

Hypermedia HG-4000 Product Manual





3U and 6U Cellular / VoIP Gateways Release 5.4 (Mar 2018)

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Before You Begin

Conventions

The following symbols have been inserted on the left hand side of the operating instructions in order to make it easier for the User to perform procedures:

Symbol	Description				
-	Note: Information given in a note describes how the System functions or provides a tip on how best to use it.				
	Caution: Information given in a message labeled —caution refers to the safe operation of the System and provides warnings where the possibility for loss of data or damage to the equipment exists.				
O	Danger: Information given in a message labeled —danger warns of possible hazard to personnel and extreme hazard to the System.				

Notice

Information given in this document is subject to change without any notice.

1 Hardware and Installation

Note: Hardware and installation vary depending upon the features included with the Hypermedia Gateway system. Skip the sections that do not apply to your system. This chapter contains:

- Contents of Package (section 1.1.1)
- Safety Information (section 1.2)
- System Components (section 1.3)
- Typical Board Configurations (section 1.4)

- Pre-Installation Preparation (section 1.5 .1)
- Router Settings RO 1.X (section 1.6.3)
- Inserting the SIM Cards (section 1.7)
- Powering Up and LEDs (section 1.8)

Overview

1.1 Overview

The HyperGateway family of scalable platforms empowers cost-effective corporate telephony over fixed, cellular and IP networks. HyperGateway systems provide integrated voice communications for both on-site and remote users of small-to-large enterprises. Acting as legacy PBX VoIP enablers, the flexible systems are easily expanded to meet evolving corporate telephony needs over time.

The Hypermedia Gateway unit is a 19" x 6U or 19" x 3U rack-mountable box that connects to the local PBX or network via a PRI card or VoIP card. It also connects to the cellular network via up to 8 cellular cards, each card with 4 modules of cellular channels. The system enables any combination of connectivity between its various interfaces.

1.1.1 Contents of Package

Depending upon configuration, the package should contain some or all of the following:

- The Hypermedia Gateway unit
- Ethernet cables
- 1 or 2 power cords, depending upon the configuration
- 1 to 8 indoor antennas, depending upon the configuration
- Hypermedia Software CD-ROM
- The warranty certificate
- 1 SD card (standard gateway)

1.2 Safety Information

Hypermedia Gateway works with a nominal mains supply voltage of 110–240V AC. Hazardous voltages are present inside of this equipment. Some of the parts can also have high operating temperatures.

To avoid injury and prevent equipment damage, observe the following safety precautions:

• Installation, service, and maintenance of the Hypermedia Gateway should be done by qualified technicians only.

- Do not connect the Hypermedia Gateway to any power source other than the indicated nominal source.
- The power supply cord must be connected to a socket with a valid ground. This equipment should only be used in buildings with proper safety ground.
- When connecting the equipment, first, ensure that the ground connection is connected to the rack ground or building ground.
- When disconnecting the equipment, disconnect the ground connection last.
- Opening the housing may be dangerous and invalidates the warranty. Only a qualified technician should open the housing. Before opening, disconnect the power cable from the equipment.
- The Hypermedia Gateway complies with all necessary safety standards. Equipment connected to the Hypermedia Gateway must also comply with the applicable safety standards.
- The packaging is designed to protect against mechanical damage and should be stored. Do not ship equipment unless it is properly packed in its original wrapping and shipping containers.
- Make sure that the equipment top and bottom are not blocked to air movement. Leave 1U under and on top of the equipment for proper ventilation.
- Do not operate the Hypermedia Gateway in close proximity to potentially hazardous areas. These includes areas such as, but not exclusively, fuel stations, fuel depots, chemical works or during blasting.
- The operation of radio transmitters, which includes cellular engines, can impair the function of medical devices that have not been properly shielded. Please ask the advice of your doctor or the manufacturer of the medical device.
- To avoid moisture condensation, allow time for the unit to adapt to the ambient temperature before switching it on.

System Components

1.3 System Components

The HG-4000 Gateway comes in two main series:

Standard — based on an embedded CPU and is designed for the enterprise user.

Heavy-Duty — based on a PC board and is designed for the VoIP call operator.

• The Hypermedia Gateway is a $19" \times 6U$ or $19" \times 3U$ rack-mount unit that connects to the local PBX or network. The system enables any combination of

connectivity between its PRI and cellular interfaces (VoIP and BRI are optional).

- The unit is built of a **backplane** and slots for the system boards, as described in the following Table 1. The placement of the boards varies according to product configuration.
- The unit contains a single **power supply** module. A dual power supply module is also available.
- Depending upon system configuration, the Hypermedia Server is an application that is embedded on the HBN, HBS, HBD or on the PC1/2 board. The Hypermedia Server is controlled and managed by the browser-based Hypermedia Management Console.
- The Hypermedia Management Console (HMC) is used by the system administrator for remote configuration and monitoring of the Hypermedia Gateway system. It connects to the gateway using TCP/IP and is accessed via a standard WEB browser.

1.4 Typical Board Configurations

The placement of the HG-4000 boards varies according to the product series. The names and function of the boards is described in the following Table 1.

Board Name Description					
Standard Gateway's Boards					
HBN, HBD, HBSThese Hybrid boards provide the gateway management function as well as VoIP functionality. Optionally, these cards can also support PRI functionality. The HBD support dual PRI ports and the HBS supports a single PRI port.					
Heavy-Duty Gateway's Boards					
PC1/PC2	The PC board runs the HyperGateway Server along with one of the following boards: MC, SU or MG.				
MC1.0, MC1.1, MC1.2	These boards provide support for VoIP functionality (MC1.0) and the PRI connectivity function (MC1.1, MC1.2). Installed on PC-based systems. The MC1.2 card supports dual PRI ports and the MC1.1 card supports a single PRI port.				

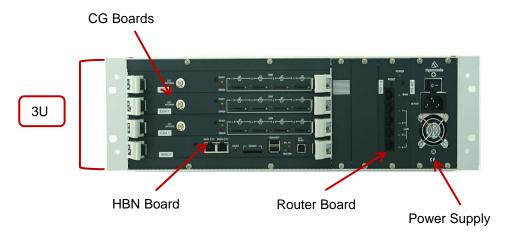
Table 1. HG-4000 Boards and Functi	on
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SU	This board provides support for VoIP functionality (32 ports) in 3U form board along with MG2.1			
MG 2.1 This board contains a media matrix, and is used with an SU board.				
MG1.2	MG1.2This board provides support for VoIP functionality where 72 ports expansion is required. It also contains a media matrix.			
Cross-Gateways Boards				
CG41/CC41/CU41	CG41 for GSM, CC41 for CDMA and CU41 for UMTS is a single-slot board that enables four (4) inbound and outbound cellular voice calls for the various cellular networks.			
RO 1.X	This is an embedded router board			
S-HUB	This board provides SIM server connectivity			

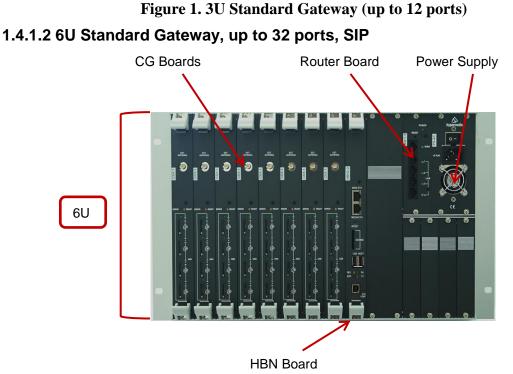
Typical Board Configurations

1.4.1 Standard Series

1.4.1.1 3U Standard Gateway, up to 12 ports, SIP or H.323



Hardware and Installation







1.4.2 Heavy-Duty Series



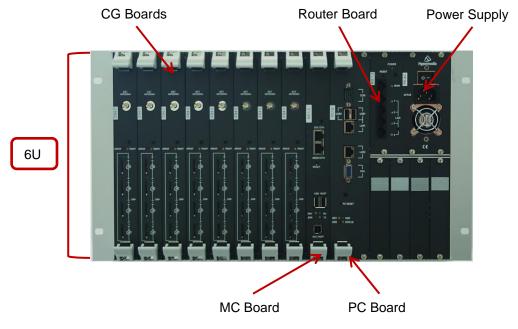


Figure 3. 6U Heavy-Duty (32 ports)

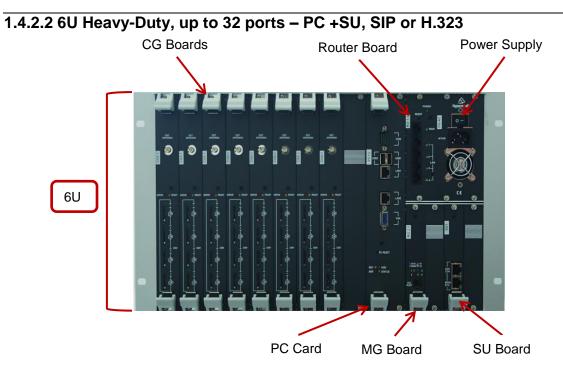


Figure 4. 6U Heavy-Duty (up to 32 ports)

Typical Board Configurations

1.4.2.3 6U Heavy-Duty, expandable up to 72 ports – PC+MG, SIP or H.323

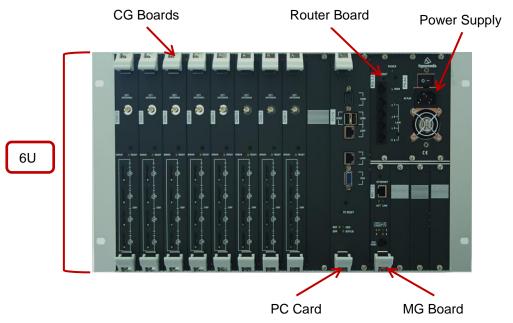


Figure 5. Heavy-Duty (expandable up to72 ports)

1.5 Installation

Note: Installation varies depending upon the boards included with the Hypermedia Gateway system. Skip the sections that do not apply to your system.

1.5.1 Pre-Installation Preparations

- 1. Install the Hypermedia Gateway in a 19^{||} rack. Depending upon the physical configuration, the unit requires a height of either 3U or 6U. In addition, we recommend: the following
 - Avoid installing the device near computer rooms, computer monitors, electrical cabinets, metal objects, and windows with fold aluminum sheet.
 - Perform a cellular signal check before mounting the system. This can be done by checking the Signal Strength and the Bit Error Rate ratio on another mobile phone's display from the same operator and system.
 - Ensure that the device is protected against direct sunlight and heat. This increases both the reliability of the operation as well as its service life.
 - The provided antennas are for indoor use only. RF combiners and external antennas are sold separately.
 - The cables to the devices should be installed so that they do not cause any physical risk. Power cables should be installed separate from the signal cables.
- 2. Depending upon the configuration of your system, verify that you have some or all of the following:
 - an Ethernet or WAN socket with a fixed IP address
 - a spare card in your PBX
 - SIM cards from your GSM operator. One SIM card is required for each GSM channel
- 3. To configure the Router, get the following information from your Internet Service Provider:
 - WAN IP Address
 - Subnet Mask, and WAN Gateway
- Note:
- The RO 1.X default LAN IP address for the Hybrid-Based Gateway is

192.168.9.254

 The RO 1.X default LAN IP address for the PC-Based Gateway is 192.168.0.1

Cable Connections

1.6 Cable Connections

There are two types of connections:

- Standard Gateway Hybrid based (HBN, HBS, HBD)
- Heavy-Duty Gateway PC Based (MC, MG+SU)

1.6.1 Standard Gateway - Hybrid Based (HBN, HBS and HBD)

HG4000 Connection Settings

- (1) Connect the WAN socket on the RO1 (Router) card to the WAN/LAN.
- Connect the LAN 1 socket on the RO1 (Router) card to the Main Ethernet socket on the HBN control board.
- 3 Connect the LAN 2 socket on the RO1 (Router) card to the Media Ethernet socket on the HBN control board.

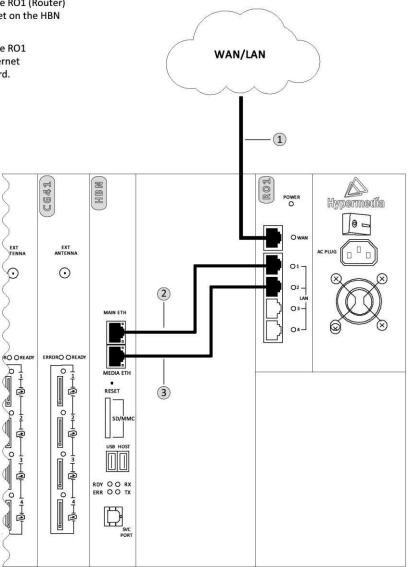
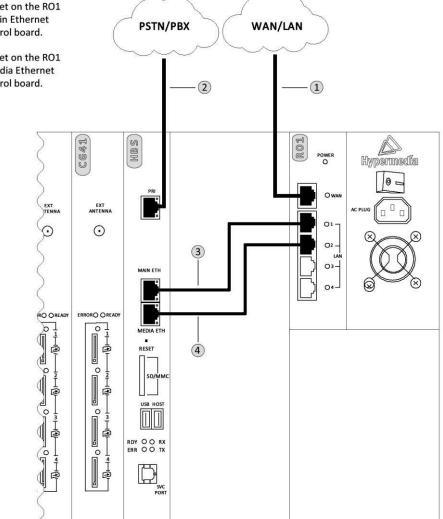


Figure 6. HG4000 - HBN Connection Settings

HG4100 Connection Settings

- (1) Connect the WAN socket on the RO1 (Router) card to the WAN/LAN.
- (2) Connect the PRI socket on the HBS control board to the PSTN or to the PBX.
- 3 Connect the LAN 1 socket on the RO1 (Router) card to the Main Ethernet socket on the HBS control board.
- Connect the LAN 2 socket on the RO1 (Router) card to the Media Ethernet socket on the HBS control board.





Cable Connections

HG4200 Connection Settings

- (1) Connect the WAN socket on the RO1 (Router) card to the WAN/LAN.
- 2 Connect the PRI 2 socket on the HBD control board to the PSTN or to the PBX.
- 3 Connect the PRI 1 socket on the HBD control board to the PSTN or to the PBX.
- (4) Connect the LAN 1 socket on the RO1 (Router) card to the Main Ethernet socket on the HBD control board.
- Connect the LAN 2 socket on the RO1 (Router) card to the Media Ethernet socket on the HBD control board.

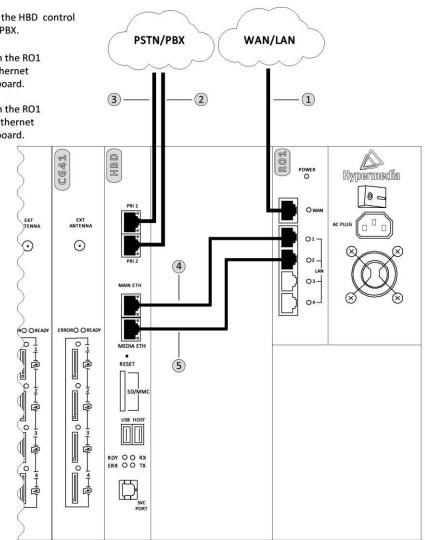
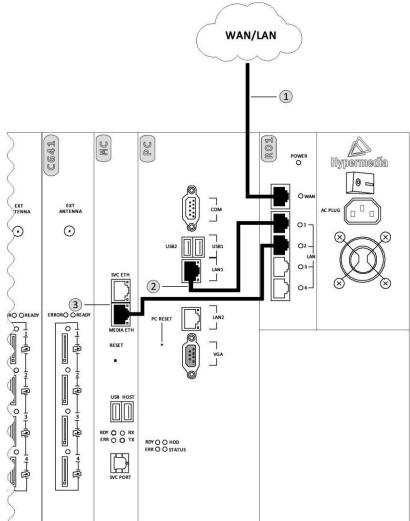


Figure 8. HG-4200 - HBD Connection Settings

1.6.2 Heavy-Duty Gateway – PC Based (MC, MG+SU)

HG4000 PC-MC Connection Settings

- (1) Connect the WAN socket on the RO1 (Router) card to the WAN/LAN.
- Connect the LAN 1 socket on the RO1 (Router) card to the LAN 1 socket on the PC control board.
- Connect the LAN 2 socket on the RO1 (Router) card to the Media Ethernet socket on the MC control card.



Cable Connections

Figure 9. HG-4000 – PC-MC Connection Settings HG4000 PC-SU Connection Settings

- Connect the WAN socket on the RO1 (Router) card to the WAN/LAN.
- Connect the LAN 1 socket on the RO1 (Router) card to the LAN 1 socket on the PC control board.
- 3 Connect the LAN 2 socket on the RO1 (Router) to the Media Ethernet socket on the SU card.

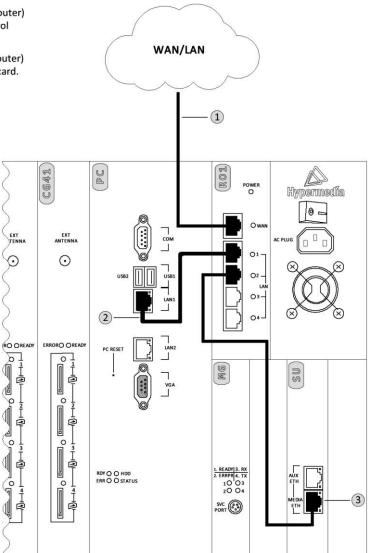


Figure 10. HG-4000 – PC-SU+MG Connection Settings

Hardware and Installation

HG4000 PC-AC Connection Settings

- Connect the WAN socket on the RO1 (Router) card to the WAN/LAN.
- (2) Connect the LAN 1 socket on the RO1 (Router) card to the LAN 1 socket on the PC control board.
- 3 Connect the LAN 2 socket on the RO1 (Router) card to the Ethernet socket on the MG card.

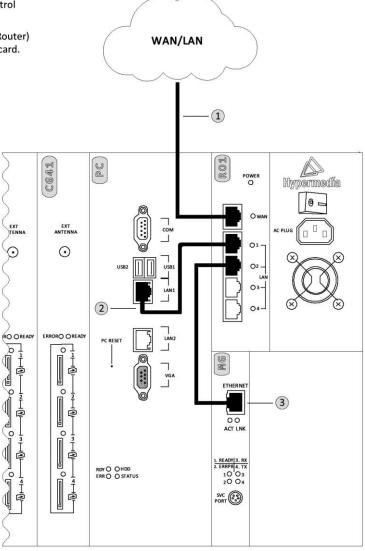


Figure 11. HG-4000 – PC + MG Connection Settings 1.6.3 Router Settings – RO 1.X

The RO 1.X board is an Ethernet Broadband Router with NAT network address translation technology. It enables the Hypermedia Gateway to connect to a public IP and to operate behind firewalls equipped with Network Address Translation (NAT).

Note: A router exists only on VoIP enabled gateway.

Cable Connections

1.6.3.1 Standard Gateway (HBN, HBS, HBD) Router Setup

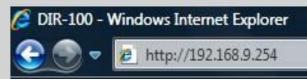
1.6.3.1.1 Assigning a Static WAN IP address (Public IP address)

Setting-up the RO 1.X board requires proper configuration of the computer network settings. The default LAN IP address of the RO 1.X is **192.168.9.254** and the default subnet mask is **255.255.255.0**. These addresses cannot be changed. If changed, connection with the Gateway will be lost.

If the TCP/IP environment of your computer has not yet been configured, refer to configuring your PCs to connect to one of the free LAN ports of the RO 1.X board. Configure your computers to automatically obtain TCP/IP settings from the DHCP server embedded in the RO 1.X.

1.6.3.1.2 Start-up and Login

 While connected to a free LAN port, activate your web browser and type in the IP address of the RO 1.X / DIR-100 into the Address field and press —Enter. The default LAN IP address of the RO 1.X / DIR-100 is 192.168.9.254



After the connection is established, the logon screen opens. To log in as an administrator, enter the username of —admin^{||} and the password —hypergateway".

LOGIN			
Log in to the router:			
	User Name	admin	
	Password	•••••	Log In

3. Click the **Log In** button. The Setup Wizard screen appears.

Hardware and Installation



4. Click on Manual Internet Connection Setup. The following screen appears.

DIR-100	SETUP	ADVANCED	MAINTENANCE	STATUS	HELP
INTERNET SETUP	INTERNET CONNECTION				Helpful Hints.
LAN SETUP	Use this section to configure				• Internet Connection: When configuring the router
TIME AND DATE	types to choose from: Static your connection method, ple			you are unsure of	to access the Internet, be sure to choose the correct
PARENTAL CONTROL	Note: If using the PPPoE opt	·		DoE client coffuero	Internet Connection
LOGOUT	on your computers.	cion, you will need	to remove or disable any PPF	VOE Client Software	Type from the drop-down menu. If you are still unsure
Internet Offline	Save Settings Don't	Save Settings			of which option to choose, please contact your Internet Service Provider(ISP).
	INTERNET CONNECTION	ТҮРЕ			• Support:
Reboot	Choose the mode to be used	d by the router to	connect to the Internet.		If you are having trouble accessing the Internet through the router, double check any settings you have
	My Internet Connection is:	Static IP	¥		entered on this page and verify them with your ISP if needed.
	STATIC IP ADDRESS IN Enter the static address infor			der (ISP).	
	IP Address:	192.168.123.33	(assigned by your ISP)		
	Subnet Mask:	255.255.255.0			
	ISP Gateway Address:	192.168.123.254			
	MAC Address:			(optional)	
	MAC Address.	Duplicate N	1AC address from the customer e	end	
	Primary DNS Address:	194.90.1.5			
	Secondary DNS Address:	0.0.0	(optional)		
	MTU:	1500			
	Save Settings Don't Sa	ve Settings			

- 5. Fill in the Public IP address information provided by your ISP.
- 6. Fill in the Subnet Mask, ISP Gateway address and Primary DNS address (optional).
- 7. Click Save Settings.

Cable Connections

1.6.3.2 Heavy-Duty Gateway (PC Based) Router Setup

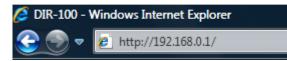
1.6.3.2.1 Assigning a Static IP address (Public IP address)

Setting-up the RO 1.X board requires proper configuration of the computer network settings. The default LAN IP address of the RO 1.X is **192.168.0.1** and the default subnet mask is **255.255.255.0**. These addresses cannot be changed. If changed, connection with Gateway will be lost and the default values are used in this manual.

If the TCP/IP environment of your computer has not yet been configured, refer to configuring your PCs to connect to one of the free LAN ports of RO 1.X board. Configure your computers to automatically obtain TCP/IP settings from the DHCP server embedded in the RO 1.X.

1.6.3.2.2 Start-up and Login

1. While connected to a free LAN port, activate your web browser and type in the IP address of the RO 1.X into the Address field and press —Enter. The default IP address of the RO 1.X is **192.168.0.1**.



After the connection is established, the logon screen appears. To log in as an administrator, enter the username —admin| and the password —hypergateway".

LOGIN			
Log in to the router:			
	User Name	admin	
	Password	•••••	Log In

3. Click the **Log In** button. The Setup Wizard screen appears.

Hardware and Installation



4. Click on Manual Internet Connection Setup. The following page appears.

DIR-100	SETUP	ADVANCED	MAINTENANCE	STATUS	HELP
INTERNET SETUP	INTERNET CONNECTION	ł			Helpful Hints.
LAN SETUP	Use this section to configure your Internet Connection type. There are several connection				 Internet Connection: When configuring the router
TIME AND DATE	types to choose from: Stati your connection method, p			If you are unsure of	to access the Internet, be
PARENTAL CONTROL		•			sure to choose the correct Internet Connection
LOGOUT	Note: If using the PPPoE of on your computers.	otion, you will need	to remove or disable any Pf	PoE client software	Type from the drop-down menu. If you are still unsure
Internet Offline	of your computers. of white Save Settings Don't Save Settings Intern Provid				
	INTERNET CONNECTION	і түре			• Support:
Reboot	Choose the mode to be use	ed by the router to	connect to the Internet.		If you are having trouble accessing the Internet through the router, double
	My Internet Connection is:	Static IP	×		check any settings you have entered on this page and verify them with your ISP if needed.
	STATIC IP ADDRESS I	NTERNET CONNE	CTION TYPE		needed.
	Enter the static address info	ormation provided by	y your Internet Service Prov	rider (ISP).	
	IP Address:	192.168.123.33	(assigned by your ISP)		
	Subnet Mask:	255.255.255.0]		
	ISP Gateway Address:	192.168.123.254	0		
	1.4			(optional)	
	MAC Address:	Duplicate MAC address from the customer end			
	Primary DNS Address:	194.90.1.5		199	
	Secondary DNS Address:	0.0.0.0	(optional)		
	MTU:	1500			
	Save Settings Don't S	ave Settings			

- 5. Fill in the Public IP address information provided by your ISP.
- 6. Fill in the Subnet Mask, ISP Gateway address and Primary DNS address (optional).
- 7. Click **Save Settings.**

Inserting the SIM Cards and Antennas

1.7 Inserting the SIM Cards and Antennas

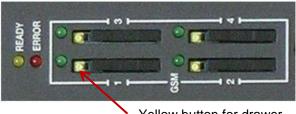
1. Insert the GSM SIM Cards. One SIM card for each cellular channel.

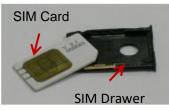
The front SIM ports are spring loaded. Slide the SIM card into the slot until it is held in place. Press the SIM card until it pops out to remove.



Figure 12. SIM Card Slots

Note: Some versions of the CG board have SIM drawers. Push the small yellow button for the SIM drawer to exit. Remove the SIM drawer, place the SIM card in the SIM drawer and replace the SIM drawer.

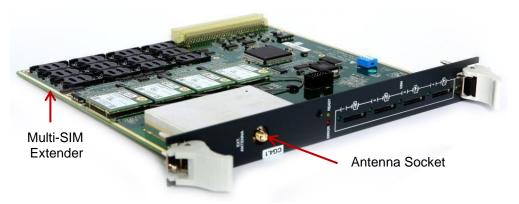


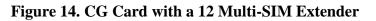


Yellow button for drawer

Figure 13. SIM Drawers

If more than four cellular channels are used, insert the additional required SIM cards into the CG board's multi-SIM extender: a. Pull out the CG board.





Hardware and Installation

b. Slide back and pull up the SIM socket.



Caution: Do not use force on the SIM sockets.

- c. Slide in the SIM cards.
- d. Lock the SIM sockets.
- 2. Install the antennas. Each cellular card requires one antenna.
 - a. Locate the antenna socket (see Figure 14).
 - b. Fasten the antenna using the SMA connector. Do not use excess force.
 - c. Tether all cables securely. Tethering helps prevents breakage of connectors and damage to cellular cards.

Caution: The antennas are for indoor use only. The antennas will be irreversibly damaged if placed outdoors.

- d. Place the antenna indoors, where the reception level is high.
- e. Optionally, to improve reception, place the magnetic back of the antenna on a metal plate larger than 20 x 20 cm.

1.7.1 Inserting the SD Card (Standard Gateway)

The Gateway saves Call Detail Records (CDRs) on a Secure Digital (SD) flash memory card that is supplied by Hypermedia. If CDRs are required, the SD card should be inserted.

Insert the SD card into the SD port of the HBN/HBS/HBD card.





Figure 15. SD Card and Port

Note: CDRs are displaced on a FIFO basis.

1.8 Powering Up and LEDs

1.8.1 Powering Up

1. Turn on the unit. The power panel is located at the top right corner of the system.

Powering Up and LEDs

PS-AC



Figure 16. Power Panel

Note: Redundant power supplies are optional. When installed, if one fails, or if the system is powered up with just one power supply, an alarm will sound. To stop the alarm, press the Alarm Reset button at the top left of the panel.

2. Check the LEDs:

- For HBN, HBS and HBD LEDs, see Table 2
- For PC Board status LEDs, see Table 3
- For MC Board Status LEDs, see Table 4
- For SU Board Status LEDs, see Table 5
- For MG Board Status LEDs, see Table 6
- For Cellular Card Green SIM LEDs, see Table 7
- For RO 1.X Board Status LEDs, see Table 8

Hardware and Installation

1.8.2 LEDs

Following are explanations of LED behavior for each of the Hypermedia Gateway's cards.

	State	Explanation
	HBN Status LEDs	
	Main ETH	
	Yellow	LAN Traffic
	Green	LAN Connection
	Media ETH	
	Yellow	LAN Traffic
	Green	LAN Connection
	Red Led - ERR	
MAIN ETH	Blinking	 Board Error: Short blinks are usually due to a configuration error A 50% duty cycle usually means a hardware failure
MEDIAETH	Yellow Led - RDY	
RESET	Off	Power is OFF
SDMMC	Short Blink	Board Ready
	Fast Blink	Maintenance mode
RDY RX	Green Led - RX	
	On	Internal Communication
SVC PORT	Yellow Led - TX	
	On	Internal Communication

Table 2. HBN LEDs

Powering Up and LEDs

	Table			
HBS and HBD PRI LEDs				
	Green Led			
г	On	PRI connection OK		
BYPASS NORM	Blinking	Powering- On		
	Yellow Led			
	On / Blinking	Connection Error		

3. PC Board status LEDs

	64-4-	El
	State	Explanation
	LAN 1	
	Yellow	LAN Traffic
B	Green	LAN Connection
	LAN 2	
	Yellow	LAN Traffic
	Green	LAN Connection
	Red Led - ERR	
	Blinking	Board Error
, L 	Yellow Led - RDY	
- <i>S</i>	Off	Power is OFF
PC RESET	Short Blink	Board Ready
RDY	Fast Blink	Maintenance mode
-	Green Led - HDD	
	On	HD Activities

_	Table	
	Yellow Led - Status	
	On	Internal communication

Hardware and Installation

-

	State	Explanation
		MC1.0 Status LEDs
	SVC ETH	
	Yellow	LAN Traffic
	Green	LAN Connection
· · · · · · · · · · · · · · · · · · ·	Media ETH	
	Yellow	LAN Traffic
	Green	LAN Connection
MC1.	Red Led - ERR	
SVC ETH	Blinking	Board Error
	Yellow Led - RDY	
MEDIA ETH	Off	Power is OFF
PRESET	Short Blink	Board Ready
	Fast Blink	Maintenance mode
	Green Led - RX	
	On	Internal Communication
	Yellow Led - TX	
SVC PORT	On	Internal Communication

4. MC Board Status LEDs

Powering Up and LEDs

	Table	
	MC1.1 and M	IC1.2 PRI LEDs
	Green Led	
гШл	On	PRI connection OK
BYPASS NORM	Blinking	Powering- On
	Yellow Led	
	On / Blinking	Connection Error

5. SU Board status LEDs

	State	Explanation
(0)	MAIN ETH	
	Yellow	LAN Traffic
INS	Green	LAN Connection
	MEDIA ETH	
	Yellow	LAN Traffic
	Green	LAN Connection

Table 6. MG1.2 / MG 2.1 Board Status LEDs

State	Explanation
ETHERNET	
ACT	LAN Traffic
Link	LAN Connection
Red Led - ERR	

	Table		
	MG 2.1	Blinking	 Board Error: Short blinks are usually due to a configuration error A 50% duty cycle usually means a hardware failure
ACT LINK		Yellow Led - RDY	
		Off	Power is OFF
1. READY 3. RX 3. ERIRON 4. FX 1. @ 3. 3	1 READY 3 RX 2 ENHOR 4 TX 1 0 3	Short Blink	Board Ready
2 0 0 4	SVC	Fast Blink	Maintenance mode
	-	Green Led - RX	
		On	Internal Communication
	and the set	Yellow Led - TX	
		On	Internal Communication

Hardware and Installation

	State	Explanation
2 2	Power Led - On	Router is powered on
Power RESET	WAN Led	Connection is established
• WAN	On	Link established
9 1 3 2- LAN	Blinking	Network activity
	Off	No link
	LAN Led 1-4	

	On	Link established
	Blinking	Network activity
	Off	No link
	Table 7. Cellular	Card LEDs Status
	State	Explanation
	Red - On	Board Error
	Yellow - Short blink	Board Ready
	SIM Cards - Green LEI	D :
	Flashing	A SIM card is not installed in this channel or the port is still being initialized.
CG4	LED is off	No reception; the channel is not registered to a cellular network.
ERROR 🔮 🔮 READY	Short blink	Stand by; the channel is registered but no call is in progress.
	Long blink	User is either dialing out or receiving a call on this channel.
	Steady on	In use. A call is in progress.

Table 8. RO 1.X Board Status LEDs

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Powering Up and LEDs

2 HMC Quick Start

Use the Hypermedia Management Console (HMC) to configure and monitor a Hypermedia Gateway from a remote location. Access to the Gateway is over TCP/IP using a standard version of Internet Explorer.

This chapter contains:

- Installation (section 2.1)
- Start-up and Initial Connection (section 2.2)
- Save, Backup and Restore (section 2.3)

HMC Quick Start Installation

2.1 Installation

To install the Hypermedia Management Console program:

- 1. Ensure that the computer matches the following minimum system requirements:
 - Windows XP, Vista, Windows 7 or 8
 - Internet Explorer 7 or above
- 2. Ensure that you have access to the installation file. It is included with the Hypermedia Gateway CD-ROM.



Figure 17. Hypermedia Gateway CD-ROM

The installation file-name begins with the letters **HMC** and ends with the extension **.exe**. The specific name depends on the type of installation.

3. Double-click the file **HMCxxx-xxx.exe** file. The Setup program starts.

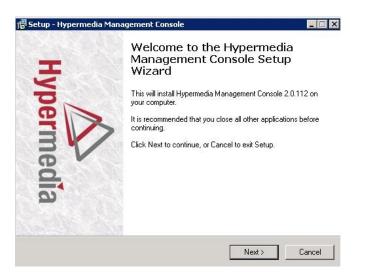


Figure 18. Setup Welcome Screen

- 4. Click **Next**. The License Agreement is displayed.
- 5. To continue, you must accept the terms of the agreement. Click **I accept the agreement** and click **Next**. The Select Destination Location window is displayed.
- 6. Define the location where the program files will be installed. The default location is "C:\ProgramFiles\Hypermedia". Click **Next**. The Select Start Menu Folder is displayed.
- 7. Define the name of the program group that will be added to the Start Menu. The default name is Hypermedia. Click **Next**. The Additional Tasks window is displayed.
- 8. Optionally, select the checkbox to create a Desktop shortcut. Click **Next**. The Ready to Install window is displayed.

etup - Hypermedia Management Console	
Ready to Install Setup is now ready to begin installing Hypermedia Management Console on your computer.	
Click Install to continue with the installation, or click Back if you want to review o change any settings.	r
Destination location: C:\Program Files\Hypermedia	-
Start Menu folder: Hypermedia	
T	T
< Back Install	Cancel

Figure 19. Setup Ready to Install Screen

- 9. Click **Install**. The installation process begins. A progress bar reports on the progress of the installation.
- 10. After the installation is complete, click **Finish**. The installation program creates a program group in the Start menu and, optionally, a Desktop shortcut.

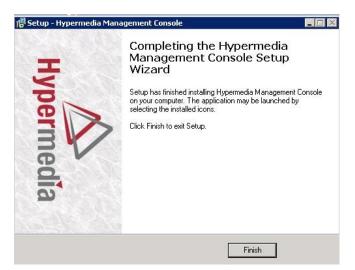


Figure 20. Setup Finish Screen

HMC Quick Start Start-up and Initial Connection

2.2 Start-up and Initial Connection

To run the Hypermedia Management Console:

- 1. Click the Windows **Start** button > **Programs** > **Hypermedia**. The Hypermedia program group expands.
- 2. Click **Hypermedia Management Console**. The program opens in the default browser.

To help protect your security, Internet Explorer has re	stricted this webpage from running scripts or ActiveX controls that could access your computer. Click here for options
Ise port: 8878 Connect	
	Hypermedia Systems Ltd.
	Systems Ltd.
	Connection state:

Figure 20. HMC Connection Screen

3. Click the warning bar at the top of the screen and, from the dropdown menu, click **Allow Blocked Content**. Confirm your choice by clicking **Yes** at the confirmation message.

Use port: 8878 Connect HGS Server at: 2.2.2.2	
🔮 HyperGateway Console 🗄 🦳 Configure 🖻 🚰 Monitor	Hypermedia Systems Ltd.
	Taking Voice to the Next Level HMC version 1.45.1919
	Connection state: Not Connected:

Figure 21. HMC Connection Screen

Note: To avoid recurring displays of the warning bar, from the menu bar click Tools > Internet Options > Advanced > Allow active content to run in files on My Computer.

- 4. Enter the IP address:
 - a. Expand the **Configure** branch.
 - b. Expand the **Server Settings** branch.
 - c. Select IP address. The Server Address screen is displayed.
 - d. Enter the IP address and click Apply Settings

Hypermedia	Hypermedia Server Address
Use port: 8878 Connect	Domain or IP Address XXXX
HyperGateway Console	Apply Settings
E Configure E Cellular Cards	Connection state: Not Connected
Bri Cards	
E G Server Settings	
IP Address	
Diagnostics	
🗄 🧰 Manage	

Figure 22. HMC Server Address Screen



Note: If the Gateway is located behind a firewall, enable traffic on TCP ports 8878, 8879, 80 and 22. Contact the network administrator for details.

Note: The IP address setting above does not affect the gateway's address but only defines the IP address to which HMC will attempt to connect.

5. Either press **F5** or click the browser's **Refresh button**. The authorization screen is displayed.

Vise port 18878 Connect Server Address: XXXX	Hypermedia
Configure Collular Cards Collular C	Authenticating HyperMedia Management Console Authorization Required Password: Submit

Figure 23. HMC Login Authorization Request



Note: The default password is admin.

HMC Quick Start

Start-up and Initial Connection

6. Enter the password and click **Submit**. A confirmation message is displayed which indicates that you have successfully connected to the Hypermedia Gateway. The Connection State screen is displayed.

HMC	2.0.176	
Model	PC SL	
Media Card	AC	
HGS	2.0.3826	ok
SGW	2.2.95	ok
HyperConnect	2.0.28	ok
HyperGuard	1.0.113	ok
HyperID	1.1.18	ok
LNP	2.0.100	ok
SMS Campaigner	2.0.220	ok
SMS Pro Server	3.0.278	ok

Figure 24. HMC Connection State Display

A list of all services will be displayed, including their versions and current activation/installation state.

2.3 Save, Backup and Restore

2.3.1 Save All

Use the configuration branch to permanently save all the configuration settings in the HyperGateway.

Save All Settings

Store settings on cards Permanently save all the configuration settings in the HyperGateway. This process might take up to 60 seconds.	Save All Settings
up to ou seconds.	

Figure 25. Save All Settings configuration branch

2.3.2 Save All Settings on Cards

Use this option to permanently save all the configuration settings in the Hypermedia Gateway. This process might take up to 60 seconds.

2.3.3 Backup/Restore

Use this option to download the entire configuration of the gateway to your PC. The downloaded backup file can then be uploaded by preforming a system restore.

Backup		
Save current configuration t	o backup file	Create Backup
Last backup: Monday, Feb	ruary 25, 2013 11:28:11 PM	Download Backup
Restore		
Never restored		
Restore configuration from	backup file	
	Browse Backing up	Upload and Restor
	Backing up	dress LCR
C Quick Start	Backing up Backing up LCR card at ad	dress LCR
C Quick Start e, Backup and Restor	Backing up Backing up LCR card at ad Figure 26. Backup and D	dress LCR

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This chapter contains:

• Cellular Card and System Terminology (section 3.1)

)

)

- Volume Settings (section 3.2)
- Media Connections (section 3.3)
- PIN Codes (section 3.4)
- MSN Values (section 3.5)
- Reset (section 3.6
- Information Screens (section 3.7)
- Locks (section 3.8
- SIM Select (section 3.9)
- SIM Counters (section 3.10)
- SIM Auto Manage (section 3.11)
- Call Counter Steps (section 3.12
- CLI Blocking (section 3.13)
- Call Limits (section 3.14)
- Cell Selection (section 3.15)
- Settings (section 3.16)
- Network Parameters (section 3.17)
- USSD SIM Balance (section 3.18
- Monitoring Cellular Cards (section 3.19)

Cellular Card and System Terminology

3.1 Cellular Card and System Terminology

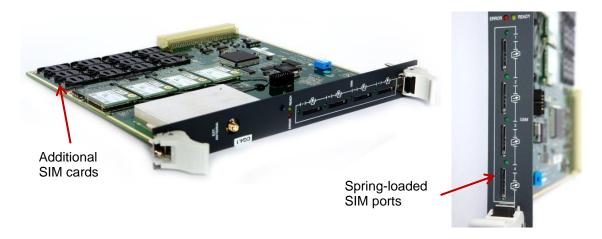
A cellular card has 4 modules, each of which can have 1 to 4 SIM holders. Therefore, each card can hold up to 16 SIM cards. The Hypermedia Gateway can include several cards.

)

)

The first SIM cards of each module are loaded into the spring-loaded SIM port from the front of the Cellular Card.

3



Some parameters can be applied either to specific SIM cards, or to specific modules, or to the entire cellular card, or to all the cards in the system.

3.2 Volume Settings

Use Volume Settings to adjust a cellular module's audio level. This can be done for each of the cellular modules on a Hypermedia Gateway.

To adjust the audio level:

1. From the Cellular Cards branch of the HMC navigation pane, click the **Volume Settings** sub-branch. The Volume Settings screen is displayed.



Note: Hypermedia recommends not adjusting these

Cellula	ar Card \	/olume Settin	gs	
Select c	ellular card			
Slot	€1 C	2		
Selected	l card at slo	t 1 (GSM)		
Modul	e 1:			
In			5	
Out	•	•	5	Echo Canceller 🗖
Modul	e 2:			
In	•		5	
Out	•	•	5	Echo Canceller 🗆
Modul	e 3:		73	
In	•		5	
Out	•		5	Echo Canceller 🗖
Modul	e 4:			
In			5	Echo Canceller 🗖
Out		-	5	Echo Canceller

Figure 27. HMC Volume Settings Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The Volume Settings screen of that cellular card is displayed.
- 3. To increase the volume, move the slider to the right. Each module includes two sliders: **In**

—In $\|$ adjusts the volume heard by the party on the PBX (or local network) side of the conversation.

Out

—Outl adjusts the volume heard by the remote party.

Note: Changes to volume are saved automatically. The message —New volumes set successfullyll is displayed.

- 4. Select or clear the Echo Canceller checkbox. There are several causes for the echo effect. Selecting Echo Canceller minimizes or cancels the echo effect.
- 5. After selecting the Echo Canceller mode (from the HMC navigation pane), click the **Save/Load** branch and then click **Save All Settings**.

Media Connections

3.3 Media Connections

Use the Media Connection screen to configure the connections from the channels of a Cellular card to other cards and channels in the system, including PRI and VoIP. Connections can be either static or dynamic, as in the case of LCR.

For example, you can assign each cellular channel to a specific E1 channel. In this case, every time there is an incoming call from a specific E1 channel, it will be routed to the configured channel on the cellular card and vice versa.



Note: The media matrix can be configured in any combination. Routing can be assigned between any cellular channel and any other channel in the system, including other cellular channels.

3.3.1 Associating/Linking Cellular Channels

To associate a cellular channel with another media channel:

1. From the Cellular Cards branch of the HMC navigation pane, click the **Media Connections** sub-branch. The Media Matrix is displayed.

Cellular Cards Media Matrix

Slot	0 3
Gelected (card at slot 3 (GSM) Target Link (Select to change) Unlink All
	(Sciect to change) Similar
1	CG4.0(3) Channel 1
1 2	· · · · · ·
1 2 3	CG4.0(3) Channel 1

Figure 28. Cellular Media Matrix screen

- 2. If more than one slot is displayed, select a specific cellular card. The Media Matrix of that cellular card is displayed.
- 3. Click within a channel row. The row turns yellow.
- 4. Click **Edit**. The row becomes configurable.

Cellular Cards Media Matrix	Cellular Cards Media Matrix
Select cellular card Slot	Select cellular card Slot
Channel Target Link Edit Unlink All	Channel Target Link Save Auto Link Cancel
1 -	1 E1.0(12) - Channel 1 -
	2 -
2 -	2 -
2 - 3 -	3 -

Figure 21. Media Matrix Row when Configurable

5. From the first dropdown list, allocate this channel to a card by selecting the card.

Note: If all of the card's channels are already allocated, the message —Fully allocatedI appears.

6. From the second dropdown list, assign this channel to a specific channel on the target card.

1 E1.0(13) ▼ 0 2 E1.0(13) Chann 3 E1.0(13) Chann 4 E1.0(13) Chann 3 Channel 1 1 1 E1.0(13) ▼ 0hann 2 MG.0(11) nnel 1 1 1 1 2 1 2 1 2 1 3 1 4 1 4 1 4 1 1 1 2 1 1	Channel	Target Link Save Cancel	Channel	Target Link				_
2 E1.0(13) Chann 2 MG.0(11) nel 1 E1.0(13) ▼ Channel 1 3 E1.0(13) Chann 2 MG.0(11) nel 1 E1.0(13) ▼ Channel 1 4 E1.0(13) Chann 3 CG4.0(2) nel 3 E1.0(13) Channel 11 4 E1.0(13) Chann 3 CG4.0(2) nnel 3 E1.0(13) Channel 11	1		1	-			Target Link <u>Save</u> <u>Cancel</u>	
4 E1.0(13) Chann 3 CG4.0(1) hnel 2 E1.0(13) CharChennel 11 CG4.0(2) hnel 3 E1.0(13) CharChennel 11 CG4.0(3) hnel 3 E1.0(13) CharChennel 12	1.775		2	MG.0(11)	-	1		
CG4.0(3) 4 E1.0(13) Channel 12	1 Next1		3	CG4.0(2)	00000000	-	E1.0(13) CharChannel 1 E1.0(13) CharChannel 1	1
Channel 14			-		iner	-	E1.0(13) Char Channel 1	13 📙

Figure 22. Assigning a Target Link

- 7. Click **Save**. The configuration dropdown boxes are hidden.
- 8. Optionally, repeat the process for additional channels and other media types.
- 9. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

Media Connections

3.3.2 Auto Linking

Enables associating all channels of one media card to another media card.

To create an auto-link:

1. From the Cellular Cards branch of the HMC navigation pane, click **the Media Connections** sub-branch. The Media Matrix is displayed.

Cellular	Cards Me	edia Matrix		Cellular	Cards Media Matrix
Select cell	ular card			Select cel	lular card
Slot (3 •4			Slot (○3 ●4
Selected c	ard at slot 4 (GSM)		Selected of	card at slot 4 (GSM)
Channel	Target Link Save Auto	Link Cancel		Channel	Target Link Save Auto Link Cancel
			21 C 1 C 1	- 20	
1	LCR ¥	Resource 1	~	1	LCR Resource 1
1	LCR 🗸	Resource 1	~	1	LCR Resource 1 LCR Resource 2
1 2 3	LCR 🗸	Resource 1	~	1 2 3	

Figure 23. Auto Media connecting

- 2. If more than one slot is displayed, select a specific cellular card. The Media Matrix of that cellular card is displayed.
- 3. Click within a channel row. The row turns yellow.
- 4. Click Auto Link.
- 5. All channels can be associated of one media card to another media card: Card X channel 1 to Card Y channel 1, Card X channel 2 to Card Y channel 2 etc.

3.3.3 Unlinking Cellular Allocations

To break an allocation:

- 1. From the Cellular Card branch of the HMC navigation pane, click the **Media Connections** sub-branch. The Media Matrix is displayed.
- 2. Click within a channel row. The row turns yellow.

Channel	Target Link Edit Unlink Unlink All	
1	CG4.0(3) Channel 1	
2	CG4.0(3) Channel 2	
3	CG4.0(3) Channel 3	
4	CG4.0(3) Channel 4	

Figure 24. Breaking a Target Link

- 3. Click Unlink.
- 4. Click Apply Settings and wait for Configuration Saved to be displayed.

3.4 PIN Codes

Use the PIN Codes screen to configure the PIN code that the gateway uses when a SIM card with an active PIN is inserted. Consult your cellular provider for more information regarding the PIN code.

To enter a SIM card's PIN code:

1. From the Cellular Cards branch of the HMC navigation pane, click the **PIN Codes** sub-branch. The PIN Codes screen is displayed.

elect c	ellular	card	
Slot	• 1	C 2	
elected	d card	at slot 1 (GS	SM)
Module	e 1		
Module Module			
	e 2		

Figure 25. HMC Cellular PIN Codes Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The PIN Codes screen of that cellular card is displayed.
- 3. Enter the PIN code into the associated Module's field.
- 4. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

MSN Values

3.5 MSN Values

Use Multiple Subscriber Number (MSN) values to route incoming calls to a specific extension on the PBX. You can assign a different extension for each channel or route all channels to the same extension.



Note: Hypermedia's use of MSN differs from the traditional ISDN use. MSN is an incoming call routing method in which a group of phone numbers is assigned to a particular PRI ISDN line by the telephone company.

To route incoming calls to a specific extension on the PBX:

1. From the Cellular Cards branch of the HMC navigation pane, click the **MSN Values** sub-branch. The MSN Values screen is displayed.

Select cellular card	l
Slot @1 C	2
Selected card at sl	ot 1 (GSM)
Module 1	Auto MSN
Module 1	Auto MSN

Figure 26. Cellular MSN Values

- 2. If more than one slot is displayed, select a specific Cellular Card. The MSN Values screen of that cellular card is displayed.
- 3. Enter a PBX extension number.
- 4. Select or clear the **Auto MSN** checkbox. When selected, if a local user —All called a remote user —Bl through a cellular module and later —Bl calls the cellular module's number, the system will automatically route the incoming call to —All. The system remembers that —All was the last local user to call —Bl through that cellular module.
- 5. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

3.6 Reset

Use the Cellular Card Reset screen to reset either the entire cellular card or a specific cellular module.

To reset a cellular card or module:

1. From the Cellular Cards branch of the HMC navigation pane, click the **Reset** sub-branch. The Reset screen is displayed.

elect cellular card	
Slot €1 C	2
elected card at slo	ot 1 (GS
-	
Reset Card	Res
Reset module 1	Res
	Res
Reset module 2	
Reset module 2 Reset module 3	Res

Figure 27. Cellular Card Reset screen

2. If more than one slot is displayed, select a specific Cellular Card. The Reset screen of that cellular card is displayed.

Caution: There is no confirmation message. The Reset command is sent as soon as the reset button is clicked.

3. Click **Reset**. The screen confirms that the Reset command has been sent.

Cellular Card	Reset
Select cellular card	1
Slot © 1 C	2
Selected card at sl	ot 1 (GSM)
Reset Card	Reset
Reset module 1	Reset sent.
Reset module 2	Reset sent.
Reset module 3	Reset
Reset module 4	Reset

Figure 28. Reset Screen After Sending the Reset Command

Information Screens

3.7 Information Screens

Several of the HMC screens display information.

Module Info

Use the Module Info screen to review information about the modules of a cellular card.

1. From the Cellular Cards branch of the HMC navigation pane, click the **Module Info** sub-branch. The Module Info screen is displayed.

elect cellular card			
Slot @1 C2			
elected card at slot 1 (GS	SIM)		
Module 1			
GSM Engine Type:	Q24CL002		
Module 2			
GSM Engine Type:	Q24CL002		
Module 3			
GSM Engine Type:	Q24CL002		
Module 4			
GSM Engine Type:	Q24CL002		

Figure 29. HMC Module Info Screen

2. If more than one slot is displayed, select a specific Cellular Card. The Module Info screen of that cellular card is displayed

3.7.2 Serial Numbers

Use the Serial Numbers screen to view the GSM Modules International Mobile Equipment Identity (IMEI) and the SIMs International Mobile Subscriber Identity (IMSI) and Integrated Circuit Card Identifier (ICCID) values.

1. From the Cellular Cards branch of the HMC navigation pane, click the **Serial Numbers** sub-branch. The Serial Numbers screen is displayed.

elect of	ellular	card								
Slot	() 1	© 2	© 3	© 4	O 5	06	© 7	08		
			(GSM)							
			(0011)							
Modul	-	Modu	ule IME		SIM IN			SIM CO		
Modul Modul	-	Modu	. ,			<mark>/ISI</mark> 012558	7300		D 01299469830	078
	e 1	Modu 3538	ule IME	18969	72431			895531		
Modul	e 1 e 2	Modu 3538 3538	ule IME	18969 18928	72431 72431	012558	8445	895531 895531	01299469830	529

Figure 30. HMC Serial Numbers Screen

2. If more than one slot is displayed, select a specific Cellular Card.

3.8 Locks

Use Locks to restrict access to specific GSM operators and/or a specific SIM card. When a lock is defined, the Gateway will only register to an operator network or allow a SIM card that matches the Lock number.

In addition, use Locks to prevent roaming handover in cases where the Gateway is located close to county or country borders.

To define a Lock number:

- 1. Ensure that:
 - you have obtained the codes from the cellular operator
 - the cellular modules support SIM locks
- 2. From the Cellular Cards branch of the HMC navigation pane, click the **Locks** sub-branch. The Locks screen is displayed.

elect c	ellular	card	-	
Slot	• 1	C 2		
electer	d card a	at slot	1 (GSN	1)
IM Lo	ck			
Modul	e 1			
Modul	e 2			
Modul	e 3			
Modul	e 4		1	
perate	or Lock	(
Modul	e 1			
Modul	e 2		1	
Modul	e 3		1	
Modul	e 4			

Figure 31. HMC Cellular Locks Screen

- 3. If more than one slot is displayed, select a specific Cellular Card. The Locks screen of that cellular card is displayed.
- 4. Enter:

SIM Lock

Use SIM Locks to avoid using SIM cards other than those whose Mobile Network Code (MNC) and Mobile Country Code (MCC) values have been entered.

Operator Lock

Use Operator Locks to avoid registration to any network other than the one whose MNC and MCC values have been entered.

5. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

SIM Select

3.9 SIM Select

Use the SIM Select screen to manually select and activate a SIM card for current use. SIM Select should not be used when SIM Auto-Manage is active (see section 3.11 , SIM Auto Manage). The definition can be applied just to the module, to all 4 modules on the card, or to all the cellular cards in the system (see section 3.1 , Cellular Card and System Terminology).

To define which of the module's SIM cards is associated with the SIM Auto Manage feature:

1. From the Cellular Cards branch of the HMC navigation pane, click the **SIM Select** sub-branch. The SIM Select screen is displayed.

Multi-SIM Configuration

	126-515					
Select cellular	card					
Slot © 1	C 2					
Selected card	at alot 1 /C	(M2				
selected card	at slot i (C	55101)				
Module S	ettings	CEr	ntire Ca	rd	CE	ntire System
Module 1	⊙ SIN	11 O	SIM2	С	SIM3	C SIM4
Module 2	• SIN	11 C	SIM2	С	SIM3	O SIM4
	19780 545550	357 1213	420200	~		C
Module 3	SIN	11 O	SIM2	0	SIM3	C SIM4

Figure 32. HMC SIM Select Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The SIM Select screen of that cellular card is displayed.
- 3. Select an application option.

Module Settings

Applies the SIM configuration to the specific module.

Entire Card

Applies the SIM configuration to all the modules on the card.

Multi-SIM Configuration

Slot © 1 C 2 Selected card at slot 1 (GSM)	Select cellular c	ard		
	Slot @ 1	C 2		
C Module Settings C Entire Card C Entire System	selected card a	t slot 1 (C	SSM)	

Entire System

Applies the SIM configuration to all the cards in the system.

Multi-SIM Configuration

Select cellular	card						
Slot @ 1	C 2						
Selected card	at slot 1 (0	GSM)					
Selected card			ntire Car	d	€E	ntire Syst	em

4. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

SIM Counters

3.10 SIM Counters

Use the SIM Counter screen to review the actual usage time of each SIM card and to set counter steps per module.

1. From the Cellular Cards branch of the HMC navigation pane, click the **SIM Counters** sub-branch. The SIM Counters screen is displayed.

Cellular Time Count

Select cellul	lar card				
Slot @	1 02				
Selected ca	rd at slot 1 (GSM)				
Module 1	000:00:04 Reset	000:00:00 Reset	000:00:00 Reset	000:00:00 Reset	Reset All
Module 2	000:01:23 Reset	000:00:00 Reset	000:00:00 Reset	000:00:00 Reset	Reset All
Module 3	000:00:04 Reset	000:00:00 Reset	000:00:00 Reset	000:00:00 Reset	Reset All
Module 4	000:00:51 Reset	000:00:00 Reset	000:00:00 Reset	000:00:00 Reset	Reset All
Refresh					

Figure 33. HMC SIM Counters Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The SIM Counters screen of that cellular card is displayed.
- 3. Optionally, select from the following controls:

Reset

Resets the counter for the specific step.

Reset All

Resets all the counters in that module.

Refresh

Updates the information.

- 4. Optionally, click **Set Counter Steps per Module** to set the exact period of time per counting step. The Cellular Card Call Counters Steps screen is displayed (see section 3. 12, Call Counter Steps).
- **Note:** Setting Counter Steps is important when using the SIM Auto Manage with prepaid SIM cards.

Set Counter Steps per Module

3.11 SIM Auto Manage

Use the SIM Auto Manage screen to configure the Gateway to automatically alternate and/or discontinue use of SIM cards. This enables load-balancing between a GSM module's SIM cards based on preconfigured switched time cycle. To enable automatic management of SIM cards:

1. From the Cellular Cards branch of the HMC navigation pane, click the **SIM Auto Manage** sub-branch. The SIM Auto Manage screen is displayed.

Automatic SIM Management

Select	cellular	card
Slot	• 1	C 2

Selected card at slot 1 (GSM)

Enable Auto Switch	SIM1	SIM2	SIM3	SIM4	Minutes until SIM is switched	Minutes until SIM is blocked
Module 1	V	•			1000	4000
Module 2	•	•			1000	4000
Module 3			•	•	1000	4000
Module 4	Γ	Γ	~		1000	4000

Figure 34. HMC SIM Auto Manage Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The SIM Auto Manage screen of that cellular card is displayed.
- 3. Select the checkbox beside a module number in the Enable Auto Switch column. The SIM column checkboxes and Minutes column fields are displayed.
- 4. To assign a SIM card to a module, select the checkboxes in the SIM column.
- **Note:** In Figure 34, each module has two SIM cards assigned to it. The Gateway will allow a SIM card to function for 1000 minutes and then switch to the second SIM card. Once a SIM card has functioned for 4000 minutes—that is, 4 cycles—it is blocked. It can only be unblocked manually.
- 5. In the **Minutes until SIM is switched** field, enter an amount of time measured in minutes. This is the how long each SIM card will be used until the Gateway automatically switches to the next SIM card assigned to that module.
- 6. In the **Minutes until SIM is blocked** field, enter an amount of time measured in minutes. This is the total amount of time a SIM card is used before the Gateway discontinues use of it.
- 7. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

Call Counter Steps

3.12 Call Counter Steps

Steps, Time Periods and Repetitions work as follows: If Time Period = 60 seconds, Repetition = 3 and the caller speaks for 10 seconds, the charge will be for the Time Period = 60 seconds. If the caller speaks for 110 seconds, the charge will be for Time Period = 120 seconds. This step charging policy expires after 180 seconds, which is the Time Period (= 60 seconds) times the Repetition (= 3). Then, the next step is applied. The final step will always be 1 x Unlimited.

Select cellular card								
Slot 🤨	C 2							
Selected care	d at slot 1 (GSM)							
Enal	oled 🔽	Enab	led 🔽	Disab	oled	Disal	oled 🔽	
Min	Minutes V		Seconds 💌		Seconds 🔻		Seconds V	
Mod	ule1 🖽 🖂	Module2 🗉 🖃		Module3 🗉 🖃		Module4 🗉 🗔		
Time Perio	d Repetitions	Time Perio	d Repetitions	Time Perio	d Repetitions	Time Perio	d Repetitions	
3 💌	7	30 💌	0	1	Unlimited	1 💌	Unlimited	
4 💌	7	60 💌	া					
5 💌	7	1 💌	Unlimited					
10 -	7							
1	Unlimited							

Figure 35. HMC Cellular Call Counter Steps Screen To

configure Counters Steps:

- 1. If more than one slot is displayed, select a specific Cellular Card. The SIM Counters screen of that cellular card is displayed.
- 2. Select a checkbox to enable the step. When enabled, the area is displayed in the color green.
- 3. From the upper dropdown menu, select either Seconds or Minutes. This determines the duration of time indicated by the numbers in the Time Period column.
- 4. Increase the number of steps by clicking the plus sign beside the module number.
- 5. For each step, define the Time Period—that is, how long—the step is applied.
- 6. For each step, define the number of repetitions.
- 7. Repeat the procedure for additional modules.
- 8. Click Save Settings and wait for Configuration Saved to be displayed.

3.13 CLI Blocking

Use the Calling Line Identification (CLI) Blocking screen to hide the caller's phone number from the person receiving the call.

Note: Some operators do not allow CLI Blocking. In some cases, if the CLI is blocked, the call does not go through. Check the operator's policy. To block CLI:

1. From the Cellular Cards branch of the HMC navigation pane, click the **CLI Blocking** sub-branch. The CLI Blocking screen is displayed.

Select cellular	card	
Slot © 1	C 2	
Selected card	at slot 1 (GSM)	
Card: Bloc	E C	
Unbl		
Second States		
Second States		Block not enforced
Unbl	ock	
Unbl Module 1	C Block enforced	 Block not enforced Block not enforced C Block not enforced

Figure 36. HMC Cellular CLI Blocking Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The CLI Blocking screen of that cellular card is displayed.
- 3. Use one of the two options:

Card

Block

Click **Block** to block CLI for all 4 of a card's SIM modules.

Unblock

Click $\mbox{Unblock}$ to allow CLI for all 4 of a card's SIM modules. Module

- Block enforced
 Select Block enforced to block CLI for a specific SIM card.
- Block not enforced
 Select Block not enforced to allow CLI for a specific SIM card.
- 4. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

Call Limits

3.14 Call Limits

Use the Call Limits screen to configure various call-related timing parameters.

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To set Call Limits:

1. From the Cellular Cards branch of the HMC navigation pane, click the **Call** Limits sub-branch. The Call Limits the screen is displayed.

Cellular Card Call Limits	
Select cellular card	
Slot © 1 C 2	
Selected card at slot 1 (GSM)	
Set the limit for an outgoing cellular call to be answered: Enabled 🔽 15 Seconds	
Set the maximum length of an outgoing call: Enabled 🔽 5 Minutes	
Round the call length up to the maximum length (above) even if shorter: Enabled (This feature cannot be used together with Call Counter Steps)	

Figure 37. HMC Cellular Call Limits Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The Call Limits screen of that cellular card is displayed.
- 3. Select or clear the following limits:

Set the limit for an outgoing cellular call to be answered

When enabled, enter a time duration (measured in seconds) that the gateway will wait for the call to be answered before ending the call.

Set the maximum length of an outgoing call

When enabled, enter a time duration (measured in seconds) for the maximum permitted length of an outgoing phone call through any of the card's cellular channels. Calls are disconnected at the beginning of the last minute, rather than its end.

Round the call length up to the maximum length

When enabled, a call counter for a specific cellular channel will be rounded up to reflect the maximum length of an outgoing call through that channel (defined above) when such a call ends; even when the conversation is shorter than the maximum length

Note: Round the call up to the maximum length cannot be used with SIM Counters steps (see section 3.12 , Call Counter Steps).

4. Click Apply Settings and wait for Configuration Saved to be displayed.

3.15 Cell Selection

Use the Cell Selection screen to manually camp on a cellular site. Most often, a user selects the strongest cell site. However, if the Base Transceiver Station (BTS) or tower is locked, this service cannot be applied.

To camp on a site:

1. From the Cellular Cards branch of the HMC navigation pane, click the **Cell Selection** sub-branch. The Cell Selection screen is displayed.

Select cellu	lar card		
Slot @	1 02		
Selected ca Select mode	rd at slot 1 (GSM) ule 1		
		CellID: 8220 BCCH: 86 <u>Camp</u> -76 dBm	
	CellID:0818 BCCH:77 <u>Camp</u> -81 dBm		CellID:D0EA BCCH:71 <u>Camp</u> -82 dBm
		CellID:8221 BCCH:82 <u>Camp</u> -69 dBm	ι¢
	CellID: 7637 BCCH: 61 <u>Camp</u> -95 dBm		CellID:0545 BCCH:64 <u>Camp</u> -95 dBm
		CellID:D53F BCCH:66 <u>Camp</u> -97 dBm	

Figure 38. HMC Cellular Cell Selection Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The Cell Selection screen of that cellular card is displayed.
- 3. From the Select module dropdown box, select a module. This is the module that the Camp selection will be applied to.
- 4. In one of the CellID boxes, click **Camp**. The screen indicates Camp Cell and new controls are displayed at the top of the screen.

Cell Selection

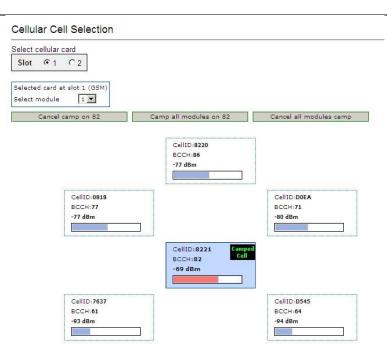


Figure 39. HMC Cellular Cell Selection with Options Screen

5. Optionally, to camp all the card's modules on the same cell, click **Camp all modules on**.

3.16 Settings

Use the Settings screen to enable and disable advanced parameters. For assistance with these, contact Technical Support.

1. From the Cellular Cards branch of the HMC navigation pane, click the **Settings** sub-branch. The Cellular Card Settings screen is displayed.

10 M	Image: Classical control
ected	I card at slot 1 (GSM)
estal	d an immediate dummy ALERTING message upon blishment of an outgoing call through cellular: led □
outg indic Enab	before sending a dummy ALERTING message on an oing call through cellular (unless such a real message is cated by the network before that time): led D Seconds evant if immediate dummy ALERTING above is enabled)
calls alert	d a fixed cause code upon termination of all outgoing through cellular (assuming these have at least led to ing, if not answering, on the remote side): led 0 (decimal)
	e code sent by the cellular card on failed outgoing calls an unknown reason): (decimal)
	GSM 03.38 Hexadecimal encoding on SMS sending and iving:

Figure 40. HMC Cellular Card Settings Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The Cellular Card Settings screen of that cellular card is displayed.
- 3. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

Network Parameters

3.17 Network Parameters

Use the Network Parameters screen to define the bandwidth used by a carrier.



Note: Do not change the Voice Rate Selection unless instructed to do so by Technical Support.

 From the Cellular Cards branch of the HMC navigation pane, click the Network Parameters sub-branch. The Cellular Card Network Parameters screen is displayed.

Cellular Card Network Parameters

Slot 💿	3 94		
Selected car	d at slot 4 (GSM)	
Module	Settings	C Entire Card	C Entire System
Band Selec	tion 900E / 180	00 MHz 🔻	
Band Selec Module 1 Module 2			
Module 1	900E / 180	00 MHz 🔻	

Figure 41. HMC Cellular Card Network Parameters Screen

- 2. If more than one slot is displayed, select a specific Cellular Card. The Network Parameters screen of that cellular card is displayed.
- 3. From the dropdown menu, select the required GSM bands for the cellular network to which you wish to connect. For a table of GSM bands per mobile carrier and per country, see <u>en.wikipedia.org/wiki/Mobile_country_code</u>.
- 4. From the HMC navigation pane, click the **Save/Load** branch and then click **Save All Settings**.

Configuring a Cellular Card

3.18 USSD SIM Balance

Use the USSD SIM Balance screen to check the balance remaining on a prepaid SIM card and to add value to a SIM card (recharge/top-up).

- 1. Ensure that your Service Provider has given you a USSD string for checking balance and a second string for adding value (recharging) the SIM card.
- 2. From the Cellular Cards branch of the HMC navigation pane, click the **USSD SIM Balance** sub-branch.

USSD SIM Balance Balance checking USSD string: Recharging USSD string: Check All Check Balanc Recharge Balance USSD Reply Reply Date Ch. Г Γ 0 0 Г 0 Г 0 N 0

Figure 42. HMC Cellular USSD SIM Balance Screen

- 3. Enter the Balance checking USSD string.
- 4. Enter the **Recharging USSD string**.
- 5. Select or clear the **Check All** checkbox. When selected, the Hypermedia Management Console will check the balance of all the SIM cards.
- 6. Click (Check Balance). The balance is displayed in the USSD Reply column.
- 7. Optionally, recharge the SIM card:
 - a. Ensure that you have a recharge string. Often, the string is displayed on recharge cards after a removing a layer of ink that hides the string.
 - b. Enter the string into the Recharge Balance field.
 - i. Click the 🔍 (Recharge Balance) button.
- 8. Optionally, click the (Excel) icon to save the results as an Excel file.

Monitoring Cellular Cards

3.19 Monitoring Cellular Cards

To monitor the status of cellular cards, open Hypermedia Management Console branch Monitor > Cellular. There are three views.

3.19.1 All Cells

To view information about all the cellular modules on all cards, expand the Monitor > Cellular Cards sub-branch and select **All Cells**. The Cellular Cards Reception screen is displayed.

Module	Туре	Operator	RX Level	RX BER	Status
1/1	GSM	orange (8221)	-67 dBm	<0.2%	ldle
1/2	GSM	orange (8221)	-65 dBm	<0.2%	Idle
1/3	GSM	orange (8221)	-67 dBm	<0.2%	Idle
1/4	GSM		Unknown	Unavailable	Missing SIM card
2/1	GSM		Unknown	Unavailable	No Signal
2/2	GSM		Unknown	Unavailable	Missing SIM card
2/3	GSM		Unknown	Unavailable	Faulty/missing
2/4	GSM		Unknown	Unavailable	Faulty/missing

Cellular Card Receptions

Figure 43. Cellular Cards Reception Screen The

screen displays the following information:

Module

This indicates the card and the SIM slot number.

Туре

The module can support GSM, CDMA or UTMS.

Operator

This is the cellular network associated with the SIM card and the Cell ID.

RX Level

This indicates the received power level in dBm. The value can be between -51 dBm and -110 dBm.

RX BER

Bit Error Rate (BER) is a calculated figure for the signal quality received from the base. It is an indication of the number of errors detected in the signal received by the cellular channel, graded into quality ratings according to the percentage of errors in the data. Typical values for BER are between less than 0.2% and 6.4%. BER of more than 6.4 will result in calls being disconnected as well as —noisyl calls. If this occurs, find a better location for the antenna or check the antenna connections.

Status

This displays the status of the specific module.

Configuring a Cellular Card

3.19.2 Reception

To view information about the SIM slots on a specific cellular module, especially the reception level and the BER level:

- 1. Expand the Monitor > Cellular Cards sub-branch and select **Reception**.
- 2. Select a specific slot. The Cellular Cards Reception screen for that card is displayed.

elect cellular	card	
Slot © 1	C 2	
elected card	at slot 1 (GSM)	
Module 1:		
Operator	orange (Cell ID: 8221)	
RX Level		-67 dBm
RX BER		Less than 0.2%
Module 2:		
Operator	orange (Cell ID: 8221)	
RX Level		-65 dBm
RX BER		Less than 0.2%
Module 3:		
Operator	orange (Cell ID: 8221)	
RX Level		-67 dBm
RX BER		Less than 0.2%
Module 4:		
Operator		
RX Level		Not known or not detectable
RX BER		Not available

Figure 44. Specific Card's Cellular Reception Screen

The screen displays the following information:

Operator

This is the cellular network associated with the SIM card and the Cell ID.

RX Level

This indicates the received power level in dBm. The value can be between -51 dBm and -110 dBm.

RX BER

Bit Error Rate (BER) is a calculated figure for the quality of the signal received from the cellular base-station (see more details in above section 3.19.1).

Monitoring Cellular Cards

3.19.3 Status

To view information about the status of cellular modules on a specific card:

- 1. Expand the Monitor > Cellular Cards sub-branch and select **Status**.
- 2. Select a specific slot. The Cellular Cards Status screen for that card is displayed.

Select cellul	ar card	
Slot @		
Selected car	d at slot 1 (GSM)	
Module 1:	Idle	
Module 2:	Idle	
Module 3:	Idle	
	Missing SIM card	

Figure 45. Cellular Cards Status Screen

- 3. Review the status. Common possibilities include:
 - Module doesn't exist or is faulty
 - Idle
 - Incoming call from cellular network
 - Remote side ringing
 - Call connected
 - Call cleared
 - Dialing out through cellular network
 - No Signal
 - Missing SIM card

4 Configuring the VoIP Card

This chapter contains:

- VoIP Media Connection (section 4.1)
- VoIP Settings (section 4.2)
- VoIP Management Features (section 4.3

)

• Monitoring VoIP Cards (section 4.4)

VoIP Media Connection

4.1 VoIP Media Connection

Use the Media Connection screen to configure the connections from a VoIP card to other cards and channels in the system, including the Cellular cards (CG) and the PRI cards (E1). The matrix can be configured in any combination.

4.1.1 Associating/Linking VoIP Channels

To associate a VoIP channel with another media channel:

1. From the VoIP Card branch of the HMC navigation pane, click the Media Connections sub-branch. The Media Matrix is displayed.

elect Me	dia Gateway card	
Slot (• 11	
09 V/ 93		
elected c	ard at slot 11 (Media Card)	
Channel	Target Link (Select to change)	
1	E1.0(13) Channel 1	^
2	E1.0(13) Channel 2	
3	E1.0(13) Channel 3	
4	E1.0(13) Channel 4	
5		
6	2	
7	-	
8	2	
9	-	
10		
11		
12	2	
13	22 C	-

Figure 46. HMC VoIP Card Media Matrix Screen

- 2. If more than one slot is displayed, select a specific VoIP card. The Media Matrix of that VoIP card is displayed.
- 3. Click within a channel row. The row turns yellow.
- 4. Click **Edit**. The row becomes configurable.

Channel	Target Link <u>Edit</u>		Channel	Target Link <u>Save Cancel</u>
1	-	~	1	LCR 💙 Resource 65 💙
2	875		2	
3	•		3	-
4	1.5	14 A	4	10 12
5	•		5	-
6	1.5		6	12 I
7			7	
8	10		8	12 12
9			9	-
10			10	10 12
11			11	-
12			12	19 12
13	-	×	13	-

Figure 47. Media Matrix Row when Configurable

5. From the first dropdown list, allocate this channel to a card by selecting the card.

Note: If all of the card's channels are already allocated, the message —Fully allocatedll appears.

6. From the second dropdown list, assign this channel to a specific channel on the target card.

Channel	Target Link <u>Cancel</u>				
1	CG4.0(1) Channel 1	Channel	Target Link]
2	CG4.0(1) Fully al	Channer	<u>Cancel</u>		
3	CG4.0(1) Channel 3	1	CG4.0(1) Channel 1	Channel	Target Link
4	CG4.0(1) Channel 4	2	CG4.0(1) Fully a		<u>Save Cancel</u>
5	CG4.0(2) Channel 1	3	MG.0(11) nnel 3	1	CG4.0(1) Channel 1
6	CG4.0(2) Channel 2	4	CG4.0(1) CG4.0(2) nnel 4	2	CG4.0(3) 💌 Channel 1 💌
7	CG4.0(2) Channel 3	5	CG4.0(2) nnel 1	3	CG4.0(1) ChaChannel 1
8	CG4.0(2) Channel 4	6	E1.0(13) nnel 2	4	CG4.0(1) Cha Channel 2 Channel 3
9	E1.0(13) Channel 9	7	CG4.0(2) Channel 3	5	CG4.0(2) ChaChannel 4
10	E1.0(13) Channel 10	8	CG4.0(2) Channel 4	6	CG4.0(2) Channel 2
11	-	9	E1.0(13) Channel 9	7	CG4.0(2) Channel 3
12		10	E1.0(13) Channel 10	8	CG4.0(2) Channel 4
13		11	-	9	E1.0(13) Channel 9
		12		10	E1.0(13) Channel 10
		13		11	-
				12	-
				13	

Figure 48. Assigning a Target Link

- 7. Click **Save**. The configuration dropdown boxes are hidden.
- 8. Optionally, repeat the process for additional channels and other media types.
- 9. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

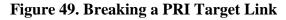
VoIP Media Connection

4.1.2 Unlinking VoIP Allocations

To break an allocation:

- 1. From the VoIP Card branch of the HMC navigation pane, click the **Media Connections** sub-branch. The Media Matrix is displayed.
- 2. Click within a channel row. The row turns yellow.

Channel	Target Link <u>Edit</u> <u>Unlink</u>
1	CG4.0(1) Channel 1
2	CG4.0(1) Channel 2
3	CG4.0(1) Channel 3



3. Click **Unlink**.

4. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

4.2 VoIP Settings

An extensive set of parameters is used to support a Voice over IP network. Use the VoIP Settings screen to configure VoIP parameters.

Note: Different versions of the VoIP Settings screen exist depending upon which VoIP protocol is installed, H.323 or SIP.

1. From the VoIP Card branch of the HMC navigation pane, click the **VoIP Settings** sub-branch. The VoIP Parameters screen is displayed.

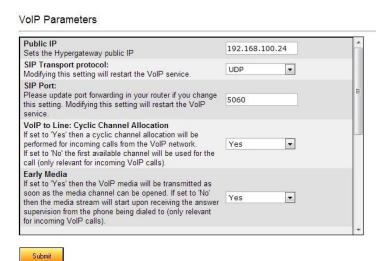


Figure 50. HMC VoIP Card VoIP Parameters Screen

2. Configure the settings:

Public IP

Enter the Hypergateway public.

SIP Transport protocol

Select the protocol type. Modifying this setting will restart the VoIP service.

SIP Port

Changing this setting requires updating the port forwarding in your router. Modifying this setting will restart the VoIP service.

VoIP to Line: Cyclic Channel Allocation

Select either Yes or No. When Yes is selected, incoming VoIP calls are assigned in a cyclic mode. When No is selected, incoming VoIP calls are assigned to the first available channel (applies only to incoming VoIP calls).

Early Media

Select either Yes or No. When Yes is selected, the VoIP media is transmitted as soon as the media channel is opened. When No is selected, the media stream starts upon receiving the answer supervision from the phone being dialed (applies only to incoming VoIP calls).

VoIP Settings

IP Precedence

Sets the value of the IP precedence field in the IP headers of the RTP media stream. Use IP Precedence to prioritize types of traffic:

- 0 Routine Precedence
- 1 Priority Precedence
- 2 Immediate Precedence
- 3 Flash Precedence
- 4 Flash Override Precedence
- 5 Critical Precedence
- 6 Internetwork Precedence
- 7 Network Precedence

IP Type of Service

Sets the value of the IP Type of Service field in the IP headers of the RTP media stream. Use Type of Service (ToS) to manage the Quality of Service (QoS) throughout a network.

- 0 Normal Service
- 1 Minimize Monetary Cost
- 2 Maximize Reliability
- 4 Maximize Throughput
- 8 Minimize Delay

Number of Calls for ASR/ACD Statistics

Select the number of last calls on which to base the ASR (Answer Seizure Ratio or Average Success Rate) and ACD (Average Call Duration) averages. For example, if the number 80 is selected then the ASR and ACD average values will be calculated according to the history of the last 80 calls.

Note: Changing to a new value resets all existing ASR/ACD statistics.

Minimum ASR allowed

Minimum ASR allowed before channel is blocked.

Minimum ACD allowed

Minimum ACD allowed before channel is blocked.

User Input Indication

Defines the SIP user input indication method (protocol).

RFC2833 Payload

Set the payload value of RFC2833 in the RTP packets when using RFC2833 as the user input method in SIP.

Enable Codecs

Select which audio codecs the Gateway will support for incoming and outgoing SIP & H.323 calls.

Payloads per Packet

Sets the number of codec payloads that are packed into an RTP packet for G723 and G729. This can be changed to better utilize the available bandwidth.

Silence Compression / VAD

If set to Yes, Silence Compression will be enabled.

SIP Proxy

Set the Enable field to Yes in order to register with a SIP proxy. If set to Yes, the SIP proxy address and authentication information entered in the fields below will be used to register with the SIP proxy.

PIN Code Send Delay

Set the period (in milliseconds) after which PIN code, if exists, will be sent to remote gateway.

PIN Code Inter-Digit Delay

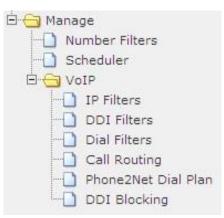
Set the delay period (in milliseconds) between each PIN code digit sent.

- 3. Click Submit.
- 4. From the HMC navigation pane, click **Save** Configuration. Initialization takes about 15 seconds.

Configuring the VoIP Card VoIP Management Features

4.3 VoIP Management Features

Use VoIP Management Features to enhance the overall performance of the VoIP network. VoIP Management Features enable you to restrict incoming calls, refined routing, and review VoIP messages.



4.3.1 IP Filters

Use IP Filters to create a White List of IP addresses. This is a list of destinations prefixes that can be dialed through the system.

- 1. From the HMC navigation pane, expand the Manage branch.
- 2. Expand the **VoIP** branch.
- 3. Click **IP Filters**. The IP Filter List screen is displayed.

Group Name	IP Address White List	
Add IP to list =>	Delete selected	
	Add Entry	
Group Name	IP White List	

Figure 51. HMC VoIP Card IP Filters List Screen

- 4. In the **Group Name** field, enter the name of an existing group or of a new group.
- 5. Enter an endpoint IP Address that the user is permitted to access via the VoIP Gateway.
- 6. Click **Add IP** to list. The new IP address appears in the IP Address White List box.
- 7. Repeat steps 5–6 until all IP addresses associated with that Group have been entered.

8.8.8.8 Delete selected	
IP White List	
1.1.1.1	Delete
4.4.4.4	Delete
213.215.61.146	Delete
	Add Entry IP White List 1.1.1.1 4.4.4.4

Figure 52. Configuring IP White List

8. Click **Add Entry**. The new Group and the IP White List are displayed in the box below.

To review the list of IP addresses associated with a Group, open the dropdown list in the Group's Row.

Configuring the VoIP Card VoIP Management Features

4.3.2 DDI Filters (Direct Dial-in)

Use DDI Filters to create a White List of Direct Dial-In numbers and prefixes. This is a list of endpoints from which a user is permitted to receive calls via the VoIP Gateway.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Expand the **VoIP** branch.

3. Click **DDI** Filters. The DDI Filter List screen is displayed.

roup Name	DDI Prefix White List
DI Prefix	
Add DDI to list =>	Delete selected
	Add Entry
oup Name	DDI White List

Figure 53. HMC VoIP Card DDI Filters List Screen

- 4. In the **Group Name** field, enter the name of an existing group or of a new group.
- 5. Enter a phone number—or a prefix to allow a group of numbers—from which a user is permitted to receive calls via the VoIP Gateway.
- 6. Click Add DDI to list. The new DDI appears in the DDI Prefix White List box.
- 7. Repeat steps 5–6 until all DDI Prefixes associated with that Group have been entered.

Group Name	DDI Prefix White List	
Demo_3	234	
DDI Prefix	307	
891		
Add DDI to list =>	Delete selected	
	Add Entry	
Group Name	DDI White List	
Demo	304 💌	Delete
	123	Delete

Figure 54. Configuring DDI White List

8. Click **Add Entry**. The new Group and the DDI White List are displayed in the box below.

Note: To review the list of DDI Prefixes associated with a Group, open the dropdown list in the Group's Row.

Configuring the VoIP Card

4.3.3 Dial Filters

Use the VoIP Dial Filters screen to apply Number Filters to a VoIP channel.

Note: For information on defining Number Filters, see, Number Filters in section 6.1.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Expand the **VoIP** branch.
- 3. Click **Dial Filters**. The VoIP Dial Filter List screen is displayed.

Channel	Application	Filter Name	Action	-
1	VoIP		Edit	
2			Edit	
3			Edit	
4			Edit	
5			Edit	
6			Edit	
7			Edit	
8			Edit	
9			Edit	
10			Edit	
11			Edit	_
12			Edit	
13			Edit	
14			Edit	
15			Edit	
16			Edit	
17			Edit	
18			Edit	
19			Edit	

Figure 55. HMC VoIP Card Dial Filter List Screen

- 4. Click **Edit**. A dropdown list of existing filters is displayed in the Filter Name column.
- 5. Select a filter from the dropdown list. The prompt in the Action column changes to Save.

Channel	Application	Filter Name	Action	
1	VoIP	- No Filter - 💌	Save	
2		- No Filter -	Edit	
3		newplan add9	Edit	
4		tarik	Edit	
5		tarik2	Edit	
6		cut972	Edit	
7		014	Edit	
8			Edit	
9			Edit	
10			Edit	
11			Edit	
12			Edit	
13			Edit	
14			Edit	
15			Edit	
16			Edit	
17			Edit	
18			Edit	

Figure 56. Configuring Dial Filters

6. Click Save.

Configuring the VoIP Card VoIP Management Features

4.3.4 Call Routing

Use Call Routing to create a list of IP resources that can dial through the system.

- 1. Ensure that the required DDI filters (see p. 58) and IP filters (see p. 57) are defined. Call Routing makes use of pre-defined DDI filters and IP filters.
- 2. From the HMC navigation pane, expand the Manage branch.
- 3. Expand the **VoIP** branch.
- 4. Click **Call Routing**. The VoIP Channel Restrictions screen is displayed.
- 5. From the **Channel** box, select the channel that the restrictions will be applied to.

Channels	IP Group / [IP Group / DDI Prefix Group restrictions			
1 2 3 4 5	IP restrictio Demo_2 DDI Prefix r Demo_2	estriction group	d Entry		
Channel	Allowed IP List	Allowed DDI List			
1	Test_sor	Allow All			
2	Demo	Demo			
3	Block	Block			
4	Block	Block			
5	Block	Block			
6	Block	Block	-		
7	Block	Block			
8	Block	Block			
9	Block	Block			
10	Block	Block			
11	Block	Block			
12	Block	Block			
13	Block	Block			
14	Block	Block			

Figure 57. HMC VoIP Card VoIP Channel Restrictions Screen

- 6. From the **IP restriction group** dropdown menu, select a pre-defined filter.
- 7. From the **DDI Prefix restriction group** dropdown menu, select a predefined DDI filter.
- 8. Click **Add Entry**. The restrictions are displayed in the table in the channel's row.

4.3.5 Phone2Net Dial Plan

The Phone2Net Dial Plan connects phone calls to IP network phones.

For example, when the Hypermedia Gateway system receives an incoming call to: Dialed Number = 077444 it can forward the call to the IP Phone at Destination IP = 192.168.1.67.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Expand the VoIP branch.
- 3. Click **Phone2Net Dial Plan**. The Phone2Net Dialing Plan screen is displayed.

Dialed Number	Dest. IP	Dest. Number	PIN Code	9
Add Entry				
Dialed Number	Destination IP	Dest. Number	PIN Code	
0	84.45.87.242	-	-	Delete
1	84.45.87.242	2	-	Delete
2	84.45.87.242	-	-	Delete
3	84.45.87.242	2	-	Delete
4	84.45.87.242	-	-	Delete
5	84.45.87.242	2		Delete
6	84.45.87.242	-	-	Delete
8	84.45.87.242	2	-	Delete
9	84.45.87.242	-	-	Delete

VoIP - Phone to Net Dialing Plan

Figure 58. HMC VoIP Card Phone to Net Dialing Plan Screen

- 4. In the **Dialed Number** field, enter the phone number received by the Gateway.
- 5. Enter either:
 - The IP address that the call will be connected to in the **Dest. IP** field
 - The phone number that the call will be connected to in the **Dest. Number** field
- 6. If necessary, in the **PIN Code field**, enter the PIN code.
- 7. Click **Add Entry**. The new entry is displayed in the area below.

Configuring the VoIP Card VoIP Management Features

4.3.6 DDI Blocking

Use the DDI Blocking screen to import a comma-separated file (csv) file of phone numbers. The Hypermedia Gateway will not dial those phone numbers.

1. From the HMC navigation pane, expand the Manage branch.

- 2. Expand the **VoIP** branch.
- 3. Click **DDI Blocking**. The DDI Blocking screen is displayed.

Import File:		Browse
	Import DDIs	
srowse DDI	s that 💌 start with 💌	Submi

Figure 59. HMC VoIP Card DDI Blocking Screen

- 4. Click **Browse** and locate the file containing the DDIs.
- 5. Click Import DDIs.
- 6. Use the two dropdown lists to refine the list of DDI numbers that will be blocked.
- 7. Click **Submit**. The list is displayed in the area below.

4.3.7 Cause Codes

Cause codes represent the reason for releasing a call. The Hypermedia Gateway can manipulate the releasing Cause code—that is, convert to Value— if we do not want to report the exact reason for call release.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Expand the **VoIP** branch.
- 3. Click **Cause Codes**. The Cause Codes screen is displayed.

VoIP Cause Codes Conversion

Description	Code	Converted	Edit
Valid cause code not yet received	00 (0)	00 (0) [SIP-480]	Edit
Unallocated (unassigned) number	01 (1)	01 (1) [SIP-404]	Edit
No route to specified transit network (WAN)	02 (2)	02 (2) [SIP-404]	Edit
No route to destination	03 (3)	03 (3) [SIP-404]	Edit
Send special information tone	04 (4)	04 (4) [SIP-480]	Edit
Misdialled trunk prefix.	05 (5)	05 (5) [SIP-480]	Edit
Channel unacceptable	06 (6)	06 (6) [SIP-480]	Edit
Call awarded and being delivered in an established channel	07 (7)	07 (7) [SIP-480]	Edit
Prefix 0 dialed but not allowed	08 (8)	08 (8) [SIP-480]	Edit
Prefix 1 dialed but not allowed	09 (9)	09 (9) [SIP-480]	Edit
Prefix 1 dialed but not required	0A (10)	0A (10) [SIP-480]	Edit
More digits received than allowed, call is proceeding	0B (11)	0B (11) [SIP-480]	Edit
No description	0C (12)	0C (12) [SIP-480]	Edit
No description	0 <mark>D (13</mark>)	0D (13) [SIP-480]	Edit
No description	0E (14)	0E (14) [SIP-480]	Edit
No description	0F (15)	0F (15) [SIP-480]	Edit
Normal call clearing	10 (16)	10 (16) [SIP-480]	Edit

Save Reset Show Converted

Configuring the VoIP Card

Figure 60. HMC VoIP Card Cause Codes Screen

4. On a code description line, click **Edit**. A dropdown menu is displayed in the Convert to Value field.

VoIP Cause Codes Conversion

Description	Code	Converted	Edit
Valid cause code not yet received	00 (0)	38 (56) [SIP-480]	Save
Unallocated (unassigned) number	01 (1)	01 (1) [SIP-404]	Edit

Figure 61. Editable Value Field

- 5. Select a new value.
- 6. Click **Save** and then **Submit**.
- 7. Two additional options exist: Show Converted

Displays the converted values.

Reset Codes

Assigns the original cause code values.

8. Click Save Conversions.

Monitoring VoIP Cards

4.4 Monitoring VoIP Cards

Use the Monitor VoIP Cards > VoIP Status screen to review information about the status of the VoIP card and to control line activity.

4.4.1 Reviewing the VoIP Card Information

To review VoIP Card information:

1. Expand the Monitor > VoIP Cards sub-branch and select VoIP Status.

Line	Direction/Type	State	То	Remote IP	ASR	ACD	-
1	-	Idle	-	-	-	-	
2	-	Blocked	-			-	
3	-	Blocked	-	-	-	-	
4	-	Blocked	-	-	-	-	
5	-	Blocked	-	-	-	-	
6	-	Blocked	-	-		-	
7	-	Blocked		-	-	-	
8	-	Blocked	-	-		-	
9	-	Blocked	-	-	-	-	
10	-	Blocked	-	-	-	-	
11	-	Blocked	2		-	-	

VoIP Card Status

Figure 62. Figure 63: VoIP Card Status Screen

2. Review the status of VoIP Lines. The following information is displayed:

Direction/Type

Calls can either be from network to the line or from the line to network.

State

—Connected indicates that the channel is busy. —Idle indicates that there is no call activity on a channel.

То

This displays the destination number that the call is being made to.

Remote IP

This displays the IP address of destination endpoint or gateway.

ASR (Answer-Seizure Ratio)

This is the ratio of successfully connected calls to attempted calls and is also known as the Call Completion Rate.

ACD (Average Call Duration)

This is the average duration of the calls routed by a VoIP provider. It is a quality parameter given by the VoIP providers.

3. Review the totals. The total numbers of lines connected, lines dialing, and global ASR and ACD are displayed below table.

4.4.2 Controlling VoIP Line Activity

To control VoIP line activity:

- 1. Expand the Monitor > VoIP Cards sub-branch and select VoIP Status.
- 2. Right-click within a line. The line turns yellow and a popup menu is displayed.

Line	Di	rection/Type	State	То	Remote IP	ASR	ACD	-
1	-	5 (D)	Idle	-	-	-	-	
2	-	Fast Block Fast Unblock	Blocked	-	-	-	-	
3		1 ust onbioer	Blocked	-	-	-	-	
4	-	Send DTMF	Blocked	-		-	-	
5	-	D 140D	Blocked	-	-	-	-	
6	-	Reset ASR Reset ACD	Blocked	-	. 	-	-	
7	-	Reset Both	Blocked	-	-	-	-	
8	-		Blocked	-	. .	-	-	
9	- ,	Clear Call	Blocked	-	-	-	-	
10	-		Blocked	-	-	-	-	
11	-		Blocked	-	-	[Discourse of the	
12	-		Blocked	-	. .	Access	current	channel dial 1
13	-		Blocked	-	-	1		Sen
14	-		Blocked	-	-			clo
15	-		Blocked	-	-		-	
16	-		Blocked	-		Line	Dire	ection/Type
17	-		Blocked	-	-		1 -	
18	-		Blocked	-	-		-	

Figure 63. VoIP Card Monitor Dropdown Menu

3. Select from the following controls:

Fast Block

Changes the State to Fast Blocked. The line cannot be used.

Fast Unblock

Returns the State to Idle. The line is available.

Send DTMF

Opens the Send DTMF tool. Enter the number of the DTMF and click Send.

Reset ASR

Restarts the calculating of the ASR.

Reset ACD

Restarts the calculating of the ACD.

Reset Both

Restarts the calculating of both the ASR and the ACD.

Clear Call

Disconnects the current call. A confirmation message is displayed. Click OK to disconnect the call.

Monitoring VoIP Cards

4.4.3 VoIP CDRs

To manage and download the daily VoIP CDR files:

1. Expand the Monitor > VoIP Cards sub-branch and select **VoIP CDRs**. The VoIP CDR Files screen is displayed.

File Name (click to download)	Last Modified	Size (bytes)	
VoIP_CDR_20081104.log	04/11/2008 14:13	0	delete
VoIP_CDR_20081106.log	06/11/2008 11:38	0	delete
VoIP_CDR_20081109.log	09/11/2008 11:10	0	delete
VoIP_CDR_20081123.log	23/11/2008 10:57	0	delete
VoIP_CDR_20081203.log	03/12/2008 12:21	0	delete
VoIP_CDR_20081207.log	07/12/2008 14:53	0	delete
VoIP_CDR_20081230.log	30/12/2008 11:48	0	delete
VoIP_CDR_20090104.log	04/01/2009 11:53	0	delete
VoIP_CDR_20090106.log	06/01/2009 08:56	0	delete
VoIP_CDR_20090111.log	12/01/2009 11:48	745	delete
VoIP_CDR_20090112.log	13/01/2009 10:58	2803	delete
VoIP_CDR_20090113.log	17/01/2009 21:26	6874	delete
VoIP_CDR_20090117.log	17/01/2009 21:26	0	delete
VoIP_CDR_20090118.log	18/01/2009 00:01	0	delete

Figure 64. VoIP CDR Files Screen

- 2. Double-click a log-file. The standard browser Open or Save dialog box is displayed.
- 3. Click either **Open** or **Save**.
- 4. Review the file.

4.4.4 Deciphering the VoIP CDR File

A CDR line is created in the file each time a VoIP call ends. All CDR fields appear on a single line without text-wrapping. Below is an example of a VoIP CDR entry but distorted by text-wrapping:

60,2009-01-12 T 11:48:51,2009-01-12 T 11:48:51,"102",0774445003,,2009- 01-12 T 11:48:55,,212.143.136.19,212.143.136.19,16386,2,12,0,0,0,0,0,10 The entries are explained in following Table 9.

Column Number	Field Name	Description
1	CallID	A unique identifier for the call

Table 9. Deciphering the VoIP CDR File

Configuring the VoIP Card

2	Received	The time when the incoming call was received
3	Dialed	The time when the remote party was dialed to (may be empty if no resources were available to place the call)
4	Alerting	The time when an alerting signal was received from the remote party (may be in case no resources were available to complete the call or a fan error or hang- up event was received prior to this stage).
5	E164Src	The number that the call is being made from.
6	E164Dest	The number that the call is being made to.
7	Start Time	Time when the call started in ISO 8601 format (two- way RTP audio channels open) (e.g. 2004-08-08 T 10:24:18 +0200). May be empty if call did not connect.
8	End Time	Time when call ended in ISO 8601 format (two-way RTP audio channels closed)
9	Duration	Duration of call in seconds
10	Remote Signal IP	IP address of remote H.323/SIP endpoint / gateway
11	RemoteMediaADDR	IP address of remote RTP endpoint
12	Remote Media Port	IP Port of remote RTP endpoint
13	Local Channel	Channel used on VoIP card
14	Remote Card Slot	Slot number of card connected to VoIP channel
Column Number	Field Name	Description
15	Slot, Module and SIM	Slot#module.sim (24#1.1) that the VoIP call is connected to.
16	Module IMEI	Module's IMEI that the VoIP call is connected to.

Monitoring VoIP Cards

17	Called Direction	Direction of call. Possible values are: 0 – Call from network to line 1 – Call from line to network
18	Hangup Initiator	Initiator of hang-up. Possible values are: 0 – Network 1 – Line
19	TxRTP	Number of RTP packets sent during the session
20	RxRTP	Number of RTP packets received during the session
21	Lost RTP	Number of RTP packets lost during the session
22	Hangup Reason	Q.931 reason for call hang-up

5 Configuring LCR

This chapter contains:

- Overview (section 5.1)
- Activating LCR (section 5.2) 🗆 Linking to LCR (section 5.3)

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- Groups (section 5.4)
- Resource Map (section 5.5
- Rules (section 5.6
- Filters (section 5.7
- Advanced Call Routing (section 5.8)
- CDR (section 5.9

Overview

5.1 Overview

Gateways with Least Cost Routing (LCR) route calls based on rules that are created by the administrator. This results in per-call routing. In contrast, when using gateways without LCR, all call routes are fixed.

LCR enables greater customizing, and potentially saves money. The best-practice order for building the LCR plan is:

- 1. Activate LCR
- 2. Link media to the LCR module
- 3. Create Groups
- 4. Assign the LCR Resources to Groups
- 5. Create Rules

Note: A best-practice is a technique or methodology that, through experience and research, has been proven to efficiently and reliably lead to the desired result. The following are optional:

- Create IN or OUT filters, to manipulate over dialed numbers
- Create Time Frames, to determine the time of day each of the Rules is active
- Configure the ACR, to analyze source and destination numbers and to enable rout/block/manipulate actions

This section follows the best-practice order.

5.2 Activating LCR

On some systems (mainly VoIP-enabled ones) the LCR service must be manually activated.

To manually activate LCR:

- 1. Click the Windows **Start** button > **All Programs**.
- 2. From the Hypermedia program group, select **HGS Setup Parameters**. The HGS Setup Parameters logon screen is displayed.
- 3. Enter your password and click **Submit**. The HGS Setup Parameters screen is displayed.

A Hypermed	a HGS Setu	p Parameters
-	Server addre	ess: XXXX
System Functions		
IP Configuration	Change	
HGS Server		Stop
Set date (MM-DD-YY)	03-03-13	
Set time (hh:mm:ss)	13:57:00	Set
Preferred DNS server	8.8.8.8	
Alternate DNS server		Set DNS
IGS Service Properti	es	
Property		/alue
Management IP port	8878	
Initial log level	5	
Enable LCR	Yes	

Note: Please stop HGS Server to change HGS settings.

Figure 65. HGS Setup Parameters Screen

- 4. From the HGS Server system function line, click **Stop**. A confirmation message indicates that the service was stopped successfully.
- 5. Refresh the browser page, reenter your password and click **Submit**. The HGS Setup Parameters screen is displayed in Edit mode.

IP Configuration	Change	
HGS Server		Stop
Set date (MM-DD-YY)	03-03-13	
Set time (hh:mm:ss)	13:57:00	Set
Preferred DNS server	8.8.8	
Alternate DNS server		Set DNS
1	les	Malua
HGS Service Propert Property Menormal Property		Value
Property Management IP port	8878	Value
Property		Value

Figure 66. HGS Setup Parameters Screen in Edit Mode

6. On the Disable LCR line, click **Edit**. The Value field becomes editable.

Activating LCR

Property	Value	
Management IP port	8878	Edit
Initial log level	5	Edit
Enable LCR	Yes 🔻	Save
Enable VolP	Yes	Edit
	No	

Figure 67. Editable Disable LCR Value Field

- 7. Select from the dropdown list **Yes** to enable the LCR or **No** to disable the LCR.
- 8. Click Save.
- 9. Click Submit.
- 10. From the HGS Server system function line, click **Start**. A confirmation message indicates that the service was started successfully.

5.3 Linking to LCR

Each media type must be configured to refer calls to the LCR module. This can be done either from the specific media branch or from the LCR branch.



Note: Each of the media type branches (such as Cellular, BRI, PRI, and VoIP) includes a sub-branch named Media Connections.

5.3.1 Linking from a Media Branch

To link a media to LCR:

1. From the HMC navigation pane, click a **Media Connections** sub-branch. The Media Matrix is displayed.

elect PR	card	
Slot 6	12 C 13	
elected c	ard at slot 12 (E1 PRI)	
Channel	Target Link (Select to change)	1
1		-
2		
3		
4	2	
5	-	
6	5	-
7	•	
8	*	
9		
10	2	
11	2	
12	53	
13	-	

Figure 68. Media Matrix before LCR

- 2. Click within a channel row. The row turns yellow.
- 3. Click **Edit**. The row becomes configurable.

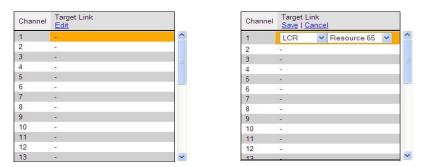


Figure 69. Channel Row when Configurable

4. From the dropdown lists, select **LCR** and the Resource number.

Linking to LCR

LCR Media Matrix Resource Target Link Save | Auto Link | Cancel E1.0(12)

Channel 1 1 • 2 MG.0(11) 3 CG4.0(4) E1.0(12) E1.0(28) 4 5 6 7 8 9 -10 11 12 -

ш

Figure 70. Channel Row Dropdown Lists

5. Click **Save**. The configuration dropdown boxes are hidden.

Resource	Target Link <u>Edit</u> <u>Unlink</u> <u>Unlink All</u>	
1	LCR Resource 1	
2 3		
3		
4	2	
5	-	
6	2	
7	-	
8	2	
9	-	
10	2	
11	-	
12		
13		

Figure 71. Channel Row Configured

- 6. Optionally, repeat the process for additional channels and other media types.
- 7. Click Apply Settings and wait for Configuration Saved to be displayed.
- 8. When finished, from the LCR branch, select **Media Connections**. The LCR Media Matrix displays the links.

Resource	Target Link (Select to change) <u>Unlink All</u>		Resour	ce Target Link (Select to change) <u>Unlink All</u>	11
1	E1.0(4) Channel 1	_	61	CG4.0(1) Channel 1	
2	E1.0(4) Channel 2		62	CG4.0(1) Channel 2	
3	E1.0(4) Channel 3		63	CG4.0(1) Channel 3	
	E1.0(4) Channel 4		64	CG4.0(1) Channel 4	
	E1.0(4) Channel 5		65	E1.0(11) Channel 1	
	E1.0(4) Channel 6		66	E1.0(11) Channel 2	
7	E1.0(4) Channel 7		67	E1.0(11) Channel 3	
	E1.0(4) Channel 8		68	E1.0(11) Channel 4	
)	E1.0(4) Channel 9		69	E1.0(11) Channel 5	
10	E1.0(4) Channel 10		70	E1.0(11) Channel 6	
1	E1.0(4) Channel 11		71	E1.0(11) Channel 7	
2	E1.0(4) Channel 12		72	E1.0(11) Channel 8	
13	E1.0(4) Channel 13	-	73	E1.0(11) Channel 9	

Figure 72. Two Views of the LCR Media Matrix Display

5.3.2 Linking from the LCR Branch

To link a media to LCR:

1. From the HMC navigation pane's LCR branch, click the **Media Connections** sub-branch. The LCR Media Matrix is displayed.

Resource	Target Link Cancel	
1	-	
2	120	<u>^</u>
3	-	
4	-	
5	-	
6	121	
7	-	
8	(4)	
9	-	
10	-	
11	-	
12	(2)	
13	-	~

Figure 73. LCR Media Matrix 2.

Click within a Resource row. The row turns yellow.

3. Click **Edit**. The row becomes configurable.

CR Me	dia Matrix		LCR Med	dia Ma	trix	
Resource	Target Link Edit		Resource	Target Save	Link Auto Link Cancel	
1	-		1	LCR	✓ Resource 65	~
2	4		2	-		_
3	-		3	-		
4			4	-		
5			5	-		
6	G		6	-		
7	-		7			
8	-		8	-		
9	-		9	-		
10	12		10	-		
11	-		11			
12	2		12	2		
13	-	~	13	-		

^

Figure 74. LCR Row when Configurable

4. From the dropdown menus, select the **media** and the Resource number.

LCR Med	dia Matrix			LCR Me	dia Matrix		
Resource	esource Target Link Save Auto Link Cancel			Resource	Target Link Cancel	2	
1	LCR	Resource 65 🗸		1	E1.0(12)	Resource 65	~
2	MG.0(11) CG4.0(4)		\sim	2	-		
3	E1.0(12)			3	2		1
4	E1.0(28)			4	-		
5	-			5	-		
6	-			6	-		
7	-			7	5		
8	-			8	2		
9	-			9	-		
10	-			10	-		
11	-			11	5		
12	2			12	2		
13	-		~	13	-		

Figure 75. LCR Row Dropdown Lists

Linking to LCR

5. Click **Save**. The configuration dropdown boxes are hidden.

Resource	Target Link Cancel	
1	E1.0(12) V Channel 1	
2		
2 3	2	
4 5	2	
5	-	
6	8	
7	70	
8	2	
9	+	
10	*	
11	1 0	
12	20	
13	-	

Figure 76. LCR Row Configured

6. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

5.3.3 Editing a Target Link

To edit a link:

1. From the HMC navigation pane's LCR branch, click the **Media Connections** sub-branch. The LCR Media Matrix is displayed.

Resource	Target Link (Select to change) Unlink All	
53	- E1.0(13) Channel 23	
54	- E1.0(13) Channel 24	1
55	- E1.0(13) Channel 25	
56	- E1.0(13) Channel 26	1
57	- E1.0(13) Channel 27	L
58	- E1.0(13) Channel 28	1
59	- E1.0(13) Channel 29	IJ
60	- E1.0(13) Channel 30	
61	- CG4.0(2) Channel 1	
62	- CG4.0(2) Channel 2	1
63	- CG4.0(2) Channel 3	
64	- CG4.0(2) Channel 4	
65		ľ

Figure 77. LCR Media Matrix 2.

Click within a Resource row. The row turns yellow.

- 3. Click **Edit**. The row becomes configurable.
- 4. From the dropdown menus, edit the settings.
- 5. Click **Save**. The configuration dropdown boxes are hidden.
- 6. Click **Apply Settings** and wait **for Configuration Saved** to be displayed.

5.3.4 Breaking a Link (Unlink)

To break a link:

- 1. From the HMC navigation pane's LCR branch, click the **Media Connections** sub-branch. The LCR Media Matrix is displayed.
- 2. Click within a Resource row. The row turns yellow.
- 3. Click **Unlink**. The settings disappear.
- 4. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

Groups

5.4 Groups

Creating Groups simplifies consistent application of LCR strategies.

5.4.1 Creating a Group

To create a group:

1. From the HMC navigation pane's LCR branch, click the **Groups** sub-branch. The Groups screen is displayed.

LCR G	roups							
Save Se	ttings							
Group #	Group Name	Cyclic	In Filter	Out Filter	Route to		Int. Routing	Report Calls
							5	Deselect All
Group 1	GSM	Yes 🗸	-none- 🗸	-none- 🗸	LCR	~		
Group 2	VoIP	Yes 🗸	-none- 🗸	-none- 🗸	GSM	~		
Group 3		Yes 🗸	-none- 🗸	-none- 🗸	LCR	~		
Group 4		Yes 🗸	-none- 🗸	-none- 🗸	LCR	~		
Group 5		Yes 🗸	-none- 🔽	-none- 🗸	LCR	~		
Group 6		Yes 🗸	-none- 🗸	-none- 🗸	LCR	~		

Figure 78. LCR Groups Screen

- 2. Name the Group. Since the Group name appears in other places, we recommend using an identifiable name.
- 3. In the **Cyclic** column dropdown menu, define whether or not the Group will be cyclic:

Yes

The LCR module begins searching for an available channel from the last used channel.

No

The LCR module begins searching for an available channel from the first channel in that group.

- 4. Optionally, and if already defined, from the **In Filter** dropdown menu, select an In Filter. See 5.7, Filters.
- 5. Optionally, and if already defined, from the **Out Filter** dropdown menu, select an Out Filter. See 5.7 , Filters.
- 6. From the **Route to Group** dropdown menu, define whether or not calls arriving to that Group will be rerouted to a specific Group, or dynamically routed according to the LCR rules:

none

The LCR Rules are applied and the call is routed to a specific channel accordingly.

Configuring LCR

< Specific Group Name >

All calls coming from Resources assigned to this Group are rerouted to the selected Group. The LCR rules are not analyzed for calls entering the LCR module from this group.

- 7. Select or clear the **Int. Routing** checkbox. When selected, all outgoing calls through the group are logged. The logs are then checked to determine the destination number for incoming calls. If a match is found, the original destination number is ignored.
- 8. Select or clear the **Report Calls** checkbox. When selected, calls are sent to an external Hypermedia application for billing.
- 9. Click Save Settings.

5.4.2 Using the Default Group Settings

The HMC includes pre-defined Group settings. These can be used instead of customized settings.

To apply the default Group settings:

- 1. From the HMC navigation pane's LCR branch, click the **Groups** sub-branch. The Groups screen is displayed.
- 2. Scroll to the bottom of the screen. The Create Default Groups button appears within the Default Groups prompt.



Figure 79. Create Default Groups Button

- 3. Click Create Default Groups.
- 4. Scroll to the top of the page.
- 5. Click Save Settings.

Resource Map

5.5 Resource Map

Use the LCR Resource Map to assign Resources to Groups.

5.5.1 Sample Assignment

The picture below illustrates Resource assignment. The first 30 Resources are assigned to the PBX, the second 30 are assigned to the PSTN, and the final 4 are assigned to Cellular.

LCR Resource Map

1	Group: GSM (1)		2	Group: GSM (1)		3	Group: GSM (1)		4	Group: GSM (1)		5	Group: GSM (1)		6	Group: GSM (1)		7	Group: GSM (1)	
80	BiDirect	EMPTY	-	BiDirect	EMPTY	5	BiDirect	EMPTY	1	BiDirect	EMPTY	5	BiDirect	EMPTY	, e	BiDirect	EMPTY	Į.	BiDirect	ENPTY
8	Group: GSM (1) BiDirect	EMPTY	9	Group: GSM (1) BiDirect	EMPTY	10	Group: GSM (1) BiDirect	EMPTY	11	Group: GSM (1) BiDirect	EMPTY	12	Group: GSM (1) BiDirect	EMPIX	13	Group: GSM (1) BiDirect	EMPTY	14	Group: GSM (1) BiDirect	EHPTY
15	Group: GSM (1) BiDirect	EMPTY	16	Group: GSM (1) BiDirect	EMPTY	17	Group: GSM (1) BiDirect	EMPTY	18	Group: GSM (1) BiDirect	EMPTY	19	Group: GSM (1) BiDirect	EHPTY	20	Group: GSM (1) BiDirect	EMPTY	21	Group: GSM (1) BiDirect	EMPTY
22	Group: GSM (1) BiDirect	EMPTY	23	Group: GSM (1) BiDirect	EMPTY	24	Group: GSM (1) BiDirect	EMPTY	25	Group: GSM (1) BiDirect	EMPTY	26	Group: GSM (1) BiDirect	EHPTY	27	Group: GSM (1) BiDirect	EMPTY	28	Group: GSM (1) BiDirect	EMPTY
29	Group: GSM (1) BiDirect	EMPTY	30	Group: GSM (1) BiDirect	EMPTY	31	Group: GSM (1) BiDirect	EMPTY	32	Group: GSM (1) BiDirect	EMPTY	33	Group: BiDirect	EMPTY	34	Group: BiDirect	LCR	35	Group: BiDirect	LCR
36	Group: BiDirect	LCR	37	Group: BiDirect	LCR	38	Group: BiDirect	LCR	39	Group: BiDirect	LCR	40	Group: BiDirect	LCR	41	Group: BiDirect	LCR	42	Group: BiDirect	LCR
43	Group: BiDirect	LCR	44	Group: BiDirect	LCR	45	Group: BiDirect	LCR	46	Group: BiDirect	LCR	47	Group: BiDirect	LCR	48	Group: BiDirect	LCR	49	Group: BiDirect	LCR
50	Group: BiDirect	LCR	51	Group: BiDirect	LCR	52	Group: BiDirect	LCR	53	Group: BiDirect	LCR	54	Group: BiDirect	LCR	55	Group: BiDirect	LCR	56	Group: BiDirect	LCR
57	Group: BiDirect	LCR	58	Group: BiDirect	LCR	59	Group: BiDirect	LCR	60	Group: BiDirect	LCR	61	Group: BiDirect	LCR	62	Group: BiDirect	LCR	63	Group: BiDirect	LCR
64	Group: BiDirect	LCR	65	Group: BiDirect	LCR	66	Group: BiDirect	LCR	67	Group: BiDirect	LCR	68	Group: BiDirect	LCR	69	Group: BiDirect	LCR	70	Group: BiDirect	LCR

Figure 80. Sample Resource Assignment

5.5.2 Assigning LCR Resources

To assign LCR Resources to Groups:

1. From the HMC navigation pane's LCR branch, click the **Resource Map** subbranch. The Resource Map screen is displayed.

LCR Resource Map

1	Group: GSM (1) BiDirect	EHPTY	2	Group: GSM (1) BiDirect	ERFTY	3	Group: GSM (1) BiDirect	EMPTY	4	Group: GSM (1) BiDirect	EMPTY	5	Group: GSM (1) BiDirect	EMPTY	6	Group: GSM (1) BiDirect	EMPTY	7	Group: GSM (1) BiDirect	EMPTY
8	Group: GSM (1) BiDirect	EMPTY	9	Group: GSM (1) BiDirect	EHPTY	10	Group: GSM (1) BiDirect	EMPTY	11	Group: GSM (1) BiDirect	EMPTY	12	Group: GSM (1) BiDirect	EMPTY	13	Group: GSM (1) BiDirect	EMPTY	14	Group: GSM (1) BiDirect	ENPTY
15	Group: GSM (1) BiDirect	EMPTY	16	Group: GSM (1) BiDirect	EHPTY	17	Group: GSM (1) BiDirect	EMPTY	18	Group: GSM (1) BiDirect	EMPTY	19	Group: GSM (1) BiDirect	EMPTY	20	Group: GSM (1) BiDirect	EMPTY	21	Group: GSM (1) BiDirect	EMPTY
22	Group: GSM (1) BiDirect	EHPTY	23	Group: GSM (1) BiDirect	EHPTY	24	Group: GSM (1) BiDirect	EMPTY	25	Group: GSM (1) BiDirect	EMPTY	26	Group: GSM (1) BiDirect	EHPTY	27	Group: GSM (1) BiDirect	EMPTY	28	Group: GSM (1) BiDirect	EMPTY
29	Group: GSM (1) BiDirect	EHPTY	30	Group: GSM (1) BiDirect	EHPTY	31	Group: GSM (1) BiDirect	EMPTY	32	Group: GSM (1) BiDirect	EMPTY	33	Group: BiDirect	EMPTY	34	Group: BiDirect	LCR	35	Group: BiDirect	LCR
36	Group: BiDirect	LCR	37	Group: BiDirect	LCR	38	Group: BiDirect	LCR	39	Group: BiDirect	LCR	40	Group: BiDirect	LCR	41	Group: BiDirect	LCR	42	Group: BiDirect	LCR
43	Group: BiDirect	LCR	44	Group: BiDirect	LCR	45	Group: BiDirect	LCR	46	Group: BiDirect	LCR	47	Group: BiDirect	LCR	48	Group: BiDirect	LCR	49	Group: BiDirect	LCR
50	Group: BiDirect	LCR	51	Group: BiDirect	LCR	52	Group: BiDirect	LCR	53	Group: BiDirect	LCR	54	Group: BiDirect	LCR	55	Group: BiDirect	LCR	56	Group: BiDirect	LCR
57	Group: BiDirect	LCR	58	Group: BiDirect	LCR	59	Group: BiDirect	LCR	60	Group: BiDirect	LCR	61	Group: BiDirect	LCR	62	Group: BiDirect	LCR	63	Group: BiDirect	LCR
64		LCR	65	Group: BiDirect	LCR	66	Group: BiDirect	LCR	67	Group: BiDirect	LCR	68	Group: BiDirect	LICR	69	Group: BiDirect	LCR	70	Group: BiDirect	LCR

Figure 81. LCR Resource Map Before Assignments

2. Click a cell to select it. To select many cells, hold down the Shift key and click a cell elsewhere on the map. The selected cells are shaded blue and the Set Group and Set Resource Type dropdown lists appear near the top of the screen.

LCR Resource Map

Se	t Group: -non	e- 🔽	Set	Set Resou	rce Typ	be: B	i Directional	✔ Set												
1	Group: GSM (1) BiDirect	EMPTY	2	Group: GSM (1) BiDirect	EMPTY	3	Group: GSM (1) BiDirect	EMPTY	4	Group: GSM (1) BiDirect	EMPTY	5	Group: GSM (1) BiDirect	EMPTY	6	Group: GSM (1) BiDirect	EMPTY	7	Group: GSM (1) BiDirect	EMPT
8	Group: GSM (1) BiDirect	EMPTY	9	Group: GSM (1) BiDirect	EMPTY	10	Group: GSM (1) BiDirect	EMPTY	11	Group: GSM (1) BiDirect	EMPTY	12	Group: GSM (1) BiDirect	EMPTY	13	Group: GSM (1) BiDirect	EMPTY	14	Group: GSM (1) BiDirect	EMPT
15	Group: GSM (1) BiDirect	EHPTY	16	Group: GSM (1) BiDirect	EMPTY	17	Group: GSM (1) BiDirect	EMPTY	18	Group: GSM (1) BiDirect	EMPTY	19	Group: GSM (1) BiDirect	EMPTY	20	Group: GSM (1) BiDirect	EMPTY	21	Group: GSM (1) BiDirect	EMPT
22	Group: GSM (1) BiDirect	EMPLY	23	Group: GSM (1) BiDirect	EMPTY	24	Group: GSM (1) BiDirect	EMPTY	25	Group: GSM (1) BiDirect	EMPTY	26	Group: GSM (1) BiDirect	EMPTY	27	Group: GSM (1) BiDirect	EMPTY	28	Group: GSM (1) BiDirect	EMPT
29	Group: GSM (1) BiDirect	EMPTY	30	Group: GSM (1) BiDirect	EMPTY	31	Group: GSM (1) BiDirect	EMPTY	32	Group: GSM (1) BiDirect	EMPTY	33	Group: BiDirect	EMPTY	34	Group: BiDirect	LCR	35	Group: BiDirect	LCR
36	Group: BiDirect	LCR	37	Group: BiDirect	LCR	38	Group: BiDirect	LCR	39	Group: BiDirect	LCR	40	Group: BiDirect	LCR	41	Group: BiDirect	LCR	42	Group: BiDirect	LCR

LCR Resource Map

Set Group: none- VSet Set Resource Type: Bi Directional V Set																				
1	Group: GSM (1) BiDirect	EMPTY	2	Group: GSM (1) BiDirect	EMETY	3	Group: GSM (1) BiDirect	EHPTY	4	Group: GSM (1) BiDirect	EMPTY	5	Group: GSM (1) BiDirect	EMPTY	6	Group: GSM (1) BiDirect	EMPTY	7	Group: GSM (1) BiDirect	EMPTY
8	Group: GSM (1) BiDirect	EMPTY	9	Group: GSM (1) BiDirect	ENPTY	10	Group: GSM (1) BiDirect	EHPTY	11	Group: GSM (1) BiDirect	ENRIY	12	Group: GSM (1) BiDirect	EMPTY	13	Group: GSM (1) BiDirect	EMPTY	14	Group: GSM (1) BiDirect	EMPTY
15	Group: GSM (1) BiDirect		16	Group: GSM (1) BiDirect	EMPTY	17	Group: GSM (1) BiDirect	ERFTY	18	Group: GSM (1) BiDirect	EMPTY	19	Group: GSM (1) BiDirect	EHPTY	20	Group: GSM (1) BiDirect	EMPTY	21	Group: GSM (1) BiDirect	EMPTY
22	Group: GSM (1) BiDirect	EMPTY	23	Group: GSM (1) BiDirect	EMPTY	24	Group: GSM (1) BiDirect	EMPTY	25	Group: GSM (1) BiDirect	EMPIX	26	Group: GSM (1) BiDirect	EMPTY	27	Group: GSM (1) BiDirect	EMPTY	28	Group: GSM (1) BiDirect	EMPTO
29	Group: GSM (1) BiDirect	EMPTY	30	Group: GSM (1) BiDirect	EMPTY	31	Group: GSM (1) BiDirect	EMPTY	32	Group: GSM (1) BiDirect	EMPTY	33	Group: BiDirect	EMPTV	34	Group: BiDirect	LCR	35	Group: BiDirect	LCR
36	Group: BiDirect	LCR	37	Group: BiDirect	LCR	38	Group: BiDirect	LCR	39	Group: BiDirect	LCR	40	Group: BiDirect	LCR	41	Group: BiDirect	LCR	42	Group: BiDirect	LCR

Figure 82. Selecting LCR Resources

3. From the Select Group dropdown list, select a Group. This is the Group the shaded cells will be associated with.

Resource Map

LCR Resource Map

lou	Selecti	on: Chann	nel 1 -	Channel 18	1	52					ň									
Se	et Group:	-none-	✓ Set	Set Resou	irce Typ	e: E	li Directional	✓ Set												
1	Group: GS BiDirect	GSM VolP PSTN	2	Group: GSM (1) BiDirect	EMPTY	3	Group: GSM (1) BiDirect	EMPTY	4	Group: GSM (1) BiDirect	EMPTY	5	Group: GSM (1) BiDirect	EHPTY	6	Group: GSM (1) BiDirect	EMPTY	7	Group: GSM (1) BiDirect	EMPT
8	Group: GS BiDirect	Group 4 Group 5	9	Group: GSM (1) BiDirect	EMPTY	10	Group: GSM (1) BiDirect	EMPTY	11	Group: GSM (1) BiDirect	ENPTY	12	Group: GSM (1) BiDirect	BHPTY	13	Group: GSM (1) BiDirect	EMPTY	14	Group: GSM (1) BiDirect	EMPTY
15	Group: GS BiDirect	Group 6 Group 7 Group 8	16	Group: GSM (1) BiDirect	EMPTY	17	Group: GSM (1) BiDirect	EMPTY	18	Group: GSM (1) BiDirect	ENPTY	19	Group: GSM (1) BiDirect	EMPIY	20	Group: GSM (1) BiDirect	EMPTY	21	Group: GSM (1) BiDirect	EMPT
22	Group: GS BiDirect	Group 8 Group 9 Group 10	23	Group: GSM (1) BiDirect	EMPTY	24	Group: GSM (1) BiDirect	EMPTY	25	Group: GSM (1) BiDirect	EMPTY	26	Group: GSM (1) BiDirect	EMPTY	27	Group: GSM (1) BiDirect	EMPTY	28	Group: GSM (1) BiDirect	EMPTY
29	Group: GS BiDirect	Group 11 Group 12	30	Group: GSM (1) BiDirect	EMPTY	31	Group: GSM (1) BiDirect	EMPTY	32	Group: GSM (1) BiDirect	EMPTY	33	Group: BiDirect	EHPTY	34	Group: BiDirect	LCR	35	Group: BiDirect	LCR
36	Group: BiDirect	Group 13 Group 14 Group 15	37	Group: BiDirect	LCR	38	Group: BiDirect	LCR	39	Group: BiDirect	LCR	40	Group: BiDirect	LCR	41	Group: BiDirect	LCR	42	Group: BiDirect	LCR

Figure 83. Group Dropdown List

- 4. Click **Set**. The assignment is applied and saved.
- 5. From the **Resource Type** dropdown list, select either: **Bi Directional**

This Resource can be used for both incoming calls and for outbound calls.

Outbound Only

This Resource can only be used for outbound calls.

6. Click **Set**. This completes the procedure.

5.6 Rules

Rules determine to which Group a call is routed.

5.6.1 Creating a Rule

To create a Rule:

1. From the HMC navigation pane's LCR branch, click the **Rules** sub-branch. The Rules screen is displayed.

Save Se	ettings							
Default F	Rule:	-none- 🗸		2				
Default 1	fext Rule:	-none- 🔽	ACR	2				
TF = Time	e Frame. T	F1: - TF2: - TF3: -	TF4: -					
Rule #	Prefix	1st Group		2nd Group		3rd Group		ACF
Rule 1	05468603	GSM	\sim	-none-	~	-none-	~	
Rule 2		-none-	~	-none-	~	-none-	~	
Rule 3		-none-	~	-none-	~	-none-	~	
Rule 4		-none-	~	-none-	~	-none-	~	
Rule 5		-none-	\checkmark	-none-	\sim	-none-	~	
Rule 6		-none-	~	-none-	~	-none-	~	
Rule 7		-none-	~	-none-	~	-none-	~	
Rule 8		-none-	~	-none-	~	-none-	~	
Rule 9		-none-	~	-none-	~	-none-	~	
Rule 10		-none-	~	-none-	~	-none-	~	
Rule 11		-none-	~	-none-	~	-none-	~	
Rule 12		-none-	~	-none-	~	-none-	~	
		-none-	~	-none-	V	-none-	V	
Rule 13		-none-	-	none				

Figure 84. LCR Rules Screen

- 2. Place the cursor in an empty Rule # Prefix cell.
- 3. Enter the **Prefix**, that is, the first numbers of the destination number. The Prefix is often the first numbers of a mobile phone service provider.
- 4. Configure the following:

1st Group

From the dropdown list, select the Group to which the LCR module will first route calls with this prefix.

2nd / 3rd Group

Optionally, enter a second and third choice for where the call should be routed.

These choices are used when the 1st Group's Resources are busy.

ACR

When this checkbox is selected, the gateway redirects the call to a database containing Advanced Call Routing lists. The call is routed according to rules on an external application with advanced routing options.

5. Optionally, repeats steps 2 until 4 for additional rules.

Rules

6. Ensure that the Rules are in the correct order. Rules are applied from top to bottom. Therefore, place a Rule with a prefix identical to but shorter than another Rule's prefix *after* the longer Rule.

For example, if Rule 1's prefix is 082 and Rule 2's prefix is 08, calls beginning with 082 will be routed according to Rule 1 and all other calls beginning with 08 will be routed according to Rule 2. If Rule 2 is placed above, the 082 calls will also be routed according to it and the 082 Rule will be rendered ineffective.

- 7. Optionally, select a **Default Rule**. This rule is applied when a call's prefix does not match one of the defined prefixes. Time Frames are not applied to the Default Rule. a. From the dropdown list, select a rule.
 - b. Select or clear the ACR checkbox. When selected, the gateway redirects the call to a database containing Advanced Call Routing lists. The call is routed according to rules on an external application with advanced routing options.
- 8. Disregard the Default Text Rule. For more information, contact Technical Support.
- 9. Click Save Settings.

5.6.2 Deleting a Rule

To delete a Rule:

- 1. From the HMC navigation pane's LCR branch, click the **Rules** sub-branch. The Rules screen is displayed.
- 2. Place the cursor in the Prefix cell on the Rule's row.
- 3. Delete the entry.
- 4. Click Save Settings.

5.7 Filters

Filters enable consistent, automatic management of phone numbers before they are routed.

An IN filter changes the destination number before the list of rules is processed.

An OUT filter changes the destination number after the list of rules has been processed and the destination group has been chosen. The process is identical for both.

To create a Filter:

1. From the HMC navigation pane's LCR branch, click either the **IN** or **OUT Filters** sub-branch. The Filters screen is displayed.

LCR IN-Filters

Save Setting	S		
Filter #	Trim Left	Add Left	Match Condition
Filter 1	0	~	
Filter 2	0	~	
Filter 3	0	~	
Filter 4	0	~	
Filter 5	0	~	
Filter 6	0	~	
Filter 7	0	~	
Filter 8	0		

Figure 85. LCR Filters Screen

2. Configure the following for up to eight filters:

Trim Left

From the dropdown menu, select the amount of digits that will be deleted from the beginning of the destination number.

Add Left

Optionally enter the numeric prefix that will be added to the beginning of the destination number.

Match Condition

Optionally enter the exact expected numeric prefix with which the dialed number should begin, for this filter to be applied.

3. Click Save Settings.

4. From the HMC navigation pane's LCR branch, click the **Groups** sub-branch. The Groups screen is displayed.

Filters

- 5. Optionally, from a Group's **In Filter** dropdown menu, select an In Filter. The IN filter will be applied to calls entering the LCR module from one of the system's interfaces.
- 6. Optionally, from a Group's **Out Filter** dropdown menu, select an Out Filter. The OUT filter will be applied to calls exiting the LCR module to one of the system's interfaces.
- 7. Click Save Settings.

5.8 Advanced Call Routing

Use ACR to define, for example, white lists and black lists. ACR supplements the LCR rules created on the Rules screen.

Note: A white list includes the phone numbers that are authorized as dialed destinations whereas a black list includes the phone numbers that are prevented from being dialed. Enabling ACR requires the following steps:

- a. Prepare and upload the Number List (optional)
- b. Define the ACR rules.
- c. Prioritize the rules by re-arranging them. The list of rules is scanned and applied from top to bottom.
- d. Set the default action to be carried out when none of the rules above it were a match, or no rule provided an LCR group selection.

5.8.1 Modifying the Existing ACR Number List

To modify the existing ACR Number List:

1. From the HMC navigation pane's LCR branch, click the ACR Numbers Lists subbranch. The ACR Number Lists screen is displayed.



Figure 86. ACR Number Lists Screen

- 2. Click **Export**. The standard Windows browse dialog box is displayed.
- 3. Save the .csv file.
- 4. Open the file in a text-editor, such as Notepad.
- 5. Modify the file. Preserve the format; that is, the words **tag,number** must appear as the first row of the list.
- 6. Save and close the file.
- 7. On the ACR Number Lists Screen, click **Browse**. The standard Windows browse dialog box is displayed.

Advanced Call Routing

- 8. Locate the .csv file containing the lists. Select it and click **Open**. The path to the .csv file is displayed on the Number Lists Screen.
- 9. Select either:

Overwrite

When selected, the old .csv file is deleted and the new file replaces it.

Append

When selected, the entries on the new .csv file are added to the entries on the old .csv file.

10. Click **Import**. The report of total lists and total numbers is automatically updated.

5.8.2 Creating a New ACR Number List File

To define a number list:

- 1. Create a new file whose file-name ends with the extension .csv.
- 2. Open the file in a text-editor, such as Notepad.
- 3. Enter the words **tag,number** as the first row of the list.
- **Note:** In step 4, the term —listl indicates all entries that are share the same tag.
 - 4. Add the tag and number of each entry. Ensure that a comma separates the tag and number.

The following example includes 5 lists:

- tag,number
- XYZ,0774445004
- XYZ,0509080704
- XYZ,0523030303
- ABC,0509380137
- ABC,0509380136
- CLCOM,052
- **PHONE**,054
- CELLC,050

Caution: A comma must separate the tag and the number or the list will not register properly.

5. From the HMC navigation pane's LCR branch, click the **ACR Numbers Lists** sub-branch. The ACR Number Lists screen is displayed.

	all lists:12
Choose a CSV f	ile to upload:
	Browse
O overwrite	Import
Append	impore
	Export

Upload Result: The file 2008-12-09.csv has been uploaded File total rows=12

Figure 87. ACR Number Lists Screen

- 6. Click **Browse**. The standard Windows browse dialog box is displayed.
- 7. Locate the .csv file containing the lists. Select it and click **Open**. The path to the .csv file is displayed on the Number Lists Screen.
- 8. Select either:

Overwrite

When selected, the old .csv file is deleted and the new file replaces it.

Append

When selected, the entries on the new .csv file are added to the entries on the old .csv file.

9. Click **Import**. The report of total lists and total numbers is automatically updated.

5.8.3 ACR Rules

To create an ACR Rule:

- 1. Ensure that an up-to-date ACR Number Lists .csv file has been uploaded to the Gateway.
- 2. From the HMC navigation pane's LCR branch, click the **ACR Rules** subbranch. The ACR Rules screen is displayed.

ACR	- Adva	nced Call Ro	outing -	Rules
Prioity	Name	Description	Edit	Delete
	Default	Allow call	block	

Add new rule

Figure 88. ACR Rules Screen

Advanced Call Routing

3. Click Add new rule. The Add New Rule screen is displayed.

Rule Name		
Check:		
Source		No check 🔽
Barrison		No check 🗸
Destination		
Destination		
Destination		no check
Actions:		
Actions:	none-V or none-V	
Actions: Block	□ -none-▼ or -none-▼ or -none-▼ Trim Left: 0 ▼ Trim Right: 0 ▼ Add Left:	Add Right:

Figure 89. Add New Rule Screen

- 4. In the Rule Name field, enter the name of the rule.
- 5. In the Check area, from either or both the **On Source** and the **On Destination** dropdown menu, define the indication the rule will evaluate.

Note: On Source checks the origination phone number, that is, the phone number from which the call was placed. On Destination checks the target phone number, that is, the phone number of the called party.

If an indication is selected, a dialog box similar to the following is displayed:

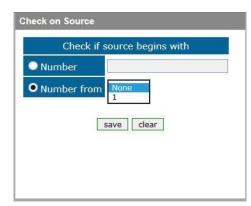


Figure 90. Sample Check Dialog Box

No Check

The rule does not check the Source number.

Begins With

The rule checks if the On Source begins with either specific digits or a tag that appears on the list.

Ends With

The rule checks if the On Source ends with either specific digits or a tag that appears on the list.

Configuring LCR

In Range

The rule checks if the On Source range is within a specific range.

Identical to

The rule checks if the On Source is exactly the specific digits or tag that appears on the list.

- 6. Complete the dialog box and click **Save**.
- 7. In the Actions area, define what ACR does when it identifies a number matching the indications defined in the Check area.

No Actions are Defined

If no actions are defined, the call is allowed as is.

Block

Calls matching the indications are not allowed.

Change Group

Calls matching the indications are routed through the LCR Group defined here.

On Source

Phone numbers of calls matching the indications are altered as defined here.

On Destination

Phone numbers of calls matching the indications are altered as defined here.

- 8. Click Save. The new rule is added to the ACR Rules screen.
- 9. Prioritize the rule. Use the arrows in the Priority column to increase or decrease a rules prioritization.



Add new rule

Figure 91. Rule Prioritization Arrows

10. From the HMC navigation pane's LCR branch, click the **Rules** sub-branch. The Rules screen is displayed.

11. From the ACR column, select the checkbox in the LCR rule row that the ACR rules will be applied to and click **Save Settings**.

CDR

5.9 CDR

Use the LCR **Settings** branch to enable the collection of Call Detail Records (CDR) and to access CDR files.

On systems equipped with an HBS/HBD card, an external storage device (an SD card) must be used. The active file is located within the internal system memory while completed files are moved onto the external storage device during the night.



Caution: Failure to plug in an external storage device will result in loss of CDR data. The memory device should not be removed.

On PC-based systems, the CDR files are stored on the hard-drive.

On all systems (HBS/HBD based as well as PC based) the user is responsible for deleting old CDR files. This is required both in order to prevent memory overflow as well as to be able to easily locate a file.

5.9.1 Enabling Collection of CDR

To enable collection of CDR files:

1. From the HMC navigation pane's LCR branch, click the **Settings** sub-branch. The Feature list is displayed.

_CR Settings	
Save Settings	
Feature	Enable

2. Select or clear the checkbox. When selected, the HMC collects Call Detail Records.

Note: Unless its size exceeds a predefined limit, only one CDR file is created each day. Configuring LCR

5.9.2 Downloading a CDR File

To download a CDR file:

- 1. From the HMC navigation pane, expand the **Monitor** branch.
- 2. Expand the LCR Card sub-branch and select LCR CDRs. The list of CDR files is displayed.

File Name (click to download)	Last Modified	Size (bytes)	
Remaining space (disk): 18.66 megabytes			
LCR_CDR_20081211.log 🗐	11/12/2008 12:25	14944	
Remaining space (external): 964.75 megabytes			
LCR_CDR_20080630.1214873338.log 🔍	30/06/2008 21:25	25015	delete
LCR_CDR_20080701.1214959931.log	01/07/2008 21:59	26726	delete
LCR_CDR_20080702.1215046530.log	02/07/2008 22:11	25259	delete
LCR_CDR_20080703.1215133121.log 🔍	03/07/2008 20:52	6678	delete
LCR_CDR_20080704.1215216106.log	04/07/2008 21:17	2540	delete
LCR_CDR_20080706.1215388874.log 🔍	06/07/2008 22:57	17568	delete
LCR_CDR_20080707.1215475467.log	07/07/2008 22:23	29035	delete
LCR_CDR_20080708.1215562061.log 🔍	08/07/2008 19:50	26728	delete
LCR_CDR_20080709.1215648652.log	09/07/2008 21:29	30487	delete
LCR_CDR_20080710.1215735247.log 🔍	10/07/2008 21:55	27894	delete
LCR_CDR_20080711.1215821844.log	11/07/2008 22:35	1660	delete
LCR_CDR_20080712.1215908009.log	12/07/2008 19:20	282	delete

- 3. Click a file name. The standard Windows Open dialog box is displayed.
- 4. Define the location where the file will be saved and click **OK**. The file is downloaded to that location.

5.9.3 Deciphering the CDR File

A CDR line is created in the file each time a LCR call ends. All CDR fields appear on a single line. For example:

12364,5003,0546858576,0546858576,1,2,2008-09-05 13:48:13,2008-09-05 13:48:14,2008-09-05 13:48:24,2008-09-05 13:50:42,31,23,1,0,10,138 The entries are explained in Table 10. The format of the line is:

Call Index Number, Source Number, Original Destination Number, Filtered Destination Number, Source Group Number, Destination Group Number, Dial Date & Time, Alert Date & Time, Answer Date & Time, Hangup Date & Time, From Resource, To Resource, Source Hangup Direction, Destination Hangup Direction, Hangup Reason, Call Duration

Entry	Explanation
Call Index Number	Counts from 0, does not reset when a new file is created (i.e. when the date changes).
Source Number, Original Destination Number	Dialing and dialed numbers respectively.
Filtered Destination Number	Dialed number after a filter was applied to it (where relevant). Otherwise identical to the Original Destination Number.
Source Group Number, Destination Group Number	Group of LCR resources from which the call had arrived to the LCR, as well as the group through which the call is sent out from the LCR.
Dial Date & Time	The moment the gateway received the call request (format = YYYY-MM-DD HH:MM:SS).
Alert Date & Time	The moment the remote party had begun ringing (if reported by the remote party, and supported by the outgoing resource).
Answer Date & Time	The moment the call had been connected (i.e. answered by the remote party).
Hangup Date & Time	The moment any of the parties had terminated the call.
From Resource	The resource through which the call entered the LCR entity.
To Resource	The resource through which the call was placed (after being routed according to the LCR rules).
Source Hangup Direction	0 = source party had terminated the call, 1 = call was terminated by LCR (due to termination by the destination party, no route to destination, unavailable destination resource, etc.)

Table 10. CDR Line Entries Explained

Destination Hangup Direction	0 = destination party had terminated the call, $1 =$ call was terminated by LCR (due to termination by the source party etc.)
Hangup Reason	Cause code as reported by the party that had first terminated the call.
Call Duration	In seconds, measured between AnswerTime and Hangup-Time.

6 Managing via the HMC

This chapter contains:

- Number Filters (section 6.1)
- Scheduler (section 6.2)

Number Filters

6.1 Number Filters

Use Number Filters to perform advanced manipulations on numbers that are sent to, or received by, the Gateway. All numbers are compared to the configured set of rules. If the number matches a rule, the rule is applied and a new number is dialed.

Note: The Number Filters feature is relevant only to Hypermedia HG4000 Gateways. To

create a Number Filter:

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Click the **Number Filters** sub-branch. The Number Filters screen is displayed.

Add New Fi	lter Name		Submit
Filter Name		1.9	
00972	Delete	Edit	
add9	Delete	Edit	
newplan	Delete	Edit	

Figure 92. Number Filters Screen

- 3. In the Add New Filter Name field, enter a name for the new filter.
- 4. Click **Submit**. The Number Filters screen is displayed; the new filter appears in the list of Filter Names.
- 5. Click the **Edit** button beside the new filter's name. The **Rules for Filter** <**name**> screen is displayed.

Direction Match Pattern Action	
ule Out 🕶	Submit

Figure 93. Edit Number Filters Screen

6. Select a Rule **Direction**.

Out

Use Out filters to apply the filters to outgoing calls. For example, if a number begins with the Country Code 44 and is followed by seven or more digits, this filter— $^44(d/d/d/d) = 1$ —removes the country code and dials only the digits following the Country Code.

This second example is an Out filter that adds the suffix _9' to all outgoing calls which have five or more digits (for getting an outside line)— $(\d\d\d\d)$

In

Use In filters to apply the filters to incoming calls.

7. Using standard Regular Expressions, enter the Match Pattern and the Action that will occur when the pattern is matched.

Note: For more information about Regular Expressions, see: http://www.regularexpressions.info

8. Click **Submit**. The Rule is listed in either the Out Filter Rules or the In Filter Rules list.

Direction Matc	h Pattern	Action	
Rule Out 🔽			Submit
Out Filter Rules Match Pattern Actio	on		
Match Pattern Actio	on		
o at i intor ritaroo	Action		

Figure 94. New Filter is Displayed

- 9. Click the **Number Filters** sub-branch.
- 10. Click Update Filters.

6.2 Scheduler

Use the Task Scheduler to configure the Gateway to repeat commands at scheduled intervals. Five commands are preconfigured. In addition, it is possible to manually configure a command.

	- Add New	/ Command - 💌			
- Add New Command - 💌					
- Add New Command - Switch SIM per Slot	Task ID	Start Time	Command	Repeat Period	
Switch SIM per System Reset SIM Counter Set Multi SIM VoIP Channels Manual Command	1	13-Jan-2009 14:38:31	UseSIM 1 1,1,1,1	3M	Delel
	2	13-Jan-2009 14:41:13	UseSIM S 2	ЗM	Dele
	3	13-Jan-2009 14:42:17	ResetSIMCount 1 1.1	ЗM	Dele
	4	13-Jan-2009 14:43:11	SetMultiSIM 1 /r2/G1,1,1,1/i1,1	ЗM	Dele
	5	13-Jan-2009 14:46:45	OpenVoIPChannels 2,3,4,5,6,7,8,9,10,11,12,13,14,15	8D	Dele

Figure 95. Dropdown Menu of Tasks and Table of Scheduled Tasks

6.2.1 Switch SIM per Slot

Use the Switch SIM per Slot task to configure a GSM slot to use specific SIM cards for a defined period of time.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Click the **Scheduler** sub-branch. The Task Scheduler screen is displayed.
- 3. From the Add New Command dropdown menu, select Switch SIM per Slot. The Task Scheduler automatically advances to the next screen.

Swite	ch SIM per Slot	
Slot	□1 □2	
Modul	e SIM	
1	As Is 💌	
	As Is 💌	
2	AS IS	
	As Is	
2 3 4		

Figure 96. Task Scheduler Switch SIM per Slot Screen

Scheduler

4. Configure the task parameters:

Slot

Select or clear the checkboxes. Each checkbox represents the GSM card located in the numbered slot counting from the left.

SIM

From each module's dropdown menu, select the SIM card that module will use. Select As Is if the Gateway does not change the SIM activity.

Note: Use the All dropdown menu to assign the same SIM card to all four modules.

5. Click Next. The Set Command screen, with the command syntax, is displayed.

Task Scheduler	Task Scheduler
- Add New Command - 💌	- Add New Command - 💌
Task ID Start Time Command Repeat Period Upload Schedule	- Add New Command - Switch SIM per Slot Switch SIM per System Reset SIM Counter Reset SMS Counter Set Multi SIM VoIP Channels

Figure 97. Task Scheduler Set Command Screen

Caution: Clicking **menu** deletes the new task. The table of schedules tasks is redisplayed. 6. Configure the task's schedule:

a. Click 🛄 (calendar icon). A calendar opens in a new browser tab.



Note: First, set the time. As soon as you click the date, the browser tab closes and the date and time are entered into the Start Time field.

- b. Enter the time that the command will start.
- c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
- d. From the Repeat drop-down menu, select either **Yes** or **No**.
- e. If the task is configured to repeat, select a **Repeat Period**. The Repeat Period can be either months, days, hours, or minutes.
- 7. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.
- 8. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

6.2.2 Switch SIM per System

Use the Switch SIM per System task to configure a Gateway to use one specific SIM card for a defined period of time.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Click the Scheduler sub-branch. The Task Scheduler screen is displayed.
- 3. From the Add New Command dropdown menu, select Switch SIM per System. The Task Scheduler automatically advances to the next screen.

ask Scheduler	
Switch SIM per System	
et Active SIM per System: 🚺 💌	
ack next	

Figure 98. Task Scheduler Switch SIM per System Screen

- 4. From the Set Active SIM per System dropdown menu, select the SIM card that the entire system will use.
- 5. Click Next. The Set Command screen, with the command syntax, is displayed.

Task Scheduler	Task Scheduler
- Add New Command - 🔻	- Add New Command - 🔻
Task ID Start Time Command Repeat Period	- Add New Command - Switch SIM per Slot Switch SIM per System Reset SIM Counter
Upload Schedule	Reset SMS Counter Set Multi SIM VolP Channels
	Manual Command

Figure 99. Task Scheduler Set Command Screen



Caution: Clicking **menu** deletes the new task. The table of schedules tasks is redisplayed. 6. Configure the task's schedule

a. Click 🛄 (calendar icon). A calendar opens in a new browser tab.



Note: First, set the time. As soon as you click the date, the browser tab closes and the date and time are entered into the Start Time field.

- b. Enter the time that the command will start.
- c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
- d. From the Repeat drop-down menu, select either Yes or No.
- e. If the task is configured to repeat, select a **Repeat Period**. The Repeat Period can be either months, days, hours, or minutes.
- 7. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.

Scheduler

8. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

6.2.3 Reset SIM Counter

Use the Reset SIM Counter task to configure a GSM slot's module to restart the recording of time in use.

- 1. From the HMC navigation pane, expand the **Manage** branch.
- 2. Click the **Scheduler** sub-branch. The Task Scheduler screen is displayed.
- 3. From the Add New Command dropdown menu, select Reset SIM Counter. The Task Scheduler automatically advances to the next screen.

Reset SIM(s) Counter		
Slot	□1 □2	
lodul	e SIM	
C 1		
0 2	All	
03	All	
C 4	All	

Figure 100. Task Scheduler Reset SIM Counter Screen

4. Configure the task parameters

Slot

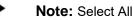
Select or clear the checkboxes. Each checkbox represents the GSM card located in the numbered slot counting from the left.

Module

From the Module column, select the module upon which the task will be performed. Only one Module can be selected.

SIM

From the module's SIM dropdown menu, select the SIM card for which the count will be reset.



Note: Select All to reset the count on all of the module's SIM cards.

5. Click **Next**. The Set Command screen, with the command syntax, is displayed.

Start Time		
Command		0
Repeat	Yes 💌	
Repeat Period	Months 💌	
set command		

Figure 101. Task Scheduler Set Command Screen



Caution: Clicking menu deletes the new task. The table of schedules tasks is redisplayed. 6. Configure the task's schedule:

a. Click 🛄 (calendar icon). A calendar opens in a new browser tab.

Note: First, set the time. As soon as you click the date, the browser tab closes and the date and time are entered into the Start Time field.

- b. Enter the time that the command will start.
- c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
- d. From the Repeat drop-down menu, select either Yes or No.
- e. If the task is configured to repeat, select a **Repeat Period**. The Repeat Period can be either months, days, hours, or minutes.
- 7. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.
- 8. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

6.2.4 Set Multi SIM

Use the Set Multi SIM task to create cycles that define when each SIM card is used and after how much time a SIM card is removed from usage.

- 1. From the HMC navigation pane, expand the Manage branch.
- 2. Click the **Scheduler** sub-branch. The Task Scheduler screen is displayed.
- 3. From the **Add New Command** dropdown menu, select Set **Multi SIM**. The Task Scheduler automatically advances to the next screen.

Scheduler

Set Multi SE	м
Slot 🗖 1	□2
Module	01020304
SIM	
Switch Period	
Lock Period	

Figure 102. Task Scheduler Set Multi SIM Screen

4. Configure the task parameters:

Slot

Select or clear the checkboxes. Each checkbox represents the cellular card located in the numbered slot counting from the left.

Module

From the Module row, select the module number on the cellular card upon which the task will be performed. Only one Module can be selected.

SIM

From the SIM row, select the checkbox to include the SIM card in the cycle.

Switch Period

Enter an amount of time measured in minutes that each SIM card is active. When the period of time expires, the next SIM card become active.

Lock Period

Enter an amount of time measured in minutes after which the SIM cards can no longer be used to place calls.

5. Click Next. The Set Command screen, with the command syntax, is displayed.

Start Time		-
Command		0
Repeat	Yes 🔻	
Repeat Period	Months 💌	
set command		



Caution: Clicking menu deletes the new task. The table of schedules tasks is redisplayed. 6. Configure the task's schedule:

a. Click 🛄 (calendar icon). A calendar opens in a new browser tab.

 \Rightarrow

Note: First, set the time. As soon as you click the date, the browser tab closes and the date and time are entered into the Start Time field.

- b. Enter the time that the command will start.
- c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
- d. From the Repeat drop-down menu, select either Yes or No.
- e. If the task is configured to repeat, select a **Repeat Period**. The Repeat Period can be either months, days, hours, or minutes.
- 7. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.
- 8. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

6.2.5 VoIP Channels

Use the VoIP Channels task to block, open, or clear VoIP channels at a specific time.

- 1. From the HMC navigation pane, expand the Manage branch.
- 2. Click the Scheduler sub-branch. The Task Scheduler screen is displayed.
- 3. From the Add New Command dropdown menu, select VolP Channels. The Task Scheduler automatically advances to the next screen.

Set Vol	IP Channel	S					
hoose C	ommand:	Block 💌					
hoose C	hannel(s):						
□1	□ 2	□ 3	□ 4	5	□ 6	□ 7	8 🗆
9	II 10	□ 11	□ 12	13	□ 14	□ 15	16
L 17	□ 18	1 9	20	L 21	□ 22	23	□ 24
25	□ 26	□ 27	28	29	□ 30	□ 31	□ 32

Figure 104. Task Scheduler Set VoIP Channels Screen

4. From the **Choose Command** dropdown menu, select either:

Block

Disables the selected channels.

Open

Enables the selected channels.

Scheduler

Clear

Disconnects all current calls on the selected channels.

- 5. Select the checkboxes of the channels that the task will be applied to.
- **Note:** Select All to apply the task to all the channels.
- 6. Click Next. The Set Command screen, with the command syntax, is displayed.

Start Time		
Command		0
Repeat Yes		
Repeat Period Mo	nths 💌	
set command		

Figure 105. Task Scheduler Set Command Screen



Caution: Clicking menu deletes the new task. The table of schedules tasks is redisplayed. 7. Configure the task's schedule:

a. Click 🛄 (calendar icon). A calendar opens in a new browser tab.

Note: First, set the time. As soon as you click the date, the browser tab closes and the date and time are entered into the Start Time field.

- b. Enter the time that the command will start.
- c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
- d. From the Repeat drop-down menu, select either Yes or No.
- e. If the task is configured to repeat, select a Repeat Period. The Repeat Period can be either months, days, hours, or minutes.
- 8. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.
- 9. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

6.2.6 Manual Command

Use the Manual Command task to customize a task and its schedule.

- 1. From the HMC navigation pane, expand the Manage branch.
- 2. Click the **Scheduler** sub-branch. The Task Scheduler screen is displayed.
- 3. From the Add New Command dropdown menu, select Manual Command. The Task Scheduler automatically advances to the next screen.

Start Time		10
Command		0
Repeat	Yes 💌	
Repeat Period	Months 💌	

Figure 106. Task Scheduler Manual Command Screen



Caution: Clicking menu deletes the new task. The table of schedules tasks is redisplayed. 4. Configure the task and its schedule:

a. Click 🛄 (calendar icon). A calendar opens in a new browser tab.

Note: First, set the time. As soon as you click the date, the browser tab closes and the date and time are entered into the Start Time field.

- b. Enter the time that the command will start.
- c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
- d. Enter the command. For help with command syntax, click
- e. From the Repeat drop-down menu, select either Yes or No.
- f. If the task is configured to repeat, select a **Repeat Period**. The Repeat Period can be either months, days, hours, or minutes.
- 5. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.
- 6. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

Scheduler

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7 Console Suite and Other Tools

)

This chapter contains:

- Console Suite (section 7.1
- Hypermedia Gateway Server List (section 7.2)
- Troubleshooting (section 8)

Console Suite and Other Tools Console Suite

7.1 Console Suite

7.1.1 CDR Console

Use the CDR Console to download and review Call Detail Records.

Note: The CDR Console feature is relevant only to Hypermedia HG4000 Gateways. To run

the CDR Console:

- 1. Click the Windows **Start** button > **All Programs**.
- 2. From the Hypermedia program group, select **CDR Console**. The CDR Console logon screen opens in the default browser.
- 3. Click the warning bar at the top of the screen and, from the dropdown menu, click **Allow Blocked Content**. Confirm your choice by clicking **Yes** at the confirmation message.

Note: To avoid recurring displays of the warning bar, from the menu bar click **Tools** > **Internet Options** > **Advanced** > **Allow active content to run in files on My Computer**.

4. Enter your password and click **Submit**. The CDR Console screen is displayed.



Figure 107. CDR Console Screen

5. Click a file name. The standard Windows Open dialog box is displayed.

6. Define the location where the file will be saved and click **OK**. The file is downloaded to that location.

7.1.2 Log Console

Use the Log Console to review the primary system log. All events and alarms are printed to this log.

To run the Log Console:

- 1. Click the Windows **Start** button > **All Programs**.
- 2. From the Hypermedia program group, select **Log Console**. The Log Console logon screen opens in the default browser.
- 3. Click the warning bar at the top of the screen and, from the dropdown menu, click **Allow Blocked Content**. Confirm your choice by clicking Yes at the confirmation message.

Note: To avoid recurring displays of the warning bar, from the menu bar click **Tools** > **Internet Options** > **Advanced** > **Allow active content to run in files on My Computer**.

4. Enter your password and click **Submit**. The Log Console screen is displayed.



Figure 108. Log Console Screen

5. Select a log level from 1 to 10. The Log Console filters the recorded logs and displays only the logs matching the level.

Console Suite

7.1.3 Decoding Logs

Following are sample Logs that have been edited. Only the relevant entries remain. The excerpted content is explained in following the Log sample.

7.1.3.1 VoIP to GSM Log

Following are excerpts from a VoIP to GSM Log.

```
[25/03-09:56:24.032] [debug] getRemoteSignalIP=192.168.1.67
```

```
...
```

[25/03-09:56:24.067] [debug] CreateIncomingSession token: 2cf9b58a-f8f3ae56ad3c20dad44bfdec@192.168.1.67 remoteNumber: 30 localNumber: 0774445016 remoteIP: 192.168.1.67

•••

[25/03-09:56:24.089] [debug] source DDI:0774445016 allowed DDI:^*[25/0309:56:24.093] [debug] FindLocalMediaResources (2cf9b58a-f8f3ae56ad3c20dad44bfdec@192.168.1.67/3) LocalHwyTS: 11:0 RemoteHwyTS: 5:31 media resource: 11.0

[25/03-09:56:24.121] getApplication for:MG.1-VoIP

•••

...

[25/03-09:56:24.242] [debug] provideAnswer

••

[25/03-09:56:24.302] [debug] Started media, accepting call [2cf9b58a-f8f3ae56-ad3c20dad44bfdec@192.168.1.67]

•••

[25/03-09:57:04.233] * Received Packet: HangingUp /A24/I3/o1/R10

...

[25/03-09:57:04.380] [debug] Close (2cf9b58a-f8f3ae56ad3c20dad44bfdec@192.168.1.67/3) closing session timeslot:0 handle: -1

•••

[25/03-09:57:04.392] [debug] (2cf9b58a-f8f3ae56-ad3c20da-d44bfdec@192.168.1.67/3) remove media resoruce: 11.0

•••

[25/03-09:57:04.991] * Received Packet: GenericReply /#90/@2b/x0,1/I2974/G

Explanation:

- 1. CreateIncomingSession indicates that the HG has received an incoming VoIP call and is attempting to establish the call.
- 2. In this case, SIP phone 192.168.1.67 is calling 0774445016 via the HG GSM module.

- 3. A unique token is produced for each call. In this case, the token is: 2cf9b58af8f3ae56-ad3c20da-d44bfdec
- 4. The HG checks connection authorization for each call before connecting the call. In this case, the authorization is: source DDI:0774445016 allowed DDI:^*
- 5. The HG analyzes to which application the call should be connected. In this case: getApplication for:MG.1-VoIP.
- 6. When the call recipient answers the call, the HG prints the following to the Log: provideAnswer.
- 7. Started media indicates that the HG has started streaming between both parties.
- 8. When one party hangs-up, the HG closes the session and removes the media resources.

7.1.3.2 GSM to VoIP Log

Following are excerpts from a GSM to VoIP Log.

[25/03-10:07:14.422] HMCServer received [ping] from 127.0.0.1/127.0.0.1:3883

```
[25/03-10:07:21.791] * Received Packet: Dialing /A24/I1031/o0/H5/S31/h11/s0/n0210/
N0774445016
```

•••

. . .

```
[25/03-10:07:22.114] [debug] Sending INVITE
[YWZmYjRiMjY3OGMyYzJkMGU1MjQxZDcxODkzMDBjYTY],
m_tokenToSession.insert
```

•••

[25/03-10:07:24.283] [debug] Started media, accepting call [YWZmYjRiMjY3OGMyYzJkMGU1MjQxZDcxODkzMDBjYTY.] [25/03-10:07:24.288] Received from MGW: [Answering /A24/I1031/x0,0/o1/#0]

[25/03-10:08:00.224] [debug] CloseResources (YWZmYjRiMjY3OGMyYzJkMGU1MjQxZDcxODkzMDBjYTY./1031)

[25/03-10:08:00.544] updateReplyContext: no effect

Explanation:

- 1. CreateIncomingSession indicates that the HG has received an incoming VoIP call and is attempting to establish the call.
- 2. In this case, analog phone 0774445016 is calling the SIM number 0546858579. This causes the HG to dial the MSN Value=0210.
- 3. The HG extracts the related called party's IP Address from the Phone2Net table. In our case: 192.168.1.67.

Dialed Number	Dest. IP	Dest. Number	PIN Code
Add Entry			
Dialed Number	Destination IP	Dest. Number	PIN Code

Console Suite

- 4. A unique token is produced for each call. In this case, the token is: YWZmYjRiMjY3OGMyYzJkMGU1MjQxZDcxODkzMDBjYTY.
- 5. JAVA analyzes to which application the call should be connected. In this case: getApplication for: 24.1-VoIP (24.1=CG card).
- 6. When the call recipient answers the call, the HG prints the following to the Log: Received from MGW: [Answering. . .
- 7. Started media indicates that the HG has started streaming between both parties.
- 8. When one party hangs-up, the HG closes the session and removes the media resources.

7.1.3.3 Callthrough Log

Following are excerpts from a Callthrough Log.

[25/03-10:21:41.783] * Received Packet: Dialing /A24/I1032/o0/H5/S31/h5/s32/n0210/ N0544331123

[25/03-10:21:42.327] Application: Callthrough-Leg1

•••

[25/03-10:21:42.563] MGWCallthrough (1032) Authentication successful, CLI found: 0544331123

•••

. . .

[25/03-10:21:45.997] [debug] OnDTMF notification: Digit=0, nHW=11, nTS.Type=0.2

[25/03-10:21:46.396] [debug] OnDTMF notification: Digit=7, nHW=11, nTS.Type=0.2

[25/03-10:21:46.757] [debug] OnDTMF notification: Digit=7, nHW=11, nTS.Type=0.2

[25/03-10:21:47.417] [debug] OnDTMF notification: Digit=4, nHW=11, nTS.Type=0.2

[25/03-10:21:47.896] [debug] OnDTMF notification: Digit=4, nHW=11, nTS.Type=0.2

[25/03-10:21:48.286] [debug] OnDTMF notification: Digit=4, nHW=11, nTS.Type=0.2

•••

[25/03-10:21:48.796] [debug] OnDTMF notification: Digit=5, nHW=11, nTS.Type=0.2

Console Suite and Other Tools

[25/03-10:21:49.216] [debug] OnDTMF notification: Digit=0, nHW=11, nTS.Type=0.2

[25/03-10:21:49.636] [debug] OnDTMF notification: Digit=1, nHW=11, nTS.Type=0.2

•••

. . .

[25/03-10:21:50.176] [debug] OnDTMF notification: Digit=6, nHW=11, nTS.Type=0.2

. . .

[25/03-10:21:53.339] Sending: [Dialing /A24/x0,0/I0/o0/H5/S31/h5/s32/N0544331123/ n0774445016], Client ID:11

[25/03-10:21:57.688] MGWCallthrough (1032) Leg2 event [SysAlerting /A24/I0/o1]

[25/03-10:22:09.470] Sending: [.MGWRequest /AMG/I888531/*resCloseChannel/H11/S0], Client ID:8

[25/03-10:22:20.969] ConnectionPing /AMG/I56/S1

Explanation:

Callthrough works as follows. The User dials the SIM number. The SIM is recognized as a register user and the HG sends the user a dial tone. The User can dial the destination number. HG successfully establishes the call between both parties.

- 1. An external cellular phone number (in our case: 0544331123) dials to the SIM number.
- 2. Application: Callthrough-Leg1 indicates that the HG has established the connection between the authorized user and Leg1.
- 3. Authentication successful, CLI found: 0544331123 indicates that the HG has checked user authentication.
- 4. The HG matches between the originating user (CLI and/or PIN Code) and the predefined registered user.
- 5. After the HG assumes the correct user authentication, the User gets a dial tone from the HG.
- 6. The User can dial the destination number by sending each digit of the destination number using DTMF. In our case, that is 0774445016.
- The HG dials to the destination called party (0774445016) and connects between Leg1 and Leg2. This is indicated by: MGWCallthrough (1032) Leg2 event [SysAlerting . . .
- 8. When one party hangs-up the call, the HG Closes Resources and removes media resources.

7.1.3.4 CallBack Log

Following are excerpts from a Callthrough Log.

[26/03-10:21:01.422] ConnectionPing /AMG/I16/S1

[26/03-10:21:17.647] * Received Packet: Dialing /A24/I1048/o0/H5/S31/h5/s31/n0210/ N0544331123

•••

...

[26/03-10:21:17.660] getApplication for: 24.1-Callback-Trigger

•••

[26/03-10:21:25.824] Error: no users defined for DDI 0210, cheking CLI [26/03-10:21:25.826] Looking up CLI: 0544331123

[25/03-10:21:42.846] Authentication successful, CLI found: 0544331123

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. . .

. . .

[26/03-10:21:25.862] Creating session: Code=[0602], UserId=[udi2], AccessNum=[], EventSource=[null] [26/03-10:21:25.866] Sending: [Dialing /A24/x0,0/I0/o0/H5/S33/h5/s32/N/n0544331123], Client ID:10

[26/03-10:21:26.041] MGWCallback (0) Leg1 event [DialAck /A24/I0/01]

[26/03-10:21:36.752] playDialTone 0 5.32

... [26/03-10:21:39.113] [debug] OnDTMF /c11.0/d0/t438010

... [26/03-10:21:41.082] [debug] OnDTMF /c11.0/d7/t1770

[26/03-10:21:41.812] [debug] OnDTMF /c11.0/d7/t510

[26/03-10:21:43.712] [debug] OnDTMF /c11.0/d4/t1680

[26/03-10:21:44.233] [debug] OnDTMF /c11.0/d4/t330

[26/03-10:21:44.892] [debug] OnDTMF /c11.0/d4/t360

[26/03-10:21:45.442] [debug] OnDTMF /c11.0/d5/t330

... [26/03-10:21:46.023] [debug] OnDTMF /c11.0/d0/t330

... [26/03-10:21:46.632] [debug] OnDTMF /c11.0/d1/t420

[26/03-10:21:47.213] [debug] OnDTMF /c11.0/d6/t330

[26/03-10:21:50.365] Sending: [Dialing /A24/x0,0/I1/o0/H5/S32/h5/s33/N/n0774445016], Client ID:10

...

. . .

[26/03-10:22:20.336] HMCServer received [ping] from 127.0.0.1/127.0.0.1:4043

Explanation:

Callback works as follows. SIM 1 is defined to _listen' for an incoming call from a registered user. SIM 2 is defined as LEG 1 and calls back the registered user and cross-connects with SIM 3. SIM 3 is defined as LEG 2 and calls to the destination party and cross connects with SIM 2.

- 1. In this case, the registered user 0544331123 is calling to the number of SIM1.
- 2. The HG answers the call, starts its callback engine—indicated by: getApplication for: 24.1-Callback-Trigger—and hangs up the user's line.

Note: The HG always prints the following error message: —Error: no users defined for DDI 0210, checking CLIII Ignore this message.

- 3. The HG checks user authentication. Successful authentication is indicated by: Authentication successful, CLI found: 0544331123.
- 4. The HG matches the originating user (CLI and/or PIN Code) to the predefined registered user.
- 5. After HG assumes a correct user authentication, the HG redials to the registered user. This is indicated by: MGWCallback (0) Leg1 event [DialAck.
- 6. After the User answers, the HG plays a dial tone. This is indicated by: playDialTone.
- 7. The User can dial the desired destination called party by sending each digit of the destination called party number using DTMF: 0774445016.
- 8. When one party hangs-up the call, the HG starts to Close Resources and removes media resources.

7.1.3.5 SMS Callback Log

Following are excerpts from a SMS Callback Log.

[26/03-10:39:40.805] HMCServer received [ping] from 127.0.0.1/127.0.0.1:4043

•••

. . .

SMSRawCallback /A24/z/I1050/r1/N"+972544331123"/i0/G"0774445016"

 $\label{eq:starses} \begin{array}{l} \mbox{[26/03-10:39:44.391] Adding message [SMSRawCallback /A24/z/I1050/r1/ N"+972544331123"/i0/G"0774445016"] to event$ $Queue for Client -1 Application ID 0 \\ \end{array}$

•••

[26/03-10:39:47.459] Creating session: Code=[0602], UserId=[udi2], AccessNum=[], EventSource=[/tSMS/A24/r1]

```
[26/03-10:39:47.680] MGWCallback (4) Leg1 event [DialAck /A24/I4/01]
...
[26/03-10:39:59.131] MGWCallback (4) Leg2 event [DialAck /A24/I5/01]
...
```

[26/03-10:40:44.917] * Received Packet: Ack /A2b/x0,1/I32

Explanation

SMS Callback works as follows. SIM 1 is defined to _listen' for an incoming SMS from a registered user. SIM 2 is defined as LEG 1 and calls back the registered user and cross-connects with SIM 3. SIM 3 is defined as LEG 2 and calls to the destination party and cross connects with SIM 2.

1. In this case the registered user 0544331123 is sending an SMS message to the number of SIM1. The SMS message contains the destination number.

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- 2. The HG receives the SMS and starting its SMS callback engine. This is indicated by: Adding message [SMSRawCallback . . .
- 3. The HG checks user authentication. Successful authentication is indicated by: Authentication successful, CLI found: 0544331123.
- 4. The HG matches the originating user (CLI and/or PIN Code) to the predefined registered user.
- 5. After HG assumes a correct user authentication, the HG redials to the registered user. This is indicated by: MGWCallback (4) Leg1 event [DialAck.
- 6. The HG calls the destination called party (Leg2) and connects it to Leg 1. This is indicated by: MGWCallback (4) Leg2 event [DialAck /A24/I5/o1
- 7. When one party hangs-up the call, the HG starts to Close Resources and removes media resources.

7.1.3.6 LCR Log

Following are excerpts from an LCR Log.

[26/03-10:52:16.490] [debug] getRemoteSignalIP=192.168.1.70

...

[26/03-10:52:16.516] [debug] CreateIncomingSession token: 5ea9f5a3-6193c5d452634512-50c08bcf@192.168.1.70 remoteNumber: 8888 localNumber: 750 remoteIP: 192.168.1.70

•••

[26/03-10:52:16.534] [debug] Number is not in BlockedDDIs list [26/03-10:52:16.537] [debug] source DDI:750 allowed DDI:^*

Console Suite and Other Tools

[26/03-10:52:16.541] [debug] FindLocalMediaResources (5ea9f5a3-6193c5d4-5263451250c08bcf@192.168.1.70/4) LocalHwyTS: 11:1 RemoteHwyTS: 12:2 media resource: 11.1

•••

[26/03-10:52:46.353] [debug] onReadyToSend replaced h_CallID with [OGNhOTYwODA4MTZINzQzZTM0ZTkzNDYyNzUwMjEzZTA

Explanation:

- 1. In this case, the originating party, 8888@192.168.1.70, is calling to the destination party, 750@192.168.1.67.
- 2. CreateIncomingSession indicates that a call is coming from (192.168.1.70) VoIP and the HG is starting to establish the call.
- 3. The originating party dials the digits: 750. The HG checks that this number is not in the BlockedDDIs list.
- 4. FindLocalMediaResources indicates that the HG is preparing to allocate local recourses.
- 5. In this case, the HG has been configured to have two uppermost LCR media connections at the top of the VoIP Media Matrix. As a result, every incoming VoIP call to the VoIP Media Matrix will be forwarded to LCR resources. In our case, the incoming call (192.168.1.70) is forwarded to LCR.

Select Me	dia Gateway card	
Slot (D11	
Selected c	ard at slot 11 (Media Card)	
Channel	Target Link (Select to change)	
Channel 1		
1	(Select to change)	
Channel 1 2 3	(Select to change)	

- 6. As a regular LCR configuration it was separated for two groups incoming and terminating:
 - 1st LCR Group accepts the incoming VoIP call from 192.168.1.70.
 - 2nd LCR Group moves the incoming VoIP call to the terminating LCR channel.

LCR Resource Map

	Group: mg1 (1) BiDirect	EMPTY	2	Group: mg2 (2) BiDirect	3	Gr Bil
7	Group: BiDirect	EMPTY	8	Group: BiDirect EMPTY	9	Gr Bil

		1.2			
roup #	Group Name	Cyclic	In Filter	Out Filter	Route to
oup #	Group Name	Cyclic	IN FIICEI		Koute

7. In order to make the connection between the originating party and destination party, the HG was configured as follows:

VoIP - Phone to Net Dialing Plan

Dialed Number	Dest. IP	Dest. Number	PIN Code	e
Add Entry				
Dialed Number	Destination IP	Dest. Number	PIN Code	
750	(192.168.1.67)		-	Delete

8. Every incoming VoIP call that dialed the digits 750 will terminate at the destination party 192.168.1.67.

Console Suite

- 9. When the destination party answers the call, the HG prints the following to the Log: provideAnswer.
- 10. Started media indicates that the HG has started streaming between both parties.
- 11. When one party hangs-up, the HG closes the session and removes the media resources.

7.1.4 Service Console

Hypermedia Technical Support might ask you to assist them by completing tasks using the Service Console.

To run the Service Console tool:

- 1. Click the Windows Start button > All Programs.
- 2. From the Hypermedia program group, select **Service Console**. The Service Console logon screen opens in the default browser.
- 3. Click the warning bar at the top of the screen and, from the dropdown menu, click **Allow Blocked Content**. Confirm your choice by clicking **Yes** at the confirmation message.

Note: To avoid recurring displays of the warning bar, from the menu bar click **Tools** > Internet Options > Advanced > Allow active content to run in files on My Computer.

4. Enter your password and click **Connect**. The Service Console screen is displayed.

Console Suite and Other Tools

Send
Delete All Card Links

Figure 109. Service Console Screen

5. Follow the instructions given to you by Hypermedia Technical Support.

7.2 Hypermedia Gateway Server List

Use the Hypermedia Gateway Server list to review a list of existing servers, to add a new server, and to edit an existing server. Other Hypermedia configuration and management tools can be accessed from the Hypermedia Gateway Server list. When accessed from here, the IP address and the password from the list are used, avoiding the need to re-enter these.

To run the Hypermedia Gateway Server List tool:

- 1. Click the Windows **Start** button > **All Programs**.
- 2. From the Hypermedia program group, select **Server List**. The Hyper-Gateway Servers Address List screen opens in the default browser.
- 3. Click the warning bar at the top of the screen and, from the dropdown menu, click **Allow Blocked Content**. Confirm your choice by clicking **Yes** at the confirmation message.

	Hypermedia							
	HyperGateway Servers Address List (Add)							
ID	ID Server Name Address Port Pass Comments							
	Demo	192.168.123.190	8878			Edit 🕼 🛒 🕸 🛣 🛸 🔀		

Figure 110. Hypermedia Gateway Server List

Note: To avoid recurring displays of the warning bar, from the menu bar click **Tools** > **Internet Options** > **Advanced** > **Allow active content to run in files on My Computer**.

7.2.1 Adding a New Server

To add a new server:

- 1. Ensure that you know the IP address of the new server.
- 2. From the top of the screen, click **Add**. An additional dialog box is displayed.

		HyperGatev	vay Serve	ers Addres	s List(<mark>Add</mark>)		
	Address			Port: 8878	3	Hide	
	ID: Save A	Pass:		ments:		Add	
	1441 (4)		Deat	Pass	Comments		
ID	Server Name	Address	Port	Pass	Comments		

Figure 111. Add a New Server Screen

Hypermedia Gateway Server List

- 3. Enter the server parameters.
- 4. Click Add. The new server is added to the list.



		HyperGatev				
	Address	: 192.168.123.191		Port: 887	8	Hide
	ID: Save As	Pass:	Com	ments:		Add
ID	Server Name	Address	Port	Pass	Comments	
	Demo	192.168.123.190	8878			Edit 🚳 📆 🖄 🛣 🔀
	HyperID	192.168.123.191	8878			Edit 😡 📆 🕸 🛣 ڬ 🔀

Figure 112. New Server Appears in List

7.2.2 Accessing Other Tools via the Server List

Use the Gateway Server List to open:

 Table 11. Tools Available from the Server List

Clicking Action	Click Result

Console Suite and Other Tools

Clicking the name that appears in the Server Name column	Opens the Hypermedia Management Console
Clicking Edit	Opens the Server Information window
S.	Opens the HGS Setup Parameters tool
	Launches the Log Console
	Launches the Service Console
	Launches the CDR Console
×	Deletes the entry

8 Troubleshooting

Following are possible causes and solutions for various possible issues.

Display	Possible Cause	Solution
System does not start up	No power to the unit	Connect power cables
Alarm sounds every time the system boots up	When a dual power supply is used, one power unit is not functioning or only one power unit is present	Replace faulty power unit. Add a power unit.

Table 12. Power

Table 13. PRI

Display	Possible Cause	Solution
Sync. LED (Orange) is blinking	No synchronization of PRI card	 Check connections to the PRI card at the PBX or line. Varify that the PBI cable
		• Verify that the PRI cable is connected.
		• Verify that all pins in the PRI connector are connected in accordance to the PRI specifications.
Ready LED (Yellow) does not light. Error LED (Red) is blinking	Card is either not inserted correctly, or faulty Card is faulty	Reinsert the card and restart the system. If problem continues replace the card.
Noise on the line while call in progress	Synchronization of PRI card is not set correctly.	Verify PRI settings for synchronization. Typically the PRI Sync. settings at the HyperGateway should be —Slavel.

Troubleshooting

Hypermedia Gateway Server List

Table 14. Centuar				
Display	Possible Cause	Solution		
No sync. with net- work (Green LED is off)	Antenna is not located properly	Position the antenna in a place with better reception.		
No sync. with net- work (Green LED blinks)	No SIM card	Put a working SIM card in the appropriate channel		
Error LED (Red) is blinking Ready LED (Yellow) does not light	Card is either not inserted correctly, or faulty	Reinsert the card and restart the system. If problem continues replace the card.		

Table 14. Cellular

Table 15. MG

Display	Possible Cause	Solution
LINK LED (Green) does not light	No LAN Connection	Check connections to the Router.
Error LED (Red) is blinking (50% duty cycle, not twinkling)	Card is faulty	Reinsert the card and restart the system.
Ready LED (Yellow) does not light	Card is either not inserted correctly, or faulty	If problem continues replace the card.

Table 16. VoIP

Display	Possible Cause	Solution
Call connected	One way audio	On VoIP Settings screen validate Public IP (should be same IP as RO card WAN IP address. See section 1.6.3.2.2).
Error on HMC media connection screen	Cannot connect any card to VoIP card	No LAN cable connected to Media ETH interface.

-			
Н	IMC->Monitor->VoIP	The connected cellular card	Check the Antenna is
C	Card Status=No Signal	has no signal	properly connected to the
			Cellular card.

Troubleshooting