Media Gateway – Session Initiated Protocol (MG-SIP)

Configuration Guide

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Media Gateway SIP

1. General Description

Media Gateway-Session Initiation Protocol 16-channel type (MG-SIP16) is an interface that enables your system to build a multi-service and reliable Voice over IP (VoIP) network using Session Initiation Protocol (SIP) defined by IETF. SIP is an application-layer control protocol that can initiate call setup, routing, authentication, and transfer feature messages to endpoints.

Up to 16 channels of extensions in an IPX network can communicate with the outside SIP network via an MG-SIP16 at the same time. As MG-SIP16 complies with small and middle sized remote offices flexibly, more offices can profit from Peer-to-Peer VoIP services using IP telephony.

The MG-SIP16 supports the SIP standard terminals based on RFC3261. Thereby, the MG-SIP16, which is controlled by MGC (PHI) of the IPX, provides a full array of call routing capabilities to maximize network performance in the packet voice network (SIP network). The MG-SIP16 provides the system with a flexible and cost-efficient network environment without wasting the accumulated assets of the NEC products.

Note: *Connection test with Common Carrier is required.*

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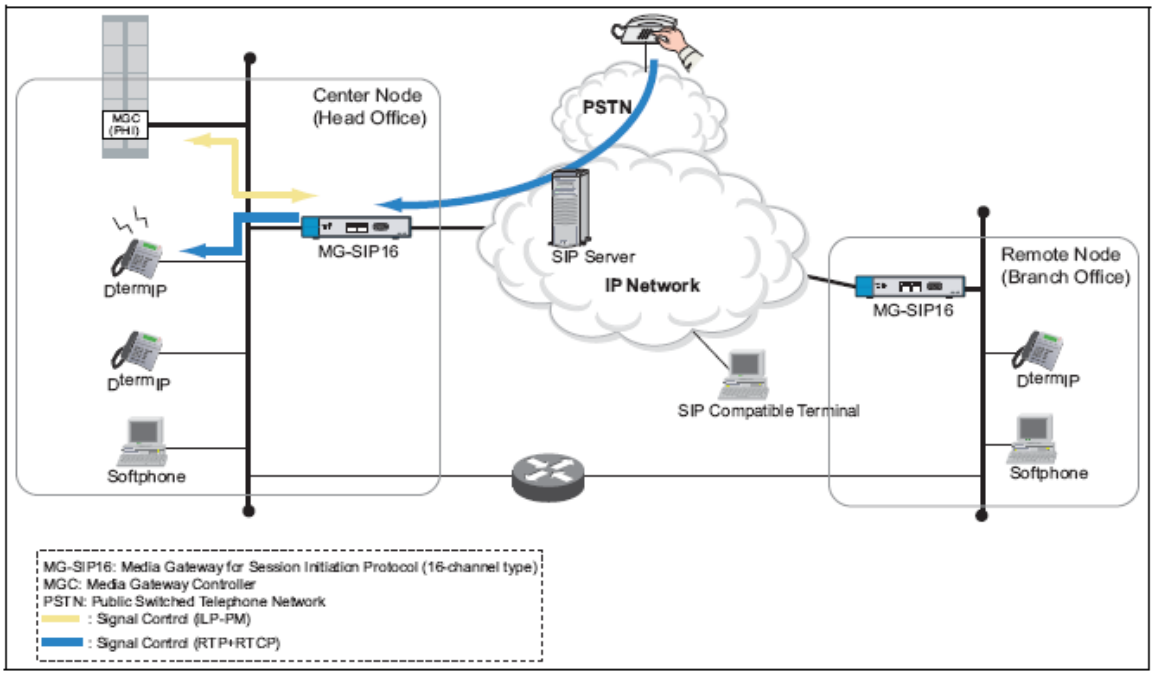


2. Operating Procedure

None.

3. Service Conditions

1. PHI is essential to perform this feature. This is included in MGC and it controls the MG-SIP16 via TCP/IP.

2. MG-SIP16 supports 1 to 16 channels.

3. The maximum number of MG-SIP16s accommodated per system (including MC-MG with PFT) and available channels are as follows, however, note that a maximum of simultaneous speech channels available per LP, including other ISDN channels, is 460 channels.

DEVICE TYPE	MAXIMUM ACCOMMODATION PER SYSTEM	
	Number of MG-SIP16	Number of Channels
MG-SIP16	384 devices	6144 channels

Note 1: *The maximum number of devices and channels per system is calculated on the condition that each device accommodated is set to the full capacity of channels. The number of devices varies depending on the total accommodated channels.*

Note 2: *When 6144 channels are occupied only by MG-SIP16, other devices cannot be connected.*

4. The number of Internal PHIs is one per system, except for UMG. For UMG, see Service Condition 22.

5. Speech channel is established by Virtual Trunk. Regardless of the registration number, the Virtual Trunk occupies channels on a 1HW (4-Group) basis. For example, ff a single channel is registered, the whole HW (32-channel) is occupied exclusively for the one single channel; other-type Virtual Channel cannot be registered.

6. Virtual Trunk is registered to Virtual PIM.

7. MG-SIP16 makes a connection using SIP Server, which helps to create multi-location connection. SIP server can use Proxy Server and Registry Server. User Agent (UA) has been registered to SIP Server.

8. Voice, FAX, DTMF (PB Signaling) communication can be established by connections via MG-SIP16.

ITEM	SPECIFICATION	NOTE
CODEC	G.711	64k [bps]: PCM μ-law
	G.729a	8k [bps]: CS-ACELP (Reduce complexity)
	G.723.1	5.3k [bps]: MP-MLQ/ACELP
		6.3k [bps]: MP-MLQ/ACELP
FAX	G.711	64k [bps]: PCM μ-law
DTMF	G.711	
	H.245	Toward system
	RTP (RCF2833)	Toward SIP network For DTMF Digits, Telephony Tones and Telephony Signals

9. IP Masquerade feature can make a VoIP connection between Private IP Address and Global IP Address. IP Masquerade feature is to translate UDP and TCP Ports, thereby; it can connect multiple Private IP

Addresses to single Global IP Address. There is no special equipment for performing IP Masquerade. However, delay and bandwidth increase might be caused on the connection.

10. Feature Services available in the SIP network are described in Appendix A.

11. When 3rd-party SIP-based terminals (such as SIP Gateway, SIP Terminal, SIP Server) are used in the SIP network, test these terminals in advance if they are available to use. Note that the terminal cannot be managed as a station under IPX.

12. Additional services (such as REFER) on the SIP procedure are not provided in this system. See SIP Message Support section for additional information.

13. Tone and holding tone to SIP network is generated by MG-SIP16. When MGC (PHI) external holding tone is selected by ASYDL command, the information is provided via MGC.

14. When making a route for MG-SIP16, register the route for each MG-SIP16. A route cannot be shared by multiple MG-SIP16s.

15. Before using MG-SIP16, it is required to register IP licenses by the AMGIL command. If the number of IP licenses is not enough to use the SIP terminals, all the terminals cannot register to the system.

16. MG Registration Status can be displayed by using the DIMG command.

17. MGC transfers only Voice RTP Payload. Therefore, Jitter-Buffer Control, Echo Canceller, PAD Control do not affect the connection. The connection is controlled by end points.

18. PB Receiver becomes invalid while receiving an announcement for AUTOMATED ATTENDANT [A-82]/REMOTE ACCESS TO SYSTEM [R-2] when Incoming Call terminates to MG-SIP16.

19. MG-SIP16 does not support ring down service.

20. To use VLAN feature of MG-SIP16, connect Switch supporting VLAN feature. MG-SIP itself does not support VLAN.

21. To use FAX communication feature of MG-SIP16, specify the FAX settings by ARTI/ARTIN command.

The FAX communication has constraints as follows:

- FAX communication can be established only when G711 is assigned to payload for Voice and FAX.
- FAX communication can be established only when Payload Sizes for Voice and FAX are the same.
- To establish FAX communication with SIP network via MG-SIP16, be sure to assign G711 as Payload

Type for all the FAX accommodated in the system.

22. The following provides the port number to be used in this system. If the firewall is applied to in your network, unblock the following ports.

SELF-PORT NO. (DEFAULT)	PATH	FUNCTION	NOTE
64000	PHI→MG-SIP16	iLP-PM	It is possible to change an initial value by using MAT (ADTM). (64000~65023)
61012	MG-SIP16↔PHI	Control Signal	It is possible to change an initial value by using Maintenance Console (set signaling_port_no).
3456	MG-SIP16→DRS	Registration	It is possible to change an initial value by using Maintenance Console (set registration_port_no).
40000	MG-SIP16→IPX	H.245	It is possible to change an initial value by using Maintenance Console (set h245_base_port_no).
50000	MG-SIP16→SIP MG-SIP16→IPX	RTP	It is possible to change an initial value by using Maintenance Console (set ixp_rtp_port_no/set sip_rtp_port_no).
5060	MG-SIP16→SIP	SIP message SIP registration	It is possible to change an initial value by using Maintenance Console (set sip_port_no).

23. Alternate routing to PSTN line can be activated in the case of the following connection failure on IP network.

- Ether cable failure on MG-SIP16's LAN side (IPX network) connector.
- Network failure between IPX and MG-SIP16.
- MG-SIP16 failure (such as power-off, etc.) → Alternate routing is activated after health check timeout detection.
- Ether cable failure on MG-SIP16's WAN side (SIP network) connector → Alternate routing is activated after health check timeout detection.
- Network failure between MG-SIP16 and carrier's SIP server → Alternate routing is activated after originating connection timeout (6 seconds).
- MG-SIP16 receives error response from carrier's SIP server → Alternate routing is activated after receiving error response (400, 408, 500, and 503).
- All the available channels are busy or in make-busy state.

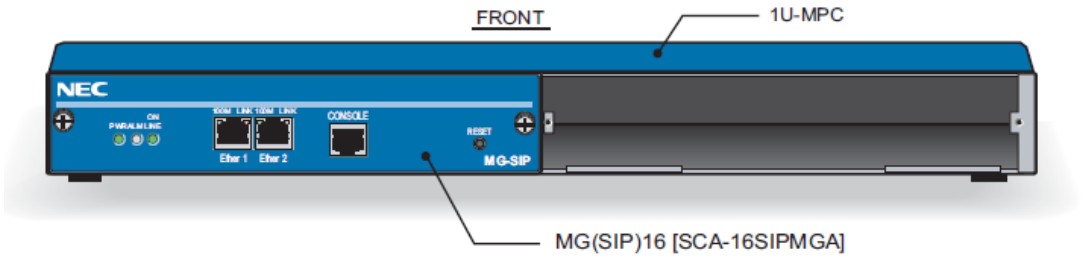
4. Specifications

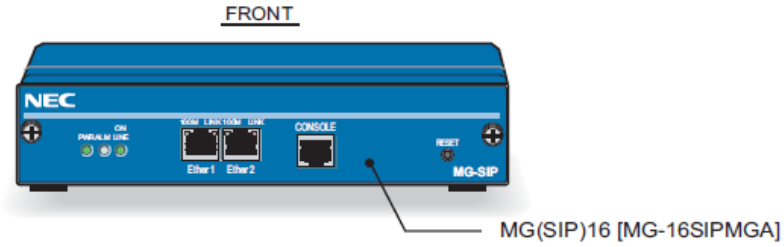
4.1 Hardware Specifications

This subsection explains the hardware specifications of SCA-16SIPMGA and MG-16SIPMGA. The figure below shows the outer view of MG-SIP16 [SCA-16SIPMGA] and MG-SIP16 [MG-16SIPMGA].

- Outerview

The following shows the outerview of MG-SIP16.



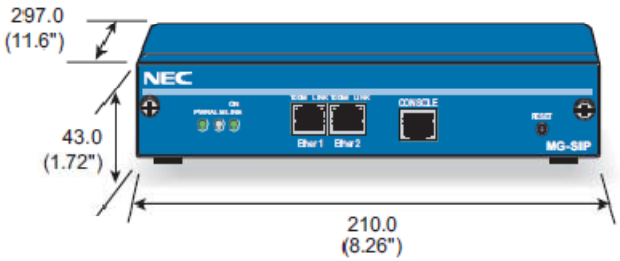


- Dimension

SCA-16SIPMGA

MG-16SIPMGA

Unit : mm (inch)



ITEM	SPECIFICATION	REMARKS
External interface	RJ-45 Serial connector × 1	for maintenance
	RJ-45 Ether connector (100BASE-TX/ 10BASE-T) × 2	Port for connecting to LAN × 1 Port for connecting to SIP network × 1
Setting	Desktop horizontal setting (standard setting)	without any fastening hardware
	19-inch rack mount	SV70 RACK MTG is used
Input power supply	AC100V (50/60Hz) ± 10% AC120V (50/60Hz) ± 10% AC230V (50/60Hz) ± 10% AC240V (50/60Hz) ± 10%	
Electric power consumption	15W/30VA	
Weight	1.8 Kg	
Environmental requirement	Temperature: 0 ~ 40°C Humidity: below 90% (not condensing)	
Cooling	Air-cooling without FANs	

4.2 Software Specifications

The available features are in the following:

ITEM	SPECIFICATION	REMARKS
LAN interface	10Mbps/100Mbps Ethernet	
Communication speed	10Mbps/100Mbps auto negotiation, Half/Full duplex	
Protocol	RFC3261 (SIP)	Only UDP is supported
SIP server conditions	SIP Proxy Server	
Channel capability	Maximum 16 channels/MG-SIP16	
Voice CODEC	G.711, G.729a, G.723.1	
FAX relay	Data transmission as voice data (G.711)	
DTMF	H.245 Alphanumeric (LAN side) RFC2833 (SIP network side) Data transmission as voice data (G.711)	
Address translation	IP masquerade (NAPT)	
Caller ID notification	Direct-in number, Pilot number	
Download	Firmware download	
Holding tone	Internal Music 1: Minuet Internal Music 2: For Elise	
Maintenance	Maintenance console (PC) via serial connection	*telnet remote maintenance is not supported

Note: *Additional services (such as REFER) on the SIP procedure are not provided in this system.*

Note: *Tone and holding tone to SIP network is generated by MG-SIP. When MGC(PHI) external holding tone is selected by ASYDL command, the information is provided by Telephony Server (via IP PAD).*

5. Interactions

None.

6. PBX Programming for MG-SIP

Note: *Be sure to assign the data in the following order.*

6.1 ASYD - Assign System Data 1,
Index64, Bit7 = 1 (holding tone sending)
Index186, Bit6 = 1 (ISDN)
Index187=00
Index220, Bit6=0 (ISDN is enabled)

6.2 ASYDL - Assign the following:
System Data 1 Index 810 Bit2 = 0/1 [Internal Holding Tone (IP terminals)/External Holding Tone (EMA and PLO)]
System Data 1 Index 880 Bit1 = 1 (Internal PHI is enabled)
Note: *If External music (2) is selected, refer to Music On Hold [M-7].*

6.3 ALOCL - Assign ToS settings as follows:
Network Address: Specify the Network Address (assign 0.0.0.0 when LOC-ID=0).
Mask Bit: Specify the Mask Bit (assign32 when LOC-ID=0).
LOC-ID = 0
Setting of Type of Service (Signaling Packet): Specify the Quality of Service (IP Precedence/ Diffserv).

- When IP Precedence is selected
Specify its priority [0-7] and the type (LOW DELAY/THROUGH PUT/RELIABILITY/MIN COST).

- When Diffserv is selected
Specify the DiffServ Code Point [0-63].

Note: *LOC-ID=0 is essential to be assigned, however, assign other network's LOC-ID according to the configuration.*
Note: *When any change has been made, it is necessary to initialize the MGC (PHI) by using the ADPM command.*
Note: *When the data change is applied to the already-operating equipment (such as PH, IPPAD, and DtermIP) please take the following:*
- Reset the appropriate PH or IPPAD.
- Re-register the DtermIP

6.4 ADTM - Assign port numbers if necessary [default value = 64000].
Initialize the PHI if the port number has been modified. (Options)

6.5 ADPM - Initialize the MGC (PHI).
PH TYPE = Internal PHI (BRI)
Menu = Initialize

6.6 ALIDL - Specify LAN the MGC accommodated location.
LENS: Specify the Line Equipment Number (even number)
TYPE = Internal PHI
REGMAX: Specify the registration capacity.

Note: *When the total number of channels using PHI exceeds 256, increase the value of REGMAX.*

6.7 ARTD – Specify the route class data on Virtual Speech Channel as follows. It is not necessary to register attributes for the Virtual Signaling Channel.

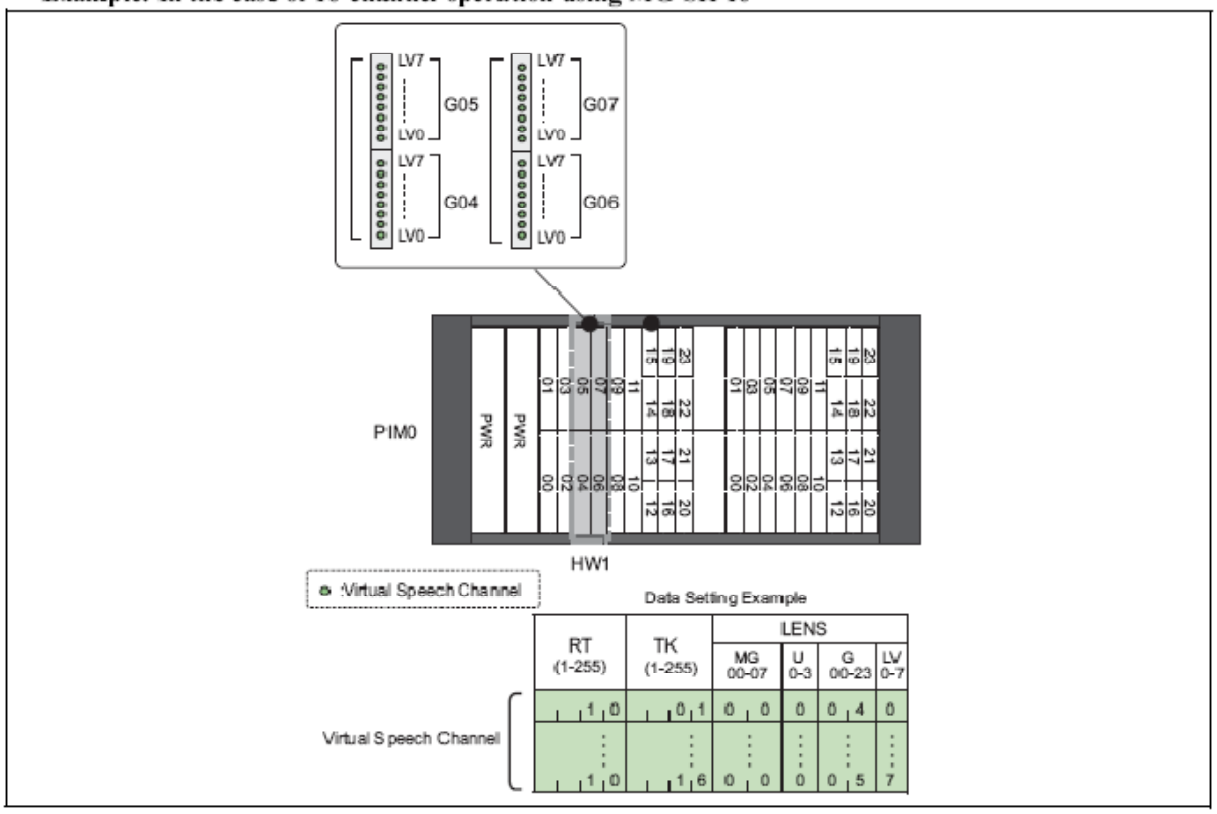
CDN2 (ONSG) = 2 (PB, 60 milliseconds Interruption, CCIS, or ISDN)
CDN4 (INSG) = 2 (PB, 60 milliseconds Interruption, or CCIS)
CDN5 (TF) = 3 [Bothway Trunk (BWT)]
CDN6 (TCL) = 1 (DDD Line/Tie Line)
CDN7 (L/T) = 1 (Trunk)
CDN8 (RLP) = 2 [First Party Release (either station or trunk side)]
CDN15 (LSG) = 12 [Speech Line (for CCIS or B-Channel of ISDN)]
CDN28 (ANS) = 1 (Answer signal is provided)
CDN30 (PAD) = 7 [PAD OFF(0db)]
CDN31 (OGRL) = 1 (224 milliseconds)
CDN32 (ICRL) = 1 (224 milliseconds)
CDN34 (GUARD) = 1 (512 milliseconds)
CDN45 (A/D) = 0 (Analog)
CDN49 (TRKS) = 0 (Select from the trunk which becomes idle first)
CDN50 (DPLY) = 1 (Number Display of Dterm between offices is given)
CDN60 (TC/EC) = 1 (Echo Canceller)
CDN65 (INT) = 10 [Q-Sig, (ETS 300 172)/IS-11572]
CDN66 (DOC) = 1-15 (DID Addressing number)
Assign the CDN111 (ADVPRA) = 1 (ISDN PRI Failure Routing Service) to Dummy Routes.

6.8 ARTI - Specify the application data for trunk.
CDN47: INTD = 2 (H.323/SIP)
CDN68: VIR = 2 (MG connection)
CDN77: RA_RT = 0/1 (Virtual Register is used/Register card is used)

6.9 ATRK - Specify trunk data on Virtual Speech Channel and Virtual Signaling Channel.
RT: Specify Route Number [1-255]
TK: Specify Trunk Number [1-255]
LENS: Specify Accommodated Location (Six digits)

The following is an example of 16-channel operation.

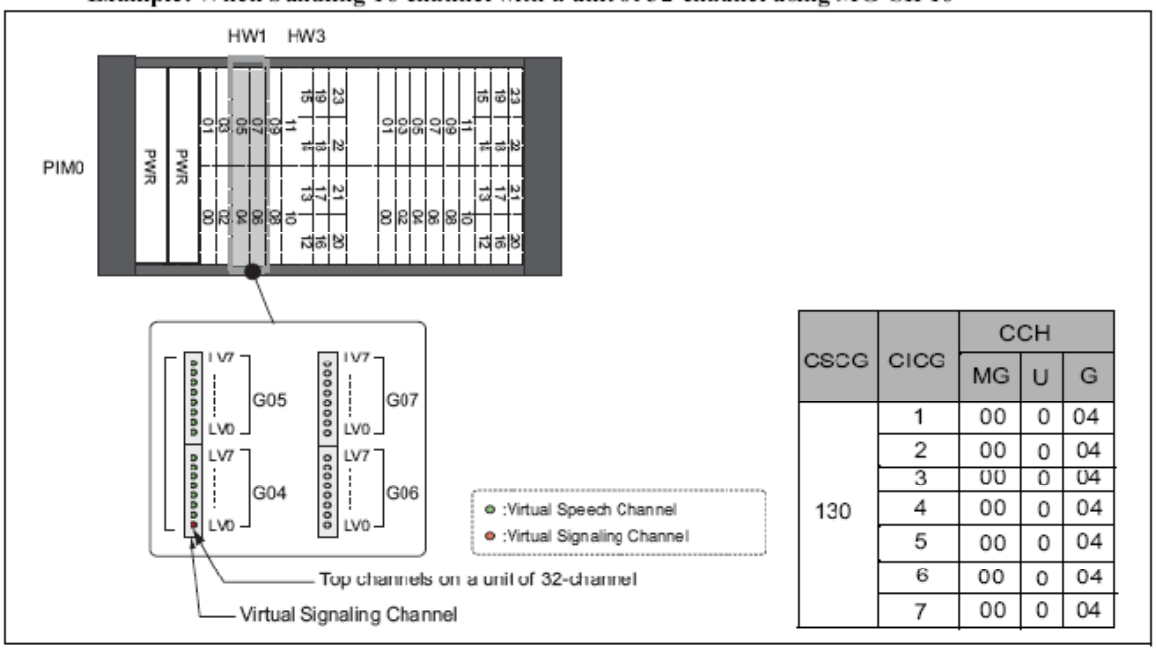
Example: In the case of 16-channel operation using MG-SIP16



6.10 ADPC - Register Point Code on Virtual Speech Channel and Virtual Signaling Channel.
RT: Specify a Route Number [1-255]
PC: Specify unused Point Code, not Point Code used in SS7 [1-16383]

6.11 ACSC - Assign the top number of 32-channel LENS.
CSCG: Specify the CSC Group Number
GROUP: Specify the CIC Group Number
CCH: Specify the top LENS of a unit.

Example: When bundling 16-channel with a unit of 32-channel using MG-SIP16



CSCG	CICG	CCH		
		MG	U	G
130	1	00	0	04
	2	00	0	04
	3	00	0	04
	4	00	0	04
	5	00	0	04
	6	00	0	04
	7	00	0	04

6.12 ACIC1 - Specify the accommodated location of Virtual Control Channel on Point Code as follows:
PC: Enter Point Code specified by ADPC
CSCG: Enter CSC group specified by ACSC

6.13 ACIC2 - Specify the accommodated location of Virtual Control Channel on Point Code as follows:
PC: Enter Point Code specified by ADPC
CIC: Enter CSC numbers in sequential number
LENS: Enter accommodated locations of Speech Channel and B-Channel

6.14 MBTK - Cancel Make Busy of Virtual Speech Channel.
RT: Enter Route Number
TK: Enter Trunk Number
MB = 0 (Make-Busy is cancelled.)

6.15 AMGIL - Specify information regarding to MG-SIP16 as follows:
MG-ID: Enter MAC Address (6 bytes)
FUNCTION = Setting
KIND = SIP-MG
LINE = 0 (fixed)
CH = 0 (fixed)
LENS: Enter Basic Accommodated Location (the first number of HW)
Retry = 0
Service Type: Specify QoS settings of Signaling that is used when PHI connects MG-SIP16.
CH: Enter the number of channels to be used per MG-SIP16 [1-16].
Service of Authentication exists: Select the box if a registration is required per number. **Note**
Note: *Whether to use Service of Authentication is determined by the carrier's selected services. For more information about this feature, refer to Multiple Number Service (MG-SIP) [M-113].*

6.16 AMGVL - Register the voice control data when connecting to MG-SIP16. If the settings are not specified by this command, the values will be set to "G711" and "40ms" automatically.

A RT: Specify Physical Route Number (MG-SIP16).
LOC-ID: Specify Destination Location ID (Destination MG-SIP16). **LOC-ID=0 must be set when IPPAD card is mounted.*
B RT: Specify Physical Route Number (MG-SIP16) in the case of tandem connection between MGs.
SETTING OF SERVICE TYPE (VOICE PACKET): Specify QoS settings of Voice Speech
PAYLOAD TYPE: Specify Payload type. **G.711 and 20ms must be set for public SIP network.*
PAYLOAD SIZE: Specify Payload size.

Note: *Unless the AMGVL Command is not used for the registration, the **AIVCL** command is required to register the attributes. For more information, refer to the Office Data Specifications.*

6.17 ACNAL - Assign the Calling Number Pattern (CNP) on an Access Code basis. **When this command is used, assign ARTD command CDN66 to DC=15.*

• Settings for a Call Originated to SIP Network

Specify Calling Number Pattern against route for Caller ID Notification and Access Code.
IC/OG = OG (Outgoing)
RT: Enter Route Number to be sent Caller ID Notification per Access Code.
ACC: Enter Access Code.
CNP: Enter Calling Number Pattern.

Note: *To modify CNP set by the ACNAL command, use the ACND command; ACNDN command cannot be used.*

• Settings for a Call Arrived from SIP Network

Specify Calling Number Pattern against route for Caller ID Notification and Access Code.
IC/OG = IC (Incoming)
RT: Enter Route Number to be arrived.
ACC: Enter Access Code.
DC: Dialed Number Confirmation

6.18 ACND - Assign the data for number change to CNP has been specified by the ACNAL command

CNP: Calling Number Pattern
SKIP: Skip Digit
ADD: Number of Digits of the Additional Number
DC: Digit Code of the Additional Number

6.19 ACDD - Change Digit Code according to DID Addressing.

DAY/NIGHT: Day/Night Mode
RT: Enter the B-Channel Route Number.
DC: Enter Number of digits for this DC must match the data in DC of the ARTD command.
CDC: Enter Change Digit Code [Maximum 24 digits]
AD: Enter Additional Dialing
XFR: Enable/Disable Transfer Service

After the registration has been completed, reset MG-SIP16 (ON→OFF→ON).

7. MG-SIP Startup and Programming

7.1 Maintenance Console Settings

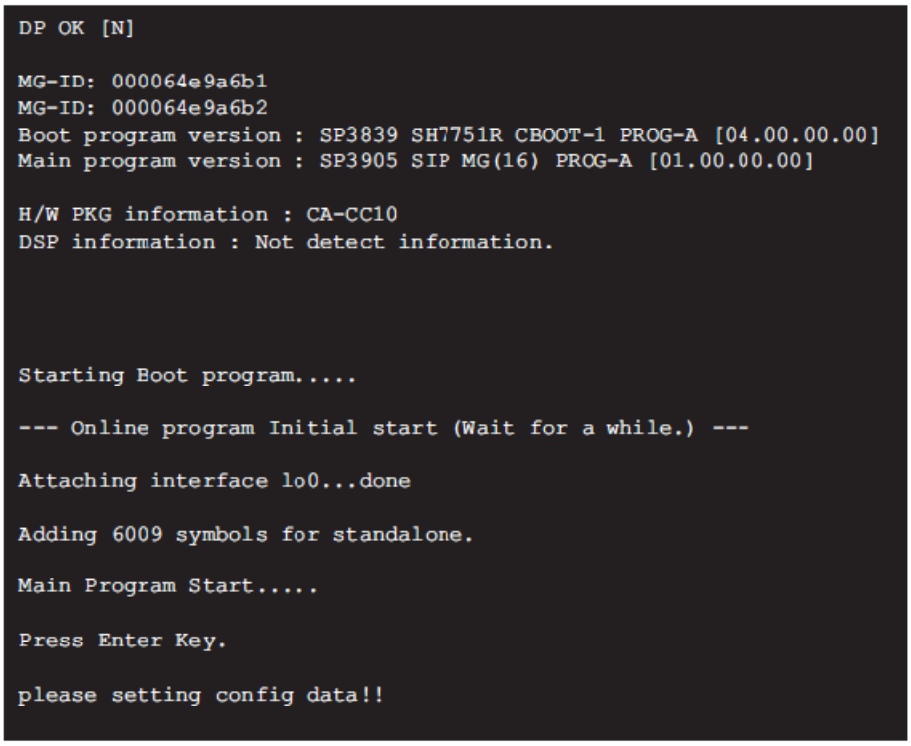
Use a serial connection client such as Hyperterminal to connect MG-SIP16 on a software basis. Be sure to connect RS-232C cable (straight cable) between MG-SIP16 and the Maintenance Console (PC) when initially setting up MG-SIP16.

STEP 1: Open a communication software Hyper Terminal on the Maintenance Console, and set up the connection with MG-SIP16.
(1) Startup Windows on the Maintenance Console.
(2) Click **Start**, point to **Programs → Accessories → Communications**, and then click **Hyper Terminal** icon.
(3) Communication setting dialog box appears. Enter the name, icon, connection type, and port settings.
Note: *There is no specific note in assigning the name and icon. Select the connection type COM1 (depending on the PC). Port settings should be specified as follows:*

PARAMETER	VALUE
Bits per second	9600 bps
Data bit	8 bit
Parity	None
Stop bits	1
Flow control	None

STEP 2: Power ON the switch on the rear panel of MG-SIP16. Linux installed in MG-SIP16 is activated.

STEP 3: The following message is displayed on the Maintenance Console screen. **NOTE 1**



Note 1: *If the CONSOLE cable is connected after starting up the MG-SIP16, "->" prompt will not appear. In this case, press Enter key to display "->" prompt.*

Note 2: *MAC address that is set at LAN1 of Telephony Server.*

Note 3: *When downloading a firmware, an initialization is required to display the version of the downloaded firmware.*

Note 4: *To confirm the configuration information:*
Press ESC key within five seconds after "Main Program Start..." to display "->" prompt. Then, input "config" to go into the configuration mode. (However, registration to Telephony Server is not executed.

Note: *If the key control is not activated, a communication problem between the console and the MG-SIP16 might occur. Make sure the connector is firmly inserted.*

7.2 Configuration Setting

Using Configuration Commands, assign the MG-SIP16 data. The following data is assigned here:

Setting Data	Configuration Command
IP address of MG-SIP16's ether port	set ipaddress
IP address of MGC (DRS)	set drsaddress
SIP server data	set sip_server
Pilot number of MG-SIP16	set keynumber

Note: *Assign the data depending on the SIP network configuration.*

STEP 1: When a prompt "->" is displayed, enter "config" and then press Enter key.

STEP 2: A prompt "MG-SIP>" is displayed indicating the console command mode.

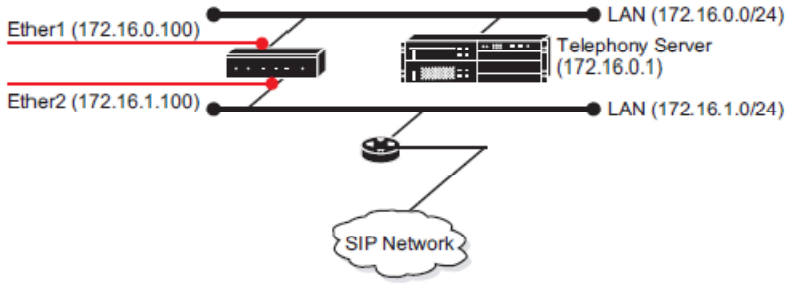
[Set IP Address of MG-SIP16]

MG-SIP16 has two LAN ports (Ether1 and Ether2) on the front panel. Each port is used as follows:

- Ether1: for connecting LAN
- Ether2: for connecting WAN (SIP network)

Note: *When IP addresses that belong to the same segment are used for Ether1 and Ether2, set the IP address to Ether1 only. Otherwise, set IP address for both Ether1 and Ether2.*

STEP 3: Set the IP address of MG-SIP16 (Ether1 and Ether2) by using **`set ipaddress`** command. The following shows a sample setting for the network configuration shown below.



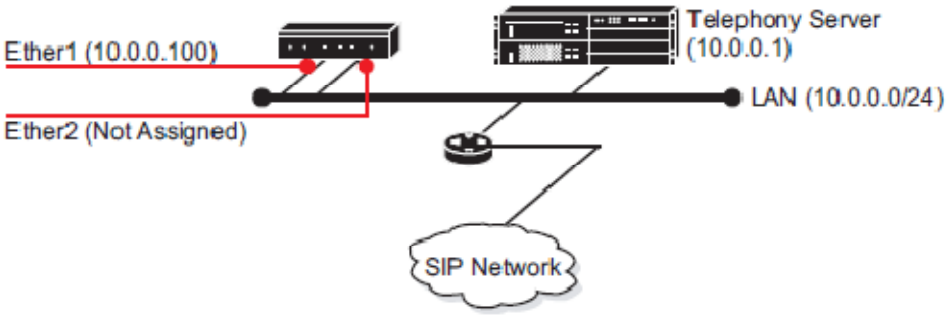

```
MG(SIP) > set ipaddress

Use one-port only? Y/N=n

Ether[1]
        IP address: 172.  16.   0. 100
        Subnet:     255. 255. 255.   0


Ether[2]
        IP address: 172.  16.   1. 100
        Subnet:     255. 255. 255.   0
```

- Enter "n" when two ports are used.

Ether [1]: LAN
- Assign the IP address (default: 0.0.0.0) for Ether [1].
- Assign the subnet mask (default: 0.0.0.0) for Ether [1].

Ether [2]: SIP network
- Assign the IP address (default: 0.0.0.0) for Ether [2].
- Assign the subnet mask (default: 0.0.0.0) for Ether [2].

The following shows an example where Ether1 and Ether2 belong to the same segment.



[Set IP Address and Port Number of DRS]

STEP 4: Assign the IP address and port number of DRS by using **`set drsaddress`** command.**Note 1**

`MG(SIP) > set drsaddress`	
`DRS unit(0)`	
`DRS IP address: 172.16.0.1`	• Assign the IP address of DRS.
`DRS port number(1024-65535): 3456`	• Assign the UDP port number DRS (Default: 3456).
`DRS unit(1)`	
`DRS IP address: 0.0.0.0`	• Skip this by pressing Enter key.
`DRS port number(1024-65535): 3456`	• Skip this by pressing Enter key.
`DRS unit(2)`	
`DRS IP address: 0.0.0.0`	• Skip this by pressing Enter key.
`DRS port number(1024-65535): 3456`	• Skip this by pressing Enter key.
`DRS unit(3)`	
`DRS IP address: 0.0.0.0`	• Skip this by pressing Enter key.
`DRS port number(1024-65535): 3456`	• Skip this by pressing Enter key.

Note: *unit(0), unit(1), unit(2), and unit(3) represent primary, secondary, tertiary, and fourthly respectively.*

Note 1: *About IP address of DRS (Telephony Server), refer to "REGISTRATION DESTINATION OF IP DEVICES/ STATIONS" in the top part of this manual.*

[Set SIP Server Data]

STEP 5: Set SIP Server data by using **`set sipserver`** command. This data can be assigned by using IP address or Full Qualified Domain Name (FQDN).

When **IP address** (=0) is selected:

`MG(SIP) > set sip_server`	
`SIP server type(0=IP address/1=FQDN):0`	• When IP address (=0) is selected.
`SIP server IP address: 192.168.100.100`	• Assign the IP address of the proxy server/redirect server (default: 0.0.0.0).
`SIP server port number(1024-65535): 5060`	• Assign the port number of the proxy server/redirect server (default: 5060)
`Strict or Loose(0/1): 0`	• Select a Strict router or Loose router for the proxy server/redirect server (default: 0). 0: Strict route 1: Loose router
`Domain Name(MAX128):_`	• Input a string that specifies the service provider in maximum of 128 characters.

When **FQDN** (=1) is selected:

`MG(SIP) > set sip_server`	
`SIP server type(0=IP address/1=FQDN):1`	• When FQDN (=1) is selected.
`Fully Qualified Domain Name(MAX63):nec.com`	• Assign the FQEN of the proxy server/redirect server in maximum of 62 characters (default: 0).
`SIP server port number(1024-65535): 5060`	• Assign the port number of the proxy server/redirect server (default: 5060)
`Strict or Loose(0/1): 0`	• Select a Strict router or Loose router for the proxy server/redirect server (default: 0). 0: Strict route 1: Loose router
`Domain Name(MAX128):_`	• Input a string that specifies the service provider in maximum of 128 characters.

Note: *Be sure not to enter a space after FQDN characters.*

[Set Key Number Data]

STEP 6: Assign a pilot number, which is used to perform registration to the SIP server.

`MG(SIP) > set keynumber`	
`Key number(MAX32): 0`	• Assign the pilot number when register is performed (default: 0). **Note 1**

Note 1: *Be sure not to enter a space after the key number.*

[Reboot MG-SIP16]

STEP 7: Reboot the MG-SIP16 by using **reboot** command. The assigned config data can also be saved onto the Flash memory by using this command.

`MG(SIP) > reboot`	
`Do you want to save Config data? Y/N=y`	• Config data can be saved before rebooting the MG-SIP16. Enter "y" to save the assigned data onto Flash memory. **Note 1**
`Do you want to reboot MG(SIP) Y/N=y`	• Reboot the MG-SIP16 or not is specified. Enter "y" to reboot the MG-SIP16.

`Config data flash write start.`
`##`
`Complete`
`Config data flash write end.`
	• Config data is saved.

`MG(SIP) reboot start...`	• rebooting the MG-SIP16....

Note 1: *Before saving the config data, be sure to assign necessary data by using "set ipaddress", "set drsaddress", "set sip_server", and "set keynumber" that are explained in STEP 3, STEP 4, STEP 5, and STEP 6 respectively. If there is any unassigned item, the following will appear.*

`the following setting commands are not perfect.`	
`"set ipaddress" command. (IPX side)`	• Appears if the IP address of Ether [1] (LAN side) has not been assigned.
`"set ipaddress" command. (SIP side)`	• Appears if the IP address of Ether [2] (WAN side) has not been assigned.
`"set drsaddress" command.`	• Appears if the IP address of DRS has not been assigned.
`"set sip_server" command.`	• Appears if the IP address of SIP server has not been assigned.
`"set keynumber" command.`	• Appears if Keynumber (Pilot number) has not been assigned.
`So, Config data is made a default setup.` `Is it all right? Y/N=y`	• By entering "y", default value will be automatically applied to the unassigned items. If other than above is entered "`Reboot command was interrupted`" will be displayed.

STEP 8: Make sure of the following message, which shows successful rebooting, appears on the Maintenance Console.

```
**************************************
*         MG-SIP ONLINE START        *
**************************************
```

7.3 Operation Check

After the configuration setting is completed, check the MG-SIP16 works normally.

STEP 1: Reboot MG-SIP.
Open **reboot** command to save the settings.

STEP 2: After the MG-SIP16 is rebooted, the following is displayed on Maintenance Console.

Note: *If a message indicating MG-SIP OFFLINE START is displayed, make sure of the following:*
- Confirm a cable connected to SIP network is inserted firmly.
- Check the Link lamp lights.
If any message does not appear on the screen for three minutes, it could be a communication problem between MG-SIP16 and MGC (DRS). Confirm the LAN cable and the IP Address on IPX side.

STEP 3: Make sure of the connectivity between IPX network and SIP network.
Open **show status** command to confirm the network registration status on IPX and SIP sides.

STEP 4: Make sure of the registration status of MG-SIP16.
Open **DIMG** command on Windows MAT to check the registration status.

7.4 Diagnosis

STEP: Diagnose the user program is working properly.
On the Maintenance Console, type "ping ***appropriate IP address***" to make sure the MG-SIP16 connects the network and operates normally.

7.5 Maintenance Console Commands

7.5.1 How to Use the Maintenance Commands

• Connection Settings

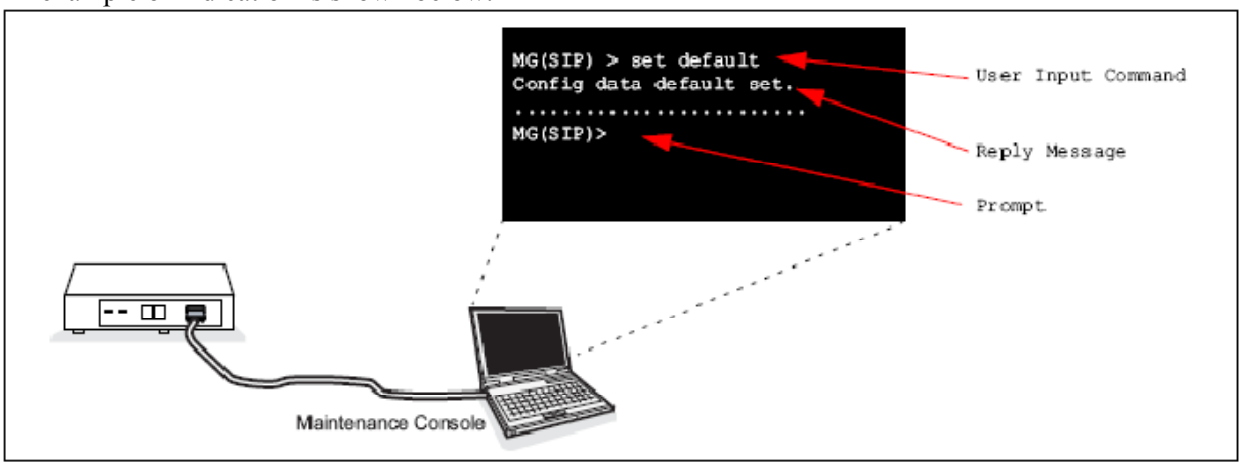
A communication between Maintenance Console and MG-SIP16 is established via communications software such as HyperTerminal, which comes with Windows.

When the program is activated, messages are displayed. After a prompt "->" is displayed, enter "config" after the prompt to login.

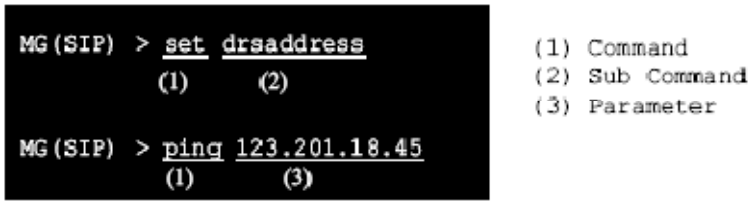
The following prompt appears, indicating that the Maintenance Console command entry is ready:

```
MG(SIP) >
```

An example of indication is shown below:



The user input command above consists of several components. The following describes these components using one of the **set** commands.



Input the desired command, sub command and each required parameter after the prompt ("MG-SIP>" as an example here) is indicated. Parameters vary depending on the specified command. When each data (command name, sub command name, parameter) is specified correctly, the command executes the required data processing, and then informs the processed result on the screen. When all the command operation is completed, you may input "exit" after a prompt.

Note: *During the maintenance command program is activated, it also provides a help function for referring to available command and sub command. After a prompt is indicated, request to list up all the command help by "help" or "?" after the prompt and press the Enter key. If you know more details about each command, it is also available to list up the target help by "command name Δ ?" after the prompt, and press the Enter key. The example below shows the screen when executing help function regarding "? (help)" and "set address".*

```
MG(SIP) > ?
 set                    : Config data set command
 show                   : Config data show command
 download               : MG-SIP program download command
 ping                   : Ping command
 exit                   : Config data exit command
 reboot                 : MG-SIP reboot command
 help                   : Help command
 ?                      : Help command

MG(SIP) > set ?

 drsaddress             : Setting IP address
 signaling_port_no      : Setting signaling port number
```

7.5.2 How to Read the Maintenance Commands

The commands on this section are explained with defined characters. These characters' meanings are in the following:

CHARACTERS	MEANING
Δ	Blank
P	Parameters
[ ]	Parameter Option (indicates optional)

The maintenance console uses the commands listed on the table below.

List of Maintenance Command

COMMAND	No.	SUB COMMAND	FUNCTION
SET	1	183RBT	Assigns whether to enable/disable local RBT when 183 message without SDP is received.
	2	ANOTHER_KEYNUMBER	Assigns additional three pilot numbers used for registration to SIP server.
	3	AUTH	Assigns an authentication information.
	4	AUTH_HEADER	Assigns the cache function of authentication header.
	5	CAUSE_TABLE	Assigns the error translation table.
	6	cc_convert	Assign calling party's country code display conversion feature note 1
	7	CDN_PATTERN	Assigns called number pattern.
	8	check_number	Assign limit to number of digits for calling/called party number
	9	cpn_pattern	Assign how to obtain cpn (calling party number)
	10	DEFAULT	Specifies default settings of the configuration.
	11	DNSADDRESS	Assigns the DNS IP address.
	12	DOMAIN	Specifies the domain of SIP-MG
	13	DRSADDRESS	Assigns the DRS IP address.
	14	DRS_QOS	Specifies the DRS ToS.
	15	DTMF_MODE	Assigns a type of DTMF mode.
	16	H245_BASE_PORT_NO	Assigns the H.245 base port in SIP network.
	17	HC_ALARM	Assigns a type of Health Check pattern.
	18	HC_TIMER	Assigns a type of Health Check pattern.
	19	INTERFACE	Assigns an interface to the port.
	20	IPADDRESS	Assigns the IP address and the subnet mask to the port.
	21	IPX_ROUTE	Assigns the route information in the IPXPBX side.
	22	IPX_RTP_PORT_NO	Assigns the RTP port in LAN.
	23	KEYNUMBER	Assigns the pilot number of MG-SIP16.
	24	MULTI_REGIST	Assigns the registration function per number.
	25	MUSICTYPE	Assigns the type of music to be sent from MG(SIP).
	26	PRACK	Assigns PRACK information.
	27	PRE_NEGOTIATION_PORT_NO	Assigns the UDP port receiving packets for voice control path.
	28	PRIVACY_PATTERN	Assigns a type of Calling Line Identification.
	29	REGISTRATION_PORT_NO	Assigns the UDP port receiving registration packets.
	30	REG_INTERVAL	Assigns the retry waiting time when failed to register, due to the error-response or no answer from the server.
	31	RTP_PATHON	Assigns Path-on function by 183 Progress after receiving 180 Ringing.
	32	RTP_QOS	Specifies the RTP ToS.
	33	SELF_SIP_DOMAIN	Assigns SIP Domain.
	34	SESSION_TIMER	Specify information regarding session timer.
	35	SIGNALING_PORT_NO	Assigns the UDP port receiving control signal packets
	36	SIP_PORT_NO	Specifies the ToS transmitted to/from SIP network.
	37	SIP_QOS	Specifies the SIP ToS
	38	SIP_REGISTER	Assigns the IP address or the FQDN to registry server.
	39	SIP_ROUTE	Assigns the route information in the SIP side.
	40	SIP_RTP_PORT_NO	Assigns the RTP port in SIP network.
	41	SIP_SERVER	Assigns the IP address or the Fully Qualified Domain Name (FQDN) to SIP server.
	42	SIP_TEL_SERVICE	Assigns the setting of additional services.
	43	SLIPRESP	Assigns a SLIP response code.
	44	UPDATE	Assigns the setting of update method.

COMMAND	No.	SUB COMMAND	FUNCTION	PAGE
SET	45	RESPONSE_TABLE	Assigns the response table pattern.	page 1436
	46	OUT_OF_AREA_CODE	Assigns the error response code to inform out-of-area error on IPX network side.	page 1436
SHOW	1	ARP	Displays the ARP.	page 1438
	2	CONFIG	Displays the configuration.	page 1438
	3	INTERFACE	Displays the link and setting state of Ether connection	page 1446
	4	ROUTE	Displays the routes.	page 1447
	5	STATUS	Displays status of the system.	page 1447
	6	VERSION	Displays the firmware version installed in MG-SIP.	page 1449
DOWNLOAD		-	Downloads data with the IP address and file name	page 1450
EXIT		-	Exits configuration setting.	page 1456
REBOOT		-	Restarts MG-SIP	page 1455
PING		-	Tests whether the destination is reached at Layer 3 level.	page 1454
HELP/?		-	Shows the help display	page 1456

Note: *When using Multi-Path Monitor Connection in ACD system, assign the by the command "SET MULTISESSION". (Available for SP-3905 MG SIP (16) PROG-A Ver02.01.00.00 or later)*

Note: *For versions prior to below, assign by command "SETΔ81to0."*
SP3796/SP3816Ver08. 00. 02. 00
SP3843Ver04. 00. 02. 00
S3905Ver01. 00. 03. 00

7.5.3 SET COMMANDS

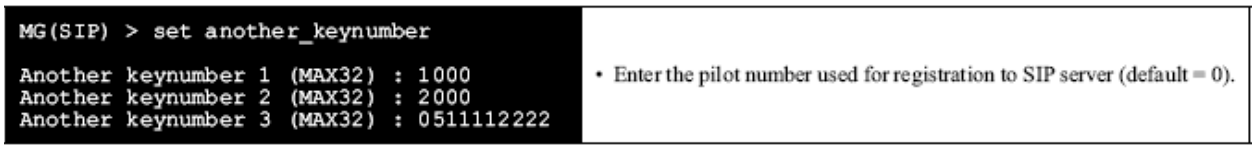
7.5.3.1 SETΔ183RBT

This command is used to enable/disable the connection of local RBT when 183 message without SDP is received. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MGSIP16.

Assign this command adjusting to the specifications on SIP network. Normally this command is not required to be changed.

7.5.3.2 SETΔANOTHER_KEYNUMBER

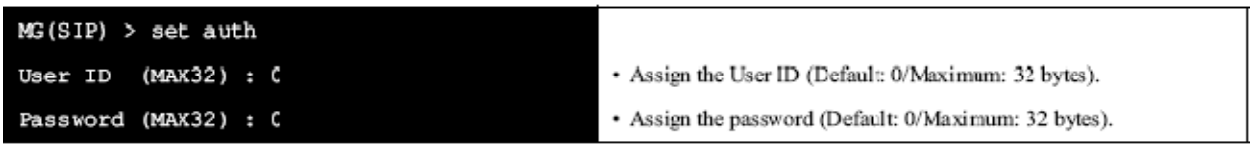
The command is used to assign three pilot numbers (in addition to the pilot number assigned by the "KEYNUMBER" command) for registration to SIP server. Pressing the Enter key can skip this item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute "REBOOT" command to restart the MG-SIP16.



Note: *Assign this command adjusting to the specifications on SIP network. Normally this command is not required to be changed. Unique number to be assigned for each of Another keynumber 1/2/3. Assign value=0 (default) for parameter when nothing is to be assigned.*

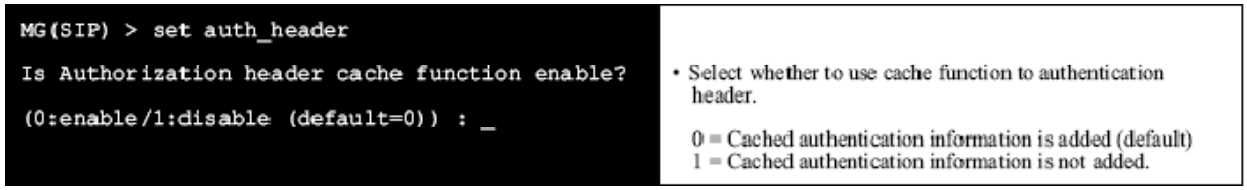
7.5.3.3 SETΔAUTH

The command is used to specify a User ID and a password for HTTP Digest Auth. This parameter is used when the SIP server performs authentication. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.



7.5.3.4 SETΔAUTH_HEADER

The command is used to assign whether to add cache information to authentication header of request message in updating ACK and REGISTER for re-INVITE/200 OK. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.



Note: *Assign this data in accordance with the specifications of connected SIP network.*

7.5.3.5 SETΔCAUSE_TABLE

The command is used to select the translation table of error cause to be sent to LAN received from SIP network as error response. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set cause_table

Select cause_table(SIP_Error_response to Error_cause)
          (0:normal/1:alternate routing(default=0)): _
```

- Select the error translation table.
  0 = Normal table (default)
  1 = Alternate routing table

Note: *Assign this data in accordance with the specifications of connected SIP network.*

7.5.3.6 SETΔCC_CONVERT

This command is used to assign calling party's country code display conversion feature (since version 09.00.00.00). Pressing the Enter key can skip the item. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

When this feature is available, conversion will take place as in the following table.

Direction of Call termination/ origination	Intended Number	Conversion Feature
Call termination via SIP	Calling party	Convert to "0" if first numbers are "81" or "+81"
Call termination via SIP	Calling party	Add "0" to first number if number is more than 8 digits
Call origination via MG(SIP)	Calling party	Convert to "0" if first number is "81"

It is possible to confirm the previous settings through this command since this command is an extention of the previous version's SETΔ81to0.

```
MG(SIP) > set cc_convert

Is this function enable or disable?

                    (0:disable/1:enable (default=0)): 0
```

- Enter 0 or 1 (default=0).
  0 = Disable (default)
  1 = Enable

Note: *Assign this data in accordance with the specifications of connected SIP network.*

7.5.3.7 SETΔCDN_PATTERN

The command is used to assign the way of obtaining information for called number from SIP network.
When isub parameter is enabled, the called number is obtained from isub of URI-PARAM within Request-URI. If the called number cannot be obtained from isub, it will be obtained from TO header or Request-URI that has been set in Config.
Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

The command is used to assign the way of obtaining information for called number from SIP network. When this command is enabled, called number is obtained according to the priority order shown in the table below:

Selected Parameter		Order of priority			
		1	2	3	4
0	To	To	isub	Request-URI	-
1	isub	isub	Request-URI	To	-
2	Request-URI	Request-URI	isub	To	-
3	P-Called-Party-ID	P-Called-Party-ID	To	Request-URI	isub

```
MG(SIP) > set cdn_pattern
Active called-party-number?
(0:To:userinfo/1:isub/2:Request-URI/3:P-Called-Party-ID(default=0)):0
```

- Select a type to obtain called number information.

Note:
- *Assign this command adjusting to the specifications on SIP network.*
- *This command is available for SP-3905 MG SIP (16) PROG-A Issue 3 or later.*
- *For the earlier version of firmware, the command displays as follows. P-Called-Party is not available. When isub parameter is enable, the called number is obtained from isub of URI-PARAM in Request-URI. If the called number cannot be obtained from isub, it will be obtained from TO header or Request-URI that has been set in Config.*

```
MG(SIP) > set cdn_pattern
Active called-party-number?(0:To:userinfo/1:Request-URI(default=0)):0
isub function (0:disable/1:enable(default=0)): _
```

- Select a type to obtain called number information.
- Priority is selected for the isub parameter of URI-PARAMS.

Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

7.5.3.8 SETΔCHECK_NUMBER

This command is used to assign a limit to number of digits for calling/called party number (since version 09.00.00.00). Calling/called party number sent via IPX network may be limited to numbers only. Pressing the Enter key can skip the item. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set check_number
Is this function enable or disable?
                              (0:disable/1:enable(default=0)): _
```

- Enter 0 or 1 (default=0).
  0 = Disable (default)
- 1 =Limit to numbers only

Note: *Assign this command adjusting to the specifications on SIP network.*

7.5.3.9 SETΔCPN_PATTERN

This command is used to assign how to obtain CPN (Calling Party Number), available since version 09.00.00.00. It is possible to change the priority of obtaining calling party number when a call terminates via SIP network. Pressing the Enter key can skip the item. To make this assignment effective, it is required to execute the

"REBOOT" command to restart the MG-SIP16. The following shows the method of obtaining CPN when this feature is available.

Selected Parameter		Order of priority		
		1	2	3
0	Displayname	Displayname	Userinfo	-
1	Userinfo	Userinfo	Displayname	-
2	Anonymous	Userinfo (Anonymous)	Userinfo	Displayname
3	P-Asserted-ID	P-Asserted-ID	Displayname	Userinfo

```
MG(SIP) > set cpn_pattern

What calling party number is given priority?

(0:Displayname/1:Userinfo/2:Anonymous/3:P-Asserted-ID(default=0)):
```

- 0: Display name is given priority (default)
- 1: Userinfo is given priority
- 2: When Anonymous is detected in Userinfo, cpn is handled as blocked, disregarding the second priority and later.
- 3: P-Asserted-ID is given priority.

Note: - *Assign this command adjusting to the specifications on SIP network.*
- *Select 2 when the caller ID blocking is judged by the userinfo in From header on the SIP network side specification.*
  e.g.) From: "01234567" <sip:anonymous@anonymous.invalid>
- *Do not select 2 when the caller ID blocking is assigned by Displayname only on the SIP network side.*
  e.g.) From: "Anonymous" <sip:01234567@xxx.com> In this case, the cpn is informed when 2 is selected.

- *This command is available for SP-3905 MG SIP (16) PROG-A Issue 3 or later.*
- *For the earlier version of firmware, the command works as follows. Anonymous and P-Asserted-ID are not available.*

When this feature is unavailable, calling party number is obtained in the following order

Order of priority	Obtaining pattern
1	Obtain from Remote-Name (Display Name section)
2	Obtain from Remote-URL (user Info section)

When this feature is available, calling party number is obtained in the following order

Order of priority	Obtaining pattern
1	Obtain from Remote-URL (user Info section)
2	Obtain from Remote-Name (Display Name section)

```
MG(SIP) > set cpn_pattern
What calling party number is given priority?
                          (0:displayname/1:Userinfo(default=0)): _
```

- 0: Display name is given priority (default)
- 1: User infois given priority

Note: *Assign this command adjusting to the specifications on SIP network.*

7.5.3.10 SETΔDEFAULT

The command is used to set back to the default setting of MG-SIP16 configuration. Executing this command saves the default setting to the flash memory. To make this assignment effective, it is required to restart the MG-SIP16 by using the "REBOOT" command.

```
MG(SIP) > set default
Are you sure? Y/N=y
Config data default set.
MG(SIP) >
```

- Enter "y" to determine to set the default value

7.5.3.11 SETΔDNSADDRESS

This command is used to specify the DNS IP address. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set dnsaddress
DNS IP address :   0.0.0.0
```

- Specify DNS IP address. (Default: 0.0.0.0)

7.5.3.12 SETΔDOMAIN

This command is used to specify the domain of MG-SIP16. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

MG(SIP) > set domain Domain name(MAX128) : nec.com	• Specify the domain name. (Default: 0/Maximum: 128 bytes)

7.5.3.13 SETΔDRSADDRESS

This command is used to assign MGC (DRS) address to MG-SIP16. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

MG(SIP) > set drsaddress	
DRS unit(0)	
DRS IP address: 172.16.253.1	• Assign the IP address of unit (0) (Default: 0.0.0.0).
DRS port number(1024-65535): 3456	• Assign the UDP port number for unit(0) (Default: 3456).
DRS unit(1)	
DRS IP address: 172.16.253.2	• Assign the IP address of unit (1) (Default: 0.0.0.0).
DRS port number(1024-65535): 3456	• Assign the UDP port number for unit(0) (Default: 3456).
DRS unit(2)	
DRS IP address: 172.16.253.3	• Assign the IP address of unit (2) (Default: 0.0.0.0).
DRS port number(1024-65535): 3456	• Assign the UDP port number for unit(0) (Default: 3456).
DRS unit(3)	
DRS IP address: 172.16.253.4	• Assign the IP address of unit (3) (Default: 0.0.0.0).
DRS port number(1024-65535): 3456	• Assign the UDP port number for unit(0) (Default: 3456).

Note: *unit(0), unit(1), unit(2), and unit(3) represent primary, secondary, tertiary, and fourthly respectively.*

7.5.3.14 SETΔDRS_QOS

This command is used to specify the Quality of Service (QoS) of DRS. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

- When IP PRECEDENCE (=1) is selected:

```
MG(SIP) > set drs_qos
Input type: (1=PRECEDENCE/2=DIFFSERV/3=TOS): 1
PRECEDENCE(0-7): 5
DELAY(0/1): 0
THROUGHPUT (0/1): 0
RELIABILITY(0/1): 0
COST(0/1): 0
```

- When IP PRECEDENCE (=1) is selected:
- Specify the precedence (default: 5). **Note** 0-7 (Low - High)
- Specify the delay (default: 0). 0/1 = Normal/Delay
- Specify the throughput (default: 0). 0/1 = Normal/High Throughput
- Specify the reliability (default: 0). 0/1 = Normal/High Reliability
- Specify the cost (default: 0). 0/1 = Normal/Cost Precedence

Note: *IP Precedence - ToS field is allocated as shown below.*

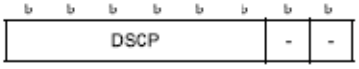
: Prec. = PRECEDENCE (3 bits), D = Delay, T = Throughput, R = Reliability, C = Cost

- When DIFFSERV (=2) is selected:

```
MG(SIP) > set drs_qos
Input type: (1=PRECEDENCE/2=DIFFSERV/3=TOS): 2
DSCP(0-63): 40
```

- When DIFFSERV (=2) is selected:
- Specify the ToS field of DiffServ (default: 40). **Note**

Note: *DiffServ - ToS field is allocated as shown below.*



: DSCP (Differentiated Service Code Point (6 bits)

- When TOS (=3) is selected:

```
MG(SIP) > set drs_qos
Input type: (1=PRECEDENCE/2=DIFFSERV/3=TOS): 3
DSCP(00-FE): a0
```

- When TOS (=3) is selected:
- Specify the ToS field (default: a0).

7.5.3.15 SETΔDTMF_MODE

This command is used to specify the DTMF relay system in SIP network. MG-SIP16 supports Out-Band (RFC2833) and In-Band (G.711 data transmission as voice data). Negotiation, Out-Band, or In-Band can be assigned. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MGSIP16.

```
MG(SIP) > set dtmf_mode
DTMF Mode (0=Negotiation,1=Out-Band,2=In-Band)(default=0): _
```

- Select DTMF Mode.
  0: Negotiation
  1: Out-Band (fixed)
  2: In-Band (fixed)

- When Negotiation is selected:

```
MG(SIP) > set dtmf_mode
DTMF Mode  (0=Negotiation,1=Out-Band,2=In-Band)(default=0): 0
DTMF Duration (50-240(default=120)):
DTMF Pause(30-240(default=100)):
Payload type(RFC2833)(96-127(default=101)):
```

- When Negotiation (=0) is selected:
- Specify DTMF Duration.
- Specify DTMF Pause.
- Specify Payload type.

- When Out-Band is selected:

```
MG(SIP) > set dtmf_mode
DTMF Mode  (0=Negotiation,1=Out-Band,2=In-Band)(default=0): 1
DTMF Duration (50-240(default=120)):
DTMF Pause(30-240(default=100)):
Payload type(RFC2833)(96-127(default=101)):
```

- When Out-Band (=1) is selected:
- Specify DTMF Duration.
- Specify DTMF Pause.
- Specify Payload type.

- When In-Band is selected:

```
MG(SIP) > set dtmf_mode
DTMF Mode  (0=Negotiation,1=Out-Band,2=In-Band)(default=0): 2
DTMF Duration (50-240(default=120)):
DTMF Pause(30-240(default=100)):
```

- When In-Band (=2) is selected:
- Specify DTMF Duration.
- Specify DTMF Pause.

Note: *Note that the sum of DTMF Duration and DTMF Pause values must be specified more than 120ms. If not, the following error message is displayed.*

```
Input parameter error.
      reason [DTMF Duration + DTMF Pause < Min120ms]
```

7.5.3.16 SETΔH245_BASE_PORT_NO

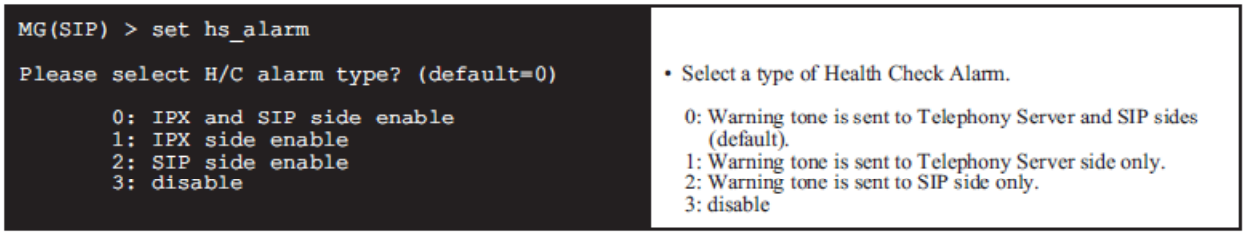
This command is used to specify the H.245 port number to/from IPX network. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the “REBOOT” command to restart the MG-SIP16.

```
MG(SIP) > set h245_base_port_no
H245 base port number(1024-65535): 40000
```

- Assign the negotiation port number (default: 40000).

7.5.3.17 SETΔHC_ALARM

This command is used to specify a type of health check alarm. When health check timeout occurs or when 30 seconds have passed before health check timeout, Health Check Alarm function is activated to send warning tone using this settings. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

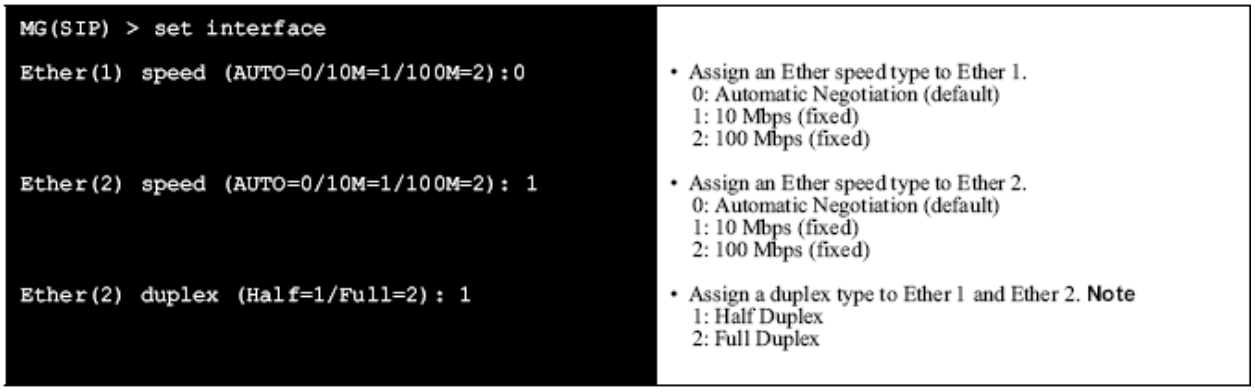


7.5.3.18 SETΔHC_TIMER

This command is used to specify the health check time-out. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

7.5.3.19 SETΔINTERFACE

This command is used to assign the Ether speed and the duplex type to each port on MG-SIP16. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.



Note: *When "Automatic Negotiation" is selected, "Full Duplex" is automatically applied to the interface. Therefore, this command line will not appear for interface that is specified as "Automatic Negotiation". When 100M is specified for Ether 1, the duplex type should also be assigned for Ether 1.*

7.5.3.20 SETΔIPADDRESS

This command is used to assign an IP Address and a subnet mask to each Ether port on MG-SIP16. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

- Ether1: LAN (IPX network) side
- Ether2: WAN (SIP network) side

Note: *When the IP addresses of both LAN and WAN are assigned in the same segment, use Ether1 port only. Select one port in the number of port setting, and assign Ether1's IP address only. In this case, Ether2 is not used.*

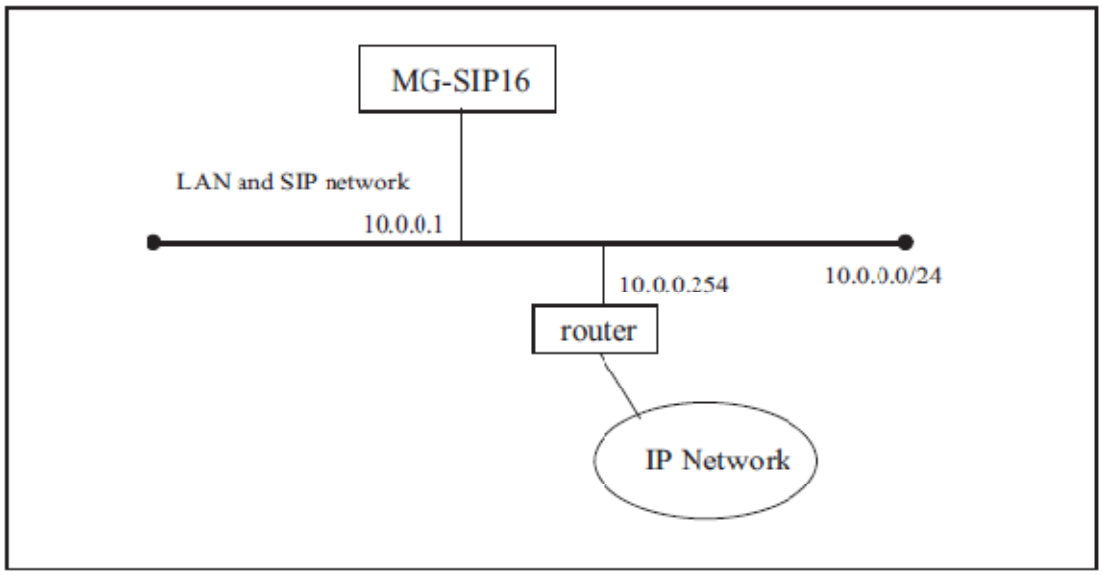
```
MG(SIP) > set ipaddress

Use one-port only? Y/N=n

Ether[1]
        IP address:  10.     1.     0.   1
        Subnet:     255.   255.   255.   0


Ether[2]
        IP address: 192. 168.     1.   1
        Subnet:     255. 255.   255.   0
```

- Enter "n" when two ports are used.

Ether [1]: LAN side
- Assign the IP address (default: 0.0.0.0) for Ether [1].
- Assign the subnet mask (default: 0.0.0.0) for Ether [1].

Ether [2]: SIP network side
- Assign the IP address (default: 0.0.0.0) for Ether [2].
- Assign the subnet mask (default: 0.0.0.0) for Ether [2].

Note: *When the IP addresses of IPX network and SIP network are assigned in the same segment, use Ether1 only as shown on next page.*



7.5.3.21 SETΔIPX_ROUTE

This command is used to specify route information in the PBX side network. The registered number of the route information is up to 10. Pressing the Enter key can skip some of the items. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set set ipx_route

Route type(0: Exit/1: None/2: Static) : 0
```

- Specify the Route type.
  0: Exit
  1: None (default)
  2: Static

- When **Exit** (Route type = 0) is selected:

```
MG(SIP) > set set ipx_route
Route type(0: Exit/1: None/2: Static): 0

MG(SIP) > _
```

- When Exit (=0) is selected
- This will exit the command.

- When **None** (Route type = 1) is selected:

```
MG(SIP) > set set ipx_route
Route type(0: Exit/1: None/2: Static): 1

Rute type: None
Are you srure? Y/N=y
MG(SIP) > _
```

- When None (=1) is selected
- Enter "y" to set the data. **Note**

Note: *Pressing any key other than "y" causes the following message.*

```
Route setting command was interrupted.
```

- When **Static** (Route type = 2) is selected: **Note**

[To Assign Destination Network Address and Gateway Address]

Note: *Usually, gateway data should be set as 'Static' at LAN (IPX network) side.*

```
MG(SIP) > set ipx_route
Route type(0: Exit/1: None/2: Static): 2

Select command (0: Exit/1: Set/2: Delete): 1

Select gateway type (0: Exit/1: Gateway/2: Default gateway): 1

Destination network address(0.0.0.0): 172.16.0.0

Input subnet mask bit(0-31): 16

Gateway IP address(0.0.0.0): 192.168.0.254

Route type: Static
Gateway address     | Destination network / Prefix
-------------------------------------------------
192. 168.   0. 254 | 172.  16.   0.   0  / 16
Are you sure? Y/N=y
MG(SIP) > _
```

- When Static (=2) is selected
- Select 1 to set the data.
- Select Gateway (=1) as a gateway type.
- Specify the destination network address (default: 0.0.0.0).
- Specify the subnet mask (default: 0).
- Specify the gateway IP address (default: 0.0.0.0).
- Enter "y" to set the data. **Note**

Note: *Pressing any key other than "y" displays the following message.*

```
Route setting command was interrupted.
```

[To Assign Gateway Address only]

```
MG(SIP) > set ipx_route

Route type(0: Exit/1: None/2: Static) : 2

Select command (0: Exit/1: Set/2: Delete): 1

Select gateway type (0: Exit/1: Gateway/2: Default gateway): 2

Gateway IP address(0.0.0.0): 192.168.0.254

Route type: Static

Gateway address     | Destination network / Prefix
-------------------------------------------------
192. 168.   0. 254 |   0.   0.   0.   0  / 0

Are you sure? Y/N=y

MG(SIP) > _
```

- When Static (=2) is selected
- Select 1 to set the data.
- Select Default gateway (=2) as a gateway type.
- Specify the default gateway IP address (default: 0.0.0.0).
- Enter "y" to set the data. **Note**

Note: *Pressing any key other than "y" displays the following message.*

```
Route setting command was interrupted.
```

Note 1: *Two or more Default Gateway cannot be registered.*

Note 2: *To set a default gateway, it should be assigned to IPX network port or SIP network port either.*

[To Delete the assigned Routing Information]

```
MG(SIP) > set ipx_route

Route type(0: Exit/1: None/2: Static) : 2

Select command (0: Exit/1: Set/2: Delete): 2

No | Gateway address   | Destination network / Prefix
-------------------------------------------------
 1 | 192.168.  0.254   | 172.16. 0. 0        / 16
 2 | 172. 16.  0.254   |  10. 0. 0. 0        / 8

Select Delete No?: 1



No | Gateway address   | Destination network / Prefix
-------------------------------------------------
 1 | 172. 16.  0.254   |  10. 0. 0. 0        / 8

Are you sure? Y/N=y

MG(SIP) > _
```

- Select 2 to delete routing data.
- Select 2 to delete routing data. **Note 1**
- Select No of Static Route Information you want to delete. (In this example, 1 is specified.)
- Enter "y" to delete the data. **Note 2**

Note 3: *If there is no route to be deleted, the following will be displayed.*

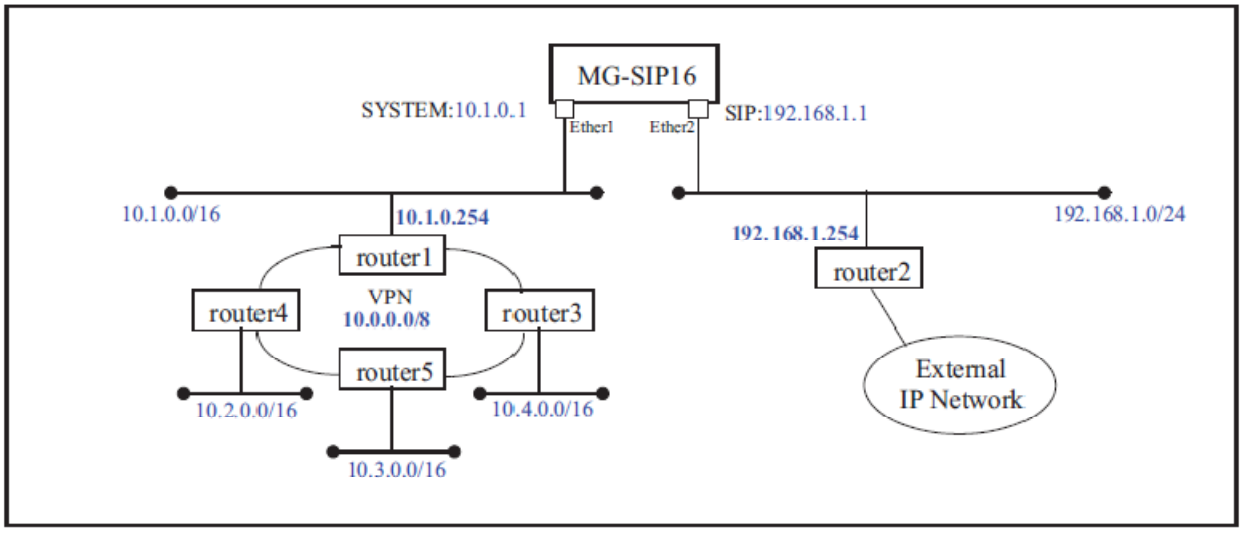
```
There is no static route table to delete.
```

Note4: *Pressing any key other than "y" displays the following message.*

```
Route setting command was interrupted.
```

Note: *Routing assignment is unnecessary for network segment assigned to Ether (0).*

The following shows a typical network configuration and the sample data setting.



Sample Data Setting for the above network configuration

```
MG(SIP) > set ipx_route
Route type(0: Exit/1: None/2: Static)                          : 2
Select command (0: Exit/1: Set/2: Delete)                      : 1
Select gateway type (0: Exit/1: Gateway/2: Default gateway): 1
Destination network address(0.0.0.0)                          : 10.0.0.0
Input subnet mask bit(0-31)                                    : 8
Gateway IP address(0.0.0.0)                                    : 10.1.0.254
Route type: Static
Gateway address     | Destination network / Prefix
------------------------------------------------
  10.  1.  0. 254  | 10.   0.   0.    0  / 8
MG(SIP) > set sip_route
Route type(0: Exit/1: None/2: Static)                          : 2
Select command (0: Exit/1: Set/2: Delete)                      : 1
Select gateway type (0: Exit/1: Gateway/2: Default gateway): 2
Gateway IP address(0.0.0.0)                                    : 192.168.1.254
Route type: Static
Gateway address     | Destination network / Prefix
------------------------------------------------
192. 168.  1. 254  |   0.   0.   0.   0  / 0
```

7.5.3.22 SETΔIPX_RTP_PORT_NO

This command is used to assign the base port number that is used for RTP at IPX LAN side. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

MG(SIP) > set ipx_rtp_port_no IPX side RTP port number (1024-65024): 51000	• Assign the base port number that is used for RTP at IPX LAN side (default: 51000). **Note**

Note: *The value must be assigned by an even number.*

7.5.3.23 SETΔKEYNUMBER

The command is used to assign a Trunk Group pilot number of MG-SIP16 for registration. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

MG(SIP) > set keynumber Key number(MAX32): 0	• Assign the pilot number when register is performed (default: 0). **Note**

Note: *Be sure not to enter a space after the key number.*

7.5.3.24 SETΔMULTI_REGIST

This command is used to enable/disable the setting of registration to SIP server per number. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

MG(SIP) > set multi_regist	
Enable Multi-registration mode? (0:disable/1:enable(default=0)): 1	• .Select disable or enable. 0: disable (default) 1: enable
The interval of REGISTER message transmitting (1-10sec(default=1sec)): 1	• Assign the time interval to send register (default: 1sec).
Standby timer value(10-3600sec(default=30sec)): 30	• Assign the time value to re-register after fault recovery (default: 30sec).
Contact header type? (0: Privacy/1: SIP-URI(defaul=0)): 0	• Assign the header type. 0: Privacy (default) **Note 1** 1: SIP-URI **Note 2**

Note 1: *When "Privacy" is selected, assign a random value to the User ID field of SIP message "Contact header". When "SIP-URI" is selected, assign the SIP-URI to the User ID field of SIP message "Contact header". Assign the telephone number if SIP-URI has not been assigned.*

Note 2: *Use configuration command "setΔsip_register" to assign the SIP server for register destination. The assignment of "setΔsip_register" is necessary when registration is to be done per number. Assign this command adjusting to the specifications on SIP network.*

7.5.3.25 SETΔMUSICTYPE

This command is used to select music type that is sent from MG-SIP16. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set musictype

Please select the music type
(0: Type1/1: Type2(default=Type1)): 0
```

- Select the music type to be sent from the MG-SIP16.
  0: Type 1 (Minuet) (default)
  1: Type 2 (For Elise)

7.5.3.26 SETΔPRACK

This command is used to enable/disable Provisional Response Acknowledgement (PRA) function. When this is set enabled, the cyclical-send of provisional response function can be specified. Pressing the Enter key can skip this item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set prack

Is 100rel enable?
(0: enable/1: disable(default=0)): 0



Function which stop cyclical-send of Provisional Response
(0: disable/1: enable(default=0)): 0
```

- Select enable or disable for PRACK function.

  0: Prack function is enabled (default)
  1: Prack function is disabled

- Select enable or disable for stopping cyclical-send of provisional response. (This line appears when '0' is set in the previous line.)

  0: disable (cyclical 18x send will occur)
  1: enable (cyclical 18x send will not occur)

Note: *Assign this command adjusting to the specifications on the SIP network.*

7.5.3.27 SETΔPRE_NEGOTIATION_PORT_NO

This command is used to specify the UDP port number that receives packets regarding the voice control path. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "SAVE" command and to restart the MG-SIP16 by using the "REBOOT" command.

```
MG(SIP) > set pre_negotiation_port_no

Pre negotiation port number(1024-65535): 61014
```

- Assign the negotiation port number (default: 61014)

7.5.3.28 SETΔPRIVACY_PATTERN

This command is used to specify a type of Calling Line Identification Non-Presentation. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set privacy_pattern

Please select calling number privacy pattern.
(0:DisplayName/1:Remote-Party-ID/2:RFC3325(default=0)):
```

- Select a pattern of RFC3325.
  0: DisplayName (default)
  1: Remote-Party-ID
  2: RFC3323/3325(P-Preferred-ID/Privacy)

- When **DisplayName** (=0) is selected:

```
MG(SIP) > set privacy_pattern

Please select calling number privacy pattern.
(0:DisplayName/1:Remote-Party-ID/2:RFC3325(default=0)):0


Privacy pattern: DisplayName
```

• When DisplayName (=0) is selected:

- When **Remote-Party-ID** (=1) is selected:

```
MG(SIP) > set privacy_pattern

Please select calling number privacy pattern.
(0:DisplayName/1:Remote-Party-ID/2:RFC3325(default=0)):1

Please input a dummy string.(MAX32): anonymous

Privacy pattern: Remote-Party-ID

Dummy string anonymous
```

• When Remote-Party-ID (=1) is selected.

• Enter a dummy string in maximum of 32 characters. Note

Note: *Be sure not to enter a blank character to the end of the Dummy string characters (with the Copy and Paste features of your personal computer), and be careful not to mistype a character.*

- When **RFC3323/3325** (=2) is selected:

```
MG(SIP) > set privacy_pattern

Please select calling number privacy pattern.
(0:DisplayName/1:Remote-Party-ID/2:RFC3325(default=0)):2


Please select RFC3325 pattern.
(0: Pattern 1/1: Pattern 2(default=0)):0


Privacy pattern: RFC3325(0)
```

• When RFC3325 (=2) is selected.

• Select an RFC3325 pattern
0: Pattern 1
(P-Preferred-ID Header is not attached)
1: Pattern 2
(P-Preferred-ID Header is attached)

7.5.3.29 SETΔREGISTRATION_PORT_NO

This command is used to specify the UDP port number that receives the registration packets. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set registration_port_no

Registration port number (1024-65535): 3456
```

• Assign the port number (default: 3456).

7.5.3.30 SETΔREG_INTERVAL

This command is used to assign the retry waiting time when failed to register, due to the error-response or no answer from the server when Register packet was sent to SIP server from MG(SIP). Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set reg_interval
REGISTER Interval timer (1-255min(default=5min)): 5
```

- Assign the registration retry waiting time. Re-register waiting time (min) (default: 5min)

Note: *Assign this command adjusting to the specification on SIP network.*

When registration per number function is effective, assign by setting MG(SIP) using the largest number within the same MG(SIP) group referring to table below.

Amount of Numbers	Time (minute)
1-300	5
301-600	10
601-900	15
901-1000	20

7.5.3.31 SETΔRTP_PATHON

This command is used to assign Path-on function by 183Progress after receiving 180Ringing. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set rtp_pathon
Path-on 183 after 180?(0: disable/1: enable(default=0)): 0
```

- Assign Path-on function data.
  0: disable (default)
  1: enable

Note: *Assign this command adjusting to the specifications on the SIP network.*

7.5.3.32 SETΔRTP_QOS

This command is used to specify the QoS of Real-Time Protocol (RTP). Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16. The sample data setting is explained in SET DRS_QOS command.

```
MG(SIP) > set rtp_qos
```

See SET DRS_QOS command for more details.

7.5.3.33 SETΔSELF_SIP_DOMAIN

This command is used to create SIP domain. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set self_sip_domain

Self SIP domain mode is disable?(0: disable/1: enable(default=0)): _
```

- When **SIP Domain Mode is Disable** (=0) is selected:

```
MG(SIP) > set self_sip_domain

Self SIP domain mode is disable?(0: disable/1: enable(default=0)): 0
```

- When 0 (=disable) is specified (default)

- When **SIP Domain Mode is Enable** (=1) is selected:

```
MG(SIP) > set self_sip_domain

Self SIP domain mode is disable?(0: disable/1: enable(default=0)): 1

Please input a self SIP domain string.(MAX128):
```

- When 1 (=enable) is specified.
- Input the SIP domain name in maximum of 128 characters.

Note 1: *Assign this command adjusting to the specifications on the SIP network.*

Note 2: *This command is required only when SIP domain must be separated between the SIP server and MG(SIP)16.*

Note 3: *When no data has been assigned by this command, SIP domain that has been set by "setΔsip_server" command will be used as the SIP domain of MG(SIP)16.*

7.5.3.34 SETΔSESSION_TIMER

This command is used to specify the Session Timer. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set session_timer

Is a session-timer enable?(0: enable/1: disable(default=0)):_
```

- Enable/Disable session timer
  0: Session Timer is enabled
  1: Session Timer is disabled

- When **Session-Timer is Enable** (=0) is selected:

```
MG(SIP) > set session_timer

Is a session-timer enable?
(0: enable/1: disable(default=0)): 0

Session-expires(0-86400(default=180sec)): 180

Refresher(0: UAC/1: UAS(default=0)): 0

Add "refresher=uac" in INVITE?
(0: disable/1: enable(default=0)): 1

forced mode?(0: disable/1: enable(default=0)): 0

Session-timer is enable.
Session-expires: 180
Refresher: UAC
Invite Refresher: disable
Forced: disable
```

- When Enable(=0) is selected:
- Set the session timer.
- Determine a point to make refresher.
  UAC: User Agent Client
  UAS: User Agent Server
- refresher=uac addition to INVITE message:
  0: refresher=uac is not added
  1: refresher=uac is added
- forced mode:
  0: Session timer will not be activated when Supported/Require header does not exist (default).
  1: Session timer will be activated by using Session-Expires when Supported/Require header does not exit.

- When **Session-Timer is Disable** (=1) is selected:

```
MG(SIP) > set session_timer

Is a session-timer enable?(0: enable/1: disable(default=0)): 1

Session-timer is disable.
```

- When Disable(=1) is selected.

7.5.3.35 SETΔSIGNALING_PORT_NUMBER

This command is used to specify the UDP port number that receives the control signal packets. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the “REBOOT” command to restart the MG-SIP16.

```
MG(SIP) > set signaling_port_no

Signaling port number(1024-65535):61012
```

- Assign the signaling port number (default: 61012).

7.5.3.36 SETΔSIP_PORT_NO

The command is used to specify a port number that receives SIP messages. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the “REBOOT” command to restart the MG-SIP16.

```
MG(SIP) > set sip_port_no

SIP port number(1024-65535):5060
```

- Assign the SIP port number (default: 5060).

7.5.3.37 SETΔSIP_QOS

This command is used to specify the QoS of Session Initiation Protocol (SIP). Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the “REBOOT” command to restart the MG-SIP16.

```
MG(SIP) > set sip_qos
```

See SET DRS_QOS command for more details.

7.5.3.38 SETΔSIP_REGISTER

The command is used to assign an IP address or a Fully Qualified Domain Name (FQDN) to the SIP registrar. This command is required for using a Proxy Server. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set sip_register
SIP register type(0=IP address/1=FQDN):_
```

- Select the registrar type.
  0: IP address
  1: FQDN

- When **IP address** (=0) is selected:

```
MG(SIP) > set sip_register

SIP register type(0=IP address/1=FQDN):0
SIP register IP address: 192.168.100.100
SIP register port number(1024-65535): 5060
SIP register expires time(1-65535): 3600
```

- When IP address (=0) is selected.
- Assign the IP address of the SIP registrar (default: 0.0.0.0).
- Assign the port number of the SIP registrar (default: 5060)
- Assign the registrar alive time in seconds (default: 3600).

- When **FQDN** (=1) is selected:

```
MG(SIP) > set sip_register

SIP register type(0=IP address/1=FQDN):1
Full Qualified Domain Name(MAX63): nec.com
SIP register port number(1024-65535): 5060
SIP register expires time(1-65535): 3600
```

- When FQDN (=1) is selected.
- Assign the FQDN (default:0, max 63 characters). **Note**
- Assign the port number of the SIP registrar (default: 5060)
- Assign the registrar alive time in seconds (default: 3600).

Note: *Be sure not to enter a space after FQDN characters.*

7.5.3.39 SETΔSIP_ROUTE

This command is used to specify route information in the SIP side network. The registered number of the route information is up to 10. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set sip_route
```

See SET IPX_ROUTE command for more details.

7.5.3.40 SETΔSIP_RTP_PORT_NO

This command is used to specify the RTP port base number from SIP network. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set sip_rtp_port_no
SIP side RTP port number (1024-65024): 50000
```

- Assign the RTP base port number for SIP side (default: 50000) **Note**

Note: *The value must be assigned by an even number.*

7.5.3.41 SETΔSIP_SERVER

The command is used to assign an IP address or a Fully Qualified Domain Name (FQDN) to the SIP server. Pressing the Enter key can skip the item. (**Note**) In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

Note: *"SIP server type" and "IPaddress/FQDN" cannot be skipped.*

```
MG(SIP) > set sip_server

SIP server type(0=IP address/1=FQDN):_
```

- Select the SIP server type.
  0: IP address
  1: FQDN

- When **IP address** (=0) is selected:

```
MG(SIP) > set sip_server
SIP server type(0=IP address/1=FQDN):0

SIP server IP address: 192.168.100.100

SIP server port number(1024-65535): 5060


Strict or Loose(0/1): 0




Domain Name(MAX128):_
```

- When IP address (=0) is selected.
- Assign the IP address of the proxy server/redirect server (default: 0.0.0.0).
- Assign the port number of the proxy server/redirect server (default: 5060)
- Select a Strict router or Loose router for the proxy server/redirect server (default: 0).

  0: Strict route
  1: Loose router
- Input a string that specifies the service provider in maximum of 128 characters.

- When **FQDN** (=1) is selected:

```
MG(SIP) > set sip_server
SIP server type(0=IP address/1=FQDN):1

Fully Qualified Domain Name(MAX63):nec.com

SIP server port number(1024-65535): 5060


Strict or Loose(0/1): 0




Domain Name(MAX128):_
```

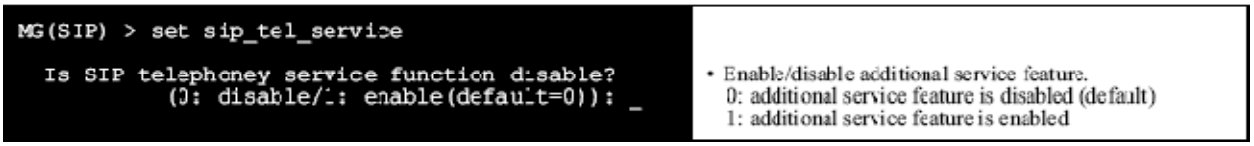
- When FQDN (=1) is selected.
- Assign the FQEN of the proxy server/redirect server in maximum of 62 characters (default: 0).
- Assign the port number of the proxy server/redirect server (default: 5060)
- Select a Strict router or Loose router for the proxy server/redirect server (default: 0).

  0: Strict route
  1: Loose router
- Input a string that specifies the service provider in maximum of 128 characters.

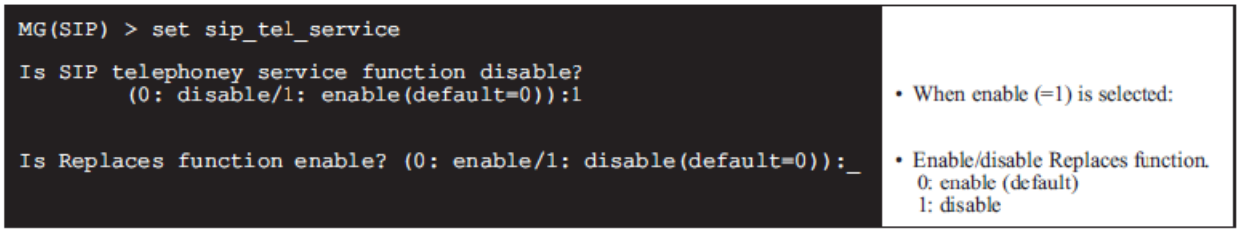
Note: *Be sure not to enter a space after FQDN characters.*

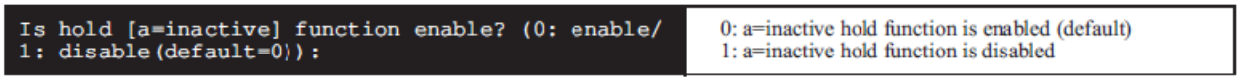
7.5.3.42 SETΔSIP_TEL_SERVICE

The command is used to enable/disable the use of additional service features (Hold/Retrieve/Transfer from the SIP network side terminal). Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.



- When **enable** (=1) is selected:





Note: *Assign this command adjusting to the specification on SIP network*

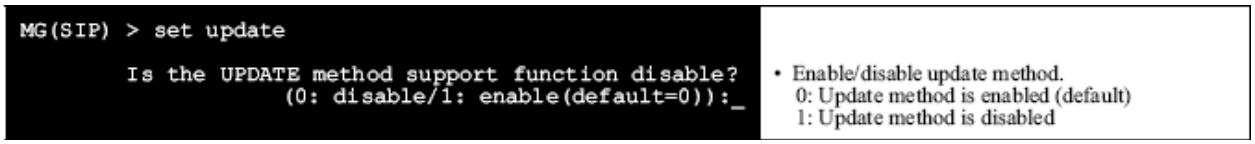
Note: *Setting of a=inactive hold function enable/disable is available for SP-3905 MG SIP (16) PROG-A Issue 3 or later.*

7.5.3.43 SETΔSLIPRESP

This command is used to determine a SLIP response code. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

7.5.3.44 SETΔUPDATE

This command is used to enable/disable the use of update method. Pressing the Enter key can skip the item. In this case, default values are assigned automatically. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.



Note: *Assign this command adjusting to the specification on SIP network.*

7.5.3.45 SETΔRESPONSE_TABLE

This command is used to set response table. Pressing the Enter key can skip the item. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set response_table

Select Response_table (Error_cause to SIP_Error_response)
          (0:normal/1:revised_table (default=0)):_
```

- Select the response table pattern
  0: Normal table (default)
  1: Server error is not sent out from MG-SIP16 to SIP network

Note: - *Generally this command is not required to be changed.*
- *This command is available for SP-3905 MG SIP (16) PROG-A Issue 3 or later.*

7.5.3.46 SETΔOUT_OF_AREA_CODE

This command is used to set the error response code to inform out-of-area-code on PBX network side. Pressing the Enter key can skip the item. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set out_of_area_code

Please set up the error response code when the out of
area. (400-606 (default=408)): 408
```

- Enter the error response code (default: 408)

Note: - *Generally this command is not required to be changed.*
- *This command is available for SP-3905 MG SIP (16) PROG-A Issue 3 or later.*

7.5.3.46 MULTISESSION

This command is used to enable/disable the use of Multi-Path Switch in ACD system by using MG-SIP. To make this assignment effective, it is required to execute the "REBOOT" command to restart the MG-SIP16.

```
MG(SIP) > set multisession

The multi-session setting is disable.

Is the multi-session setting enable? (0:disable/
1:enable (default=0): 1

The multi-session setting is enable.

MG(SIP) >
```

The current setting is displayed.

0: disable (default)
1: enable

The result is displayed.

Note: *This command is available for* SP-3905 MG SIP (16) PROG-A 02.01.00.00 or later.

7.5.4 SHOW COMMANDS

7.5.4.1 SHOWΔARP

This command is used to show the Address Resolution Protocol (ARP) table. The following shows a sample display.
Note

```
MG(SIP) > show arp

LINK LEVEL ARP TABLE
Destination     LL Address           Flags     Refcnt    Use    Interface
-------------------------------------------------------------------------
90.0.0.63       08:0C:3e:23:79:e7    0x405     0         82     lo0
-------------------------------------------------------------------------
```

Note: *Actual value may differ from this sample.*

7.5.4.2 SHOWΔCONFIG

This command is used to show the configuration that has been currently specified for the MG-SIP16.

```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:_
```

- Select a desired item (0 - 9) to display.

- When **MAC Data** (=0) is selected:

```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:0

Ether[1] MAC address: 00-00-00-00-00-00

Ether[2] MAC address: 00-00-00-00-00-00
```

- When MAC Data (=0) is selected:
- MAC address of Ehter [1] of MG-SIP16 16
- MAC address of Ether [2] of MG-SIP16 16

- When **DRS Data** (=1) is selected:

```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:1

DRS[0] IP address: 0.0.0.0: PortNo[3456]

DRS[1] IP address: 0.0.0.0: PortNo[3456]

DRS[2] IP address: 0.0.0.0: PortNo[3456]

DRS[3] IP address: 0.0.0.0: PortNo[3456]
```

- When DRS Data (=1) is selected:
- IP address and port number of the currently configured DRS will be displayed.

- When **Common Config Data** (=2) is selected:

```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:2

set signaling_port_no:
 Signal port number          :61012
-------------------------------------

set registration_port_no:
 Registration port number    :3456
-------------------------------------

set pre_negotiation_port_no:
 Voice path port number      :61014
-------------------------------------

set ipx_rtp_port_no:
 IPX side RTP port number    :51000
-------------------------------------

set sip_rtp_port_no:
 SIP side RTP port number    :50000
-------------------------------------

set h245_base_port_no:
 H245 base port number       :40000
-------------------------------------

Does it display more? Y/N=y
```

- When Common Config Data (=2) is selected:
- Currently assigned config data will be displayed.
- To see the config data more, enter "y". To exit this command, press "n".

```
set drs_qos:
 DRS QOS                     : 0xa0
     PRECEDENCE              : 5
     DELAY                   : 0
     THROUGHPUT              : 0
     RELIABILITY             : 0
     COST                    : 0
-------------------------------------

set rtp_qos:
 RTP QOS                     : 0xa0
     PRECEDENCE              : 5
     DELAY                   : 0
     THROUGHPUT              : 0
     RELIABILITY             : 0
     COST                    : 0
-------------------------------------

Does it display more? Y/N=y
-------------------------------------

set sip_qos:
 SIP QOS                     : 0xa0
     PRECEDENCE              : 5
     DELAY                   : 0
     THROUGHPUT              : 0
     RELIABILITY             : 0
     COST                    : 0
-------------------------------------

set domain:
 Domain name                 : 0
-------------------------------------

set dnsaddress:
 DNS IP address              : 0.0.0.0
-------------------------------------

set hc_alarm:
 H/C Alarm type              : IPX and SIP side enable

-------------------------------------

set hc_timer:
 H/C Timer value             : 240
-------------------------------------

set musictype:
 Music Tyep                  : Type1
```

Note

Note: *H/C Alarm type display varies depending on the type that is assigned by the "set hc_alarm."*
- When assigned as IPX network → SIP network: "IPX and SIP side enable"

- When assigned as IPX network: "IPX side enable"
- When assigned as SIP network: "SIP side enable"
- When assigned not to send: "Disable"

- When **Port Config Data** (=3) is selected:

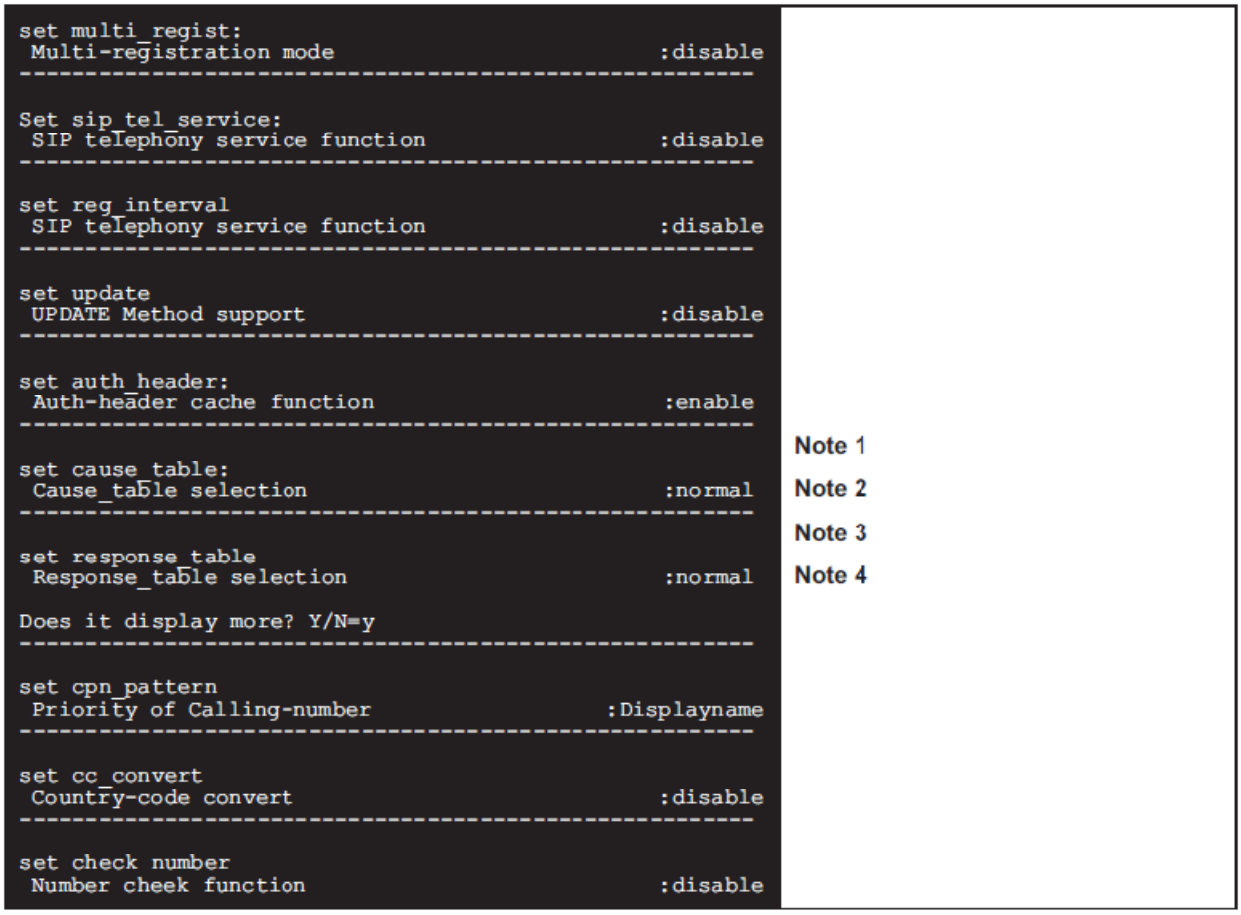
```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:3


Ether[1]
      IP address: 0.0.0.0
      Subnet    : 0.0.0.0
      Interface : Speed/Duplex-Auto/Automatic
      Port type : IPX Side Port

Ether[2] MAC address: 00-00-00-00-00-00
    IP address: 0.0.0.0
      Subnet    : 0.0.0.0
      Interface : Speed/Duplex-Auto/Automatic
      Port type : SIP Side Port
```

- When Port Config Data (=3) is selected:
- Information of data that is assigned for ports.

- When **SIP Config Data** (=4) is selected:

```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:4


set sip_server:
 Server type                    :0
 Sever IP address               :0.0.0.0
 Server port number             :5060
 Strict or Loose                :0
 Domain Name                    :0
-----------------------------------------
set sip_register:
 Register IP address            :0.0.0.0
 Register port number           :5060
 Expires time                   :3060
-----------------------------------------
set keynumber:
 Key number                     :0
-----------------------------------------
set auth:
 User ID                        :0
 Password                       :0

Does it display more?Y/N=y
```

- When SipConfig Data (=4) is selected:
- SIP config data will be displayed.



Note 1: *"revised_table" will be displayed when revised_table is selected in "response_table" command.*

Note 2: *"User info" will be displayed when User info is selected in "cpn_pattern" command.*

Note 3: *"enable" will be displayed when User info is selected in "cc_convert" command.*

Note 4: *"enable" will be displayed when User info is selected in "check_number" command.*

Additional Information when **SIP Config Data** (=4) is selected:

Item	Detail
Server type	"Server IP address" may be displayed as "Server FQDN", pertaining to the data assigned.
Register IP Address	"Register IP address" may be displayed as "Register FQDN", pertaining to the data assigned.
Privacy pattern	Displayed as pattern shown below, pertaining to the data assigned. "DisplayName" "Remote-Party-ID" "RFC3323/3325(0)" "RFC3323/3325(1)"
Dummy string	Displayed only when "Remote-Party-ID" is assigned for "Privacy pattern".
Session-timer	May be displayed "Disabled", pertaining to the data assigned.
Session-expires	Not displayed when the value of "Session-timer" is "disable".
Refresher	Not displayed when the value of "Session-timer" is "disable". May be displayed "UAS", pertaining to the data assigned.
Invite Refresher	Not displayed when the value of "Session-timer" is "disable". May be displayed "disabled", pertaining to the data assigned.
Forced	Displayed as "enabled" when Forced section in "session_timer" is assigned as enabled.
100rel	May be displayed "disabled", pertaining to the data assigned.
Stop cyclical-send of 18x	Not displayed when the value of "100rel" is "disable". May be displayed "enabled", pertaining to the data assigned.
Called-number pattern	May be displayed "Request-URI", pertaining to the data assigned.
isub function	May be displayed "enabled", pertaining to the data assigned.
184 → 0 Privacy function	Displayed as pattern shown below, pertaining to the data assigned. "disable" "enable (1)" "enable (2)"
Self SIP domain mode	May be displayed "enabled", pertaining to the data assigned.
Self SIP domain string	Not displayed when the value of "Self SIP domain mode" is "disable". Domain name assigned will be displayed when "enable".
DTMF Mode	Displayed as pattern shown below, pertaining to the data assigned. "Negotiation (SIP/SDP)" "In-Band (G.711)" "Out-Band (RFC2833)"
DTMF Payload type	Not displayed when the value of "DTMF Mode" is "In-Band".
RBT add (183 w/o SDP)	May be displayed "Disabled", pertaining to the data assigned.
Path-on 183 after 180	May be displayed "enabled", pertaining to the data assigned.
Transmitting Interval timer	Not displayed when the value of "Multi-registration mode" is "disable".
Stanby timer value	Not displayed when the value of "Multi-registration mode" is "disable".
Contact header type	Not displayed when the value of "Multi-registration mode" is "disable". May be displayed "SIP-URI", pertaining to the data assigned.

Item	Detail
Multi_regist	When enable is selected in "**multi_regist**" command, "enable" is displayed and the following are also displayed. Transmitting interval timer: 1sec Standby timer value: 30sec Contact header type: Privacy or SIP-URI *The settings above are not displayed when "disable" is assigned in "**multi_regist**"
SIP telephony service function	When enable is selected in "**sip_tel_service**" command, "enable" is displayed and the setting of Replaces function is displayed as follows. Replaces function: enable Replaces function: disable *Replaces function setting is not displayed when "disable" is assigned in "**sip_tel_service**".
UPDATE Method support function	May be displayed "enable", pertaining to the data assigned.
Auth-header cache function	May be displayed "disable", pertaining to the data assigned.
Cause_table selection	May be displayed "alternate routing", pertaining to the data assigned.

- When **Route Config Data** (=5) is selected:

```
MG(SIP) > show config

0=MAC Data
1=DRS Data
2=Common Config Data
3=Port Config Data
4=SIP Config Data
5=Route Config Data
9=Exit

Please choose a reference number:5


Ether[1]
Route type: Static

No | Gateway address   | Destination IP address / Prefix
-------------------------------------------------------
 1 | 192.168.  0.254   | 172.16. 0. 0           / 16

Ether[2]
Route type: Static

No | Gateway address   | Destination IP address / Prefix
-------------------------------------------------------
 1 | 192.168.  0.254   |   0. 0. 0. 0           / 0
```

- When Route Config Data (=5) is selected:

7.5.4.3 SHOWΔINTERFACE

This command is used to show the link and setting state of Ether connection.

```
MG(SIP) > show interface

Use one-port only

Ether[1]:

 MAC Address:00-00-00-00-00-00

 Interface: Spped/Duplex = Auto/Auto

 Link status: Link up
```

- MAC address is indicated.
- Speed and operation mode will be indicated.
- Link status can be monitored.

7.5.4.4 SHOWΔROUTE

This command is used to show the Route Table.

```
MG(SIP) > show route

ROUTE NET TABLE

Destination     Gateway         Flags    Refcnt   Use  Interface
-------------------------------------------------------------------
10.41.205.0     10.41.205.100   0x101    0        0    dp0
10.41.207.0     10.41.207.100   0x101    0        0    dp1
-------------------------------------------------------------------

ROUTE HOST TABELE
Destination     Gateway         Flags    Refcnt   Use  Interface
-------------------------------------------------------------------
127.0.0.1       127.0.0.1       0x101    0        0    lo0
-------------------------------------------------------------------
```

- It may take time to display the route table information when DSN server IP address has been assigned.

Note: *Actual value may differ from this sample.*

7.5.4.5 SHOWΔSTATUS

This command is used to show a status of the system.

```
MG(SIP) > show status

0: Port status
1: IPX status
2: SIP status
9: Exit

Please choose a reference number:_
```

0: Port status (default)
1: IPX network registration status
2: SIP network registration status
9: Exit

- When **Port status (=0)** is selected:

```
MG(SIP) > show status

0: Port status
1: IPX status
2: SIP status
9: Exit

Please choose a reference number:0

IPX port link up (100Base-TX/Half)
SIP port link up (100Base-TX/Half)
```

- When Port Status (=0) is selected:

Note

Note: *Port status is displayed as follows depending on the status.*

Port Status	IPX Network	SIP Network
100M/Half	IPX port link up (100Base-TX/Half)	SIP port link up (100Base-TX/Half)
100M/Full	IPX port link up (100Base-TX/Full)	SIP port link up (100Base-TX/Full)
10M/Half	IPX port link up (10Base-TX/Half)	SIP port link up (10Base-TX/Half)
10M/Full	IPX port link up (10Base-TX/Full)	SIP port link up (10Base-TX/Full)
Link Down	IPX port link down	SIP port link down

- When **IPX status (=1)** is selected:

```
MG(SIP) > show status

0: Port status
1: IPX status
2: SIP status
9: Exit

Please choose a reference number:1

MG(SIP) > IPX Registration Information
Registration Done. (DRS IP address 172.16.253.1)
```

When IPX status (=1) is selected:

Note

Note: *Display pattern is as follow depending on the registration status.*
- During Registration: Now Registering
- Registration Succeed: Registration Done.

- When **SIP status (=2)** is selected [Multi Registration Mode is disabled]:

```
MG(SIP) > show status

0: Port status
1: IPX status
2: SIP status
9: Exit

Please choose a reference number:2

MG(SIP) > IPX Registration Information
Registration Done. (DRS IP address 172.16.253.1)
```

When SIP status (=2) is selected:

Note

Note: *Displayed message for each registration status is as follows:*

Status	Displayed Message	Remarks
During Registration	Now Registering	
Registration Succeed	Registration Done	
Registration Failed	Registration NG. Waiting Re-Registration timer.	
Registration Invalid	Registration Server Configuration data is not setting.	No data has been assigned by using *set sip_register* command.

- When **SIP status (=2)** is selected [Multi Registration Mode is enabled]:

```
MG(SIP) > show status

0: Port status
1: IPX status
2: SIP status
9: Exit

Please choose a reference number:2

MG(SIP) > IPX Registration Information
Registration Done.

MG(SIP) > SIP Registration Information

------Registration NG RegIndex------

[MG-No:1]

9 10 11 12 13 14 15

[MG-No:2]

[MG-No:3]

[MG-No:4]

------Registration OK RegIndex------

[MG-No:1]

1 2 3 4 5 6 7 8

[MG-No:2]

[MG-No:3]

[MG-No:4]
```

When SIP status (=2) is selected:

- registration failed CNT (RegIndex) information is displayed here.
- registration failed CNTs
- registration OK CNT (RegIndex) information is displayed here.
- registration OK CNTs

Note: *In the above example, registration was attempted for 16 numbers toward the SIP server. However, 8 numbers failed. Assign MG-No by using ASRIL command. "CNT" is a parameter of ASRIL command.*

7.5.4.6 SHOWΔVERSION

This command is used to show a version information installed in MG-SIP16.

```
MG(SIP) > show version

Firmware Information    | SP No |    Issue
-------------------------------------------------
MG(SIP) BOOT PROG       | 3839  |  01.00.00.00
MG(SIP) MAIN PROG       | 3905  |  01.00.00.00
MG(SIP) AU PROG         |  --   |  01.00.00.00
MG(SIP) HW              |  --   |  CA-CC10-1A
```

- MG(SIP) BOOT PROG: kernel version
- MG(SIP) MAIN PROG: program version
- MG(SIP) AU PROG: Music/Tone/DTMF version
- MG(SIP) HW: hardware version

7.5.5 DOWNLOAD COMMAND

7.5.5.1 DOWNLOAD

This command is used to download Main Program/DTMF/Music data via Ether1 port. The data is downloaded from Trivial File Transfer Protocol (TFTP) server.

- When downloading **all programs**

```
MG(SIP) > download

Please reboot after the command.

--- Download Menu ---
Download of all programs.(default) --- input: 1
Download of one program.           --- input: 2

Input: 1

--- MG-SIP IP address set ---
Select Ether Port[1(Ether1)/2(Ether2)/Q(quit)]: 1

Current MG-SIP IP address: 10.41.1.100
Change MG-SIP address? [Y(change)/N(current)/Q(quit)]:y

If you want return to the previous step, please input 'Q'.
Input new IP address: 172.16.253.250

--- TFTP IP address set ---
Current TFTP server IP address: 10.41.1.250
Change TFTP server IP address?[Y(change)/N(current)/Q(quit)]:y

If you want to return to the previous step, please input 'Q'.
Input new IP address: 172.16.253.250


 Change IP address complete.
 New MG-SIP IP address: 172.16.253.100
 New TFTP IP address: 172.16.253.250

 Are these IP address correct?[Y(correct)/N(modify)/Q(quit)]
 If you enter Y,MG-SIP ONLINE service will be stop:y


 mgsipmwlist.txt download...
 SP3843/ngsip.bin download...
 Checksun matched!

 ##################################
 Complete
 SP3843/tone.dat download...
 Checksun matched!

 ##################################
 Complete
 SP3843/holdmusic.dat download...
 Checksun matched!

 ##################################
 Complete
```

- To download all programs, enter "1".
- Select Ether1 that is used for download.
- To change the IP address that is used for downloading, enter "y".
- Enter a new IP address. **Note 1 Note 2**
- default: 10.41.1.250
- To change the TFTP server IP address, enter "y".
- Enter the IP address of TFTP server that is prepared at your site.
- When the specified IP addresses are correct, enter 'y'.
- downloading main program
- downloading DTMF Tone file
- downloading music
- Download is complete.

Note 1: *The new IP address that is used for downloading and those of other ports should be different network address (different segment).*

Note 2: *Do not use a network address for which static routing has been set.*

```
--- Download menu ---

 Download of all programs.(default) --- input:1
 Download of one program.           --- input:2


 input: q

MG(SIP) > _
```

- When download is complete, the menu appears again.

Enter 'q' to exit download command. **Note**

Note: *Be sure to reboot the MG-SIP16 after downloading data.*

- [When downloading one program]

```
MG(SIP) > download

Please reboot after the command.

--- Download Menu ---
Download of all programs.(default) --- input: 1
Download of one program.           --- input: 2

Input: 2

--- MG-SIP IP address set ---
Select Ether Port[1(Ether1)/2(Ether2)/Q(quit)]: 1

Current MG-SIP IP address: 10.41.1.100
Change MG-SIP address? [Y(change)/N(current)/Q(quit)]:y

If you want return to the previous step, please input 'Q'.
Input new IP address: 172.16.253.250

--- TFTP IP address set ---
Current TFTP server IP address: 10.41.1.250
Change TFTP server IP address?[Y(change)/N(current)/Q(quit)]:y

If you want to return to the previous step, please input 'Q'.
Input new IP address: 172.16.253.250


 Change IP address complete.
 New MG-SIP IP address: 172.16.253.100
 New TFTP IP address: 172.16.253.250

 Are these IP address correct?[Y(correct)/N(modify)/Q(quit)]:y

--- Program download ---
Main program  :0
dtmf data     :1
music data    :2
Quit          :[Q/q]

Input:0

 SP3843/mgsip.bin download...
 Checksum matched!

 ##################################
 Complete

--- Program download ---
Main program  :0
dtmf data     :1
music data    :2
Quit          :[Q/q]

Input:q

MG(SIP) > _
```

- To download all programs, enter "1".
- Select Ether1 that is used for download.
- To change the IP address that is used for downloading, enter "y".
- Enter a new IP address. **Note 1 Note 2**
- default: 10.41.1.250
- To change the TFTP server IP address, enter "y".
- Enter the IP address of TFTP server that is prepared at your site.
- When the specified IP addresses are correct, enter 'y'.
- Select a file you want to download.
- Main program is selected in this example.
- downloading the Main program...
- Download is complete.
- When download is complete, the program download menu appears again.
- Enter 'q' to exit download command.

Note: *Be sure to reboot the MG-SIP after downloading data.*

Note: *Be sure to check the product name of the firmware to download before downloading.*

Note 1: *If checksum error occurs during download, an error message similar to the following is displayed and the display goes back to the download menu. In this case, execute download again.*

```
Checksum unmatched!!
Checksum of Filename is 12345. Not.66666.
```

Note 2: *If download fails, an error message similar to the following is displayed. The message includes an error number. Please see the table that shows countermeasures.*

```
tftp Dowr.load: tftp Copy ERROR errno=0x4b0007
```

Meaning of Error Number

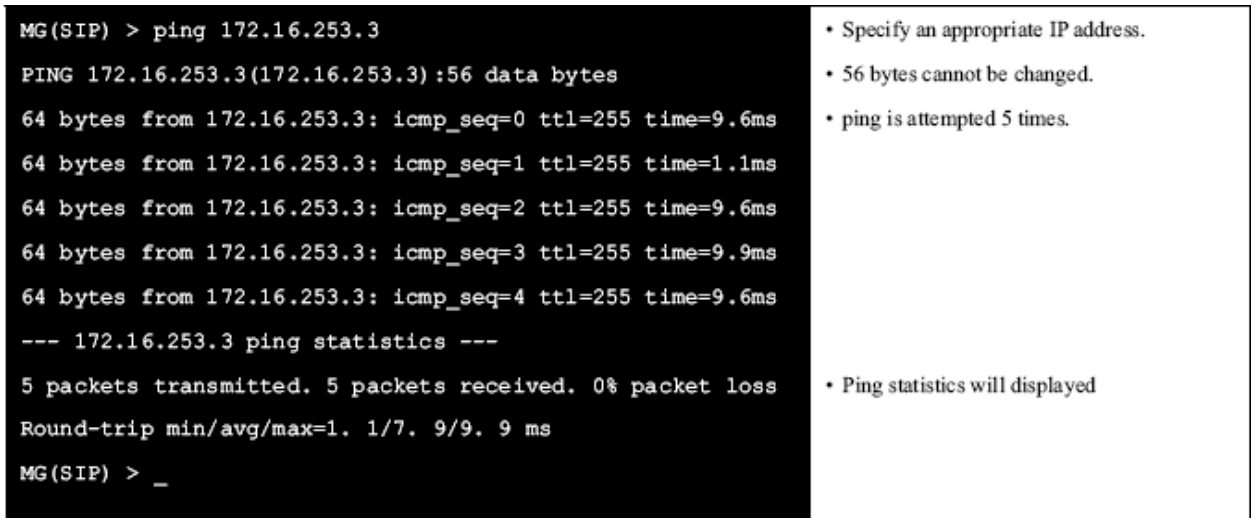
ERROR NUMBER	CAUSE	COUNTERMEASURES
0x4b0007	MG-SIP16 and the TFTP server is not connected.	Connect MG-SIP16 and TFTP server correctly.
0x4b0008	The specified download file does not exist in TFTP server.	Check the file name of the download file. Check the TFTP server setting.
0x41	The IP address of MG-SIP16 and TFTP server is not in the same segment.	Check the IP address of MG-SIP16 and TFTP server, and reassign the IP address.
0x43	TFTP server's IP address cannot be found.	
0x0d	TFTP server's IP address is not correct.	

7.5.6 PING COMMAND

7.5.6.1 PINGΔP1

This command is used to send ping packets to a specified address to confirm network status. Ping is attempted 5 times to the address specified. **Note**

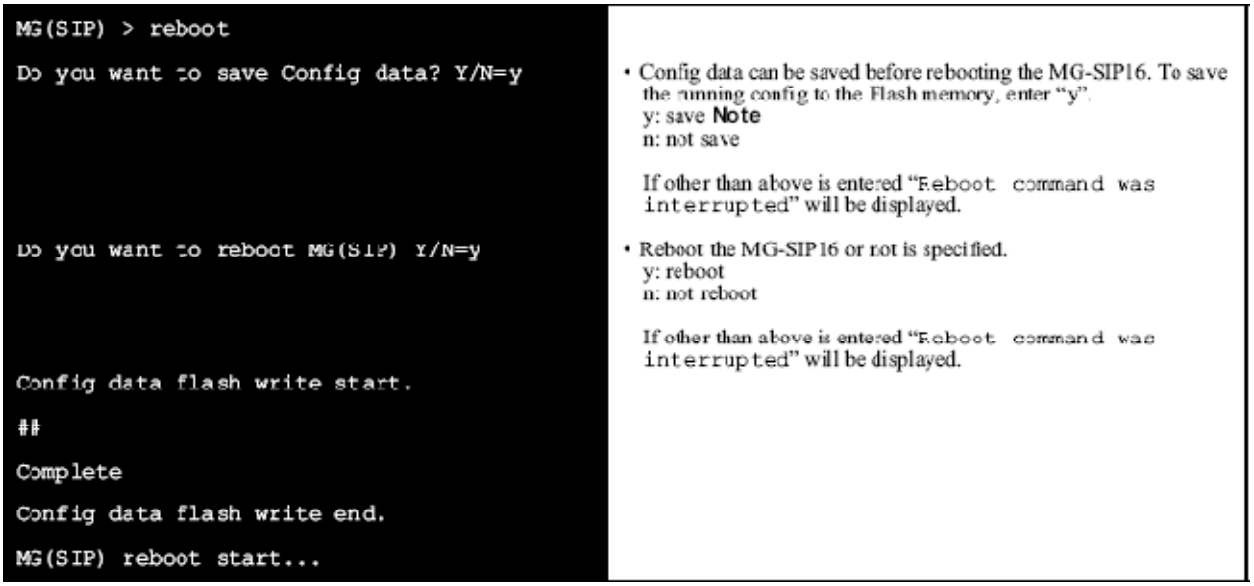
Note: *The number of ping attempts (5 times) and packet size (56 bytes) cannot be changed.*



7.5.7 REBOOT COMMAND

7.5.7.1 REBOOT

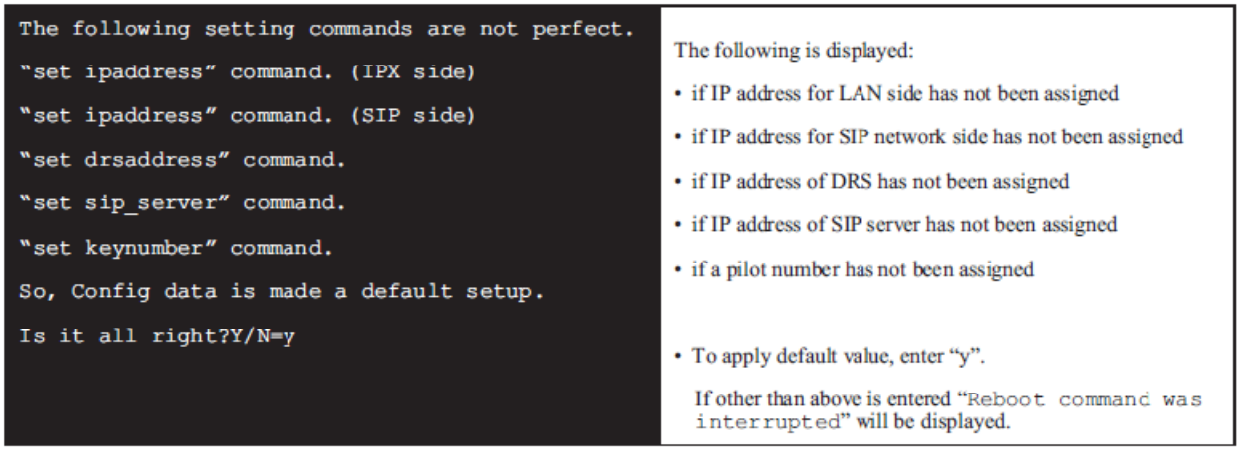
This command is used to reboot the MG-SIP16. Also configuration data can be saved to the Flash memory by using this command.



Note: *Before selecting "Y" to save the running configuration data to the Flash memory, be sure to execute the following commands:*

- *set ipaddress (Assign the IP addresses for IPX LAN side and SIP network side.)*
- *set drsaddress (Assign the IP address of DRS.)*
- *set sip_server (Assign the IP address of the SIP server)*
- *set keynumber (Assign a pilot number.)*

If any item has not been assigned when saving the running configuration data, the following message will be displayed.



7.5.8 EXIT COMMAND

7.5.8 1 EXIT

This command is used to exit from configuration mode.

```
MG(SIP) > exit
Exit ConfigMode. Bye!

->
```

- Exit from Config mode.

7.5.9 HELP COMMAND

7.5.9.1 HELP/?

This command is used to show the brief explanation of all the commands that are available on the Maintenance Console.

```
MG(SIP) > help

set                 : Config data set command.
show                : Config data show command.
download            : MG(SIP) program download command.
ping                : Ping command.
exit                : Config mode exit command.
reboot              : MG(SIP) reboot command.
help                : Help command.
?                   : Help command.
```

- Brief explanation is displayed.

7.5.10 Error Messages on Maintenance Console

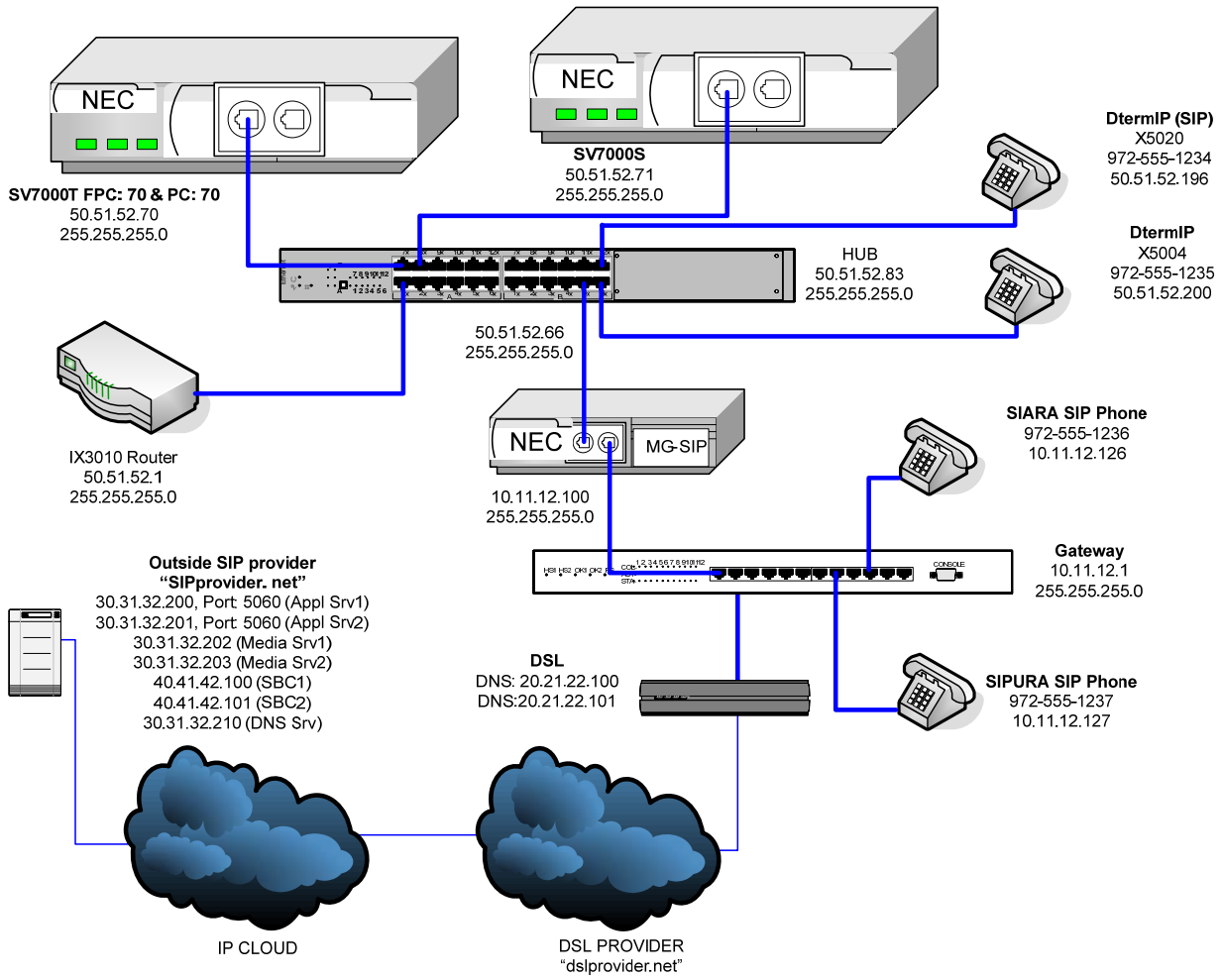
The following are error messages displayed on the Maintenance Console.

ERROR MESSAGE	TROUBLESHOTTING
Illegal command.	An incorrect command is entered. Enter the command correctly.
Illegal parameters	An incorrect parameter is entered. Enter the parameter correctly.
Invalid parameters	An invalid parameter is entered. Enter the parameter correctly.
Please set up IPX side IP address	Assign LAN side IP address by **set ipaddress** command.
Please set up SIP side IP address	Assign SIP side IP address by **set ipaddress** command.
Please set up DRS IP address	Assign DRS IP address by **set drsaddress** command.
Please set up SIP server IP address/ FQDN	Specify SIP server by **set sip_server** command.
Please set up keynumber	Assign a pilot number by **set keynumber** command.
User program download error 1	Internal error
User program download error 2	Download file cannot be found.
User program download error 3	Network connection cannot be established
User program download error 4	TFTP errors other than User program download errors 1 to 3
User program download error 5	Flash write error (User Program)
User program download error 6	Flash write error (Music/Tone)
Input parameter total error [DTMF Duration + DTMF Pause < Min 120ms]	Assign 120ms or more to the total of DTMF Duration and DTMF Pause.
Registration NG. Waiting Re-Registration timer.	Registration error. Re-Registration is being performed.
Register Server Configuration data is not setting.	There is no Register Configuration Data. Assign the data by **set sip_register** command.

**Refer to each command for the other error messages.*

APPENDIX A: Sample Network with PBX/MG-SIP Programming

A-1 Sample Network



A-2 PBX Programming for MG-SIP in Sample Network

(This does not include normal LCR programming CMDs ANPD, ASPA, ARNP, ARRC, ARSC, AFRS, AOPR, AMND, etc.) [If to be shared in Fusion Network use "N" commands, ie ARTDN, where necessary.]

ASYD

SysData1 Index64 = "80h", Bit7 = 1 (holding tone sending)
SysData1 Index186 = "71h", Bit6 = 1 (ISDN)
SysData1 Index187 = "00h"
SysData1 Index220 = "05h", Bit6=0 (ISDN is enabled)

ASYDL

System Data 1 Index 810 = "03h", Bit2 = 0/1 [Int. Hold Tone /Ext. Hold Tone]
System Data 1 Index 880 = "1Fh", Bit1 = 1 (Internal PHI is enabled)

ADTM – Internal PH-I PRI/BRI left at default value = 64000.

ADPM
PH TYPE = Internal PHI (BRI) [SVI-797]
Menu = Initialize

ALIDL
LENS: 07300 (this is just where Virtual PIM is in my system, yours may differ)
TYPE = Internal PHI
REGMAX: 1536

ARTD
Route = 200 (I just randomly picked this Route#)
CDN2 (ONSG) = **2** (PB, 60 milliseconds Interruption, CCIS, or ISDN)
CDN4 (INSG) = **2** (PB, 60 milliseconds Interruption, or CCIS)
CDN5 (TF) = **3** [Bothway Trunk [BWT]]
CDN6 (TCL) = **1** (DDD Line/Tie Line)
CDN7 (L/T) = **1** (Trunk)
CDN8 (RLP) = **2** [First Party Release (either station or trunk side)]
CDN15 (LSG) = **12** [Speech Line (for CCIS or B-Channel of ISDN)]
CDN28 (ANS) = **1** (Answer signal is provided)
CDN30 (PAD) = **7** [PAD OFF(0db)]
CDN31 (OGRL) = **1** (224 milliseconds)
CDN32 (ICRL) = **1** (224 milliseconds)
CDN34 (GUARD) = **1** (512 milliseconds)
CDN43 (BT) = **1** (Inter-Office Busy Service)
CDN45 (A/D) = **0** (Analog)
CDN49 (TRKS) = **0** (Select from the trunk which becomes idle first)
CDN50 (DPLY) = **1** (Number Display of Dterm between offices is given)
CDN60 (TC/EC) = **1** (Echo Canceller)
CDN65 (INT) = **10** [Q-Sig, (ETS 300 172)/IS-11572]
CDN66 (DOC) = **4** (DID Addressing number)
CDN111 (ADVPRA) = **1** (ISDN PRI Failure Routing Service) to Dummy Routes.

ARTI
CDN47: INTD = **2** (H.323/SIP)
CDN68: VIR = **2** (MG connection)
CDN77: RA_RT = **1** (Physical Register is used) [If “0”, Remote Access to system through MG-SIP will not work.]
CDN71: FXD = **1** (IP FAX data is in service)
CDN72: FXJS = **15** (Jitter Buffer Size for IP FAX [1-30] × 10 ms)
CDN73: FXPT = **1** (Payload Type for IP FAX is G.711)
CDN74: FXPS = **2** (Payload Size for IP FAX [1-4] × 10 ms)

ATRK - Specify trunk data on Virtual Speech Channel and Virtual Signaling Channel.
RT: 200
TK: 1 ~ 16
LENS: 072120 ~ 072137 (Virtual PIM, your LENs may differ)

ADPC
RT: 200
PC: 200 (I just picked 200 so I could have Route#, PC:, & CSCG: all the same)

ACSC
CSCG: 200 (I just picked 200 so I could have Route#, PC:, & CSCG: all the same)
GROUP: 0 ~ 7
CCH: 07212

CSCG: 201
GROUP: 0 ~ 7
CCH: 07212

ACIC1
PC: 200
CSCG: 200

ACIC2
PC: 200
CIC: 1 ~ 16
LENS: 072120 ~ 072137

AMGIL

```
MG-ID: 00-60-B9-46-4B-AE (MG-SIP Line 0 MAC Address)
KIND = SIP-MG
LINE = 0
CH = 0
LENS: 072120
Retry = 0
Service Type: Off
CH: 16
Service of Authentication exists: Yes (NOTE: If “Yes”, must assign ASRIL)
MG Group = 1
MG Number = 1
```

ASRIL

```
(This Command not needed of AMGIL “Service of Authentication exists = No”)
MG Group = 1
MG Number = 1
CNT: Start = 1  End = 2
```

CNT: 1, Calling Number: 5020, SIP URI: 9725551234, UserID: (userID of SIP Trunk Group), Password: (password of SIP Trunk Group)
CNT: 2, Calling Number: 5004, SIP URI: 9725551235, UserID: (userID of SIP Trunk Group), Password: (password of SIP Trunk Group)

ACDD

```
DAY/NIGHT: Day/Night Mode
RT: 200
DC: 1236 / 1235
CDC: 5020 / 5004
AD: Out of Service
XFR: In Service
```

A-3 MG-SIP Programming in Sample Network

MAC Data

```
 Ether[1]
     MAC Address : 00-60-b9-46-4b-ae (built into MG-SIP, not assigned by user)
 Ether[2]
     MAC Address : 00-60-b9-46-4b-6e (built into MG-SIP, not assigned by user)
```

DRS Data

```
 DRS[0] IP Address : 50.51.52.70 : PortNo[3456]
 DRS[1] IP Address : 0.0.0.0 : PortNo[3456]
 DRS[2] IP Address : 0.0.0.0 : PortNo[3456]
 DRS[3] IP Address : 0.0.0.0 : PortNo[3456]
```

Common Config Data

```
 set signaling_port_no :
   Signal port number            : 61012
 -----------------------------------------
 set registration_port_no :
   Registration port number      : 3456
 -----------------------------------------
 set pre_negotiation_port_no :
   Voice path port number        : 61014
 -----------------------------------------
 set ipx_rtp_port_no :
   IPX side RTP port number      : 51000
 -----------------------------------------
 set sip_rtp_port_no :
   SIP side RTP port number      : 50000
 -----------------------------------------
 set h245_base_port_no :
   H245 base port number         : 40000
 -----------------------------------------
```

```
set drs_qos :
   DRS QOS                      : 0xa0
       PRECEDENCE               : 5
       DELAY                    : 0
       THROUGHPUT               : 0
       RELIABILITY              : 0
       COST                     : 0
 ------------------------------------------
 set rtp_qos :
   RTP QOS                      : 0xa0
       PRECEDENCE               : 5
       DELAY                    : 0
       THROUGHPUT               : 0
       RELIABILITY              : 0
       COST                     : 0
 ------------------------------------------
  set sip_qos :
   SIP QOS                      : 0xa0
       PRECEDENCE               : 5
       DELAY                    : 0
       THROUGHPUT               : 0
       RELIABILITY              : 0
       COST                     : 0
 ------------------------------------------
 set domain :
   Domain name                  : 0
 ------------------------------------------
 set dnsaddress :
   DNS IP Address               : 20.21.22.100
 ------------------------------------------
 set hc_alarm :
   H/C Alarm type               : IPX and SIP Side enable
 ------------------------------------------
 set hc_timer :
   H/C Timer value              : 240
 set musictype :
   Music Type                   : Type1
```

Port Config Data

```
 Use all port
 Ether[1]
     IP Address  : 50.51.52.66
     Subnet      : 255.255.255.0
     Interface   : Speed/Duplex = Auto/Auto
     Port type   : IPX Side Port
 Ether[2]
     IP Address  : 10.11.12.100
     Subnet      : 255.255.255.0
     Interface   : Speed/Duplex = Auto/Auto
     Port type   : SIP Side Port
```

SIP Config Data

```
 set sip_server :
   Server type                  : 1
   Server FQDN                  : SIPprovider.net
   Server port number           : 5060
   Strict or Loose              : 1
   Domain Name                  : 0
 ------------------------------------------
 set sip_register :
   Register FQDN                : SIPprovider.net
   Register port number         : 5060
   Expires time                 : 3600
 ------------------------------------------
 set keynumber :
   Key number                   : 9725551234
 ------------------------------------------
 set auth :
   User ID                      : (userID of SIP Trunk Group)
   Password                     : (password of SIP Trunk Group)
```

```
-----------------------------------------
set privacy_pattern :
   Privacy pattern                    : DisplayName
 -----------------------------------------
 set session_timer :
   Session-timer                      : enable
   Session-expires                    : 180
   Refresher                          : UAC
   Invite Refresher                   : disable
   Forced                             : disable
 -----------------------------------------
 set prack :
   100rel                             : enable
   Stop cyclical-send of 18x          : disable
 -----------------------------------------
 set cdn_pattern :
   Called-number pattern              : To:userinfo
   isub function                      : disable
 -----------------------------------------
 set sip_port_no :
   SIP port number                    : 5060
 -----------------------------------------
 set cftinfo :
   CFT Info                           : disable
 -----------------------------------------
 set 81to0 :
   81->0 Function                     : disable
 -----------------------------------------
 set 184ToPrivacy :
   184->Privacy function              : disable
 -----------------------------------------
 set slipresp :
   SIP Server slip response code      : 488
 -----------------------------------------
 set self_sip_domain :
   Self SIP domain mode               : disable
 -----------------------------------------
 set dtmf_mode :
    DTMF Mode                         : Negotiation(SIP/SDP)
    DTMF Duration                     : 120ms
    DTMF Pause                        : 100ms
    DTMF Payload type                 : 101
 -----------------------------------------
 set 183rbt :
    RBT add                           : enable
 -----------------------------------------
 set rtp_pathon :
    Path-on 183 after 180             : enable
 -----------------------------------------
 set another_keynumber :
    Another keynumber 1               : 0
    Another keynumber 2               : 0
    Another keynumber 3               : 0
-----------------------------------------


set multi_regist :
    Multi-registration mode           : enable
    Transmitting interval timer       : 1sec
    Standby timer value               : 30sec
    Contact header type               : SIP-URI
 -----------------------------------------
 set sip_tel_service :
    SIP telephony service function    : enable
    REPLACES Function                 : enable
 -----------------------------------------
 set reg_interval :
    REGISTER interval timer           : 5min
 -----------------------------------------
 set update :
    UPDATE Method support function    : enabled
```

```
 ------------------------------------------
 set auth_header :
    Auth-header cache function        : enable
 ------------------------------------------
 set cause_table :
    Cause_table selection             : normal
```

Route Config Data

```
Ether[1]
 Route type        : Static

 No  | Gateway Address  | Destination network/Prefix
-----+------------------+---------------------------
  1  | 50. 51. 52.  1   | 50. 51. 52.  0    /24

Ether[2]
 Route type        : Static

 No  | Gateway Address  | Destination network/Prefix
-----+------------------+---------------------------
  1    |  10.11.12.1    |   0.  0.  0.  0
```

APPENDIX B: MG-SIP Session Initiated Protocol (SIP) Message Support

B-1 Provisional 1xx

Provisional responses, also known as informational responses, indicate that the server contacted is performing some further action and does not yet have a definitive response. A server sends a 1xx response if it expects to take more than 200 ms to obtain a final response. Note that 1xx responses are not transmitted reliably. They never cause the client to send an ACK. Provisional (1xx) responses MAY contain message bodies, including session descriptions.

100 Trying (MG-SIP Support = **Yes**)
180 Ringing (MG-SIP Support = **Yes**)
181 Call Is Being Forwarded (MG-SIP Support =**No**)
182 Queued (MG-SIP Support =No)
183 Session Progress (MG-SIP Support =**Yes [Receive Only]**)

B-2 Successful 2xx

The request was successfully received, understood, and accepted.

200 OK (MG-SIP Support =**Yes**)

B-3 Redirection 3xx

3xx responses give information about the user's new location, or alternative services that might be able to satisfy the call(further action needs to be taken in order to complete the request). Note that the MG-SIP does not support sending of the 3xx messages. It will properly acknowledge receiving 3xx messages from the SIP server.

300 Multiple Choices (MG-SIP Support = **No**)
301 Moved Permanently (MG-SIP Support = **No**)
302 Moved Temporarily (MG-SIP Support = **No**)
305 Use Proxy (MG-SIP Support = **No**)
380 Alternative Service (MG-SIP Support = **No**)

B-4 Request Failure 4xx

4xx responses are definite failure responses from a particular server. The client SHOULD NOT retry the same request without modification (for example, adding appropriate authorization).However, the same request to a different server might be successful.

400 Bad Request (MG-SIP Support = **Yes**)
401 Unauthorized (MG-SIP Support = **Yes [but not as response to INVITE]**)
402 Payment Required (MG-SIP Support = **No**)
403 Forbidden (MG-SIP Support = **Yes**)

404 Not Found (MG-SIP Support = **Yes**)
405 Method Not Allowed (MG-SIP Support = **Yes**)
406 Not Acceptable (MG-SIP Support = **Yes**)
407 Proxy Authentication Required (MG-SIP Support = **Yes**)
408 Request Timeout (MG-SIP Support = **Yes**)
410 Gone (MG-SIP Support = **Yes**)
413 Request Entity Too Large (MG-SIP Support = **No**)
414 Request-URI Too Long (MG-SIP Support = **No**)
415 Unsupported Media Type (MG-SIP Support = **Yes**)
416 Unsupported URI Scheme (MG-SIP Support = **Yes**)
420 Bad Extension (MG-SIP Support = **Yes**)
421 Extension Required (MG-SIP Support = **No**)
423 Interval Too Brief (MG-SIP Support = **No**)
480 Temporarily Unavailable (MG-SIP Support = **Yes**)
481 Call/Transaction Does Not Exist (MG-SIP Support = **Yes**)
482 Loop Detected (MG-SIP Support = **No**)
483 Too Many Hops (MG-SIP Support = **No**)
484 Address Incomplete (MG-SIP Support = **Yes**)
485 Ambiguous (MG-SIP Support = **No**)
486 Busy Here (MG-SIP Support = **Yes**)
487 Request Terminated (MG-SIP Support = **Yes**)
488 Not Acceptable Here (MG-SIP Support = **Yes**)
491 Request Pending (MG-SIP Support = **Yes**)
493 Undecipherable (MG-SIP Support = **No**)

B-5 Server Failure 5xx

5xx responses are failure responses given when a server itself has erred.

500 Server Internal Error (MG-SIP Support = **Yes**)
501 Not Implemented (MG-SIP Support = **Yes**)
502 Bad Gateway (MG-SIP Support = **Yes**)
503 Service Unavailable (MG-SIP Support = **Yes**)
504 Server Time-out (MG-SIP Support = **No**)
505 Version Not Supported (MG-SIP Support = **No**)
513 Message Too Large (MG-SIP Support = **No**)

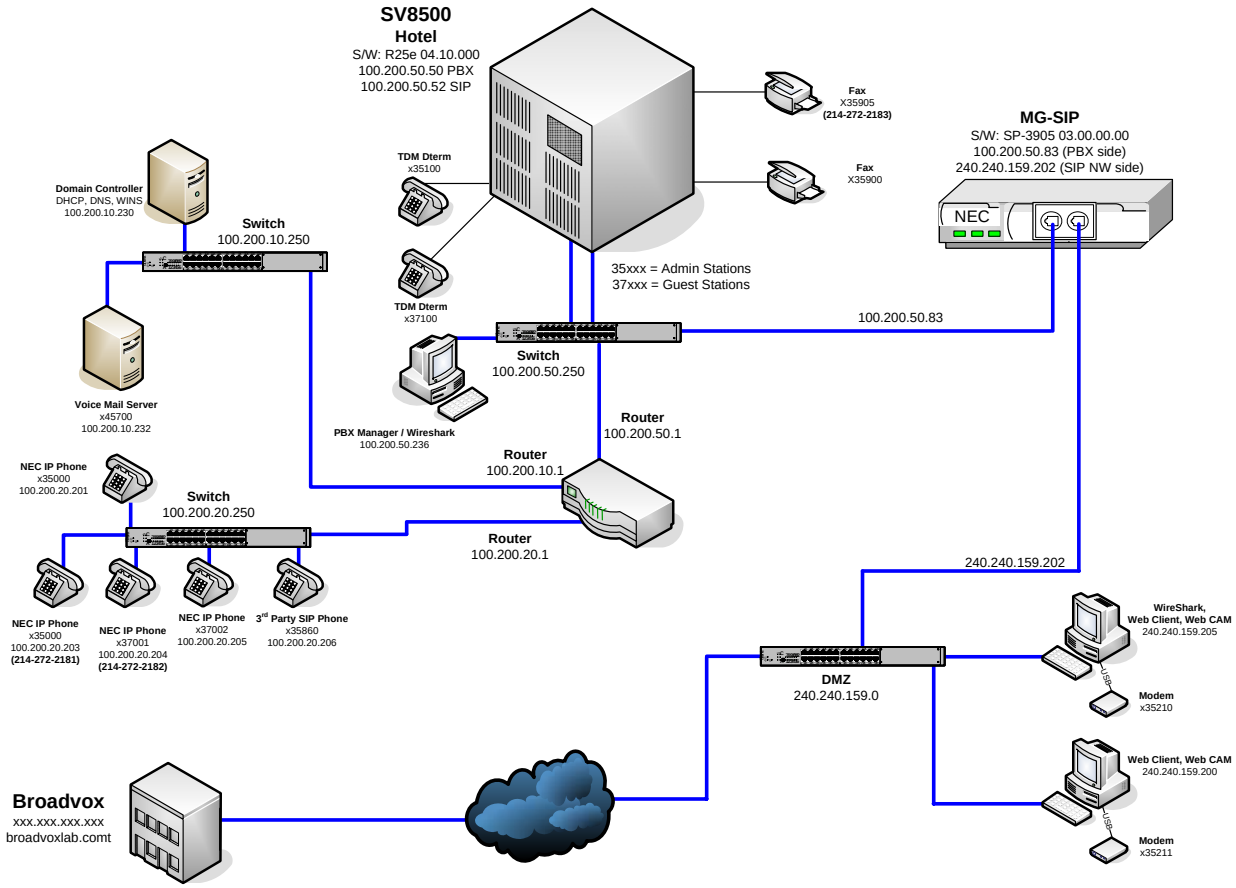
B-6 Global Failures 6xx

6xx responses indicate that a server has definitive information about a particular user, not just the particular instance indicated in the Request-URI.

600 Busy Everywhere (MG-SIP Support = **No**)
603 Decline (MG-SIP Support = **No**)
604 Does Not Exist Anywhere (MG-SIP Support = **No**)
606 Not Acceptable (MG-SIP Support = **No**)

C-2: Broadvox

C-2.1 Network Configuration



Broadvox SIP InterOp Testing NEC Lab Setup

C-2.2 PBX Programming

This does not include the basic programming that is the same regardless of SIP Provider (ie, ARTD, ARTI, ADPC, ACSC, ACIC1, etc.). You can refer to Appendix A for the information that was used during the tests. This only includes the commands that were uniquely programmed for this configuration.

AMGIL

```
MG-ID: 00-60-B9-46-4B-AE (MG-SIP Line 0 MAC Address)
KIND = SIP-MG
LINE = 0
CH = 0
LENS: 072120
Retry = 0
Service Type: Off
CH: 16
Service of Authentication exists: OFF
MG Group =
MG Number =
```

ACNP
```
OG/IC: OG
ROUTE: 200
CNP: 1
```

ACND
```
CNP: 1
SKIP: 0
ADD: 6
DC: 214272
```

ACDD/L
```
DAY/NIGHT: Day/Night Mode
RT: 200
DC:   2181 /  2182 /  2183
CDC: 35000 / 37001 / 35905
AD: Out of Service
XFR: In Service
```

C-2.3 MG-SIP Programming

Note that the assignments shown are those set for the majority of the test cases ran during the inter-operability testing. Some parameters were changed for specific tests. For example, Privacy test cases would have had the "set privacy_pattern" changed from "0: Displayname" to a "2: RFC 3323/3325 (P-Preferred-ID / Privacy)" and the selection of whether the P-Preferred-ID Header is included or not. The same type of changes were made to the "set cpn_pattern" when testing the normal "userinfo" setting as well as the "anonymous" and "P-Asserted ID" settings. The listing shows the basic data to get the equipment up and communicating. Then, if necessary, you can fine-tune various parameters for the customer's specific requirements.

DRS Data

```
 DRS[0] IP Address : 100.200.50.52 : PortNo[3456]
 DRS[1] IP Address : 0.0.0.0 : PortNo[3456]
 DRS[2] IP Address : 0.0.0.0 : PortNo[3456]
 DRS[3] IP Address : 0.0.0.0 : PortNo[3456]
```

Common Config Data

```
 set signaling_port_no :
   Signal port number            : 61012
 ------------------------------------------
 set registration_port_no :
   Registration port number      : 3456
 ------------------------------------------
 set pre_negotiation_port_no :
   Voice path port number        : 61014
 ------------------------------------------
 set ipx_rtp_port_no :
   IPX side RTP port number      : 51000
 ------------------------------------------
 set sip_rtp_port_no :
   SIP side RTP port number      : 50000
 ------------------------------------------
 set h245_base_port_no :
   H245 base port number         : 40000
 ------------------------------------------

 ------------------------------------------
 set drs_qos :
   DRS QOS                       : 0xa0
       PRECEDENCE                : 5
       DELAY                     : 0
       THROUGHPUT                : 0
       RELIABILITY               : 0
       COST                      : 0
 ------------------------------------------
```

```
 set rtp_qos :
   RTP QOS                      : 0xa0
       PRECEDENCE               : 5
       DELAY                    : 0
       THROUGHPUT               : 0
       RELIABILITY              : 0
       COST                     : 0
 ----------------------------------------
set sip_qos :
   SIP QOS                      : 0xa0
       PRECEDENCE               : 5
       DELAY                    : 0
       THROUGHPUT               : 0
       RELIABILITY              : 0
       COST                     : 0
 ----------------------------------------
 set domain :
   Domain name                  : 0
 ----------------------------------------
 set dnsaddress :
   DNS IP Address               : 200.200.20.70
 ----------------------------------------
 set hc_alarm :
   H/C Alarm type               : IPX and SIP Side enable
 ----------------------------------------
 set hc_timer :
   H/C Timer value              : 240
 set musictype :
   Music Type                   : Type1
```

Port Config Data

```
Use all port
 Ether[1]
     IP Address  : 100.200.50.84
     Subnet      : 255.255.255.0
     Interface   : Speed/Duplex = Auto/Auto
     Port type   : IPX Side Port
 Ether[2]
     IP Address  : 240.240.159.202
     Subnet      : 255.255.255.0
     Interface   : Speed/Duplex = Auto/Auto
     Port type   : SIP Side Port
```

SIP Config Data

```
 set sip_server :
   Server type                  : 1
   Server FQDN                  : broadvoxlab.com
   Server port number           : 5060
   Strict or Loose              : 0
   Domain Name                  : 0
 ----------------------------------------
 set sip_register :
   Register FQDN                : broadvoxlab.com
   Register port number         : 5060
   Expires time                 : 3600
 ----------------------------------------
 set keynumber :
   Key number                   : 2142722181
 ----------------------------------------
 set auth :
   User ID                      : 2142722181
   Password                     : 1234567890
----------------------------------------
 set privacy_pattern :
   Privacy pattern              : DisplayName
 ----------------------------------------
 set session_timer :
   Session-timer                : enable
   Session-expires              : 1800
```

```
  Refresher                          : UAC
  Invite Refresher                   : enable
  Forced                             : disable
 ------------------------------------------
 set prack :
  100rel                             : enable
  Stop cyclical-send of 18x          : disable
 ------------------------------------------
 set cdn_pattern :
  Called-number pattern              : Request:userinfo
 ------------------------------------------
 set sip_port_no :
  SIP port number                    : 5060
------------------------------------------
 set 184ToPrivacy :
  184->Privacy function              : disable
 ------------------------------------------
 set slipresp :
  SIP Server slip response code      : 503
 ------------------------------------------
 set self_sip_domain :
   Self SIP domain mode              : enable
   Self SIP domain string            : 240.240.159.202
------------------------------------------
 set dtmf_mode :
   DTMF Mode                         : Negotiation(SIP/SDP)(In-Band or RFC2833 assigned for tests)
   DTMF Duration                     : 120ms
   DTMF Pause                        : 100ms
   DTMF Payload type                 : 101
 ------------------------------------------
 set 183rbt :
   RBT add                           : enable
 ------------------------------------------
 set rtp_pathon :
   Path-on 183 after 180             : enable
 ------------------------------------------
 set another_keynumber :
   Another keynumber 1               : 0
   Another keynumber 2               : 0
   Another keynumber 3               : 0
------------------------------------------
 set multi_regist :
   Multi-registration mode           : disable
 ------------------------------------------
 set sip_tel_service :
   SIP telephony service function    : enable
   Replaces function                 : enable
   hold[a=inactive] function         : enable
 ------------------------------------------
 set reg_interval :
   REGISTER interval timer           : 5min
 ------------------------------------------
 set update :
   UPDATE Method support function    : enable
 ------------------------------------------
 set auth_header :
   Auth-header cache function        : enable
 ------------------------------------------
 set cause_table :
   Cause_table selection             : normal
 ------------------------------------------
 set response_table :
   Response_table selection          : normal

 Does it display more? Y/N = y
 ------------------------------------------
 set cpn_pattern :
   Priority of Calling-number        : Userinfo
 ------------------------------------------
 set cc_convert :
   Country-code convert              : disable
```

```
 ----------------------------------------
 set check_number :
    Number check function             : disable
```

Route Config Data

```
Ether[1]
 Route type        : Static

 No  | Gateway Address  | Destination network/Prefix
-----+------------------+---------------------------
  1  | 100.200. 50.  1  | 100.200.  0.  0    /16

Ether[2]
 Route type        : Static

 No  | Gateway Address  | Destination network/Prefix
-----+------------------+---------------------------
  1  | 240.240.159.  1  |   0.  0.  0.  0
```