. <VoIP Configuration Menu> screen is displayed. Type '2' and press [Enter].

```
<<<<< VoIP Configuration Menu >>>>>

        [0] VoIP General Option
        [1] VoIP DSP Option
        [2] VoIP Gatekeeper Option
        [3] VoIP Routing Table
        [4] VoIP Caller ID Table
        [5] VoIP Remote IP Table
        [6] VoIP Remote IP Status
        [7] Save & Exit
        [8] Exit

        Select ? 2
```

3. <VoIP Gatekeeper Option> screen is displayed. Type '0' and press [Enter].

```
<<<<< VoIP Gatekeeper Option >>>>>


+- -+- - - - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - -+
| No |            Items              |           Value              |     Default          |
+- -+- - - - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - -+
|  0 |  Gatekeeper Connection        |  Disable                     |     Disable          |
|    |  Gatekeeper Status            |  Unregistration              |       ..             |
|  1 |  RAS Method                   |  Auto                        |     Auto             |
|  2 |  Registration Type            |  E. 164 in G W Name          |     G W Name         |
|  3 |  Gatekeeper Type              |  Other G K                   |     Other G K        |
|  4 |  G W Routing In G K mode      |  Disable                     |     Disable          |
|  5 |  Gatekeeper IP                |  0. 0. 0. 0                  |       ..             |
|  6 |  Gatekeeper Alias             |  Gatekeeper                  |       ..             |
|  7 |  Alternative Gatekeeper IP    |  0. 0. 0. 0                  |       ..             |
|  8 |  Gatekeeper Down Option       |  Alternative G K             |     Alternative      |
|  9 |  Gateway Name| H. 323 ID      |  SMG 3200                    |       ..             |
| 10 |  E. 164                       |       3200                   |       ..             |
+- -+- - - - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - -+
                                                               [ . : Exit, - : Null ]
Configuration Item Number.
```

4. Message is displayed as follows. Type '1' and press [Enter].

```
 Gatekeeper Connection (0:Disable, 1:Enable): Disable -> 1
```

5. To specify IP address of Gatekeeper, type '5' and press [Enter].

```
 Configuration Item Number: 5
```

6. Input IP address of Gatekeeper and press [Enter].

```
 Gatekeeper IP Address (dot form): 165.213.81.230 -> 165.213.81.58
```

7. To specify alias name (host name) of Gatekeeper, type '6' and press [Enter].

```
 Configuration Item Number: 6
```

8. Input alias name (host name) of gatekeeper and press [Enter].

```
Gatekeeper Alias Name : Gatekeeper -> Gatekeeper1
```

9. To specify H.323 ID of the SMG-3200, type '9' and press [Enter].

```
Configuration Item Number: 9
```

10. Input H.323 ID of the SMG-3200 for login and press [Enter].

```
Gateway Name H.323 ID : pa-37 -> pa-27
```

11. To close the current screen, type '.' and press [Enter].

```
Configuration Item Number: .
```

12. After returning to the <VoIP Configuration Menu> screen, type '8', and press [Enter].

```
<<<<< VoIP Configuration Menu >>>>>

        [0] VoIP General Option
        [1] VoIP DSP Option
        [2] VoIP Gatekeeper Option
        [3] VoIP Routing Table
        [4] VoIP Caller ID Table
        [5] VoIP Remote IP Table
        [6] VoIP Remote IP Status
        [7] Save & Exit
        [8] Exit

        Select ? 8
```

13. Message asking if you want to save the changed configuration in flash memory is displayed. Type 'y' and press [Enter].

```
# VoIP Configuration has changed. Save? (y: Yes, n: No) -> y
```

14. Changed data is saved in flash memory.

Chapter 5 CLI (Command Line Interface)

This chapter presents the CLI that allows operational configuration of the SMG-3200. An overview of menus followed by a description of functions for each menu and settings for submenus is given.

Menu Configuration

The CLI menu of the SMG-3200 consists of 6 main menus. Each menu has a number of submenus, except for 'help' and 'quit' menus.

Main Menu	Sub Menu
help	No
sysmenu	[0] DHCP Client Setting [1]Network Configuration [2]Login ID Configuration [3] System Upgrade [4] Display Package Information [5] Default DB Setting [6] Restart System [7] Exit
pstnmenu	[0] Gateway Operation Mode [1] PSTN Rerouting Insert Digit [2] PCM Method [3] Dial Method [4] SLC Signal [5] Trunk Signal [6] Call Control Method [7] Ring Cadence [8] System Tone Cadence [9] CO Tone Cadence [10] Gain Control [11] Diagnosis [12] MMC Port Block/UnBlock [13] Display Slot Configuration [14] Display Port Status [15] Save & Exit [16] Exit
VoIPmenu	[0]VoIP General Option [1]VoIP DSP Option [2]VoIP Gatekeeper Option

	[3]VoIP Routing Table
	[4]VoIP Caller ID Table
	[5]VoIP Remote IP Table
	[6]VoIP Remote IP Status
	[7] Save & Exit
	[8] Exit
clicmd	clicmd
	cdrhelp
	date
	dbfilehelp
	optionhelp
	settime
quit	No

Using Menus

Make sure that you familiarize yourself with the following instructions on the CLI Menus of the SMG-3200.

- Selecting the Main Menu

  To select the Main Menu from prompt on the SMG-3200 main screen, type in the name of the desired menu. For example, type '**sysmenu**' and press [Enter] to select **sysmenu**.

- Selecting a Submenu

  To select a submenu, type the number of the desired submenu. For example, type '**0**' and press [Enter] to select **0) DHCP Client Setting** on the **System Configuration Menu**.

  When you using the 'clicmd' menu, just input the string of submenu name at the SMG3200:xxxx.xxx.xx.xxx> prompt in the main screen. Each submenu itself can be CLI command, or has another submenu.

- Back to the Previous Screen

  To close the current menu screen and return to the previous screen, type in the number corresponding to Exit in the menu.

In addition to the above, you can follow the guide that appears on the bottom of the screen every time you select a menu.

Each menu item will be explained in detail in the following sections.

System Configuration Menu

You can set overall system functions, such as IP address and login password, of the SMG-3200 from the **System Configuration Menu**. You can also view values of parameters such as system version information.

The following <System Configuration Menu> screen will appear when you type '**sysmenu**' and press [Enter] from the prompt on the main screen.

```
<<<<< System Configuration Menu >>>>>

        [0] DHCP Client Setting
        [1] Network Configuration
        [2] Login ID Configuration
        [3] System Upgrade
        [4] Display Package Information
        [5] Default DB Setting
        [6] Restart System
        [7] Exit


         Select ?
```

The following table shows an overview of the 8 submenus found in the **System Configuration Menu**.

No	Menu	Functions
0	DHCP Client Setting	Sets the SMG-3200 as a DHCP client.
1	Network Configuration	Configures static IP address, subnet mask and gateway.
2	Login ID Configuration	Configures login name and password.
3	System Upgrade	Upgrades the system software.
4	Display Package Information	Displays the version of system program.
5	Default DB Setting	Resets item values by type of database with default values.
6	Restart System	Restarts the system.
7	Exit	Closes the System Configuration Menu screen.

[0] DHCP Client Setting

Function   You can set the SMG-3200 as a DHCP client. By doing so, the DHCP server automatically allocates an IP address for the SMG-3200. After the setup, you must restart the system to implement the change.

Default   DHCP Client Set   OFF
Value   Class ID   (none)

Procedure   1. In the <System Configuration Menu> screen, type '0', and press [Enter].

```
<<<<< DHCP Client Setting >>>>>


+ - - - - + - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - +
|  No  |                Items               |           Value          |
+ - - - - + - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - +
|  0   |         DHCP Client Set            |            OFF           |
|  1   |            Class ID                |                          |
+ - - - - + - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - +
                                                    [- :Null, . :Exit ]
```

2. To set the SMG-3200 as a DHCP client, select 0 in Configuration Item Number, press [Enter], and type 'y'.

```
 Set DHCP Client? (y: ON, n: OFF): ON ->
```

3. When Class ID is needed, select 1 in Configuration Item Number, press [Enter], and type 'y'. Enter Class ID if it is necessary in DHCP server.

4. A message asking whether to restart the system will be displayed. To restart immediately, type 'y' or type 'n' otherwise and press [Enter].

```
 # System Configuration has changed. Restart? (y: Now, n: Later) ->
```

[1] Network Configuration

Function   Users can set the network configuration such as IP address for the SMG-3200, default gateway address and subnet mask. After setup, you must restart the system to implement the change.

Procedure   1. In the <System Configuration Menu> screen, type '1', and press [Enter].

```
<<<<< Network Configuration >>>>


+ - - - + - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - - - - - +
|  No |            Items               |               Value              |
+ - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - - - - - +
|  0  |   IP Address                   |           165. 213. 81. 230        |
|  1  |   Gateway Address              |           165. 213. 81. 1          |
|  2  |   Netmask                      |           255. 255. 255. 0         |
|  3  |   TOS(Type Of Service)         |               0x0                |
|  4  |   MAC Address(Read Only)       |  SAMSUNG(00- 00- F0)- AB- CD- 0D |
+ - - - + - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - - - - - +
                                                                          [ . : Exit ]
```

2. To change the network information, type 'y', and press [Enter].

```
Change Network Configuration? (y: Yes, n: No) ->
```

3. Input a new IP address for the SMG-3200 and press [Enter].

```
IP Address (dot form): 165.213.81.230 ->
```

4. Input an IP address for the default gateway and press [Enter].

```
Gateway Address (dot form): 165.213.81.1 ->
```

5. Input a subnet mask and press [Enter].

```
Netmask(dot form): 255.255.255.0 ->
```

6. Set a TOS value in consultation with your network administrator at the site. TOS (Type Of Service) requests a router for a specific service to effectively process voice packets (that are transmitted from the SMG-3200) on the network. Refer to the definition of terms listed in the **Appendix D** for a full description of TOS.

```
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
|                  TOS (Type Of Service) Field                |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
| 7  | 6  | 5 | 4 | 3 | 2 | 1 | 0 |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
|      Priority   | D | T | R | 0 | 0 |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
 D: if 0x10, Minimum Delay
 T: if 0x08, Maximum Throughput
 R: if 0x04, Maximum Reliability
 Range: 0x00 ~ 0xFF, Default: 0x00

 TOS Value (Default: 0x00): 0x00 - >
```
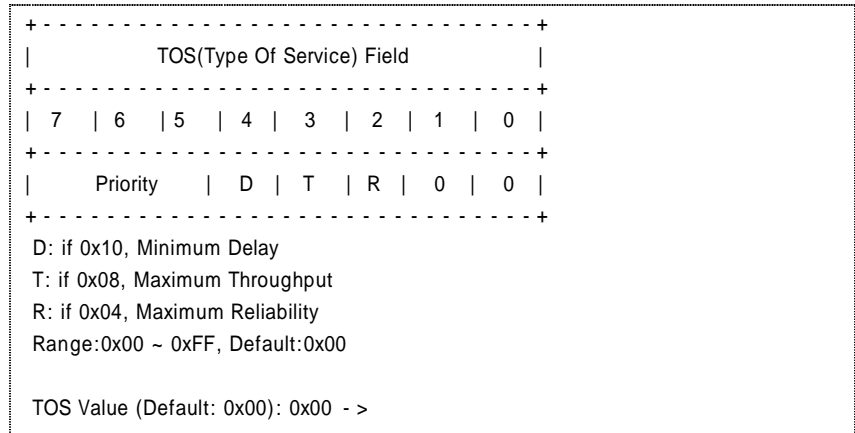
> **CAUTION** When you set TOS for the SMG-3200, you must set router to support the TOS. You can configure TOS values, if necessary, to process QoS (Quality of Service) regardless of whether using a DHCP server or not.

7. A message asking whether to restart the system will be displayed as follows. To restart immediately, type 'y' or type 'n' otherwise and press [Enter].

```
# System Configuration has changed. Restart? (y: Now, n: Later) ->
```

> **NOTE** MAC Address
>
> MAC Address is a fixed address that is allocated to a network controller of the SMG-3200. It cannot be modified by users.

[2] Login ID Configuration

Function   You can change the login name and password of CLI.

Default   `Login Name    smg3200`
Value   `Login Passwd smg3200v1`

Procedure   1. In the <System Configuration Menu> screen, type '2', and press [Enter].

```
<<<<< Login ID Configuration >>>>>
+- - - -+- - - - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - - - - -+
|  No  |            Items            |          Value          |
+- - - -+- - - - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - - - - -+
|  0   |          Login Name         |          smg3200        |
|  1   |          Login Passwd       |          smg3200v1      |
+- - - -+- - - - - - - - - - - - - - - - - - -+- - - - - - - - - - - - - - - - -+
                                                        [ . : Exit ]
```

2. To change the login name and password of CLI, type 'y', and press [Enter].

```
Change Login Name and Passwd? (y: Yes, n: No) ->
```

3. Input a new login name and press [Enter]. The new login name must be different from the default or previous login names.

```
Enter New Login Name: smg3200 ->
```

4. Input a new password.

```
Enter New Passwd: smg3200v1 ->
```

5. A message asking whether to restart the system will be displayed as follows. To restart immediately, type 'y' or type 'n' otherwise and press [Enter].

```
# System Configuration has changed. Restart? (y: Now, n: Later) ->
```

[3] System Upgrade

Function   You can view the system upgrade information, or change the program of the DSP chip for VoIP and the operation program for the SMG-3200 using TFTP or FTP. Changes are stored in the system's flash memory and will be implemented when the system is rebooted.

There are two ways to upgrade the system of the SMG-3200:

❶ TFTP : It receives the system program stored on a TFTP server at a remote location through TFTP protocol and changes the program. The system program to be changed must be stored under the "/tftpboot" directory in the TFTP server.

❷ FTP   : When there is no TFTP server, it first receives the program to be changed through FTP protocol. By selecting the FTP method and typing in the number of files in the system program, the system program will be changed.

Procedure   1. In the <System Configuration Menu> screen, type '3', and press [Enter].

```
<<<<< System Upgrade >>>>

[TFTP Method]
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
| NO  |              Items                     |     Value       |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
|  0  |   TFTP Server Address                  |   165. 213. 81. 10   |
|  1  |   Upgrade Status                       |     SUCCESS     |
|  2  |   Working Program Version              |  3200V2. 2: 020307  |
|  3  |   Saved Program Version                |  3200V2. 2: 020307  |
|  4  |   Total Program File Count             |        30        |
|  5  |   Saved Program File Count             |        30        |
|  6  |   DSP Package File Count               |        2         |
|  7  |   Main Package File Count              |        28        |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +


[FTP Method]
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
| No  |              Items                     |     Value       |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
|  0  |       DSP Package File Count           |        2         |
|     |       Main Package File Count          |        28        |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
                                               [  . :Exit ]
```

2. To upgrade the system software, type 'y', and press [Enter].

```
Upgrade This System? (y: Yes, n: No) -> y
```

3. Select an upgrade method and press [Enter].

```
Upgrade Method (1: TFTP, 2: FTP) ->
```

4. When TFTP is selected, input the IP address of the TFTP server. When FTP is selected.

```
TFTP Server Address (dot form): 165.213.81.10 ->
```

5. Input the number of files in the DSP Chip program for VoIP. When none of the DSP Chip programs for VoIP are to be upgraded, type '0' and press [Enter].

```
DSP Package File Count: 2 ->
```

6. Input the number of system operation program files. When none of the system operation programs are to be upgraded, type '0' and press [Enter].

```
Main Package File Count: 28 ->
```

7. A message asking you whether to restart the system will be displayed as follows. To restart immediately, type 'y' or type 'n' otherwise and press [Enter].

```
# System Configuration has changed. Restart? (y: Now, n: Later) ->
```

NOTE The number of DSP files or system operation files can be changed according to the version of system program.

[4] Display Package Information

Function   You can view the version information of the program that is installed in the system.

Procedure   1. In the <System Configuration Menu> screen, type '4', and press [Enter].

```
<<<<< Display Package Information >>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
|  No  |                    Items                          |         Value                |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
|   0  | Boot ROM Version                                   |    BootROM ver 1. 1          |
|   1  | Working Program Version                            |    3200V2. 2: 020307         |
|   2  | Saved Program Versio                               |    3200V2. 2: 020307         |
|   3  | Total Program File Count                           |           30                 |
|   4  | Saved Program File Count                           |           30                 |
|   5  | Upgrade Status                                     |       SUCCESS                |
|   6  | EMS                                                |       Disabled               |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - +
                                                                              [ . : Exit ]
```

2. The following information will appear.

   - Boot ROM Version : Version of the Boot ROM.

   - Working Program Version : Version of the program currently in operation.

   - Saved Program Version : Version of the program stored in flash memory.

   - Total Program File Count : Number of program files.

   - Saved Program File Count : Number of program files stored in flash memory.

   - Upgrade Status : Status of the latest upgraded system program.

   - EMS: Indicates whether EMS (Element Management System), the GUI maintenance tool for the SMG-3200, is enabled.

[5] Default DB Setting

Function   You can set all values of each variable in the SMG-3200 to default values, by database type.

Procedure   1. In the <System Configuration Menu> screen, type '5', and press [Enter].

2. When the following message appears, select which database variables are to be changed to default values and press [Enter]. To change all database variable values with default values, select '0'.

```
Set Default DB (0: All, 1: System, 2: PSTN, 3: VoIP )
```

3. It will automatically find and set the old values to the default values. The screen below the case you selected ALL.

```
>>> Set Default System DB(Default Login ID):
Good
>>> Set Default System DB(Default Password):
Good
>>> Set Default System DB(DHCP Client Off ):
Good
>>> Set Default PSTN DB(PSTN Configuration):
Good
>>> Set Default VoIP DB(VoIP Configuration):
Good
```

4. Upon completion, a message asking whether to restart the system will be displayed as follows. To restart immediately, type 'y' or type 'n' otherwise and press [Enter].

```
# System Configuration has changed. Restart? (y: Now, n: Later) ->
```

[6] Restart System

Function   When you execute the system restart command the system will restart provided that the value of **Upgrade Status** on the **4) Display Package Information** menu is 'SUCCESS'. If the value is 'Fail' or 'Loading', the system will not restart and a warning message will appear. This is because the system will not operate properly when the restart command is given when the system update has not been properly completed.

Procedure   1. In the <System Configuration Menu> screen, type '6', and press [Enter].

```
Restart System? (y: Yes, n: No)
```

2. To restart the system, type 'y', and press [Enter].

[7] Exit

Function   This closes the <System Configuration Menu> screen and returns to the main menu screen.

Procedure   In the <System Configuration Menu> screen, type '7' and press [Enter].

PSTN Configuration Menu

In the **PSTN Configuration Menu**, you can set the PSTN interface that is required to connect to the PSTN trunk line. You can also view the values of parameters.

At the SMG-3200 prompt of the main screen, type '**pstnmenu**' and press [Enter]. The following PSTN Configuration Menu screen will be displayed.

```
<<<<< PSTN Configuration Menu >>>>>


        [0] Gateway Operation Mode
        [1] PSTN Rerouting Insert Digit
        [2] PCM Method
        [3] Dial Method
        [4] SLC Signal
        [5] Trunk Signal
        [6] Call Control Method
        [7] Ring Cadence
        [8] System Tone Cadence
        [9] CO Tone Cadence
       [10] Gain Control
       [11] Diagnosis
       [12] MMC Port Block/UnBlock
       [13] Display Slot Configuration
       [14] Display Port Status
       [15] Save & Exit
       [16] Exit



        Select ?
```

The following is an overview of the 17 submenus found in the **PSTN Configuration Menu**.

No	Menu	Functions
0	Gateway Operation Mode	Sets the system operation mode.
1	PSTN Rerouting Insert Digit	When PSTN routing, it configures a trunk line access code used in either PBX or KTS.
2	PCM Method	Sets PCM mode.
3	Dial Method	Sets the trunk line digit transmission method.
4	SLC Signal	Sets the signal type of analog interface.
5	Trunk Signal	Sets the signal type of digital interface.
6	Call Control Method	Sets the signal type for call control.
7	Ring Cadence	Sets the system ring cadence.
8	System Tone Cadence	Sets the system tone cadence.
9	CO Tone Cadence	Sets the CO tone cadence.
10	Gain Control	Adjusts call quality depending on the connection type.
11	Diagnosis	Sets the diagnosis interval for PSTN interface.
12	MMC Port Block/UnBlock	Specifies use of a specific port.
13	Display Slot Configuration	Views configuration of cards installed in system slots.
14	Display Port Status	Views system slots and operation status of ports.
15	Save & Exit	Closes the PSTN Configuration Menu screen with saving changes.
16	Exit	Closes the PSTN Configuration Menu screen without saving changes.

[0] Gateway Operation Mode

Function   (1) Gateway Operation Mode
The SMG-3200 operates in either of the following modes. In this menu you can configure the operation mode of the SMG-3200.

- Tandem Gateway : You can connect the SMG-3200 to PBX or KTS, and use the system as a gateway without internal subscribers.

- Standalone Gateway : You can connect a telephone to a SLC port on the SMG-3200, and use the system as a gateway with internal subscribers.

(2) PSTN Inbound LCR Option
SMG-3200 analyzes the dialing digits coming from PABX, KTS, and telephones and decides whether or not the dialing is terminated.

Procedure   1. In the <PSTN Configuration Menu> screen, type '0', and press [Enter].

```
                  <<<<< Gateway Operation Mode >>>>>
+---+---------------------+----------------+------------+
| No |        Items        |      Value     |  Default   |
+---+---------------------+----------------+------------+
| 0 |  Gateway Operation Mode  | Tandem Gateway | Tandem Gateway |
| 1 |  PSTN Inbound LCR Option |    Disable     |   Disable  |
+---+---------------------+----------------+------------+


                  <<<<< PSTN Inbound LCR Table >>>>>
+---+----------------+---------++----+----------------+--------+
| No| Inbound Prefix |Max Digit|| No | Inbound Prefix |MaxDigit|
|   |                | Count   ||    |                | Count  |
+---+----------------+---------++----+----------------+--------+
| 2 |                |    0    || 18 |                |   0    |
| 3 |                |    0    || 19 |                |   0    |
| 4 |                |    0    || 20 |                |   0    |
| 5 |                |    0    || 21 |                |   0    |
| 6 |                |    0    || 22 |                |   0    |
| 7 |                |    0    || 23 |                |   0    |
| 8 |                |    0    || 24 |                |   0    |
| 9 |                |    0    || 25 |                |   0    |
|10 |                |    0    || 26 |                |   0    |
```

(Continued)

```
| 11 |                    |   0   || 27 |                      |   0    |
| 12 |                    |   0   || 28 |                      |   0    |
| 13 |                    |   0   || 29 |                      |   0    |
| 14 |                    |   0   || 30 |                      |   0    |
| 15 |                    |   0   || 31 |                      |   0    |
| 16 |                    |   0   || 32 |                      |   0    |
| 17 |                    |   0   || 33 |                      |   0    |
+- -+- - - - - - - - - - -+- - - - - -++- - -+- - - - - - - - - -+- - - - - -+
                                        [ . : Exit, -  : Null, Enter : Skip ]

Configuration Item Number: 0
```

2. To change the operation mode of the SMG-3200, type '0' in the above screen, and press [Enter].

```
Configuration Item Number: 0
```

3. To change the operation mode to Tandem Gateway or Standalone, press '0' or '1' respectively, and press [Enter].

```
Gateway  Operation  Mode  (0:Tandem  Gateway,  1:Standalone):
Tandem Gateway ->
```

4. To set the PSTN Inbound LCR Option, type '1' in the above <<<<< Gateway Operation Mode >>>>> screen and press [Enter]. It enables PSTN Inbound LCR Option.

```
Configuration Item Number: 1
```

5. Then, select 2 to 33 as a Configuration Item Number and enter Inbound Prefix and Maxdigit count. This value analyzes dialing digits to decide the termination of dialing.

- Inbound Prefix: the prefix pattern of dialing digits coming into SMG-3200

- Max Digit Count: The maximum number of dialing digits coming into

SMG-3200 with the designated prefix.

```
Configuration Item Number: 2
Inbound Prefix:   ->
Max Digit Count : 0 ->
```

> **NOTE** Inbound LCR PSTN Option decides whether or not the dialing is terminated coming into SMG-3200. Generally dialing is considered to be terminated when '#' came in or dialing timeout occurred. Without '#' or dialing timeout, however, when the designated number of dialing digits for the assigned prefix are incoming, it is considered the dialing termination.
>
> This feature shortens the call connetion time for SMG-3200 because SMG-3200 decides the dialing termination without any other termination separators.

[1] PSTN Rerouting Insert Digit

Function   The SMG-3200 system provides a function called PSTN rerouting (or PSTN Detour). PSTN rerouting is used to reroute a call set by a VOIP to PSTN network bypassing an IP network in the case of having poor QoS (Quality Of Service), or detecting IP network being busy or disconnected or in error.

At the time of PSTN rerouting, an access code is required for PABX or KTS connected to SMG-3200 to access the PSTN trunk line depending on the environment of the operating site. This access code can be specified.

Procedure   1. In the <PSTN Configuration Menu> screen, type '1', and press [Enter].

```
<<<<< PSTN Rerouting Insert Digit >>>>>

+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - + - - - - - - - - - - +
| No |             Items                    |   Value   |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - + - - - - - - - - - - +
|  0  |      Rerouting Insert Digit          |   None    |    None     |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - + - - - - - - - - - - +
                                                                   [ . : Exit ]
```

2. To change the access code for PSTN Rerouting, type '0', and press [Enter].

```
Configuration Item Number: 0
```

3. Input a trunk access code, and press [Enter].

```
PSTN Rerouting Insert Digit: (N: None)   None   ->
```

[2] PCM Method

Function PCM (Pulse Code Modulation) is the most frequently used analog-to-digital encoding (A/D conversion technique to convert analog voice into digital signal). SMG-3200 provides 2 PCM types, which are A-law and μ-law. In this menu, PCM type can be changed.

CAUTION The PCM coding method of the PBX or KTS connected to the SMG-3200 system must be set the same.

Procedure 1. In the <PSTN Configuration Menu> screen, type '2', and press [Enter].

```
<<<<< PCM Method >>>>>

+- - - +- - - - - - - - - - - - - - - - - - +- - - - - - - - - - - - - - +- - - - - - - - - +
|  No  |            Items            |           Value         |    Default   |
+- - - +- - - - - - - - - - - - - - - - - - +- - - - - - - - - - - - - - +- - - - - - - - - +
|  0   |          PCM Type           |           A_LAW         |    A_LAW     |
+- - - +- - - - - - - - - - - - - - - - - - +- - - - - - - - - - - - - - +- - - - - - - - - +
                                                                    [ . : Exit ]
```

2. To change the PCM coding method, type '0', and press [Enter].

```
Configuration Item Number:
```

3. To change the PCM coding method to U_LAW or A_LAW, type '0' or '1' respectively, and press [Enter].

```
PCM Type (0:U_LAW, 1:A_LAW): A_LAW ->
```

[3] Dial Method

Function   You can set the digit transmission method and its options on the trunk connected to a PSTN interface.

MFC (DTMF) : The digit transmission method that is used to send pressed numbers on a tone telephone. When MFC is used, the holding time for MFC digits must be specified on **1. DTMF Holding Time** item.

Dial Pulse : The digit transmission method that is used to send dialed numbers on a pulse telephone.

R2MFC : The digit transmission method that is used in digital trunks such as E1 or T1. Depending on the site environment, options such as **Calling Number ID** or **Called Number ID** must be specified.

Procedure   1. In the <PSTN Configuration Menu> screen, type '3', and press [Enter].

```
<<<<< Dial Method >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - +
|  No  |               Items                |    Value    |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - +
|  0   | Dial Type Selection               |    MFC      |    MFC      |
|  1   | DTMF Holding Time                 |     1       |     1       |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - +
                                                                  [Unit: 100msec]


+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - +
|  No  |          R2 Signal Items          |    Value    |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - +
|  2   | Calling Number Request            |    OFF      |    OFF      |
|  3   | Calling Number Response           |    OFF      |    OFF      |
|  4   | Called Status Request             |    OFF      |    OFF      |
|  5   | Called Status Response            |    OFF      |    OFF      |
|  6   | Calling Extension Response        |    OFF      |    OFF      |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - +
                                                                     [ . : Exit ]
```

2. Input the number of the dial method to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Specify a value referring to the following table, and press [Enter].

No	Item	Description
0	Dial Type Selection	Selects a trunk digit transmission type. 0. MFC : Multi-Frequency (DTMF) type 1. PULSE : Pulse type 2. R2MFC : R2MFC type
1	DTMF Holding Time (1 ~ 99)	Specifies MFC digit holding time. Typed number x 100msec is the holding time.
2	Calling Number Request	Sets whether caller's number identification is to be requested (ON) or not (OFF) to the other party.
3	Calling Number Response	Sets whether you accept (ON) or not (OFF) the other party's request for caller's number identification.
4	Called Status Request	Sets whether you request (ON) or not (OFF) the other party for call status.
5	Called Status Response	Sets whether you accept (ON) or not (OFF) the caller's request for call status.
6	Calling Extension Response	Must be specified when the SMG-3200 is used in **Standalone** mode, but it is currently not in service.

NOTE   Number 0 and 1 are used in MFC type and the rest are used in R2MFC type.

[4] SLC Signal

Function   You can set the signal type of the SLC interface.

Procedure   1. In the <PSTN Configuration Menu> screen, type '4', and press [Enter].

```
<<<<< SLI Signal >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - +
|  No  | SLI Signal Timer                  | Value  |    Unit     | Default |
+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - +
|  0   |     Hook Off Time                 |   1    |  100 msec   |    1    |
|  1   |     Hook On Time                  |  50    |  10 msec    |   50    |
|  2   |     Hook Flash MIN. Time          |  10    |  10 msec    |   10    |
|  3   |     Hook Flash MAX. Time          |  30    |  10 msec    |   30    |
+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - +
                                                                             [ . : Exit ]
```

2. Input the number of the SLC signal to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Specify a value referring to the following table, and press [Enter].

No	Item	Description
0	Hook Off Time	The minimum time elapsed to recognize hook off of an analog telephone. Typed number x 100msec is the actual hook off time.
1	Hook On Time	The minimum time elapsed to recognize hook on of an analog telephone. Typed number x 10msec is the actual hook on time.
2	Hook Flash MIN. Time	The minimum time elapsed to recognize hook flash of an analog telephone. Typed number x 10msec is the actual hook flash time.
3	Hook Flash MAX. Time	The maximum time elapsed to recognize hook flash of an analog telephone. Typed number x 10msec is the actual hook flash time.

[5] Trunk Signal

Function   You can set the signal type for analog and digital trunk.

Procedure   1. In the <PSTN Configuration Menu> screen, type '5', and press [Enter].

```
<<<<< Trunk Signal >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - + - - - - - - - - - +
|  No  |        Trunk Signal Type         |      Value       |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - + - - - - - - - - - +
|  0   |   Signal Type                    |     Wink         |    Wink     |
|  1   |   Insert End Of Digit            |     Off          |    Off      |
|  2   |   D- Trunk Mater/Slave           |     Master       |    Master   |
|  3   |   T1 Line Coding                 |     AMI          |    AMI      |
|  4   |   T1 Signal Mode                 |     SF           |    SF       |
|  5   |   E1 CRC4                        |     Enable       |    Enable   |
|  6   |   PRI Type                       |     EU           |    EU       |
|  7   |   PRI Channel Mode               |     Exclusive    |    Exclusive |
|  8   |   PRI Dial Mode                  |     EnBloc       |    EnBloc   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +


+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
|  No  |        Trunk Signal Timer        | Value  |    Unit     |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
|  1   |   Seize Time                     |   30   |   10 msec   |     30      |
|  2   |   Release Time                   |   10   |  100 msec   |     10      |
|  3   |   Noring Time                    |    4   |   1 sec     |      4      |
|  4   |   Answer Holding Time            |    6   |  100 msec   |      6      |
|  5   |   CO HookOn Time                 |  200   |   10 msec   |    200      |
|  6   |   Wink Time                      |   20   |   10 msec   |     20      |
+ - - - + - - - - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
                                                                       [ . : Exit ]
```

2. Input the number of the trunk signal type to be changed, and press [Enter].

```
 Configuration Item Number:
```

3. Specify a value referring to the following table, and press [Enter].

No	Item	Description
0	Signal Type	Selects the signal type for trunk interface. 0. Immediate 1. Wink 2. Delay
1	Insert End Of Digit	Input '#' to terminate dialing when SMG-3200 is making a dialing through trunk line to PABX or KTS. • Off: does not input '#' • On: inputs '#'
2	D-Trunk Master/Slave	Sets the way of synchronization of the clock of Physical layer when E1 or T1 is used. • Master: SMG-3200 provides a clock and PABX and KTS synchronize with this clock. (It operates in ISDN Network Mode when PRI trunk is used.) • Slave: PABX or KTS provides a clock and SMG-3000 synchronizes with this clock.
3	T1 Line Coding	Sets the encoding mode during T1 Signal mode to prevent the signal from wandering which occurs when you get the time information from the transmitted signal. • AMI (Alternate Mark Inversion): 0 (Space) and 1 (Mark) are bipolar marks. 0 changes into 0 level, and 1 changes into level of +1 and –1. • B8ZS (Bipolar Eight Zero Substitution): When eight zeros are being sent continuously in SX-1and DS-1signal, 000+-0-+ substitutes for the signal level of + and 000-+0+- substitutes for the signal level of –.

(Continued)

No	Item	Description
4	T1 Signal Mode	Sets the transmission frame format during T1 Signal mode. •SF (Superframing Format): Sends a superframe made of 12 frames. •ESF (BOM) (Extended Superframing Format by BOM (Bit Oriented Message Mode)): sends a extended superframe made of 24 frames. •ESF (HDLC) (Extended Superframing Format by HDLC (High Level Data Link Contro)): sends a extended superframe made of 24 frames.
5	E1 CRC4	Sets the mode to encode the CRC bit in case of E1 signal mode. •Disable: sends the CRC bit to synchronization signal frame without encoding • Enable: sends the CRC bit to synchronization signal frame with encoding
6	PRI Type	SMG-3200 supports a PRI protocol of EU and KOR type in the current version.
7	PRI Channel Mode	Sets the PRI channel mode. • Exclusive Mode: sets the channel previously and makes a call. • Preferred Mode: makes a call by using the channel the counterparty decides. *** In Network (Master) Mode, only Exclusive mode is used.**
8	PRI Dial Mode	Sets the way of transferring messages during PRI dial mode. • Enbloc Mode: transfers the messages at a time. • OverLap Mode: transfers each message separately.
9	Seize Time	The time elapsed for a seizure signal being maintained until hook off is detected. Typed number x 10msec is the actual seize time.
10	Release Time	The time elapsed for a release signal being maintained until trunk connection is off. Typed number x 100msec is the actual release time.

(Continued)

No	Item	Description
11	Noring Time	The time elapsed for the process of transmission being abandoned when a hook off signal is not maintained from the moment a hook off is detected and responded. Typed number x 1sec is the actual time.
12	Answer Holding Time	The time elapsed to keep the response signal to a hook off. Typed number x 100msec is the actual time.
13	CO HookOn Time	The time elapsed to evaluate a hook on signal when connected to a trunk. Typed number x 10msec is the actual time.
14	Wink Time	The time elapsed to respond to a signal wink in wink mode. Typed number x 10msec is the actual time.

[6] Call Control Method

Function   You can set the signal type required to process a call.

> **NOTE** The items in this menu have different default values for Tandem Gateway and Standalone modes.

Procedure   1. In the <PSTN Configuration Menu> screen, type '6', and press [Enter].

```
<<<<< Call Control Method >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
|  No   |          Digit Timer               |  Value     |      Unit       |     Default     |
|       |                                    |            |                 |   TNDM(STND)    |
+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
|   0   |    First Digit Time                |    5       |    1 sec        |     5(10)        |
|   1   |    Inter Digit Time                |    2       |    1 sec        |     2(10)        |
+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +


+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
|  No   |        Trunk LOOP Timer            |  Value     |      Unit       |     Default     |
+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
|   2   |    Loop OK Time                    |    60      |    100 msec     |     60(60)      |
|   3   |    OK Release Time                 |    80      |    100 msec     |     80(80)      |
+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - + - - - - - - - - - + - - - - - - - - - +
                                                                                   [ . : Exit ]
```

2. Input the number of the call control method to be changed,, and press [Enter].

```
Configuration Item Number:
```

3. Specify a value referring to the following table, and press [Enter].

No	Item	Description
0	First Digit Time	The time elapsed to receive the first digit after hook off. Typed number x 1sec is the actual time.
1	Inter Digit Time	The maximum time between the received digits after hook off. Typed number x 1sec is the actual time.
2	Loop OK Time	The time elapsed to receive a response after an attempt to seize a trunk is made. Typed number x 100msec is the actual time.
3	OK Release Time	The time elapsed until a response is received after a release to a trunk seize is attempted. Typed number x 100msec is the actual time.

[7] Ring Cadence

Function   You can distinguish the ring type by setting the ring cadence (interval between rings). Sets the cadence in units of 100msec.

Procedure   1. In the <PSTN Configuration Menu> screen, type '7', and press [Enter].

```
<<<<< Ring Cadence >>>>>


+ - - - + - - - - - - - - - - - + - - - - - - - + - - - - - - - + - - - - - - - - + - - - - - - - +
|       |   Ring Cadence        |      (Default Value)          |   Unit: 100msec              |
|  No   |   Ring Type      |   1st On   |   1st Off   |   2nd On   |   2nd Off   |
+ - - - + - - - - - - - - - - - + - - - - - - - + - - - - - - - + - - - - - - - - + - - - - - - - +
|  0    |      SLI         |   4( 4)    |   2( 2)    |   4( 4)    |   20(20)    |
|  1    |     TRUNK        |   4( 4)    |   2( 2)    |   4( 4)    |   20(20)    |
+ - - - + - - - - - - - - - - - + - - - - - - - + - - - - - - - + - - - - - - - - + - - - - - - - +
                                                                              [ . : Exit ]
```

2. Input the number of the ring cadence to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Set the cadence for the selected ring type, and press [Enter]. Typed number x 100msec is the actual time.

No	Item	Item in Detail	Description
0	SLI	SLI Ring 1st on Time	The time elapsed for the first SLI ring to be ON.
		SLI Ring 1st off Time	The time elapsed for the first SLI ring to be OFF.
		SLI Ring 2nd on Time	The time elapsed for the second SLI ring to be ON.
		SLI Ring 2nd off Time	The time elapsed for the second SLI ring to be OFF.
1	TRUNK	TRUNK Ring 1st on Time	The time elapsed for the first trunk ring to be ON.
		TRUNK Ring 1st off Time	The time elapsed for the first trunk ring to be OFF.
		TRUNK Ring 2nd on Time	The time elapsed for the second trunk ring to be ON.
		TRUNK Ring 2nd off Time	The time elapsed for the second trunk ring to be OFF.

NOTE In the standalone mode, SLI ring is used for the call between the telephone connected to SLC, and TRUNK ring is used for the rest of the case.

[8] System Tone Cadence

Function   You can set the tone cadence that is sent by the SMG-3200. Sets the tone cadence by tone type in units of 50msec.

Procedure   1. In the <PSTN Configuration Menu> screen, type '8', and press [Enter].

```
<<<<< System Tone Cadence >>>>>


+ - - - + - - - - - - - - - - - + - - - - - - - - + - - - - - - - + - - - - - - - - + - - - - - - - +
|     |   Tone Cadence    (Default Value)          Unit:  50msec            |
|  No |    Tone Type      |    1st On   |  1st Off  |    2nd On   |  2nd Off  |
+ - - - + - - - - - - - - - - - + - - - - - - - - + - - - - - - - + - - - - - - - - + - - - - - - - +
|  0  |   Dial            |    1( 1)    |   1( 1)   |   20(20)    |   5( 5)   |
|  1  |   Busy            |   10(10)    |  10(10)   |   10(10)    |  10(10)   |
|  2  |   Transfer        |    2( 2)    |   2( 2)   |    2( 2)    |   2( 2)   |
|  3  |   Ring Back       |   20(20)    |  40(40)   |   20(20)    |  40(40)   |
|  4  |   Error           |    5( 5)    |   5( 5)   |    5( 5)    |   5( 5)   |
+ - - - + - - - - - - - - - - - + - - - - - - - - + - - - - - - - + - - - - - - - - + - - - - - - - +
                                                                          [ . : Exit ]
```

2. Input the number of the system tone cadence to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Set the cadence for the selected ring type, and press [Enter]. Typed number x 50msec is the actual time.

No	Item	Item in Detail	Description
0	Dial Tone	DIAL 1st on Time	The time elapsed for the first dial tone to be On.
		DIAL 1st off Time	The time elapsed for the first dial tone to be Off.
		DIAL 2nd on Time	The time elapsed for the second dial tone to be On.
		DIAL 2nd off Time	The time elapsed for the second dial tone to be Off.

(Continued)

No	Item	Item in Detail	Description
1	Busy Tone	BUSY 1st on Time	The time elapsed for the first busy tone to be On.
		BUSY 1st off Time	The time elapsed for the first busy tone to be Off.
		BUSY 2nd on Time	The time elapsed for the second busy tone to be On.
		BUSY 2nd off Time	The time elapsed for the second busy tone to be Off.
2	Transfer Tone	TRANSFER 1st on Time	The time elapsed for the first transfer tone to be On.
		TRANSFER 1st off Time	The time elapsed for the first transfer tone to be Off.
		TRANSFER 2nd on Time	The time elapsed for the second transfer tone to be On.
		TRANSFER 2nd off Time	The time elapsed for the second transfer tone to be Off.
3	Ring Back Tone	RINGBACK 1st on Time	The time elapsed for the first Ring Back tone to be On.
		RINGBACK 1st off Time	The time elapsed for the first Ring Back tone to be Off.
		RING BACK 2nd on Time	The time elapsed for the second Ring Back tone to be On.
		RING BACK 2nd off Time	The time elapsed for the second Ring Back tone to be Off.
4	Error Tone	ERROR 1st on Time	The time elapsed for the first Error tone to be On.
		ERROR 1st off Time	The time elapsed for the first Error tone to be Off.
		ERROR 2nd on Time	The time elapsed for the second Error tone to be On.
		ERROR 2nd off Time	The time elapsed for the second Error tone to be Off.

NOTE When the time of 1st On and 1st Off is 1, it means continuous tone without cadence control.

[9] CO Tone Cadence

Function   You can set CO tone cadence to identify tones coming from a CO when the SMG-3200 is connected to a CO line. The tone cadence can be set to units of 50msec by tone type.

> **NOTE** This feature is not used in the current version.

Procedure   1. In the <PSTN Configuration Menu> screen, type '9', and press [Enter].

```
<<<<< CO Tone Cadence >>>>>


+ - - + - - - - - - - - - + - - - - - - - - + - - - - - - - - + - - - - - - - + - - - - - - +
|     | CO Tone Cadence    (Default Value)       Unit:   50msec            |
| No  |   Tone Type   |   1st On   |   1st Off   |   2nd On   |  2nd Off |
+ - - + - - - - - - - - - + - - - - - - - - + - - - - - - - - + - - - - - - - + - - - - - - +
|  0  |  Busy         |   10(10)   |   10(10)    |   10(10)   |  10(10)  |
|  1  |  Ring Back    |   20(20)   |   40(40)    |   20(20)   |   0(40)  |
|  2  |  Dial         |   20(20)   |    5( 5)    |   20(20)   |   5( 5)  |
+ - - + - - - - - - - - - + - - - - - - - - + - - - - - - - - + - - - - - - - + - - - - - - +
                                                                    [ . : Exit ]
```

2. Input the number of the CO tone cadence to be changed, and press [Enter].

```
 Configuration Item Number:
```

3. Set the CO tone cadence referring to the following table, and press [Enter]. Typed number x 50msec is the actual time.

No	Item	Item in Detail	Description
0	Busy (Trunk Busy Tone)	BUSY CO TONE 1st on Time	The time elapsed for the first busy tone to be On.
		BUSY CO TONE 1st off Time	The time elapsed for the first busy tone to be Off.
		BUSY CO TONE 2nd on Time	The time elapsed for the second busy tone to be On.
		BUSY CO TONE 2nd off Time	The time elapsed for the second busy tone to be Off.
1	Ring Back (Trunk Ring Back Tone)	RING BACK CO TONE 1st on Time	The time elapsed for the first ring back tone to be On.
		RING BACK CO TONE 1st off Time	The time elapsed for the first ring back tone to be Off
		RING BACK CO TONE 2nd on Time	The time elapsed for the second ring back tone to be On
		RING BACK CO TONE 2nd off Time	The time elapsed for the second ring back tone to be Off.
2	Dial (Trunk Dial Tone)	DIAL CO TONE 1st on Time	The time elapsed for the first dial tone to be On.
		DIAL CO TONE 1st off Time	The time elapsed for the first dial tone to be Off.
		DIAL CO TONE 2nd on Time	The time elapsed for the second dial tone to be On.
		DIAL CO TONE 2nd off Time	The time elapsed for the second dial tone to be Off.

[10] Gain Control

Function   You can adjust call quality (gain control) depending on the connection type, i.e. analog telephone, analog trunk or digital trunk line. Each gain is set in units of dB.

Procedure   1. In the <PSTN Configuration Menu> screen, type '10', and press [Enter].

```
<<<<< Gain Control >>>>>

   +- - - -+- - - - - - - - - - - - - - - - - - - - - - - +- - - - - - -+- - - - - - - - +
   |  No  |         Connection Type          |   Gain  |    Default   |
   |       |        ( 0: 0dB    1: 1.9Db      2: - 6dB      3: - 2.5dB )   |
   +- - - -+- - - - - - - - - - - - - - - - - - - - - - - +- - - - - - -+- - - - - - - - +
   |  0   |      SLI  - >  SLI               |    0     |     0        |
   |  1   |      SLI  - > ATRK               |    0     |     0        |
   |  2   |      SLI  - > DTRK               |    0     |     0        |
   |  3   |      ATRK - >  SLI               |    0     |     0        |
   |  4   |      ATRK - > ATRK               |    0     |     0        |
   |  5   |      ATRK - > DTRK               |    0     |     0        |
   |  6   |      DTRK - >  SLI               |    1     |     1        |
   |  7   |      DTRK - > ATRK               |    0     |     0        |
   |  8   |      DTRK - > DTRK               |    0     |     0        |
   +- - - -+- - - - - - - - - - - - - - - - - - - - - - - +- - - - - - -+- - - - - - - - +
                                                            [ . : Exit ]
```

2. Input the number of the gain control to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Set value of gain referring to the following table, and press [Enter].

No	Item	Description
0	SLI ➜ SLI	Specifies the call quality that transmits from TX to RX of analog telephone.
1	SLI ➜ ATRK	Specifies the call quality that transmits from TX of analog telephone to RX of analog trunk.
2	SLI ➜ DTRK	Specifies the call quality that transmits from TX of analog telephone to RX of digital trunk.
3	ATRK ➜ SLI	Specifies the call quality that transmits from TX of analog trunk to RX of analog telephone.
4	ATRK ➜ ATRK	Specifies the call quality that transmits from TX of analog trunk to RX of analog trunk.
5	ATRK ➜ DTRK	Specifies the call quality that transmits from TX of analog trunk to RX of digital trunk.
6	DTRK ➜ SLI	Specifies the call quality that transmits from TX of digital trunk to RX of analog telephone.
7	DTRK ➜ ATRK	Specifies the call quality that transmits from TX of digital trunk to RX of analog trunk
8	DTRK ➜ DTRK	Specifies the call quality that transmits from TX of digital trunk to RX of digital trunk.

NOTE ATRK refers to LOOP and E&M, DTRK refers to VoIP and E1/PRI, T1, and SLI refers to SLC.

[11] Diagnosis

Function   You can set a regular interval to diagnose the PSTN interface of the SMG-3200. Setting it to '0' it bypasses the diagnosis. You can set the interval at units of 1sec by the test type.

Procedure   1. In the <PSTN Configuration Menu> screen, type '11', and press [Enter].

```
<<<<< Diagnosis >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - + - - - - - - - +
|  No  |       Diagnosis Items       |    Period    |    Unit    |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - + - - - - - - - +
|  0   |   SLI Port Test             |      0       |   1 sec    |     0       |
|  1   |   Trunk Seizure Test        |      0       |   1 sec    |     0       |
|  2   |   Trunk CODEC Test          |      0       |   1 sec    |     0       |
+ - - - + - - - - - - - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - + - - - - - - - +
                                                                        [ . : Exit ]
```

2. Input the number of the diagnosis interval to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Set the diagnosis interval referring to the following table, and press [Enter]. Typed number x 1sec is the actual time.

No	Item	Description
0	SLI Port Test	Sets the diagnosis interval for SLI port test.
1	Trunk Seizure Test	It sets the diagnosis interval for trunk seizure test.
2	Trunk CODEC Test	It sets the diagnosis interval for trunk CODEC test.

NOTE   SLI refers to SLC, Trunk refers to LOOP and E&M.

CAUTION   When you test the E&M port, you should connect the E&M JIG.

[12] MMC Port Block/UnBlock

Function   You can set Block/UnBlock on each port of the system. 'Block' indicates 'disabled to use' and 'UnBlock' indicates 'enabled to use'.

Procedure   1. In the <PSTN Configuration Menu> screen, type '12', and press [Enter].

```
<<<<< MMC Port Block/UnBlock >>>>>


+ - - - - + - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
| Port  |    Slot No.     (0: UnBlock,        1: Block,       - : UnUsed)    |
| No.   |   0(VoIP)    |    1(USL1)    |    2(USL2)    |    3(D- TRK)   |
+ - - - - + - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - - - +
|   0   |      0      |      0       |      0       |       -       |
|   1   |      0      |      0       |      0       |       -       |
|   2   |      0      |      0       |      0       |       -       |
|   3   |      0      |      0       |      0       |       -       |
|   4   |      0      |      0       |      0       |       -       |
|   5   |      0      |      0       |      0       |       -       |
|   6   |      0      |      0       |      0       |       -       |
|   7   |      0      |      0       |      0       |       -       |
|   8   |      -      |      -       |      -       |       -       |
|   9   |      -      |      -       |      -       |       -       |
|   A   |      -      |      -       |      -       |       -       |
|   B   |      -      |      -       |      -       |       -       |
|   C   |      -      |      -       |      -       |       -       |
|   D   |      -      |      -       |      -       |       -       |
|   E   |      -      |      -       |      -       |       -       |
|   F   |      -      |      -       |      -       |       -       |
|  10   |      -      |      -       |      -       |       -       |
|  11   |      -      |      -       |      -       |       -       |
|  12   |      -      |      -       |      -       |       -       |
|  13   |      -      |      -       |      -       |       -       |
|  14   |      -      |      -       |      -       |       -       |
|  15   |      -      |      -       |      -       |       -       |
|  16   |      -      |      -       |      -       |       -       |
|  17   |      -      |      -       |      -       |       -       |
|  18   |      -      |      -       |      -       |       -       |
|  19   |      -      |      -       |      -       |       -       |
|  1A   |      -      |      -       |      -       |       -       |
|  1B   |      -      |      -       |      -       |       -       |
|  1C   |      -      |      -       |      -       |       -       |
|  1D   |      -      |      -       |      -       |       -       |
+ - - - - + - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - - - - + - - - - - - - - - - - +
                                                                  [ . : Exit ]
```

2. Type '1' to block or '2' to unblock, and press [Enter].

```
Select Block or UnBlock (1: Block, 2: UnBlock) ->
```

3. Input the slot number for the port specified to be unblocked, and press [Enter].

```
Blocking Slot Number: (0: VoIP, 1: USL1, 2: USL2, 3: D-TRK)
```

4. Input the port number, and press [Enter].

```
Blocking Port No. of VoIP Slot (Range: 0 ~ 0x1F) [ . :Exit ] ->
```

5. You can continue with other ports by typing in the corresponding port number and pressing [Enter].

```
Blocking Port No. of VoIP Slot (Range: 0 ~ 0x1F) [ . :Exit ] ->
```

6. To exit, type '.', and press [Enter]. You will return to the <PSTN Configuration Menu> screen.

[13] Display Slot Configuration

Function   Displays type of cards that are installed on each slot of the system.

Procedure   1. In the <PSTN Configuration Menu> screen, type '13', and press [Enter].

```
<<<<< Display Slot Configuration >>>>


+ - - - - - - - - - - - + - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - +
|     Slot No        |        Card Type          |         Port Count        |
+ - - - - - - - - - - - + - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - +
|   0( VoIP  )       |        VoIP_04            |              8            |
|   1( US1  )        |        LOOP              |              8            |
|   2( US2  )        |        SLI               |              8            |
|   3( D- TRK )      |        None              |              0            |
+ - - - - - - - - - - - + - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - +
                                                                        [ . : Exit ]

[ . : Exit ], [ 1 : Re- play ]:
```

2. The following information will be displayed.

No	Item	Description
0	VOIP	You can identify the type of VoIP card and number of ports installed on VOIP slot. There are two types of VOIP cards, VoIP_04 and VoIP_304 depending on the type of DSP chip.
1	US1	You can identify the type of cards and number of ports installed on US1 slot.
2	US2	You can identify the type of cards and number of ports installed on US2 slot.
3	D-TRK	You can identify the type of digital trunk connected on E1/ PRI, T1 port and number of ports.

[14] Display Port Status

Function   You can view the status of each port installed in the system slots.

Procedure   1. In the <PSTN Configuration Menu> screen, type '14', and press [Enter].

2. When the following message appears, input the slot number to display, and press [Enter].

```
Slot Number [0: VoIP, 1: US1, 2: US2, 3: D-TRK] :
```

3. Port status of the selected slot will appear as follows:

```
<<<<< Display Port Status >>>>>

[VoIP]
+---------+-----------+-------------+-------------+-------------+----------+
|  PortNo |  CardType |  FaultBlock |   MMCBlock  |   CallState |  Opp.Port|
+---------+-----------+-------------+-------------+-------------+----------+
|    0    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    1    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    2    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    3    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    4    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    5    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    6    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
|    7    |  VoIP_04  |   Normal    |   UnBlock   |     CO      |    FF    |
+---------+-----------+-------------+-------------+-------------+----------+
                                                                 [ . :Exit]

Slot Number [0: VoIP, 1: US1, 2: US2, 3: D-TRK] :
```

- Port No : The port number on the slot.

- Card Type : The card type installed in the slot.

- Fault Block : Indicates an error on the selected port. When the port is operated normal, it shows 'Normal'.

- MMC Block : Indicates the operational status of the related port. 'UnBlock' indicates 'enabled to use', 'Block' indicates 'disabled to use'.

- Call State : Indicates the internal process status of a call. This value is used to trace the call processing status.

- Opp. Port : Indicates the relative port number of the selected port. It can also be used to test trace call status.

4. To continue to check the status of other slots, input the slot number to check.

```
Slot Number [0: VoIP, 1: US1, 2: US2, 3: D-TRK] :
```

[15] Save & Exit

Function   After saving changes, it closes the <PSTN Configuration Menu> screen, and returns to the main menu screen.

Procedure   In the <PSTN Configuration Menu> screen, type '15', and press [Enter].

[16] Exit

Function   Without saving changes, it closes the <PSTN Configuration Menu> screen, and returns to the main menu screen.

Procedure   In the <PSTN Configuration Menu> screen, type '16', and press [Enter].

VoIP Configuration Menu

In the **VoIP Configuration Menu**, you can control the IP interface that connects to the SMG-3200. You can also set IP routing information together with VoIP features.

At the prompt on the startup screen, type '**VoIPmenu**' and press [Enter]. The following screen will be displayed.

```
<<<<< VoIP Configuration Menu >>>>>

        [0] VoIP General Option
        [1] VoIP DSP Option
        [2] VoIP Gatekeeper Option
        [3] VoIP Routing Table
        [4] VoIP Caller ID Table
        [5] VoIP Remote IP Table
        [6] VoIP Remote IP Status
        [7] Save & Exit
        [8] Exit

        Select ?
```

The following is an overview of the 8 submenus found in the **VoIP Configuration Menu**.

No	Menu	Functions
0	VoIP General Option	Sets general options for VoIP services.
1	VoIP DSP Option	Sets DSP (Digital Signal Processing) options for VoIP services.
2	VoIP Gatekeeper Option	Sets connection options for Gatekeeper.
3	VoIP Routing Table	Sets types of connection for VoIP sending and incoming call services.
4	VoIP Caller IP Table	Sets the Caller ID for external calling through IP Network
5	VoIP Remote IP Table	Sets IP address of VoIP IP Table.
6	VoIP Remote IP Status	Checks each IP status in VoIP IP Table.
7	Save & Exit	Closes the VoIP Configuration Menu screen with saving changes.
8	Exit	Closes the VoIP Configuration Menu screen without saving changes.

[0] VoIP General Option

Function   You can set general options for VoIP services.

Procedure   1. In the <VoIP Configuration Menu> screen, type '0', and press [Enter].

```
<<<<< VoIP General Option >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - - +
| No  |                  Items                 |   Value   |  Default  |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - - +
|  0  |  Signal Type                           | FastStart |  FastStart |
|  1  |  Gateway ID                            |   3200    |    ..     |
|  2  |  Caller ID Type                        |   ANI     |    ANI    |
|  3  |  Virtual Ring Back Tone                |  Disable  |  Disable  |
|  4  |  DTMF Signal Type                      |  H. 245   |  H. 245   |
|  5  |  FAX Signal Type                       |   T. 38   |   T. 38   |
|  6  |  H. 245 Open in FastStart              |   Yes     |   Yes     |
|  7  |  H. 245 Tunneling                      |   No      |   No      |
|  8  |  DIL Number                            |   201     |    ..     |
|  9  |  SNMP Server IP                        |  0.0.0.0  |    ..     |
| 10  |  Signaling Port                        |  10000    |  10000    |
| 11  |  Status Monitoring Port                |  20000    |  20000    |
| 12  |  WCS Port                              |  20010    |  20010    |
| 13  |  SIG K Access Port                     |  20020    |  20020    |
| 14  |  Status Monitoring Period(sec)         |    0      |    0      |
| 15  |  Max. Fax Service Count                |    8      |    8      |
| 16  |  No Answer Waiting Time(sec)           |   90      |   90      |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - + - - - - - - - - - +
                                                                    [ . : Exit ]
```

2. Input the item number to be changed, and press [Enter].

```
 Configuration Item Number:
```

3. Set values for the selected item referring to the following table, and press [Enter].

No	Item	Description
0	Signal Type	Selects H.323 signal type. 0. SlowStart : Q.931 ➜ H.245 ➜ Connection to Media 1. FastStart : Q.931 ➜ Connection to Media
1	Gateway ID	Sets the SMG-3200's Gateway ID. If Caller ID Type is GWID, it is the ID information that is sent to the other party.
2	Caller ID Type	When sending a VoIP call via IP network, it selects the Caller ID type that is sent from the SMG-3200 to recipients. 0. GWID: Uses Gateway ID number. 1. ANI: Uses Calling Numbers that are sent by PBX at sender's end. 2. IP: Uses IP address. 3. GWD+ANI: Uses Gateway ID number and Calling Numbers that are sent by PBX at sender's end. 4. Caller ID Table: Uses Caller ID in the Caller ID Table
3	Virtual Ring Back Tone	Sets whether to use virtual Ring Back Tone. 0. Disable: Do not use virtual Ring Back Tone. 1. Enable (Setup): uses virtual Ring Back Tone when sending setup. 2. Enable (Alert): uses virtual Ring Back Tone when receiving Alert.
4	DTMF Signal Type	Sets DTMP process method via IP network. 0. Inband: The DTMF signaling process through voice channels. 1. H.245: The DTMF signaling process through H.245 signal method.
5	FAX Signal Type	Internet fax is processed in the real-time event relay method. It sets a protocol for it. 0. T.38 : Uses standard T.38 fax protocol. 1. Samsung : Uses Samsung own protocol.
6	H.245 Open in FastStart	At the time of Fast Start, specifies (in terms of Yes/No) if H.245 channel is to be opened using H.245 channel information in setup information.

(Continued)

No	Item	Description
7	H.245 tunneling	H.245 signalling does not need any additional channel. It is possible to use the Q.931 signalling channel together.
8	DIL Number	When a dial digit is not included in incoming calls on IP network, specifies a number to determine a call.
9	SNMP Server IP	When the SMG-3200 is connected with network management equipment with SNMP protocol, it inputs IP address of the network management equipment.
10	Signaling Port	Indicates the port number in IP for H.323 signaling. It also sets the range of port numbers allowed by firewall equipment. When a specific port is specified, up to the number of VoIP channels x 4 from the specific port, can be used. This function will be available soon.
11	Status Monitoring Port	Sets the range of port numbers for exchange of system status information between the SMG-3200. The specified port plus (specified port +1) can be used.
12	WCS Port	Specifies the communication port connecting Samsung's Web Call Service terminal.
13	SIGK Access Port	Specifies the communication port connecting Samsung's Internet Gatekeeper. The specified port plus (specified port +1) can be used.
14	Status Monitoring Period	Sets the status monitoring period between Samsung's VoIP Gateways. It is only to be used when the SMG-3200 is connected to Samsung's VoIP Gateway.
15	Max. Fax Service Count	Sets the max allowable number of Internet fax channels with the SMG-3200. (Max. 8 no)
16	No Answer Waiting Time (sec)	Sets the max waiting time to wait when the party does not answer after call connection.

[1] VoIP DSP Option

Function   You can set DSP (Digital Signal Processing) options for VoIP services.

Procedure   1. In the <VoIP Configuration Menu> screen, type '1', and press [Enter].

```
<<<<< VoIP DSP Option >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - + - - - - - - - - - - +
|  No  |                   Items                   |    Value    |    Default    |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - + - - - - - - - - - - +
|   0  |   Audio Codec                             |  G.729a(8K) |  G.729a(8K)  |
|   1  |   Echo Cancellation                       |   Enable    |    Enable    |
|   2  |   Silence Suppression                     |   Enable    |    Enable    |
|   3  |   High Pass Filter                        |   Enable    |    Enable    |
|   4  |   Post Filter                             |   Enable    |    Enable    |
|   5  |   Input Gain (dB)                         |     0       |    0 dB      |
|   6  |   Voice Volume (dB)                       |     0       |    0 dB      |
|   7  |   Multi- Frame Counter                    |     2       |     2        |
|   8  |   Jitter Optimizing Factor                |     4       |     4        |
|   9  |   RTP Delay Limit(msec)                   |    500      |   500 msec   |
|  10  |   RTP Loss Limit(%)                       |    10       |   10 %       |
|  11  |   RTP Loss Check Period(sec)              |    30       |   30 sec     |
|  12  |   RTP Over Limit Count                    |     1       |     1        |
|  13  |   FAX Error Correction Mode               |   Enable    |    Enable    |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - + - - - - - - - - - - +
                                                                    [ . : Exit ]
```

2. Input the item number to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Set the values for the selected item referring to the following table, and press [Enter].

No	Item	Description
0	Audio Codec	Selects VoIP Codec. 1. G.711 (64K) 2. G.723.1 (6.3K) 3. G.729a (8K) 4. G.729 (8K)
1	Echo Cancellation	Echo Cancellation is the function to remove echo that is generated by voice reflection on Packet Delay and PSTN. It enables/disables this function.
2	Silence Suppression	Silence Suppression is the function to prevent transmission of voice packet by detecting 'mute' during a call. It enables/disables this function.
3	High Pass Filter	Voice filter, which must always be set as 'Enable'.
4	Post Filter	Voice filter, which must always be set as 'Enable'.
5	Input Gain	Quality of PCM voice that is input via VoIP DSP. It sets it to the site environment.
6	Voice Volume	Volume of voice packet when it is PCM processed. It sets it to the site environment.
7	Multi-Frame Counter	Sets the buffering number when voice packets are transmitted to network. The voice packets are buffered to the set number and set as a single RTP packet.
8	Jitter Optimizing Factor	Sets the control standard for Jitter Buffering that is required in the PCM process of received voice packets from network. When it is set below 4, it focuses on process of Packet Loss. When it is set above 4, it focuses on Packet Delay.
9	RTP Delay Limit	Sets the delay limit on voice packets received through RTP. When the limit is exceeded during communication, it is used as a basic index for network error.

(Continued)

No	Item	Description
10	RTP Loss Limit	Sets the loss limit on voice packets received through RTP. When the limit is exceeded during communication, it is used as a basic index for network error.
11	RTP Loss Check Period	Sets the RTP Loss check period.
12	RTP OverLimit Count	When the RTP Delay Limit or RTP Loss Limit is exceeded, it sets the standard accumulated frequency to be used as a basic index for network error.
13	FAX Error Connection Mode	Sets the additional recovery feature for T.38 FAX error.

[2] VoIP Gatekeeper Option

Function   You can set information required for Gatekeeper connection when the SMG-3200 is to be connected to Gatekeeper.

Procedure   1. In the <VoIP Configuration Menu> screen, type '2', and press [Enter].

```
<<<<< VoIP Gatekeeper Option >>>>>


+ - - - + - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - + - - - - - - - +
|  No   |                   Items                       |         Value           |   Default   |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - + - - - - - - - +
|   0   |  Gatekeeper Connection                        | Disable                 | Disable     |
|       |  Gatekeeper Status                            | Unregistration          |   ..        |
|   1   |  RAS Method                                   | Auto                    | Auto        |
|   2   |  Registration Type                            | E. 164 in G W Name      | G W Name    |
|   3   |  Gatekeeper Type                              | Other G K               | Other G K   |
|   4   |  GW Routing In GK mode                        | Disable                 | Disable     |
|   5   |  Gatekeeper IP                                | 0. 0. 0. 0              |   ..        |
|   6   |  Gatekeeper Alias                             | Gatekeeper              |   ..        |
|   7   |  Alternative Gatekeeper IP                    | 0. 0. 0. 0              |   ..        |
|   8   |  Gatekeeper Down Option                       | Alternative G K         | Alternative |
|   9   |  Gateway Name        |       H. 323 ID        | SMG 3200                |   ..        |
|   10  |                      |       E. 164           | 3200                    |   ..        |
+ - - - + - - - - - - - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - + - - - - - - - +
                                                         [ . :Exit, - :Null ]
```

2. Input the item number to be changed, and press [Enter].

```
Configuration Item Number:
```

3. Set values for the selected item referring to the following table, and press [Enter]. The settings of No.6,9,10 can be 'Null', when if necessary.   In that case, it sends the 'Null' to the connected Gatekeeper.

No	Item	Description
0	Gatekeeper Connection	Sets whether Gatekeeper is to be connected.
	Gatekeeper Status	Displays the current status of connection to Gatekeeper. • Unregistration : Indicates 'no-connection'. • Registration : Indicates 'connection'.
1	RAS Method	Selects manual to connect to the Gatekeeper or not according to the Prefix, and selects Auto for the rest of the case.
2	Registration Type	Sets the registration type for Gateway when it registered to Gatekeeper. The types include E.164 ID of Gateway mode and Caller ID in the Caller ID Table.
3	Gatekeeper Type	Specifies the manufacturer of Gatekeeper. SIGK : Select if Samsung Internet Gatekeeper is to be connected.. Other GK : Select if other company's Gatekeeper is to be connected.
4	GW Routing In GK mode	This feature is used when SMG-3200 analyzes the dialing digits when it is connected to Gatekeeper. Generally Gatekeeper analyzes the digits, but with this feature, SMG-3200 analyzes the dialing digits using the data in VoIP Outbound Routing Table of [3] VoIP Routing Table.
5	Gatekeeper IP	Sets IP address of the Gatekeeper to be connected.
6	Gatekeeper Alias	Sets H.323 Alias Name of the Gatekeeper to be connected.
7	Alternative Gatekeeper IP	When Gatekeeper is to be duplicated, and the connection to the primary Gatekeeper is disconnected, it sets the other Gatekeeper's IP address.

(Continued)

No	Item	Description
8	Gatekeeper Down Option	Sets the type of routing that may be used in case the connection to the Gatekeeper in use becomes disconnected. 0. Alternative GK : Connects to the alternative Gatekeeper set in the above item 4. 1. PSTN : Uses PSTN rerouting.
9	Gateway Name H.323 ID	Sets H.323 ID to be registered as ID of SMG-3200 with Gatekeeper.
10	Gateway Name E.164	Sets E.164 to be registered as ID of SMG-3200 with Gatekeeper.

[3] VoIP Routing Table

Function   You can set the type of connection to another party's VoIP equipment depending on the prefix of sent VoIP calls to IP network.

Procedure   1. In the <VoIP Configuration Menu> screen, type '3', and press [Enter].

```
VoIP Routing Table (0:Outbound Routing Table, 1: Inbound Routing
Table) -> 0
```

2. In the above screen, type '0' to view Routing table.

```
<<<<< VoIP Outbound Routing Table >>>>>


+---+----------+-------+-------+----------+------------+---------+----+
|   |          |Acc Code|Acc Code|  Insert |IPTable(0 31)| IP Table | GK |
| No|Access Code| Length | Del-Len|  Digit  |index1|index2|StartPoint| Use|
+---+----------+-------+-------+----------+------+-----+---------+----+
| 0 |    0     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 1 |    1     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 2 |    2     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 3 |    3     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 4 |    4     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 5 |    5     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 6 |    6     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 7 |    7     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 8 |    8     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 9 |    9     |   1   |   0   |          |  0   |  0  |    0    | Yes|
| 10|          |   0   |   0   |          | 255  | 255 |    0    | Yes|
|   |          |       |       |          |      |     |         |    |
|   |          |       |       |          |      |     |         |    |
|   |          |       |       |          |      |     |         |    |
| 63|          |   0   |   0   |          | 255  | 255 |    0    | Yes|
+---+----------+-------+-------+----------+------+-----+---------+----+
```

3. Input the routing table number to be changed, and press [Enter]. It sets the way of handling dialing digits sent to IP Network though SMG-3200.

```
Configuration Item Number:
```

4. Set the values for the selected item referring to the following table, and press [Enter].

Item	Description
Access Code	Inputs the Prefix Digit that can identify the other party to be connected. The maximum length of Prefix Digit is 8 .
Acc Code Length	Sets the length of access code. (0~8)
Acc Code Del-Len	Inputs the number of digit to be deleted from the access code. It analyzes the access code and deletes to the set length before it sends the remainder digits to the other party. (0~8)
Insert Digit	After it analyzes and deletes digits from access codes, it sets prefix to be added to the access codes. It normally uses the other party's Trunk access code. The maximum length of Insert Digit is 8.
IP Table Index1	Sets IP table numbers that store IP address data of the other party's VoIP device. Each IP table can have up to 32 IP addresses, and can set 2 IP tables per access code.
IP Table Index2	
IP Table Start Point	When multiple IP addresses exist in the specified IP table, it sets which IP address is to be connected first. It is used to diversify routing when one access code is used for connecting multiple VoIP Gateways.
GK Use	Decides whether to use Gatekeeper for the corresponding access.

5. Now type '1' in VoIP Routing Table to set the Prefix.

```
VoIP Routing Table (0: Outbound Routing Table, 1:Inbound
Routing Table)->1
```

(Continued)

```
<<<<< VoIP Outbound Routing Table >>>>>


+---+----------+-------+-------+----------+------------+---------+----+
|   |          |Acc Code|Acc Code|  Insert  |IPTable(0 31)| IP Table | GK |
| No|Access Code| Length | Del-Len|   Digit  |index1|index2|StartPoint| Use|
+---+----------+-------+-------+----------+------+------+---------+----+
| 0 |    0     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 1 |    1     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 2 |    2     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 3 |    3     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 4 |    4     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 5 |    5     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 6 |    6     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 7 |    7     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 8 |    8     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 9 |    9     |   1   |   0   |          |   0  |   0  |    0    | Yes|
| 10|          |   0   |   0   |          |  255 |  255 |    0    | Yes|
|   |          |       |       |          |      |      |         |    |
|   |          |       |       |          |      |      |         |    |
|   |          |       |       |          |      |      |         |    |
| 63|          |   0   |   0   |          |  255 |  255 |    0    | Yes|
+---+----------+-------+-------+----------+------+------+---------+----+
```

6. Input the routing table number to be changed, and press [Enter].

```
Configuration Item Number:
```

7. Set the values for the selected item referring to the following table, and press [Enter].

Item	Description
Access Code	The Prefix pattern of the incoming dialing digits. The maximum length of Access Code digit is 16.
Acc Code Length	The number of Access Code digits (0~16)
Acc Code Del-Len	The number of digits to be deleted from the access code.(0~16)
Insert Digit	The prefix to be added to the access codes after it is analyzed and deleted. The maximum length of Insert Digit is 8.

[4] VoIP Caller ID Table

Function   You can set the Caller ID when sending a call through IP Network. Caller ID can be set separately according to the PSTN ports of SMG-3200.
To use this feature, the second item of [0] VoIP General Option, Caller ID Type, must be set to Caller ID Table.

Description 1. In the <VoIP Configuration Menu> screen, type '4', and press [Enter].

```
<<<<< VoIP Caller ID Table >>>>>


+ - - - - - - - - - - + - - - - - - - - - - - + + - - - - - - - - - - + - - - - - - - - - - - +
| PSTN Port Index |    Caller ID    || PSTN Port Index |    Caller ID    |
+ - - - - - - - - - - + - - - - - - - - - - - + + - - - - - - - - - - + - - - - - - - - - - - +
|        0        |                 ||       15        |                 |
|        1        |                 ||       16        |                 |
|        2        |                 ||       17        |                 |
|        3        |                 ||       18        |                 |
|        4        |                 ||       19        |                 |
|        5        |                 ||       20        |                 |
|        6        |                 ||       21        |                 |
|        7        |                 ||       22        |                 |
|        8        |                 ||       23        |                 |
|        9        |                 ||       24        |                 |
|       10        |                 ||       25        |                 |
|       11        |                 ||       26        |                 |
|       12        |                 ||       27        |                 |
|       13        |                 ||       28        |                 |
|       14        |                 ||       29        |                 |
+ - - - - - - - - - - + - - - - - - - - - - - + + - - - - - - - - - - + - - - - - - - - - - - +
                                              [ . : Exit, - : Null, Enter : Skip ]
```

2. When the following message appears, input the index number of the PSTN Port, and press [Enter].

```
Configuration Port Index:
```

3. Select PSTN Port Index and enter Caller ID.

```
Caller ID for PSTN Port : -> 12345
```

[5] VoIP Remote IP Table

Function   More than one IP address must be specified in the VoIP IP Table that is set by the VoIP Routing Table for VoIP outgoing call services. The VoIP IP Table is the table containing the IP address information of another party's VoIP device, which will be connected with access codes. Each IP table can have up to 32 IP addresses.

Procedure   1. In the <VoIP Configuration Menu> screen, type '5', and press [Enter].

2. When the following message appears, input the index number of the table for setting IP addresses, and press [Enter].

```
IP Table Index Number(Range: 0 ~ 31):
```

3. The IP table of the selected index will appear below.

```
<<<<< VoIP Remote IP Table >>>>>

+ - - - + - - - - - - - - - - - - - - - - - - - + - - - - - - - - + - - - - - - - - - - - - - - - - - - +
|  No  |        IP Address          |   No    |       IP Address           |
+ - - - + - - - - - - - - - - - - - - - - - - - + - - - - - - - - + - - - - - - - - - - - - - - - - - - +
|  0   |      165. 213. 81. 230      |   16    |      0.  0.  0.  0          |
|  1   |       0.  0.  0.  0         |   17    |      0.  0.  0.  0          |
|  2   |       0.  0.  0.  0         |   18    |      0.  0.  0.  0          |
|  3   |       0.  0.  0.  0         |   19    |      0.  0.  0.  0          |
|  4   |       0.  0.  0.  0         |   20    |      0.  0.  0.  0          |
|  5   |       0.  0.  0.  0         |   21    |      0.  0.  0.  0          |
|  6   |       0.  0.  0.  0         |   22    |      0.  0.  0.  0          |
|  7   |       0.  0.  0.  0         |   23    |      0.  0.  0.  0          |
|  8   |       0.  0.  0.  0         |   24    |      0.  0.  0.  0          |
|  9   |       0.  0.  0.  0         |   25    |      0.  0.  0.  0          |
|  10  |       0.  0.  0.  0         |   26    |      0.  0.  0.  0          |
|  11  |       0.  0.  0.  0         |   27    |      0.  0.  0.  0          |
|  12  |       0.  0.  0.  0         |   28    |      0.  0.  0.  0          |
|  13  |       0.  0.  0.  0         |   29    |      0.  0.  0.  0          |
|  14  |       0.  0.  0.  0         |   30    |      0.  0.  0.  0          |
|  15  |       0.  0.  0.  0         |   31    |      0.  0.  0.  0          |
+ - - - + - - - - - - - - - - - - - - - - - - - + - - - - - - - - + - - - - - - - - - - - - - - - - - - +
                                                                      [ . : Exit ]
```

4. Input the table number to set IP addresses, and press [Enter].

```
Configuration Item Number:
```

5. When the following message appears, type in an IP address and press [Enter].

```
IP Address (dot form): 0.0.0.0 ->
```

[6] VoIP Remote IP Status

Function   You can display the status of each IP address in the VoIP IP Table. With the SMG-3200 Gateway function of monitoring status, this menu provides accurate status information.

Procedure   1. In the <VoIP Configuration Menu> screen, type '6', and press [Enter].

2. When the following message appears, type in the index number of the table to display status of IP addresses, and press [Enter].

```
 IP Table Index Number(Range: 0 ~ 31):
```

3. The selected IP Table will appear below.

```
<<<<< VoIP Remote IP Status >>>>>

Table Index[0]
+ - - - + - - - - - - - - - - - - + - - - - - - + - - - - + - - - - - - - - - - - - + - - - - - - - - +
| No |     IP Address     | Status | No |     IP Address     |   Status   |
+ - - - + - - - - - - - - - - - - + - - - - - - + - - - - + - - - - - - - - - - - - + - - - - - - - - +
|  0 |  165. 213. 81. 230 |  Idle  | 16 |  0.  0.  0.  0 |  Idle  |
|  1 |  0.  0.  0.  0 |  Idle  | 17 |  0.  0.  0.  0 |  Idle  |
|  2 |  0.  0.  0.  0 |  Idle  | 18 |  0.  0.  0.  0 |  Idle  |
|  3 |  0.  0.  0.  0 |  Idle  | 19 |  0.  0.  0.  0 |  Idle  |
|  4 |  0.  0.  0.  0 |  Idle  | 20 |  0.  0.  0.  0 |  Idle  |
|  5 |  0.  0.  0.  0 |  Idle  | 21 |  0.  0.  0.  0 |  Idle  |
|  6 |  0.  0.  0.  0 |  Idle  | 22 |  0.  0.  0.  0 |  Idle  |
|  7 |  0.  0.  0.  0 |  Idle  | 23 |  0.  0.  0.  0 |  Idle  |
|  8 |  0.  0.  0.  0 |  Idle  | 24 |  0.  0.  0.  0 |  Idle  |
|  9 |  0.  0.  0.  0 |  Idle  | 25 |  0.  0.  0.  0 |  Idle  |
| 10 |  0.  0.  0.  0 |  Idle  | 26 |  0.  0.  0.  0 |  Idle  |
| 11 |  0.  0.  0.  0 |  Idle  | 27 |  0.  0.  0.  0 |  Idle  |
| 12 |  0.  0.  0.  0 |  Idle  | 28 |  0.  0.  0.  0 |  Idle  |
| 13 |  0.  0.  0.  0 |  Idle  | 29 |  0.  0.  0.  0 |  Idle  |
| 14 |  0.  0.  0.  0 |  Idle  | 30 |  0.  0.  0.  0 |  Idle  |
| 15 |  0.  0.  0.  0 |  Idle  | 31 |  0.  0.  0.  0 |  Idle  |
+ - - - + - - - - - - - - - - - - + - - - - - - + - - - - + - - - - - - - - - - - - + - - - - - - - - +
                                                                      [: Exit ]
```

NOTE Unless the value of 14th item of [0] VoIP General Option, Status Monitoring Period, is ′0′, you get the exact information. This feature can be used only when SMG- 3200 is connected to Samsung Gateway.

4. The following status information may be displayed.

   • Idle : Indicates 'normal status' to access VoIP outgoing call services.

   • Busy : Indicates 'all ports are busy' to process new VoIP outgoing calls.

   • Block : Indicates that the local Gatekeeper or the Gateway connected to the SMG-3200 is down, or the link is in error.

5. To continue to check the status of the IP address table, type in the index number of the table.

```
IP Table Index  Number(Range: 0 ~ 31):
```

[7] Save & Exit

Function   After saving changes, it closes the <VoIP Configuration Menu> screen, and returns to the main menu screen.

Procedure   In the <VoIP Configuration Menu> screen, type '7', and press [Enter].

[8] Exit

Function   Without saving changes, it closes the <VoIP Configuration Menu> screen, and returns to the main menu screen.

Procedure   In the <VoIP Configuration Menu> screen, type '8', and press [Enter].

CLI Command Menu

The **CLI Command Menu** displays the list of CLI commands, which SMG-3200 system administrators can use, and provides simple directions.

At the SMG-3200 prompt, type 'clicmd,' and press [Enter]. Then, the screen displays a list of simple descriptions of available CLI commands as follows:

```
<<<<< CLI Command Menu >>>>>

 clicmd              Print This List
 cdrhelp             Help CDR Command
 date                Display the Current Time
 dbfilehelp          Help DB Backup & Restore Command
 optionhelp          Help Option Command
 settime y,M,d,h,s   Set Time yyyy,
                     M(1~12),d(1~31),h(0~23),m(0~59),s(0~5)
```

The commands displayed in the CLI Command Menu can be summarized as follows:

Menu	Functions
clicmd	Display CLI commands.
cdrhelp	Display commands related to the use of CDR information.
date	Display the current time.
dbfilehelp	Display commands related to the backup and saving of DB.
optionhelp	Display other commands that can be set as options.
settime y,M,d,h,m,s	Manually set the system time.

Detailed directions for use of the CLI commands are provided below.

clicmd

Function   It displays the list of CLI commands that the user can use to operate the system.

Procedure   Type 'clicmd' at the SMG-3200 prompt, and press [Enter]. Then, the following CLI command list is displayed on the screen.

```
SMG3200:165.213.81.230> clicmd


clicmd          Print This List
cdrhelp         Help CDR Command
date            Display the Current Time
dbfilehelp      Help DB Backup & Restore Command
optionhelp      Help Option Command
settime         y,M,d,h,m,s Set Time yyyy,
                M(1~12),d(1~31),h(0~23),m(0~59),s(0~5)


value = 1 = 0x1
SMG3200:165.213.81.230>
```

cdrhelp

Function   This command prints the list of short descriptions of the CLI commands that the user uses to operate the system to display the CDR information. For detailed description of the CDR format, please see "Chapter 7 Using the CDR (Call Detail Record)."

Procedure   At the SMG-3200 prompt, type 'cdrhelp,' and press [Enter]. Then, the following CLI command list related to CDR information is displayed on the screen.

```
SMG3200:165.213.81.230> cdrhelp

cdrhelp           Print This List
cdrlist           Print CDR for the Current Call
CDRclear          Set Default CDR Port, Clear CDR Buffer
CDRsetlist        Print CDR Setting Information
CDRtcpport port   Set CDR Output on TCP Port(Default Port:8200)
CDRudpport ip1,ip2,ip3,ip4,port

                  Set CDR Output on UDP IP & Port
Offcdrtcp         Turn Off CDR Output on TCP Link(default)
Offcdrudp         Turn Off CDR Output on UDP Link(default)
Oncdrtcp          Turn On CDR Output on TCP Link
Oncdrudp          Turn On CDR Output on UDP Link

value = 1 = 0x1
SMG3200:165.213.81.230>
```

cdrlist

Function   It displays the CDR information regarding the currently connected call.

Procedure   If you want to see the CDR information regarding the currently connected call,
type 'cdrlist' at the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> cdrlist



        <<<<< Current CDR >>>>>

13. DVI:
1/1/2002 14:23:23 14:23:32 201 201 165.213.81.230 40 ffff 32


value = 2 = 0x2
SMG3200:165.213.81.230>
```

CDRclear

Function   Close all TCP and UDP Links, and delete all CDR information saved in the buffer and the flash memory, and then set the CDR port as the default port. It will revert the system back to the initial setting.

Procedure   If you want to delete all CDR information, type 'CDRclear' at the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> CDRclear

>>>[CDR] Turn Off CDR Output on TCP Link

>>>[CDR] Turn Off CDR Output on UDP Link

Good

>>>[CDR] Set Default CDR TCP Port, UDP Port

Good

>>>[CDR] Clear CDR TCP Buffer

Good

>>>[CDR] Clear CDR UDP Buffer

Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

CDRsetlist

Function   It displays the current setting of the options related to the CDR of the system.
You can use other CDR CLI commands to change the setting.

Default   TCP Link   Off
TCP Port   8200
UDP Link   Off
UDP Port   Unknown
UDP IP Address   Unknown

Procedure   you want to see the setting of the CDR-related options, type 'CDRsetlist' at the
SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> CDRsetlist


>>>[CDR] Turn On CDR Output on TCP Link
                                    tcp link is turned On.
>>>[CDR] TCP Port: 8200            tcp port is set as 8200.

>>>[CDR] Turn Off CDR Output on UDP Link
                                    udp link is turned Off.
>>>[CDR] UDP Port: Unknown
>>>[CDR] UDP IP Address = Unknown


value = 37 = 0x25 = '%'
SMG3200:165.213.81.230>
```

CDRtcpport port

Function   Set the TCP port for the TCP Link that will display the CDR output information.
It is already set as the Default(8200 port) value, and the user can use the CLI
command to change the setting.

Default   [CDR] TCP Port 8200

Procedure   At the SMG-3200 prompt, type 'CDRtcpport' and a space, and type the TCP port
for displaying the CDR information, and then press [Enter].
For example, if you want to set the TCP port for displaying the CDR information
as 8500, type 'CDRtcpport 8500' on the screen, and press [Enter], and then the
port will be set as follows:

```
SMG3200:165.213.81.230> CDRtcpport 8500

>>>[CDR] Set CDR Output on TCP Port(8500)

Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

CDRudpport ip1,ip2,ip3,ip4,port

Function   Set the UDP IP address and UDP port for the UDP Link that will display the CDR output information.

Procedure   In the SMG-3200 prompt, type 'CDRudpport' and a space, and type the UDP IP address and port for displaying the CDR information, and then press [Enter]. Separate the parameters from one another by means of a comma (,).
For example, if you want to set the IP address as 165.213.87.85, and the port as 8800 for the UDP Link for displaying the CDR information, type 'CDRudpport 165,213,87,85,8800' on the screen, and press [Enter].

```
SMG3200:165.213.81.230> CDRudpport 165,213,87,85,8800


>>>[CDR] Set CDR Output on UDP IP = 165.213.87.85
                      udp IP address is set as 165.213.87.85.
>>>[CDR] Set CDR Output on UDP Port(8800)
                      udp port is set as 8800.



 Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

Offcdrtcp

Function   It is used to inactivate the CDR TCP Link. That is, the CDR to be output to the TCP Link is not generated. Basically, the CDR TCP Link is turned Off.

Procedure   If you want to inactivate the current TCP CDR output Link, type 'Offcdrtcp' at the SMG-3200 prompt, and press [Enter].

```
SMG400:165.213.81.230> Offcdrtcp


>>>[CDR] Turn Off CDR Output on TCP Link


 Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

Offcdrudp

Function   It is used to inactivate the current CDR UDP Link. That is, the CDR to be output
to the UDP Link is not generated. Basically, the CDR UDP Link is turned Off.

Procedure   If you want to inactivate the current UDP CDR output Link, type 'Offcdrudp' at
the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> Offcdrudp


>>>[CDR] Turn Off CDR Output on UDP Link


 Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

Oncdrtcp

Function   Before using this command, the port for displaying the CDR information must be set, and the Default value is 8200. Activate the CDR to be output to the TCP Link. Basically, the CDR TCP link output is turned Off.

Procedure   1. If you want to display the CDR information on the TCP Link, type 'Oncdrtcp' at the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> Oncdrtcp


>>>[CDR] Turn On CDR Output on TCP Link
>>>[CDR] TCP Port(8500)

Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

2. If you use the Telnet program to connect to the CDR tcp port specified for the system, the CDR information is displayed. For more details on the format of the CDR information, please see "Chapter7 Using the CDR (Call Detail Record)."

```
 GVO: 1/2/2002 18:39:07 --:--:-- 201 2111 165.213.87.74
                                   20 0026 24
DVR: 1/2/2002 18:39:08 --:--:-- - 9 - 43 0202 0
DVR: 1/2/2002 18:39:11 --:--:-- - 9 - 42 0202 0
DVR: 1/2/2002 18:39:14 --:--:-- - 9 - 41 0202 0
DVI: 1/7/2002 14:59:13 --:--:-- 201 4111 - ffff 001c 0
DVO: 1/7/2002 14:59:12 --:--:-- 201 4111 165.213.81.230
                                   20 001c 0
DVI: 1/7/2002 15:00:25 15:00:25 4112 201 165.213.87.83 20
                                   0010 64
DVI: 1/7/2002 11:27:32 --:--:-- 4111 201 - 20 0010 0
DVI: 1/7/2002 11:27:34 --:--:-- 4111 201 - 20 0010 0
```

Oncdrudp

Function   It activates the CDR to be output to the UDP Link. Basically, the CDR UDP Link output is turned Off. Before using this command, the UDP IP address and port for displaying the CDR information on the UDP Link must be set. These values do not have Defaults, and users must set them.

Procedure   1. If you want to display the CDR information on the UDP Link, type 'Oncdrudp' at the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> Oncdrudp


>>>[CDR] Turn On CDR Output on UDP Link
>>>[CDR] UDP IP Address = 165.213.87.85
>>>[CDR] UDP Port: 8800


Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

2. If you make the UDP Link to the UDP Server program using the port of the CDR UDP IP address specified for the system, the CDR information is displayed. For more details on the CDR information, please see "Chapter7 Using the CDR (Call Detail Record)."

```
opened UDP socket with port no. 8800 ...
---------------------------------------
GVO: 1/2/2002 18:39:07 --:--:-- 201 2111 165.213.87.74 20
                                0026 24
DVR: 1/2/2002 18:39:08 --:--:-- - 9 - 43 0202 0
DVR: 1/2/2002 18:39:11 --:--:-- - 9 - 42 0202 0
DVR: 1/2/2002 18:39:14 --:--:-- - 9 - 41 0202 0
DVI: 1/7/2002 14:59:13 --:--:-- 201 4111 - ffff 001c 0
DVO: 1/7/2002 14:59:12 --:--:-- 201 4111 165.213.81.230
                                20 001c 0
DVI: 1/7/2002 15:00:25 15:00:25 4112 201 165.213.87.83 20
                                0010 64
DVI: 1/7/2002 11:27:32 --:--:-- 4111 201 - 20 0010 0
DVI: 1/7/2002 11:27:34 --:--:-- 4111 201 - 20 0010 0
```

date

Function   It displays the current system time in the 'day of the week month day hour:minute:second year' format.

Procedure   Type 'date' at the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> date


 >>> Date: Thu Feb 21 10:32:12 2002

value = 1 = 0x1
SMG3200:165.213.81.230>
```

dbfilehelp

Function   This command displays the CLI commands related to system information Backup and save. The DB Down/Upload function is used to save system information in a file, or transfer the information saved in a file to the system. It is used to apply information on one system to several other systems, or to back up system information and recover the system from system failures. The system information file is an ASCII file.

Procedure   At the SMG-3200 prompt, type 'dbfilehelp,' and press [Enter]. Then the following DB-related CLI command list is displayed on the screen.

```
SMG3200:165.213.81.230> dbfilehelp


dbfilehelp            Print This List
getdefdb "filename"   Generate File with Default DB Value
getdb "filename"      Generate File from Current DB Value
putdb "filename"      Update System DB from File
dump "filename"       Print DB File to Console
load "filename"       Write DB File from Console


value = 2 = 0x2
SMG3200:165.213.81.230>
```

getdefdb "filename"

Function   It saves the default DB value of the current system in a file.

Procedure   At the SMG-3200 prompt, type 'getdefdb' and a space, and type the file name to save, and press [Enter]. Then, the default DB backup file is created. The file name must be in quotation marks (""). For example, if you want to save the default DB in a file named defdb.txt, type 'getdefdb "defdb.txt"' at the prompt on the screen, and press [Enter].

```
 SMG3200:165.213.81.230> ls
                         <- command used to check the file
value = 0 = 0x0
SMG3200:165.213.81.230> getdefdb "defdb.txt"
                        <- The system initial information is
                           saved in a file named defdb.txt.
SMG3200:165.213.81.230> ls
DEFDB.TXT              <- defdb.txt file is created.
value = 0 = 0x0
SMG3200:165.213.81.230>
```

getdb "filename"

It saves the DB value currently set for the system in a file.

Procedure   At the SMG-3200 prompt, type 'getdb' and a space, and type the file name to save, and press [Enter]. Then, the system DB backup file is created. The file name must be in quotation marks (""). For example, if you want to save the DB of the current system in a file named db.txt, type 'getdb "db.txt"' at the prompt on the screen, and press [Enter].

```
 SMG3200:165.213.81.230> ls
                 <- command used to check the file
value = 0 = 0x0
SMG3200:165.213.81.230> getdb "db.txt"
                 <- The system information of the system is saved
                    in a file named defdb.txt.
value = 0 = 0x0
SMG3200:165.213.81.230> ls
DB.TXT           <- db.txt file is created.
value = 0 = 0x0
SMG3200:165.213.81.230>
```

putdb "filename"

Function   It saves the DB file transmitted via the FTP program in the system. First, use the FTP program to send the saved DB file to the system, and use this command to set the DB for the system.

Procedure   At the SMG-3200 prompt, type 'putdb' and a space, and type the file name of the DB to save in the system, and press [Enter]. Then, the system DB is saved as the applicable DB value. The file name must be in quotation marks ("").
For example, if you want to use the backup DB named db.txt in the system, use the FTP program to send the DB file to the system, and type 'putdb "db.txt"' at the prompt, and press [Enter].

```
SMG3200:165.213.81.230> ls
           <- Check the system information file.
DB.TXT
value = 0 = 0x0
SMG3200:165.213.81.230> putdb "db.txt"
           <- Upload the system information saved in db.txt file
to the system.
 Good

 Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

dump "filename"

Function   It displays the file in the system on the console screen.

For detailed description of system information file configuration, please see "Appendix B. System Information File Configuration."

Procedure   At the SMG-3200 prompt, type 'dump' and a space, and type the name of the file to display, and press enter [Enter]. Then, the file is displayed on the console screen. The file name must be in quotation marks (" ").

For example, if you want to display a file named db.txt, type 'dump "db.txt"' at the prompt, and press [Enter].

```
MG3200:165.213.81.230> ls
         <- Check system information file.
DB.TXT
value = 0 = 0x0
SMG3200:165.213.81.230> dump "db.txt"
         <- Print the system information file on the screen.


system_db()
{
  sys.dhcp()
  {
   sys.dhcp.client = 0 ; def(0) min(0) max(1) (0)no, (1)yes
   sys.dhcp.classid =  ; def()
  }
  sys.network_parameter()
  {
   sys.network.my_ipaddr = 165.213.81.230 ; def(0.0.0.0) My
                            IP Address
   sys.network.my_gateway = 165.213.81.1 ; def(0,0,0,0) My
                              GateWay Address
   sys.network.my_netmask = 255.255.255.0 ; def(0,0,0,0) My
                              Subnet Masks
   sys.network.my_tos = 0; def(0) min(0) max(255) My TOS
                      (Typeof Service)

}
...
(abbreviated)
...
  VoIP.caller_id_table(30)
  {
  }
}
value = 0 = 0x0
SMG3200:165.213.81.230>
```

load "filename"

Function   It creates a file on the console screen, and allows users to enter desired characters. It is used to read the system information file from the console and save it in a file.

Procedure   1. At the SMG-3200 prompt, type 'load' and a space, and type the name of the file for entering characters, and press [Enter]. Then, the prompt on the next line will blink. The file name must be in quotation marks (" ").
For example, if you want to display a file named digit.txt, type 'load "digit.txt"' at the prompt on the screen, and press [Enter]. If a file named 'digit.txt' already exists, it is overwritten, and if not, a new file is created.

2. Enter the desired character string. If you want to finish entering the character string, type a 'period(.),' and press [Enter].

3. Corresponding files are saved in the system.

```
SMG3200:165.213.81.230> ls
        <- Command used to check the file
value = 0 = 0x0
SMG3200:165.213.81.230> load "db.txt"
        <- The system information is saved in db.txt file.

system_db()              <- Enter the system information.
{
  sys.dhcp()
  {
   sys.dhcp.client = 0 ;
   sys.dhcp.classid = ;
  }
}
.               <- Enter '.' in the first space to finish.
value = 0 = 0x0
SMG3200:165.213.81.230> ls
DB.TXT                <- db.txt file is created.
value = 0 = 0x0

SMG3200:165.213.81.230> dump "db.txt"
                      <- Check the system information file.

system_db()
{
  sys.dhcp()
  {
   sys.dhcp.client = 0
   sys.dhcp.classid = ;
  }
}

value = 0 = 0x0
SMG3200:165.213.81.230>
```

optionhelp

Function   This command displays short descriptions of CLI commands concerning miscellaneous options that can be set in the system.

Procedure   At the SMG-3200 prompt, type 'optionhelp,' and press [Enter]. Then, the following CLI command list for setting options is displayed on the screen.

```
SMG3200:165.213.81.230> optionhelp

optionhelp            Print This List
Showoption            Show Option List of the Followings
Off800                Turn Off 800 Dial in Standalone Mode
On800                 Turn On 800 Dial in Standalone
                      Mode(Default)
Offhotconnection      Turn Off Hot Connection on Hook
                      Off(Default)
Onhotconnection       Turn On Hot Connection on Hook Off
Offbcast              Turn Off Speaker Connection on E&M,
                      LOOP(Default)
Onbcast slot,port,tel Turn On Speaker Connection on E&M, LOOP
Offloopcheck          Turn Off Detecting LOOP
                      Disconnection by Tone(Default)
Onloopcheck frequency Turn On Detecting LOOP Disconnection
                      by Tone
Setisptype isptype    Set ISP Type
                      (0: Default, 1: SAMSUNG Networks)

value = 1 = 0x1
SMG3200:165.213.81.230>
```

Showoption

Function   It displays the current setting status of the miscellaneous options in the system. If the ISP type is normal, it is not displayed on the screen. Other option CLI commands can be used to change these options.

Default   800 Off (tandem mode)
                 On (Standalone mode)
            hot connection Off
            broadcast function Off
            loop disconnect check functionOff

Procedure   Type 'Showoption' at the SMG-3200 prompt, and press [Enter].

```
SMG3200:165.213.81.230> Showoption

800 : On
hot connection : Off
broadcast function : Off
loop disconnect check function : Off


value = 40 = 0x28 = '('
SMG3200:165.213.81.230>
```

Off800

Function   If a VoIP Call is made in the Stand-alone mode, the system automatically sets the
'800' access code so that the VoIP port is seized unconditionally and a call is
connected without having to dial the Access Code.
This CLI sets the currently active status, and if the setting needs to be maintained
during system booting, it must be saved in the CLI's pstnmenu.

Procedure   1. At the SMG-3200 prompt, type 'Off800,' and press [Enter].

```
SMG3200:165.213.81.230> Off800

Off 800 option...
value = 20 = 0x14
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


     <<<<< PSTN Configuration Menu >>>>>


      [0] Gateway Operation Mode
      [1] PSTN Rerouting Insert Digit
      [2] PCM Method
      [3] Dial Method
      [4] SLI Signal
      [5] Trunk Signal
      [6] Call Control Method
      [7] Ring Cadence
      [8] System Tone Cadence
      [9] CO Tone Cadence
     [10] Gain Control
     [11] Diagnosis
     [12] MMC Port Block/UnBlock
     [13] Display Slot Configuration
     [14] Display Port Status
     [15] Save & Exit
     [16] Exit


     Select ? 15     Select item 15 'Save & Exit.'
Save & Exit


 Good
```

On800

Function   It suspends the system function to automatically set the '800' access code so that trunk access codes such as 800, 801, 802, and 803 can be dialed and the call is connected in the Stand-alone mode.
The user must enter the desired access code, and press the digits(default).
This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's pstnmenu.

Procedure   1. At the SMG-3200 prompt, type 'On800,' and press [Enter].

```
SMG3200:165.213.81.230> On800

 On 800 option...
value = 19 = 0x13
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and
   select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


     <<<<< PSTN Configuration Menu >>>>>


      [0] Gateway Operation Mode
      [1] PSTN Rerouting Insert Digit
      [2] PCM Method
      [3] Dial Method
      [4] SLI Signal
      [5] Trunk Signal
      [6] Call Control Method
      [7] Ring Cadence
      [8] System Tone Cadence
      [9] CO Tone Cadence
     [10] Gain Control
     [11] Diagnosis
     [12] MMC Port Block/UnBlock
     [13] Display Slot Configuration
     [14] Display Port Status
     [15] Save & Exit
     [16] Exit


     Select ? 15     Select item 15 'Save & Exit.'
Save & Exit


 Good
```

Offhotconnection

Function   This command is used to clear the hot connection mode(Default).
This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's pstnmenu.

Procedure   1. At the SMG-3200 prompt, type 'Offhotconnection,' and press [Enter].

```
SMG3200:165.213.81.230> Offhotconnection

Off hot connection...
value = 24 = 0x18
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


     <<<<< PSTN Configuration Menu >>>>>


      [0] Gateway Operation Mode
      [1] PSTN Rerouting Insert Digit
      [2] PCM Method
      [3] Dial Method
      [4] SLI Signal
      [5] Trunk Signal
      [6] Call Control Method
      [7] Ring Cadence
      [8] System Tone Cadence
      [9] CO Tone Cadence
     [10] Gain Control
     [11] Diagnosis
     [12] MMC Port Block/UnBlock
     [13] Display Slot Configuration
     [14] Display Port Status
     [15] Save & Exit
     [16] Exit


     Select ? 15      Select item 15 'Save & Exit.'
Save & Exit


 Good
```

Onhotconnection

Function   If a Hook Off Event is detected in the FXS/FXO configuration, it automatically enables a VoIP call. The routing information about access code '9' must be set from the VoIP Outbound Routing Table. This function can be used when a 1:1 connection is made to the other's Gateway, and the VoIP Network is used to do Overlap Dialing. (In case VoIP is used for T/D)

This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's pstnmenu.

Procedure   1. At the SMG-3200 prompt, type 'Onhotconnection,' and press [Enter].

```
SMG3200:165.213.81.230> Onhotconnection

On hot connection...
value = 23 = 0x17
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


    <<<<< PSTN Configuration Menu >>>>>


     [0] Gateway Operation Mode
     [1] PSTN Rerouting Insert Digit
     [2] PCM Method
     [3] Dial Method
     [4] SLI Signal
     [5] Trunk Signal
     [6] Call Control Method
     [7] Ring Cadence
     [8] System Tone Cadence
     [9] CO Tone Cadence
    [10] Gain Control
    [11] Diagnosis
    [12] MMC Port Block/UnBlock
    [13] Display Slot Configuration
    [14] Display Port Status
    [15] Save & Exit
    [16] Exit


    Select ? 15      Select item 15 'Save & Exit.'
Save & Exit


Good
```

Offbcast

Function   It clears the function to connect the speaker through E&M and Loop, and broadcast. (default) This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's pstnmenu.

Procedure   1. At the SMG-3200 prompt, type 'Offbcast,' and press [Enter].

```
SMG3200:165.213.81.230> Offbcast

 Off broadcast function...
value = 28 = 0x1c
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


     <<<<< PSTN Configuration Menu >>>>>


      [0] Gateway Operation Mode
      [1] PSTN Rerouting Insert Digit
      [2] PCM Method
      [3] Dial Method
      [4] SLI Signal
      [5] Trunk Signal
      [6] Call Control Method
      [7] Ring Cadence
      [8] System Tone Cadence
      [9] CO Tone Cadence
     [10] Gain Control
     [11] Diagnosis
     [12] MMC Port Block/UnBlock
     [13] Display Slot Configuration
     [14] Display Port Status
     [15] Save & Exit
     [16] Exit


     Select ? 15     Select item 15 'Save & Exit.'
Save & Exit


Good
```

Onbcast slot,port,tel

Function   It sets the function to connect the speaker through E&M and Loop, and broadcast.
If this function is set and a call is tried at the specified phone number, the speaker
is connected to the applicable slot and channel of the SMG-3200 system, and can
be used for broadcasting.
This CLI sets the currently active status, and if the setting needs to be maintained
during system booting, it must be saved in the CLI's pstnmenu.

slot 1 or 2 (1:USL1, 2:USL2)
Channel the port number of the applicable slot (1~8).
Tel telephone number for connecting to the speaker.

Procedure   1. At the SMG-3200 prompt, type 'Onbcast' and type the desired slot, channel,
and telephone number in parentheses, and press [Enter]. The parameter must be
in parentheses and separated by commas (,).
For example, if you want to set 700 as the telephone number for USL slot 1, and
port 1, and connects the speaker, type 'Onbcast(1,1,700)' on the screen, and press
[Enter].

```
SMG3200:165.213.81.230> Onbcast(1,1,700)


 On broadcast function : slot 1, channel 0, tel 700...
value = 56 = 0x38 = '8'
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


      <<<<< PSTN Configuration Menu >>>>>


       [0] Gateway Operation Mode
       [1] PSTN Rerouting Insert Digit
       [2] PCM Method
       [3] Dial Method
       [4] SLI Signal
       [5] Trunk Signal
       [6] Call Control Method
       [7] Ring Cadence
       [8] System Tone Cadence
       [9] CO Tone Cadence
      [10] Gain Control
      [11] Diagnosis
      [12] MMC Port Block/UnBlock
      [13] Display Slot Configuration
      [14] Display Port Status
      [15] Save & Exit
      [16] Exit


      Select ? 15     Select item 15 'Save & Exit.'
Save & Exit


 Good
```

Offloopcheck

Function   This command is used to clear the Onloopcheck function(default).
This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's pstnmenu.

Procedure   1. At the SMG-3200 prompt, type 'Offloopcheck,' and press [Enter].

```
SMG3200:165.213.81.230> Offloopcheck

 Off Loop Disconnect Check Function...
value = 40 = 0x28 = '('
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


     <<<<< PSTN Configuration Menu >>>>>


      [0] Gateway Operation Mode
      [1] PSTN Rerouting Insert Digit
      [2] PCM Method
      [3] Dial Method
      [4] SLI Signal
      [5] Trunk Signal
      [6] Call Control Method
      [7] Ring Cadence
      [8] System Tone Cadence
      [9] CO Tone Cadence
     [10] Gain Control
     [11] Diagnosis
     [12] MMC Port Block/UnBlock
     [13] Display Slot Configuration
     [14] Display Port Status
     [15] Save & Exit
     [16] Exit


     Select ? 15     Select item 15 'Save & Exit.'
Save & Exit


 Good
```

Onloopcheck frequency

Function   In the Loop incoming mode, the Loop checks the disconnect tone periodically to prevent the channel from being tied up.

For example, if the SMG-3200 system is in the tandem mode where VoIP enters and then go out with seizing the Loop, the Loop may not be aware that the VoIP part is disconnected, and thereby the Loop and SLC can be tied up. If you set this function, the Loop checks the disconnect tone periodically to disconnect.

If you press [Enter] without entering the disconnected tone (in general, busy tone) frequency, the system default frequency is set. 480Hz and 350Hz are available for the frequency.

This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's pstnmenu.

SMG-3200 frequency default value : 480Hz.

Procedure   1. At the SMG-3200 prompt, type 'Onloopcheck' and set the desired tone frequency, and press [Enter]. 480Hz and 350Hz are available for the Tone frequency.

```
SMG3200:165.213.81.230> Onloopcheck

On Loop Disconnect Check Function(480Hz)...
value = 46 = 0x2e = '.'
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's pstnmenu and select item 15 '[15] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> pstnmenu


     <<<<< PSTN Configuration Menu >>>>>


     [0] Gateway Operation Mode
     [1] PSTN Rerouting Insert Digit
     [2] PCM Method
     [3] Dial Method
     [4] SLI Signal
     [5] Trunk Signal
     [6] Call Control Method
     [7] Ring Cadence
     [8] System Tone Cadence
     [9] CO Tone Cadence
    [10] Gain Control
    [11] Diagnosis
    [12] MMC Port Block/UnBlock
    [13] Display Slot Configuration
    [14] Display Port Status
    [15] Save & Exit
    [16] Exit


    Select ? 15     Select item 15 'Save & Exit.'
Save & Exit


 Good
```

Setisptype isptype

Function   It sets the desired ISP type of the system. The default ISP type parameter is 0 (normal), and 1 selects the option of a Samsung Network company.

You can use this function to set options for diverse ISPs, and provide differentiated services.

This CLI sets the currently active status, and if the setting needs to be maintained during system booting, it must be saved in the CLI's VoIP menu.

Default   ISP type   0

Procedure 1. At the SMG-3200 prompt, type 'Setisptype' and enter the desired ISP type, and press [Enter]. For example, if you want to set a Samsung Network company as the ISP type (1), type 'Setisptype 1' on the screen, and press [Enter].

```
SMG3200:165.213.81.230> Setisptype 1

ISP Type: Unitel
value = 20 = 0x14
SMG3200:165.213.81.230>
```

2. To maintain this setting during system booting, enter the CLI's VoIPmenu and select item 7 '[7] Save & Exit,' and press [Enter].

```
SMG3200:165.213.81.230> VoIPmenu


   <<<<< VoIP Configuration Menu >>>>>


     [0] VoIP General Option
     [1] VoIP DSP Option
     [2] VoIP Gatekeeper Option
     [3] VoIP Routing Table
     [4] VoIP Caller ID Table
     [5] VoIP Remote IP Table
     [6] VoIP Remote IP Status
     [7] Save & Exit
     [8] Exit



     Select ? 7      Select item 7 'Save & Exit.'
Save & Exit


 Good
 Exit
```

settime y,M,d,h,m,s

Function
The user manually sets the system time.

The system time is important for the CDR information. If you set the time using 'settime,' the system changes the time on its own, so the time can be erroneous. (The error is about 5 seconds per day.) Therefore, accurate time must be maintained by setting time during system booting or on a periodical basis.

Procedure
At the SMG-3200 prompt, type 'settime' and a space. Then type the year, month, day, hour, minute, and second in that order, and press [Enter].

For example, if you want to enter 2002, February, 21st, 10am, 40 minutes, and 00 seconds as the system time, type 'settime 2002,2,21,10,40,0' on the screen, and press [Enter] to set the system time as follows:

```
SMG3200:165.213.81.230> settime 2002,2,21,10,40,0


 >>> Old Date: Thu Feb 21 10:43:35 2002
 >>> New Date: Thu Feb 21 10:40:00 2002


value = 0 = 0x0
SMG3200:165.213.81.230>
```

Chapter 6 Web-based Remote Management

The SMG-3200 offers web-based management functions that enable configuration and management of the system from a web browser. Internet web browsers are similar to that of Windows in terms of user environment. You only need to use a mouse to configure the browsers.

In this Chapter, you can learn how to login to the web management interface of the SMG-3200. The web management interface only provides frequently used functions for system operation among CLI functions. For menus and detailed information you should refer to **Chapter 5 CLI (Command Line Interface)**.

Before you Begin

To use the web management interface of the SMG-3200, the IP address, subnet mask and default gateway of the SMG-3200 must be set correctly to the site's network. Such setup is described in **Chapter 4 Configuring the System**.

Login

1. Launch a web browser such as Internet Explorer or Netscape Communicator.

NOTE Internet Explorer 5.0 has been used as an example in this paper. Please refer to Program Help for detailed information on Internet Explorer.

2. When the web browser of your choice appears on the screen, type the SMG-3200 IP address in the 'Location' field.

3. The startup screen of the Web management interface will appear as follows.

4. To login, type your login name and password in **Login ID** and **Password** fields on the bottom of the screen, and press [Enter]. The default login name and password are '**smg3200**' and '**smg3200v1**' respectively.

5. Upon completion of login, the following message will appear. Click the **OK** button.

6. The following main screen of the SMG-3200 web management interface will appear.

7. You should log out by clicking **LogOut** on the left-hand side of the menu frame once you are finished with the Web management interface.

Configuration and Functions of Menu

The overview of each menu of the SMG-3200 web management interface is provided below. For more detail, please refer to **Chapter 5 CLI (Command Line Interface)**.

Menu	Functions
Home	Returns to the main screen of the SMG-3200 web management interface.
Network Configuration	Sets static IP address of the SMG-3200, subnet mask, default gateway address and TOS (Type Of Service) values.
VoIP Configuration	Sets general options for VoIP services.
VoIP Caller ID Table	Sets the ID for VoIP call.
VoIP Routing Table	Sets the Prefix to send and receive VoIP call through IP network.
VoIP Remote IP Table	For VoIP call service, at least one IP address need to be assigned in the VoIP IP Table, which is set by VoIP Routing Table.
Gatekeeper Configuration	When the SMG-3200 is connected to Gatekeeper, it sets information for Gatekeeper connection.
Voice Packetizer	Sets voice control options for VoIP services.
PSTN Configuration	Sets general options for PSTN services such as operation mode and type of PCM and dial.
PSTN Inbound LCR	Analyzes the dialing digits coming from PBX or KTS connected to SMG-3200.
PSTN Call Control Method	Sets the call control method to handle calls.
PSTN Gain Control	Controls the call sensitivity according to the connection type.
PSTN Post Status	Checks the system slots and the ports status.
MMC Port Block	Decides whether to use a specific port.
Version Information	Displays version information on the SMG-3200 system program.
Default DB Set	Reset all items with the default values according to the database.
System Restart	Restarts the SMG-3200 system.
LogOut	Ends the connection of web management interface.

Chapter 7   Using the CDR (Call Detail Record)

CDR is a function that displays a detailed record about the system call. The system administrator uses the CDR function to check the current call information through the CLI command, or uses the TCP Link or UDP Link to receive call information.

Screen for checking current call information

```
SMG3200:165.213.81.230> cdrlist


                    <<<<< Current CDR >>>>>


28. DVO: 2/3/2002 18:46:38 18:46:53 4403 201 165.213.87.76 6a ffff 13


value = 2 = 0x2
SMG3200:165.213.81.230>
```

How to receive call information - TCP Link

1. Check the current setting.
   : The current TCP Link is inactive, and the TCP Port is set as 8200.

```
SMG3200:165.213.81.230> CDRsetlist

 >>>[CDR] Turn Off CDR Output on TCP Link
 >>>[CDR] TCP Port: 8200

 >>>[CDR] Turn Off CDR Output on UDP Link
 >>>[CDR] UDP Port: Unknown
 >>>[CDR] UDP IP Address = Unknown

value = 37 = 0x25 = '%'
 SMG3200:165.213.81.230>
```

2. Set the TCP port.
   : Set the port (8500) for TCP Link connection.

```
SMG3200:165.213.81.230> CDRtcpport 8500

 >>>[CDR] Set CDR Output on TCP Port(8500)

 Goodvalue = 0 = 0x0
 SMG3200:165.213.81.230> CDRsetlist

 >>>[CDR] Turn Off CDR Output on TCP Link
 >>>[CDR] TCP Port: 8500                 <- port number is changed.

 >>>[CDR] Turn Off CDR Output on UDP Link
 >>>[CDR] UDP Port: Unknown
 >>>[CDR] UDP IP Address = Unknown

value = 37 = 0x25 = '%'
 SMG3200:165.213.81.230>
```

3. Activate the TCP Link.

  : It is activated to generate CDR information.

```
SMG3200:165.213.81.230> Oncdrtcp


>>>[CDR] Turn On CDR Output on TCP Link  <- TCP Link is On.
>>>[CDR] TCP Port(8500)


Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

4. Receive CDR information.

   : TCP Link is established to receive CDR information.

   : In the following screen the telnet program offered by Windows 2000 is used to receive CDR
    information.
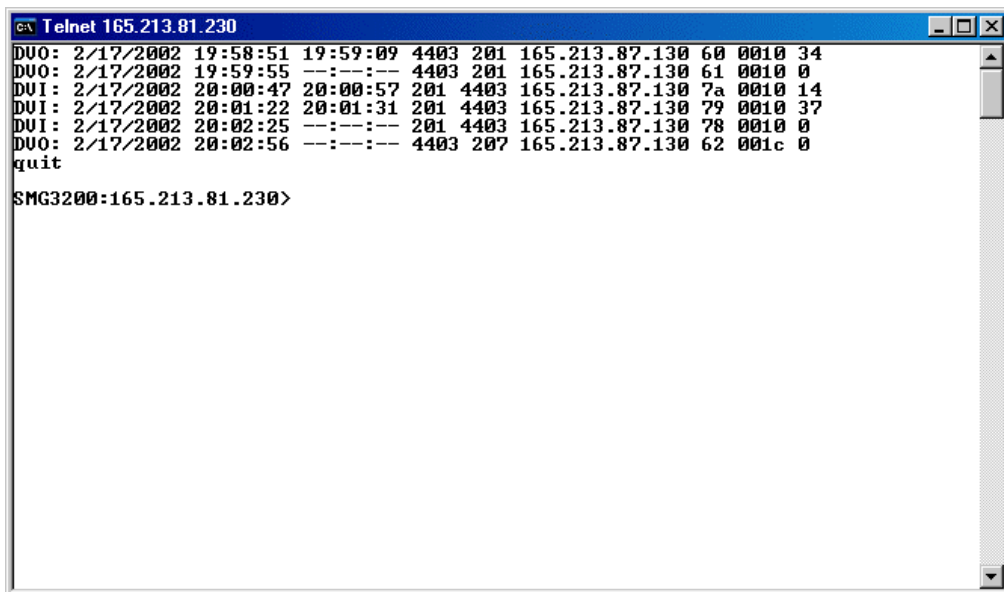
     E.g.) c:\> telnet 165.213.81.230 8500

5. If you enter the 'quit' command in the TCP Link input window for receiving CDR, reception is finished and the link is disconnected.

```
Telnet 165.213.81.230                                                    _ □ ×
DUO: 2/17/2002 19:58:51 19:59:09 4403 201 165.213.87.130 60 0010 34
DUO: 2/17/2002 19:59:55 --:--:-- 4403 201 165.213.87.130 61 0010 0
DUI: 2/17/2002 20:00:47 20:00:57 201 4403 165.213.87.130 7a 0010 14
DUI: 2/17/2002 20:01:22 20:01:31 201 4403 165.213.87.130 79 0010 37
DUI: 2/17/2002 20:02:25 --:--:-- 201 4403 165.213.87.130 78 0010 0
DUO: 2/17/2002 20:02:56 --:--:-- 4403 207 165.213.87.130 62 001c 0
quit

SMG3200:165.213.81.230>
```

6. If you do not want to receive CDR information anymore
   : Inactivate the TCP Link.

```
SMG3200:165.213.81.230> Offcdrtcp


 >>>[CDR] Turn Off CDR Output on TCP Link      <- TCP Link is Off.


 Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```

How to receive call information - UDP Link

1. Check the current setting status.
   : The current UDP Link is inactive, and the UDP Port information and UDP IP Address are not set.

```
SMG3200:165.213.81.230> CDRsetlist

 >>>[CDR] Turn Off CDR Output on TCP Link
 >>>[CDR] TCP Port: 8200

 >>>[CDR] Turn Off CDR Output on UDP Link
 >>>[CDR] UDP Port: Unknown
 >>>[CDR] UDP IP Address = Unknown

value = 37 = 0x25 = '%'
SMG3200:165.213.81.230>
```

2. Set the UDP IP Address and Port.
   : The IP Address and port for UDP Link connection are set.

```
SMG3200:165.213.81.230> CDRudpport 165,213,87,154,50000
                              <- There are dots (.) between Numbers.

 >>>[CDR] Set CDR Output on UDP IP = 165.213.87.154
 >>>[CDR] Set CDR Output on UDP Port(50000)

 Goodvalue = 0 = 0x0
SMG3200:165.213.81.230> CDRsetlist

 >>>[CDR] Turn Off CDR Output on TCP Link
 >>>[CDR] TCP Port: 8200

 >>>[CDR] Turn Off CDR Output on UDP Link
 >>>[CDR] UDP IP Address = 165.213.87.154   <- IP Address  and
 >>>[CDR] UDP Port: 50000                       Port number are set up.
value = 26 = 0x1a
SMG3200:165.213.81.230>
```

3. Activate the UDP Link.
   : It is activated to generate CDR information.

```
SMG3200:165.213.81.230> Oncdrudp

>>>[CDR] Turn On CDR Output on UDP Link      <- UDP Link is On.
>>>[CDR] UDP IP Address = 165.213.87.154
>>>[CDR] UDP Port: 50000


Goodvalue = 0 = 0x0
SMG3200:165.213.81.230>
```
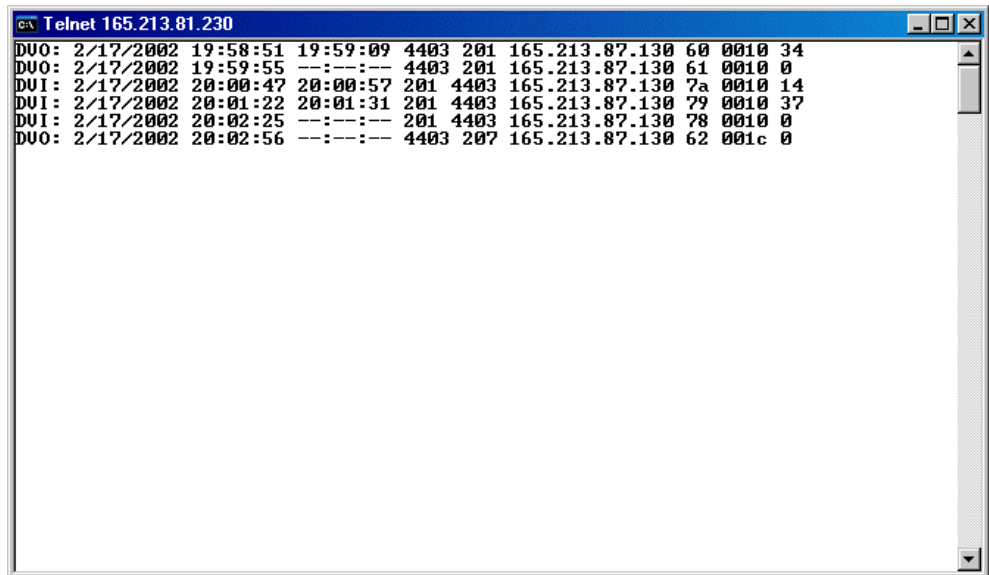
4. Receive CDR information.
   : The UDP Link is made to receive CDR information.
   : The following screen is for receiving UDP data.

CAUTION

The UDP Link requires a dedicated program for receiving UDP data.

When the UDP Link is activated but is not made yet, the CDR data is discarded.
Therefore, first make the UDP Link. Then activate it.

```
Telnet 165.213.87.154                                              _ □ ×

opened UDP socket with port no. 50000...
----------------------------------------
DUO: 2/17/2002 19:58:51 19:59:09 4403 201 165.213.87.130 60 0010 34
DUO: 2/17/2002 19:59:55 --:--:-- 4403 201 165.213.87.130 61 0010 0
DUI: 2/17/2002 20:00:47 20:00:57 201 4403 165.213.87.130 7a 0010 14
DUI: 2/17/2002 20:01:22 20:01:31 201 4403 165.213.87.130 79 0010 37
DUI: 2/17/2002 20:02:25 --:--:-- 201 4403 165.213.87.130 78 0010 0
DUO: 2/17/2002 20:02:56 --:--:-- 4403 207 165.213.87.130 62 001c 0
```

5. If you do not want to receive CDR information anymore.
    : Inactivate the UDP Link.

```
SMG3200:165.213.81.230> Offcdrudp

 >>>[CDR] Turn Off CDR Output on UDP Link        <- UDP Link is Off.


 Goodvalue = 0 = 0x0
 SMG3200:165.213.81.230>
```

CDR Form

Call Type	DVO
Delimiter	:
M/D/Y	12/03/2001
Setup Time	18:20:00
Connected Time	18:21:07
Calling #	2187463
Called #	027798888
Connected IP	165.213.87.38
PSTN Port #	20
Call erm. Code	0010
Call Duration (sec.)	180

DVO : 12/03/2001 18:20:00 18:21:07 2187463 027798888 165.213.79.38 20 0010 180
DVO : 12/03/2001 18:20:00 --:--:-- 2187463 027798888 - 20 0010 180

Call Type (3 bytes)

- First byte (the Connection Type)
    G: the Call via Gatekeeper
    D: the Direct Call to the other Gateway

- Second byte (Voice/Fax)
    V: Voice Call
    F: Fax Call

- Third byte (Call Direction)
    O: a Outbound call of VoIP
    I: a Inbound call of VoIP
    R: a Rerouted call

- Examples
    DVO, DVI, DFO, DFI, GVO, GVI, GFO, GFI, DVR, GVR

Delimiter

The delimiter between Call Type and Other Field

Month/Day/Year

Start-up Date (Setup date)

Setup Time

Start-up Time
    * Gatekeeper Mode : the start time to send ARQ
    * Direct Mode : the start time to send Setup signal.

Connected Time

A Connection start time
    * The time to send or receive Connect Message

Calling

Calling No. (Caller ID)

Called

A called number
* The original digit that the SMG-3200 is received first.

Connected IP

IP address of other gateway which connected to the SMG-3200.
 * RTP voice packet being exchanged with this connected IP.

PSTN Port

The PSTN Port number of SMG-3200
* The Outbound PSTN port number when the call is rerouted.
  - 20: the 1st port of VSL1
  - 40:the 1st port of VSL2
  - 60: the 1st port of digital trunk

Call Term.(Termination) Code

Word value is represent with 4 bytes of Hex Value
 - The first 2 bytes : Code Type
    00 : Q.931 Reason Code
    01 : RAS Reason Code
    02 : Rerouting Reason Code
    03 : The reason code of the other's abnormal close
      e.g.) IP Address isn't found.
 - The second 2 bytes : Code Value.
      e.g.) When Q.931 reason code is Normal, it's 10.

* FFFF: The call is not terminated.
* For detailed information on the codes, please see "Appendix A Call Termination Code."

Call Duration in seconds

The Call duration from connected time to released time

Appendix A   Call Termination Code

CDR Form

Call Type	DVO
Delimiter	:
M/D/Y	12/03/2001
Setup Time	18:20:00
Connected Time	18:21:07
Calling #	2187463
Called #	027798888
Connected IP	165.213.87.38
PSTN Port #	20
Call Term. Code	0010
Call Duration (sec.)	180

DVO: 12/03/2001 18:20:00 18:21:07 2187463 027798888 165.213.79.38 20 0010 180
DVO: 12/03/2001 18:20:00 --:--:-- 2187463 027798888 - 20 0010 180

Call Termination Code

1. 00xx : Q.931 Reason Code
   * Following Next Pages

2. 01xx : RAS Reason Code

3. 02xx : Rerouting Reason Code
   1) for Loop/ E&M / T1E1
       GOOD : 0x00
       BAD : 0x01
       COLLSN : 0x02

   2) for PRI :
       * Following Next Pages

4. 03xx : Abnormal Reason Code

Q.931 Reason Code (00xx)

| Cause Value | | Nbr | Cause | Diagnostic |
Class bits 7 6 5	Value bits 4 3 2 1			
Normal event				
0 0 0	0 0 0 1	01	Unsigned number	Transit network identity
0 0 0	0 0 1 0	02	No route to specified transit network	
0 0 0	0 0 1 1	03	No route to destination	
0 0 0	0 1 1 0	06	Channel unacceptable	
0 0 0	0 1 1 1	07	Call awarded and being delivered in an established channel	
Normal event				
0 0 1	0 0 0 0	10	Normal call clearing	
0 0 1	0 0 0 1	11	User busy	
0 0 1	0 0 1 0	12	No user responding	
0 0 1	0 0 1 1	13	No answer from user (user alerted)	
0 0 1	0 1 0 1	15	Call rejected	User supplied diagnostic
0 0 1	0 1 1 0	16	Number changed	New destination
0 0 1	1 0 1 0	1A	Non-selected user clearing	
0 0 1	1 0 1 1	1B	Destination out of order	
0 0 1	1 1 0 0	1C	Invalid number format	
0 0 1	1 1 0 1	1D	Facility rejected	Facility identification
0 0 1	1 1 1 0	1E	Response to STATUS ENQUIRY	
0 0 1	1 1 1 1	1F	Normal unspecified	
Resource unavailable				
0 1 0	0 0 1 0	22	No circuit/channel available	
0 1 0	0 1 1 0	26	Network out of order	
0 1 0	1 0 0 1	29	Temporary failure	
0 1 0	1 0 1 0	2A	Switching equipment congestion	Discarded IE identifier(s)
0 1 0	1 0 1 1	2B	Access information discarded	
0 1 0	1 1 0 0	2C	Requested circuit/chan not available	
0 1 0	1 1 1 1	2F	Resources unavailable, unspecified	

Q.931 Reason Code (00xx)

Cause Value		Nbr	Cause	Diagnostic
Class bits 7 6 5	**Value bits 4 3 2 1**			
Service/option not available				
0 1 1	0 0 0 1	31	Quality of service unavailable	
0 1 1	0 0 1 0	32	Requested facility not subscribed	Facility
0 1 1	1 0 0 1	39	Bearer capability not authorized	identification
0 1 1	1 0 1 0	3A	Bearer capability not presently avail	
0 1 1	1 1 1 1	3F	Service or option not available	
Service/option not imp.				
1 0 0	0 0 0 1	41	Bearer capability not implemented	
1 0 0	0 0 1 0	42	Channel type not implemented	Channel type
1 0 0	0 1 0 1	45	Requested facility not implemented	Facility
1 0 0	0 1 1 0	46	Only restr.Dig.Info BC. Is available	identification
1 0 0	1 1 1 1	4F	Service or option not implemented	
Invalid message				
1 0 1	0 0 0 1	51	Invalid call reference value	
1 0 1	0 0 1 0	52	Identified channel does not exist	Channel identity
1 0 1	0 0 1 1	53	Call id does not exist for susp call	
1 0 1	0 1 0 0	54	Call identity in use	
1 0 1	0 1 0 1	55	No call suspended	
1 0 1	0 1 1 0	56	Call with the req call id is cleared	Clearing cause
1 0 1	1 0 0 0	58	Incompatible destination	Incompatible
1 0 1	1 0 1 1	5B	Invalid transit network selection	parameter
1 0 1	1 1 1 1	5F	Invalid message, unspecified	

Q.931 Reason Code (00xx)

Cause Value		Nbr	Cause	Diagnostic
Class bits 7 6 5	Value bits 4 3 2 1			
ETSI cause values				
1 0 1	0 0 0 1	51	Non existent closed user group	
1 0 1	1 0 0 1	59	Called user not member of cug	
1 0 1	1 0 1 0	5A	Called user belongs to cug	
Protocol error				
1 1 0	0 0 0 0	60	Mandatory information element is missing	Information element identifier(s)
1 1 0	0 0 0 1	61	Message type non existing or not implemented	Message type
1 1 0	0 0 1 0	62	Message not compatible with call state or message type non existent or not implemented	Message Type
1 1 0	0 0 1 1	63	Information element non existing or not implemented	Information element identifier(s)
1 1 0	0 1 0 0	64	Invalid information element constants	Information element identifier(s)
1 1 0	0 1 0 1	65	Message not compatible with call state	Message type
1 1 0	0 1 1 0	66	Recovery on timer expiry	Timer number
1 1 0	1 1 1 1	6F	Protocol error, unspecified	
Interworking				
1 1 1	1 1 1 1	5F	Interworking, unspecified	

Cause Value of PRI for SMG System (02xx)

No.	Define	Val	Comment
1	CAUSE_UNASSIGNED	1	Unassigned REL_COM, DISC
2	CAUSE_NOROUTE_TX	2	no route to specified transit network DISC, REL_COM
3	CAUSE_NOROUTE_DEST	3	no route to destination DISC, REL_COM
4	CAUSE_CH_UNEXPT	6	Channel unexpectable REL
5	CAUSE_CALL_AWARD	7	Call awarded and being delivered in an established channel REL
6	CAUSE_NOR_CLEAR	16	Normal call clearing DISC
7	CAUSE_USER_BUSY	17	User busy REL_COM
8	CAUSE_NO_RESPONDING	18	No user responding DISC
9	CAUSE_NO_ANSWER	19	User alerting, No answer DISC
10	CAUSE_CALL_REJ	21	call reject DISC
11	CAUSE_NUM_CHG	22	Number change DISC, REL_COM
12	CAUSE_NON_SELECT	26	Non selected user clearing REL
13	CAUSE_DES_OOO	27	Destination out of order DISC
14	CAUSE_INV_NUM	28	Invalid number format REL_COM, DISC
15	CAUSE_INV_NUM	29	Facility reject REL_COM, DISC
16	CAUSE_STAT_ENRTY	30	Response to status entry STAT
17	CAUSE_NOR_UNSPE	31	Normal unspecified REL_COM, DISC
18	CAUSE_NO_CIRCUIT	34	No circuit available REL_COM, DISC
19	CAUSE_NET_OOS	38	Network out of service
20	CAUSE_TEMP_FAULURE	41	Temporary failure DISC
21	CAUSE_SW_CONGEST	42	Switching equipment congestion REL, REL_COM
22	CAUSE_INFO_DISCARD	43	Access information discard CON, STAT
23	CAUSE_CH_NOTA	44	Circuit channel not available REL_COM, DISC
24	CAUSE_RES_NOTA	47	Resource not available REL_COM, DISC
25	CAUSE_QUAL_NOTA	49	Quality of service unavailable REL, REL_COM

26	CAUSE_FAC_NOTS	50	Requested facility not subscribed DISC
27	CAUSE_BC_NOTA1	57	Barer capability not authorized REL, REL_COM
28	CAUSE_BC_NOTA2	58	Bearer capability not authorized DISC, REL_COM
29	CAUSE_SRVO_NOTA	63	Service or option not available, not unspecified DISC, REL_COM
30	CAUSE_BC_NOTI	65	Bearer capability not implemented DISC, REL_COM
31	CAUSE_CT_NOTI	66	Channel type not implemented
32	CAUSE_RF_NOTI	69	Requested facility not implemented DISC, REL
33	CAUSE_OR_INFB	70	Only restricted digital information bearer capability is available
34	CAUSE_SRVO_NOTI	79	Service or option not implemented
35	CAUSE_INV_CRV	81	Invalid call reference value REL, REL_COM
36	CAUSE_IC_DNE	82	identified channel does not exist REL_COM
37	CAUSE_SC_EXIST	83	A suspended call exist REL_COM
38	CAUSE_CI_INUSE	84	Call identify in use SUSP, REJ
39	CAUSE_NC_SUSPEND	85	No call suspended RES, REJ
40	CAUSE_RCI_CLEAR	86	Call having the requested call identify has been cleared RES, REJ
41	CAUSE_INC_DEST	88	Incompatible destination DISC
42	CAUSE_INV_TNS	91	Invalid transit network selection DISC, REL, REL_COM
43	CAUSE_INV_MSG	95	Invalid message unspecified REL_COM, STAT
44	CAUSE_MIE_MISS	96	Mandatory information element is missing REL, REL_COM, STAT
45	CAUSE_MT_NOTE	97	Message type non-existence or not implemented STAT
46	CAUSE_MSG_NOTC1	98	Message not compatible with call state or message type non-existence of not implemented STAT
47	CAUSE_IE_NOTE	99	Information element non-existence or not implemented STAT,REL,REL_COM
48	CAUSE_INV_INFOE	100	Invalid information element contents

			STAT, REL, REL_COM
49	CAUSE_MSG_NOTC2	101	Message not compatible with call state STAT,DISC,REL, REL_COM
50	CAUSE_ROT_EXP	102	Recovery on time expiry DISC
51	CAUSE_PRO_ERROR	111	Protocol error, unspecified DISC
52	CAUSE_INTW_UNSPE	127	Interworking unspecified
53	CAUSE_VOIP_OOS	146	VoIP Out of service

Appendix B   System Information (Database) File Structure

The system information managed by the SMG-3200 is saved in a text file which allows the information to be backed up, restored, and edited.

- You can back up the system information externally.
- You can copy information between several systems.
- You can use the text editor to edit the system information.

File Structure

The Database file is configured in the CLI (Command Line Interface) menu structure, and has a similar hierarchical structure to that of the CLI menu.

Hierarchical structure

```
file ── system_db ────── dhcp
          │        ├── network_parameter
          │        └── login_id
          │
          ├── pstn_db ────── gateway_operation_db
          │            ├── rerouting_insert_digit
          │            ├── pcm_method
          │            ├── dial_method
          │            ├── sli_signal
          │            ├── trunc_signal
          │            ├── call_control_method
          │            └── ring_cadence
```

```
                              ── system_tone_cadence
                              ── co_tone_cadence
                              ── gain_control
                              ── diagnosis
                              ── inbound_lcr_table

   ── voip_db ──── general_option
                  ── dsp_option
                  ── gatekeeper_option
                  ── outbound_routing_table ──── routetable_00
                  │                           ── :
                  │                           ── routetable_63
                  │
                  ── inbound_routing_table ──── routetable_00
                  │                           ── :
                  │                           ── routetable_31
                  │
                  ── remote_ip_table ──── iptable_00
                  │                     ── :
                  │                     ── iptable_31
                  │
                  ── caller_id_table
```

Syntax Structure

DB Types

Most of the data for SMG-3200 system DBs can be entered by assigning parameter values to corresponding variables, but data for DBs in table format can be entered differently depending on the type. So the characteristics of each DB will be described here.

DBs can be classified by the characteristics of the input values as follows :

```
db ───────┬─── Variable type DB──┬─── Number
          │                      │
          │                      ├─── String
          │                      │
          │                      └─── IP Address
          │
          └─── Table type DB─────┬─── inbound_lcr_table
                                 │
                                 ├─── routing_table (inbound, outbound)
                                 │
                                 ├─── remote_ip_table
                                 │
                                 └─── caller_id_table
```
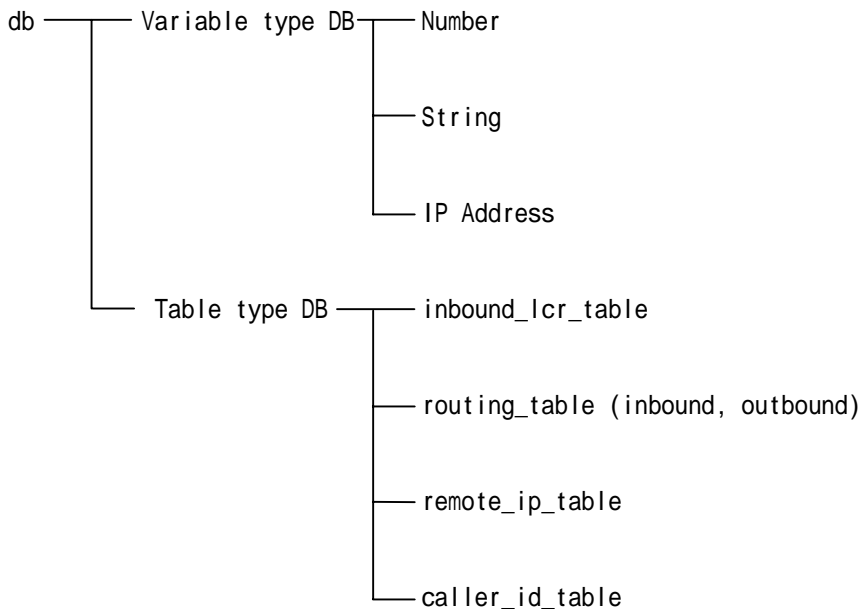
[Classification of DBs by type of value]

Above structure shows that there are two types of DBs: Variable Type DBs and table type DBs.

Variable Type DB

When assigning values to Variable Type DBs, write the variable name in the left side, put the allocation sign '=' in the middle, and write the value in the right side.

E.g.> sys.network.my_ipaddr = 165.213.87.145
        pstn.call_control.loop_ok_time = 60

If you want to delete String DBs, write "NULL" in the right side.

E.g.> voip.option.gateway_id = NULL

As the system analyzes DB files by line, only one assignment statement must be used for one line.

If you use the semicolon(;), the part of the line after the semicolon will be commented and not analyzed.

E.g.> voip.dsp.multi_frame_counter = 2   ; def(1) 1 ~ 10
                                  ~~~~~~~~~~~~~~~ commented

All variables must be predefined in the system to be recognized by the system, and they must be used within the folder to which the applicable DB belongs.

DBs of the same type are classified as a folder, and braces ('{','}') must be used to indicate the beginning and end of the DBs. At this time, the braces must be used in a new line, and cannot be used with other statements.

The ending part of the folder name must be ended with parentheses '(),' and in the case of table DBs, the maximum number of entry is written in the parenthesis of the folder name.

E.g.> System DB Configuration

```
system_db()
   {
      sys.dhcp()
      {
           sys.dhcp.client  = 0 ; def(0) min(0) max(1) (0)no, (1)yes
           sys.dhcp.classid =   ; def()
```

```
}

      sys.network_parameter()
      {
           sys.network.my_ipaddr  = 165.213.87.145 ;  My IP Address
           sys.network.my_gateway = 165.213.87.1   ;  My GateWay
                                                       Address
           sys.network.my_netmask = 255.255.255.0  ;  My Subnet Masks
           sys.network.my_tos     = 0 ; def(0) min(0) max(255)
                                         My TOS(Type of Service)
      }

      sys.login_id()
      {
           sys.login.id       = SMG-3200  ; Login ID
           sys.login.password = SMG-3200v1 ; Login Password
      }
  }
```

Not all DBs must be entered in the DB file, and you can leave only the DBs to modify, and delete the DBs you don't need to modify from the file before loading them.

Table Type DB

Table type DBs can have slightly different formats depending on the nature of the table.
The SMG-3200 system has the following four types of table DBs.

> - Inbound LCR Table
> - Routing Table (Inbound, Outbound)
> - Remote IP Table
> - Caller ID Table

1) Inbound LCR Table

The Inbound LCR Table belongs to the PSTN DB, and immediately performs Call Setup by checking predefined prefixes for quick Call Setup even if the End Digit ('#') does not arrive. It can have up to 32 entries, and one entry has 2 fields: 'Inbound Prefix' and 'maximum length.' One entry must be entered on one line, and the Inbound Prefix and the maximum length field must be separated by a comma (,).

An example of data input is given below :

```
pstn.inbound_lcr_table(32)  ; Maximum number of entries is 32
{
    1234567, 8  ; First entry [0/32]
    23456, 8    ; Second entry [1/32]
        :
}
```

2) Routing Table

The Routing Table belongs to the VoIP DB, and there are 2 types of routing tables: Outbound Routing Tables and Inbound Routing Tables.

> - Outbound Routing Table

The Outbound Routing Table has up to 64 entries, and each entry has the following Variable Type DBs.

voip.routetable.access_code

voip.routetable.code_length

voip.routetable.delete_lenth

voip.routetable.insert_dight

voip.routetable.iptable_1

voip.routetable.iptable_2

voip.routetable.iptable_start_point

voip.routetable.gk_use

An example of data input is given below :

```
voip.outbound_routing_table(64)
    {
       voip.routetable_00()
       {
voip.routetable.access_code              = 0
        voip.routetable.code_length      = 1
        voip.routetable.delete_lenth     = 0
        voip.routetable.insert_dight     =
        voip.routetable.iptable_1        = 0
        voip.routetable.iptable_2        = 0
        voip.routetable.iptable_start_point = 0
        voip.routetable.gk_use           = 1
       }
                 :
       voip.routetable_63()
       {
         :
       }
      }
```

- Inbound Routing Table

The Inbound Routing Table has up to 32 entries, and each entry has the following Variable Type DBs.

voip.routetable.access_code

voip.routetable.code_length

voip.routetable.delete_lenth

voip.routetable.insert_dight

An example of data input is given below :

```
voip.inbound_routing_table(32)  ; Maximum number of entries is 32
  {
     voip.routetable_00()
     {
        voip.routetable.access_code       = 0
        voip.routetable.code_length       = 1
        voip.routetable.delete_lenth      = 0
        voip.routetable.insert_dight      =
     }
                              :
     voip.routetable_31()
     {
         :
     }
  }
```

3) Remote IP Table

The Remote IP Table belongs to the VoIP DB, and has up to 32 entries. Each entry consists of tables, and up to 32 IP addresses can be entered in one IP Table entry. When entering IP addresses in the IP Table entry, you must enter one IP address in one line.

An example of data input is given below :

```
voip.remote_ip_table(32)   ; Maximum number of entries is 32
  {
     voip.iptable_00()    ; Maximum number of IPs entered in one IP
                            Table entry is 32
     {
        165.213.87.145    ; [0/32]
        165.213.87.146    ; [1/32]
             :
     }
     voip.iptable_01()    ; Maximum number of IPs entered in one IP
                             Table entry is 32
     {
        165.213.87.144    ; [0/32]
     }
           :
     voip.iptable_31()    ; Maximum number of IPs entered in one IP
                            Table entry is 32
     {
       165.213.87.55      ; [0/32]
     }
  }
```

4) Caller ID Table

The Caller ID Table belongs to the VoIP DB, and has up to 30 entries. In this case 30 means the maximum number of trunk ports that the SMG-3200 system can have. As each entry is one Variable Type DB, it can be expressed simply as an assignment statement as follows :

```
voip.caller_id_table(30)
   {
      voip.calleridtable_00 = 1234
      voip.calleridtable_01 = 2345
      voip.calleridtable_02 = 3456
      voip.calleridtable_07 = 4567
            :
   }
```

DB Attribute

```
file ─┬─ system_db ─┬─ dhcp
      │             │      ├── sys.dhcp.client   (Number)
      │             │      └── sys.dhcp.classid  (String)
      │             │
      │             ├── network_parameter
      │             │      ├── sys.network.my_ipaddr   (IP)
      │             │      ├── sys.network.my_gateway  (IP)
      │             │      ├── sys.network.my_netmask  (IP)
      │             │      └── sys.network.my_tos       (Number)
      │             │
      │             ├── login_id
      │             │      ├── sys.login.id        (String)
      │             │      └── sys.login.password  (Stirng)
      │             │
      ├── pstn_db   ├── gateway_operation_db
```

```
                    ├──pstn.gateway_operation_mode      (Number)
                    └──pstn.gateway_inbound_lcr_option (Number)

  ──rerouting_insert_digit
        └──pstn.rerouting_insert_digit (String)

  ──pcm_method
        └──pstn.pcm_method (Number)

  ──dial_method
        ├──pstn.dial_method.dial_type                (Number)
        ├──pstn.dial_method.dtmf_hold_time           (Number)
        ├──pstn.dial_method.calling_number_request   (Number)
        ├──pstn.dial_method.calling_number_response  (Number)
        ├──pstn.dial_method.called_status_request    (Number)
        ├──pstn.dial_method.called_status_response   (Number)
        └──pstn.dial_method.calling_extension_response
                                                     (Number)

  ──sli_signal
        ├──pstn.sli_signal.hook_off_time       (Number)
        ├──pstn.sli_signal.hook_on_time        (Number)
        ├──pstn.sli_signal.hook_flash_min_time (Number)
        └──pstn.sli_signal.hook_flash_max_time (Number)

  ──trunc_signal
        ├──pstn.trk_signal.signal_type       (Number)
        ├──pstn.trk_signal.seize_time        (Number)
        ├──pstn.trk_signal.release_time      (Number)
        ├──pstn.trk_signal.noring_time       (Number)
```

```
                              ├──pstn.trk_signal.answer_holding_time (Number)
                              ├──pstn.trk_signal.co_hookon_time      (Number)
                              ├──pstn.trk_signal.wink_time           (Number)
                              ├──pstn.trk_signal.insert_eod          (Number)
                              ├──pstn.trk_signal.t1_line_coding      (Number)
                              ├──pstn.trk_signal.t1_signal_mode      (Number)
                              ├──pstn.trk_signal.e1_crc4             (Number)
                              ├──pstn.trk_signal.pri_country         (Number)
                              ├──pstn.trk_signal.pri_oper_mode       (Number)
                              ├──pstn.trk_signal.pri_channel_mode    (Number)
                              └──pstn.trk_signal.pri_dial_mode       (Number)


          ├──call_control_method
                              ├──pstn.call_control.first_digit_time (Number)
                              ├──pstn.call_control.inter_digit_time (Number)
                              ├──pstn.call_control.loop_ok_time     (Number)
                              └──pstn.call_control.ok_release_time  (Number)


          ├──ring_cadence
                              ├──pstn.ring_cadence.sli_ring_1st_on_time  (Number)
                              ├──pstn.ring_cadence.sli_ring_1st_off_time (Number)
                              ├──pstn.ring_cadence.sli_ring_2nd_on_time  (Number)
                              ├──pstn.ring_cadence.sli_ring_2nd_off_time (Number)
                              ├──pstn.ring_cadence.trk_ring_1st_on_time  (Number)
                              ├──pstn.ring_cadence.trk_ring_1st_off_time (Number)
                              ├──pstn.ring_cadence.trk_ring_2nd_on_time  (Number)
                              └──pstn.ring_cadence.trk_ring_2nd_off_time (Number)


          ├──system_tone_cadence
                              ├──pstn.systone_cadence.dial_1st_on_time   (Number)
```

```
                          ┌── pstn.systone_cadence.dial_1st_off_time    (Number)
                          ├── pstn.systone_cadence.dial_2nd_on_time     (Number)
                          ├── pstn.systone_cadence.dial_2nd_off_time    (Number)
                          ├── pstn.systone_cadence.busy_1st_on_time     (Number)
                          ├── pstn.systone_cadence.busy_1st_off_time    (Number)
                          ├── pstn.systone_cadence.busy_2nd_on_time     (Number)
                          ├── pstn.systone_cadence.busy_2nd_off_time    (Number)
                          ├── pstn.systone_cadence.transfer_1st_on_time (Number)
                          ├── pstn.systone_cadence.transfer_1st_off_time(Number)
                          ├── pstn.systone_cadence.transfer_2nd_on_time (Number)
                          ├── pstn.systone_cadence.transfer_2nd_off_time(Number)
                          ├── pstn.systone_cadence.ringback_1st_on_time (Number)
                          ├── pstn.systone_cadence.ringback_1st_off_time(Number)
                          ├── pstn.systone_cadence.ringback_2nd_on_time (Number)
                          ├── pstn.systone_cadence.ringback_2nd_off_time(Number)
                          ├── pstn.systone_cadence.error_1st_on_time    (Number)
                          ├── pstn.systone_cadence.error_1st_off_time   (Number)
                          ├── pstn.systone_cadence.error_2nd_on_time    (Number)
                          └── pstn.systone_cadence.error_2nd_off_time   (Number)

                  ┌── co_tone_cadence
                          ├── pstn.co_tone_cadence.busy_1st_on_time     (Number)
                          ├── pstn.co_tone_cadence.busy_1st_off_time    (Number)
                          ├── pstn.co_tone_cadence.busy_2nd_on_time     (Number)
                          ├── pstn.co_tone_cadence.busy_2nd_off_time    (Number)
                          ├── pstn.co_tone_cadence.ringback_1st_on_time (Number)
                          ├── pstn.co_tone_cadence.ringback_1st_off_time(Number)
                          ├── pstn.co_tone_cadence.ringback_2nd_on_time (Number)
                          ├── pstn.co_tone_cadence.ringback_2nd_off_time(Number)
                          ├── pstn.co_tone_cadence.dial_1st_on_time     (Number)
```
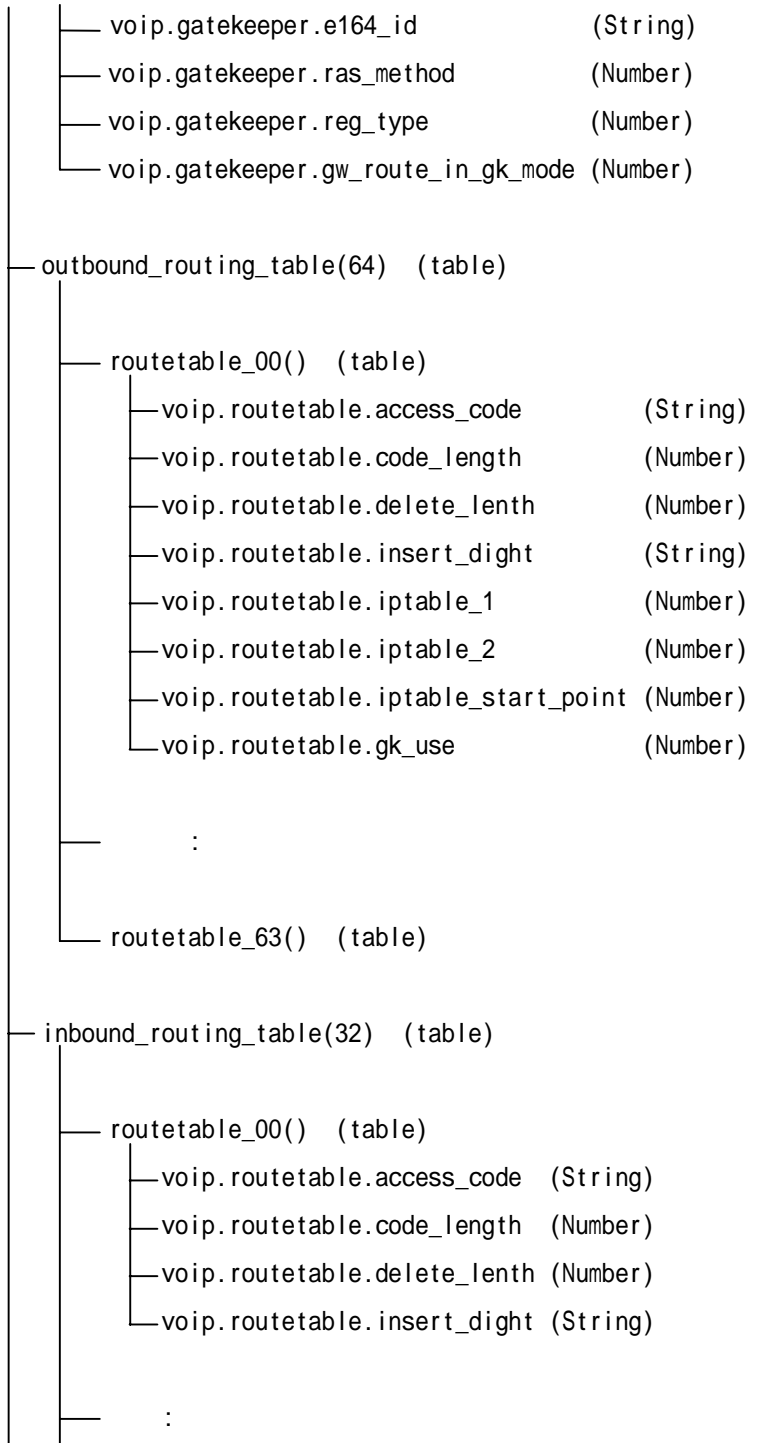
```
              ┌── pstn.co_tone_cadence.dial_1st_off_time  (Number)
              ├── pstn.co_tone_cadence.dial_2nd_on_time   (Number)
              └── pstn.co_tone_cadence.dial_2nd_off_time  (Number)

          ┌─ gain_control
          │   ├── pstn.gain.sli_sli   (Number)
          │   ├── pstn.gain.sli_atrk  (Number)
          │   ├── pstn.gain.sli_dtrk  (Number)
          │   ├── pstn.gain.atrk_sli  (Number)
          │   ├── pstn.gain.atrk_atrk (Number)
          │   ├── pstn.gain.atrk_dtrk (Number)
          │   ├── pstn.gain.dtrk_sli  (Number)
          │   ├── pstn.gain.dtrk_atrk (Number)
          │   └── pstn.gain.dtrk_dtrk (Number)

          ├─ diagnosis
          │   ├── pstn.diag.sli_port_test   (Number)
          │   ├── pstn.diag.trk_szr_test    (Number)
          │   └── pstn.diag.trk_codec_test (Number)

          └─ inbound_lcr_table(32) (table)

── voip_db ──── general_option
                ├── voip.option.signal_type              (Number)
                ├── voip.option.gateway_id               (String)
                ├── voip.option.caller_id_type           (Number)
                ├── voip.option.dtmf_type                (Number)
                ├── voip.option.fax_signal_type          (Number)
                ├── voip.option.h245_open_in_faststart  (Number)
                ├── voip.option.Tunneling                (Number)
```

```
            ── voip.option.dil_number          (String)
            ── voip.option.snmp_server_ip       (IP)
            ── voip.option.signaling_port       (Number)
            ── voip.option.status_port          (Number)
            ── voip.option.wcs_port             (Number)
            ── voip.option.sigk_access_port     (Number)


── dsp_option
            ── voip.dsp.audio_codec             (Number)
            ── voip.dsp.echo_cancellation       (Number)
            ── voip.dsp.silence_suppression     (Number)
            ── voip.dsp.high_pass_filter        (Number)
            ── voip.dsp.post_filter             (Number)
            ── voip.dsp.input_gain              (Number)
            ── voip.dsp.voice_volume            (Number)
            ── voip.dsp.multi_frame_counter     (Number)
            ── voip.dsp.jitter_optimizing_factor (Number)
            ── voip.dsp.rtp_delay_limit         (Number)
            ── voip.dsp.rtp_loss_limit          (Number)
            ── voip.dsp.rtp_loss_check_period   (Number)
            ── voip.dsp.rtp_over_limit_count    (Number)


── gatekeeper_option
            ── voip.gatekeeper.connection       (Number)
            ── voip.gatekeeper.type             (Number)
            ── voip.gatekeeper.ip               (IP)
            ── voip.gatekeeper.alias            (String)
            ── voip.gatekeeper.alt_gk_ip        (IP)
            ── voip.gatekeeper.down_option      (Number)
            ── voip.gatekeeper.h323_id          (String)
```

```
                        ─── voip.gatekeeper.e164_id              (String)
                        ─── voip.gatekeeper.ras_method           (Number)
                        ─── voip.gatekeeper.reg_type             (Number)
                        ─── voip.gatekeeper.gw_route_in_gk_mode  (Number)


        ─ outbound_routing_table(64)   (table)


                ─── routetable_00()   (table)
                        ─── voip.routetable.access_code          (String)
                        ─── voip.routetable.code_length          (Number)
                        ─── voip.routetable.delete_lenth         (Number)
                        ─── voip.routetable.insert_dight         (String)
                        ─── voip.routetable.iptable_1            (Number)
                        ─── voip.routetable.iptable_2            (Number)
                        ─── voip.routetable.iptable_start_point  (Number)
                        └── voip.routetable.gk_use               (Number)


                ───          :


                └── routetable_63()   (table)

        ─ inbound_routing_table(32)   (table)


                ─── routetable_00()   (table)
                        ─── voip.routetable.access_code  (String)
                        ─── voip.routetable.code_length  (Number)
                        ─── voip.routetable.delete_lenth (Number)
                        └── voip.routetable.insert_dight (String)


                ───          :
```

```
        └── routetable_31()   (table)

─── remote_ip_table(32)   (table)

    ├── iptable_00(32)   (IP)

    ├──       :

    └── iptable_31(32)   (IP)

─── caller_id_table(30)   (table)

    ├── voip.calleridtable_00   (String)

    ├──       :

    └── voip.calleridtable_31   (String)
```

Appendix C Glossary

This appendix provides brief definitions of terms used in the guide. **Bold** items in the text indicates that the item is defined in the list.

A-law

An encoding scheme that determines how an analog speech signal is converted to a digital signal. A-law encoding is used in Europe. The other algorithm, **U-law**, is used in North America and Japan.

Alias

A name given to each host to distinguish it from one another within an **H.323** network. While using the same Internet address, each host name can be set differently.

Automatic Number Identification (ANI)

ANI enables call recipients to recognize a caller's telephone number. How this works varies from provider to provider. This service is often provided by sending DTMF tones with a call.

Channel

A channel through a device, controlling data delivery between two devices, for information delivery. As the channel is a logical connection channel rather than a physical one connecting devices, a number of logical channels can exist even through only one physical communication line is present.

CODEC (COder-DECoder)

Converts analog voice to digital bit stream, and digital bit stream to analog voice. It can be also referred to as a type of compression (e.g. **G.729** CODEC).

Delay Start

A trunk signal method. A call is initiated when the trunk is seized at the sending end. The Off Hook status of the PBX at the receiving end lasts until it becomes ready to receive call data. Once it is ready to receive, it is changed to On-Hook status. When the PBX at the sending end sends call data, the PBX at the receiving end receives it and calls the subscriber at the receiving end. When

the subscriber at the receiving end lifts the phone (in the **Off-Hook** status), the call begins. The call is ended when either subscriber replaces the phone (in the **On-Hook** status).

Digital Signal Processor (DSP)

A special computer chip designed to handle digital signals, which are fast and complex. It is widely used for real-time processing of voice and image.

Dual Tone Multi Frequency (DTMF)

An in-band signaling system that uses two simultaneous voice-band tones for dialing.

Dynamic Host Configuration Protocol (DHCP)

Provides a mechanism for allocating **IP Addresses** dynamically so that addresses can be reused when hosts no longer need them.

E.164

The international numbering system for remote communication using telephone.

E&M (Ear & Mouth) Signaling

A method of sending and monitoring signals between signaling equipment independent of trunk devices. E (Ear) receives open or earth signals from signaling equipment. M (Mouth) sends earth signals or voltage status. It monitors a PBX's status depending on the changes in voltage of E and M. It also connects or disconnects connections.

Echo Cancellation

A process of removing echo from lines. Echo normally is created due to difference in impedance in wires of a telephone network. Echo Cancellers store a voice sample it sends, and extracts the voice from the returned voice in the reverse direction.

Fast Start

Fast Start is one of the **H.323** signal methods. It exchanges all information through a connection at the connection stage, and the media connection is made without connecting to **H.245**. As it is faster and simpler than Slow Start, it is now more widely used.

Fax On Demand (FOD)

Upon request of information using a telephone, you can receive information through fax. This service is provided on a 24 hour a day basis.

Foreign Exchange Office (FXO)

Being connected to a signal at a loop start signal type PBX, it receives power current and RING signals from the PBX, and sends them to the corresponding system. It forms the subscribers' telephone lines by processing voice signals at the sending end to PCM data.

Foreign Exchange Station/Subscriber (FXS)

Sends dial tones to ordinary telephones. It accommodates subscriber lines in loop start signal type exchangers, supplies current call RING signals to subscribers, sends voice signals, and dials signals of DTMF and LOOP ON/OFF by processing them into PCM data to the corresponding systems.

File Transfer Protocol (FTP)

A client/server protocol for exchanging files with a host computer. Examples are X-modem, Y-modem, Z-modem and Kermit.

Gatekeeper

H.323 Gatekeeper performs important functions which allow the deployment of an accountable and manageable multi-media network. A Gatekeeper is typically assumed to provide functions such as directory services, address translation, bandwidth management, authentication, accounting, authorization, and billing.

Gateway

A device that connects two computer networks that use different protocols. It translates between protocols so that computers on the connected networks can exchange data. For example, commercial online services often have gateways for sending e-mail to Internet addresses.

G.711

G.711 is a CCITT recommendation detailing a 74 kbps, 7kHz bandwidth audio coding algorithm.

G.723.1

G.723.1 (previously just "G.723") is a standards-based voice codec. It was designed for video conferencing / telephony over standard phone lines, and is optimized for real-time encode & decode. G.723.1 is part of the **H.323** (IP) and H.324 (POTS) standards for video conferencing. Has a compression ratio of 5.3 and /or 6.3 kbits/sec (0.7-0.8 kbytes/sec), depending on implementation.

G.729

The ITU-U G.729 recommendation contains the description of an algorithm for the coding of speech signals at 8 Kbit/s using Conjugate-Structure Algebraic-Code Excited Linear Prediction (CS-ACELP). The CS-ACELP coder is fed with a digital signal resulting from telephone bandwidth filtering (Recommendation G.712) of an analog signal sampled at 8 kHz, followed by conversion to 16-bit linear PCM for input to the encoder. The output of the decoder is converted back into analog signal by similar means.

H.245

H.245 is line transmission of non-telephone signals. It includes receiving and transmitting capabilities as well as mode preference from the receiving end, logical channel signaling, and Control and Indication. Acknowledged signaling procedures are specified to ensure reliable audiovisual and data communication.

H.323

The H.323 standard provides a foundation for audio, video, and data communications across IP-based networks, including the Internet. H.323 is an umbrella recommendation from the International Telecommunications Union (ITU) that sets standards for multimedia communications over Local Area Networks (LANs) that do not provide a guaranteed **Quality of Service (QoS)**. These networks dominate today's corporate desktops and include packet-switched TCP/IP and IPX over Ethernet, Fast Ethernet and Token Ring network technologies. Therefore, the H.323 standards are important building blocks for a broad new range of collaborative, LAN-based applications for multimedia communications. It includes parts of H.225.0 - RAS, Q.931, H.245 RTP/RTCP and audio/video codecs, such as the audio codecs (G.711, G.723.1, G.728, etc.) and video codecs (H.261, H.263) that compress and decompress media streams.

Immediate Start

Immediate Start is a type of trunk signaling. When the PBX at the sending end seizes a trunk line the PBX at the receiving end sends a dial tone to the former to inform of its readiness to receive call data. When the PBX at the sending end sends call data, the PBX at the receiving end receives

them and calls out a corresponding subscriber at the receiving end. When the subscriber lifts the phone (in **Off Hook** status) the telephone line is connected through. When either of the calling parties replaces the handset, it becomes **On-Hook** status, and the call is terminated.

Internet Protocol (IP)

Network layer protocol in the TCP/IP stack offering a connectionless internetwork service. IP provides features for addressing, type-of-service specification, fragmentation and reassembly, and security. Defined in RFC 791.

IP Address

32-bit address assigned to hosts using TCP/IP. An IP address belongs to one of five classes (A, B, C, D, or E) and is written as 4 octets separated by periods (dotted decimal format). Each address consists of a network number, an optional subnetwork number, and a host number. The network and subnetwork numbers together are used for routing, while the host number is used to address an individual host within the network or subnetwork. A subnet mask is used to extract network and subnetwork information from the IP address. CIDR provides a new way of representing IP addresses and **Subnet Masks**. Also called an Internet address. See also **Internet Protocol (IP).**

Jitter

The deviation of a transmission signal in time or phase. It can introduce errors and loss of synchronization in high-speed synchronous communications.

Off-Hook

The active state of a customer telephone circuit. The term is derived from old telephone sets where the handset (receiver), when in use, was lifted from a hook attached to a switch. The opposite condition is **On-Hook**.

On-Hook

Means the handset of a telephone is replaced (down). The connection is closed and the bell is in standby mode.

Quality of Service (QoS)

The quality of the services that are provided. When specified values of QoS variables are satisfied, it indicates that the quality of the corresponding service is satisfactory.

RTP (Real-time Transport Protocol)

An Internet protocol sending real-time data such as audio and video. Although RTP itself does not guarantee real-time transmission, transmission application programs provide devices for streaming data support. In general, RTP works on UDP protocol.

Slow Start

A type of **H.323** signaling. It exchanges all information through a connection at the Q931 connection stage, and connects to **H.245** followed by a media connection.

Subnet Mask

32-bit address mask used in **IP** to indicate the bits of an **IP Address** that are being used for the subnet address. Sometimes referred to simply as mask.

Trivial File Transfer Protocol (TFTP)

A simpler version of **File Transfer Protocol (FTP)** that uses UDP (User Datagram Protocol) rather than TCP (Transmission Control Protocol) for data transport. It is easier to program than FTP but lacks directory and authentication services. It is often used to allow diskless workstations to boot over the network.

Type of Service (TOS)

TOS parameters consist of three bits, which are used to set services on Delay, Throughput and Reliability.

	Delay (4)	Throughput (2)	Reliability (1)
Set	Low	High	High
Clear	Normal	Normal	Normal

Combinations of TOS bits and their meanings are shown below:

7	111	Network Control
6	110	Internetworking Control
5	101	CRITIC/ECP
4	100	Flash Override
3	011	Flash
2	010	Immediate
1	001	Priority
0	000	Routine

U-law

One of two algorithms used in telephony to logarithmically compress or expand digitized speech. U-law is used in North America and Japan. **A-law** is the algorithm used in European networks.

Wink Start

A type of trunk signaling. When the PBX at the sending end seizes a trunk line a call is initiated. The receiving end maintains its **Off-Hook** status for a short period (150-300ms, and 250ms on average) after being ready to receive call data until it becomes **On-Hook**. When the sending end sends dialing related signals call information is delivered to a subscriber at the receiving end. When the subscriber lifts the handset (Off-Hook) the call line is connected. When either party of the telephone call replaces the handset (On-Hook), the call is terminated.

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