

# Hypermedia HG-3000

## Product Manual



**3U and 6U Cellular / PRI  
Gateways**

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Hypermedia Systems

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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
	<b>Note:</b> Information given in a note describes how the System functions or provides a tip on how best to use it.
	<b>Caution:</b> 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.
	<b>Danger:</b> 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.

Table of Contents

# Table of Contents

<b>1</b>	<b>Hardware and Installation .....</b>	
<b>1</b>		
<b>1.1</b>	<b>Overview .....</b>	<b>2</b>

---

1.1.1	Contents of Package .....	2
<b>1.2</b>	<b>Safety Information .....</b>	<b>3</b>
<b>1.3</b>	<b>System Components .....</b>	<b>4</b>
<b>1.4</b>	<b>Installation .....</b>	<b>6</b>
1.4.1	Pre-Installation and Preparation .....	6
1.4.2	Installing the Hybrid (HBD or HBS) Card .....	7
1.4.3	Preparing the PRI Connection .....	8
1.4.4	Inserting the SIM Cards .....	10
1.4.5	Inserting the SD Card .....	11
<b>1.5</b>	<b>Powering Up and LEDs .....</b>	<b>12</b>
1.5.1	Powering Up.....	12
1.5.2	LEDs .....	13
<b>1.6</b>	<b>Cable Connections .....</b>	<b>15</b>
1.6.1	Hybrid Cards (HBS/HBD) .....	15
1.6.2	PC .....	18
<b>2</b>	<b>HMC Quick Start .....</b>	<b>19</b>
<b>2.1</b>	<b>Installation .....</b>	<b>20</b>
<b>2.2</b>	<b>Setting the IP Address .....</b>	<b>22</b>
<b>2.3</b>	<b>Start-up and Initial Connection .....</b>	<b>24</b>
<b>2.4</b>	<b>Save, Backup and Restore .....</b>	<b>27</b>
2.4.1	Save All .....	27
2.4.2	Save All Settings on Cards .....	27
2.4.3	Backup/Restore .....	27
<b>3</b>	<b>Configuring a Cellular Card .....</b>	<b>29</b>

Release 5.4 (Mar 2018)

Table of Contents

<b>3.1</b>	<b>Cellular Card and System Terminology .....</b>	<b>30</b>
<b>3.2</b>	<b>Volume Settings.....</b>	<b>31</b>
<b>3.3</b>	<b>Media Connections .....</b>	<b>32</b>
3.3.1	Associating/Linking Cellular Channels .....	32

---

3.3.2	Auto Linking .....	33
3.3.3	Unlinking Cellular Allocations .....	34
<b>3.4</b>	<b>PIN Codes .....</b>	<b>35</b>
<b>3.5</b>	<b>MSN Values .....</b>	<b>36</b>
<b>3.6</b>	<b>Reset .....</b>	<b>37</b>
<b>3.7</b>	<b>Information Screens .....</b>	<b>38</b>
3.7.1	Module Info .....	38
3.7.2	Serial Numbers .....	38
<b>3.8</b>	<b>Locks .....</b>	<b>39</b>
<b>3.9</b>	<b>SIM Select.....</b>	<b>40</b>
<b>3.10</b>	<b>SIM Counters .....</b>	<b>41</b>
<b>3.11</b>	<b>SIM Auto Manage .....</b>	<b>42</b>
<b>3.12</b>	<b>Call Counter Steps .....</b>	<b>43</b>
<b>3.13</b>	<b>CLI Blocking .....</b>	<b>44</b>
<b>3.14</b>	<b>Call Limits .....</b>	<b>45</b>
<b>3.15</b>	<b>Cell Selection .....</b>	<b>46</b>
<b>3.16</b>	<b>Settings .....</b>	<b>47</b>
<b>3.17</b>	<b>Network Parameters .....</b>	<b>48</b>
<b>3.18</b>	<b>USSD SIM Balance .....</b>	<b>49</b>
<b>3.19</b>	<b>Monitoring Cellular Cards .....</b>	<b>50</b>
3.19.1	All Cells .....	50
3.19.2	Reception .....	51
3.19.3	Status .....	52
<b>4</b>	<b>Configuring LCR .....</b>	<b>53</b>
<b>4.1</b>	<b>Overview .....</b>	<b>54</b>



## Table of Contents

<b>4.2 Linking to LCR .....</b>	<b>54</b>
4.2.1 Linking from a Media Branch .....	54
4.2.2 Linking from the LCR Branch.....	56
4.2.3 Editing a Target Link.....	58
4.2.4 Breaking a Link (Unlink).....	58
<b>4.3 Groups.....</b>	<b>58</b>
4.3.1 Creating a Group .....	58
4.3.2 Using the Default Group Settings .....	60
<b>4.4 Resource Map .....</b>	<b>60</b>
4.4.1 Sample Assignment.....	60
4.4.2 Assigning LCR Resources .....	61
<b>4.5 Rules.....</b>	<b>63</b>
4.5.1 Creating a Rule.....	63
4.5.2 Deleting a Rule .....	64
<b>4.6 Filters.....</b>	<b>64</b>
<b>4.7 Advanced Call Routing (ACR).....</b>	<b>66</b>
4.7.1 Modifying the Existing ACR Number List.....	66
4.7.2 Creating a New ACR Number List File .....	67
4.7.3 ACR Rules.....	68
<b>4.8 Number Filters .....</b>	<b>71</b>
4.8.1 Creating a Number Filter .....	71
<b>4.9 CDR.....</b>	<b>72</b>
4.9.1 Enabling Collection of CDR .....	73
4.9.2 Downloading a CDR File .....	73
4.9.3 Deciphering the CDR File .....	74
<b>4.10 Activating LCR .....</b>	<b>75</b>
<b>5 Configuring the PRI Card .....</b>	<b>78</b>
<b>5.1 PRI Media Connections .....</b>	<b>79</b>
5.1.1 Associating/Linking PRI Channels.....	79
5.1.2 Unlinking PRI Allocations.....	80

<b>5.2</b>	<b>Connection Settings .....</b>	<b>87</b>
<b>5.3</b>	<b>PRI Card Dial Plan .....</b>	<b>89</b>
<b>5.4</b>	<b>Monitoring PRI Card Status .....</b>	<b>90</b>
<b>6</b>	<b>Managing via the HMC .....</b>	<b>91</b>
<b>6.1</b>	<b>Scheduler .....</b>	<b>92</b>
6.1.1	Switch SIM per Slot .....	92
6.1.2	Switch SIM per System .....	95
6.1.3	Reset SIM Counter .....	96
6.1.4	Set Multi SIM .....	98
6.1.5	Manual Command .....	100
<b>7</b>	<b>Console Suite and other Tools .....</b>	<b>101</b>
<b>7.1</b>	<b>Service Console .....</b>	<b>102</b>
<b>7.2</b>	<b>PRI Cause Conversion .....</b>	<b>103</b>
<b>7.3</b>	<b>Hypermedia Gateway Server List .....</b>	<b>105</b>
7.3.1	Adding a New Server .....	105
7.3.2	Accessing Other Tools via the Server List .....	106
<b>7.4</b>	<b>Troubleshooting .....</b>	<b>107</b>
<b>Index</b>	<b>.....</b>	<b>109</b>

# 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 section includes:

- Contents of Package on page 2 • Safety Information on page 3
- System Components on page 4
- Pre-Installation and Preparation on page 6
- Installing the Hybrid (HBD or HBS) Card on page 7
- Preparing the PRI Connection on page 8
- Inserting the SIM Cards on page 10
- Inserting the SD Card on page 11
- Powering Up and LEDs<sup>12</sup> on page 12
- LEDs on page 13

## 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-mount unit 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.

Running on the HyperGateway family of platforms, the HyperConnect package is a corporate communications software add-on that minimizes expenses of local, national and international calls. The scalable system provides secure and flexible control of on-site and remote calls over fixed, cellular and IP networks. Leveraging organizational communications resources, Web-based management capabilities, and operators' various service tariffs, the HyperConnect package empowers significant savings in corporate telephony expenses.

The HyperConnect package includes a number of service combinations, such as: Call-Through, Call-Back, SMS Call-Back, Web Call-Back, 2-ways SMS messenger and Smart-phones applications.

### 1.1.1 Contents of Package

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

- The Hypermedia Gateway unit
- PRI cables
- Ethernet cables
- 1 or 2 power cords, depending upon configuration
- 1 to 8 indoor antennas, depending upon configuration
- The warranty certificate
- Hypermedia Software CD-ROM
- 1 SD Card

## 1.2 Safety Information

The Hypermedia Gateway works with a nominal mains supply voltage of 110–240 VAC. Hazardous voltages are present inside the equipment. Some parts may 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 include 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. 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.

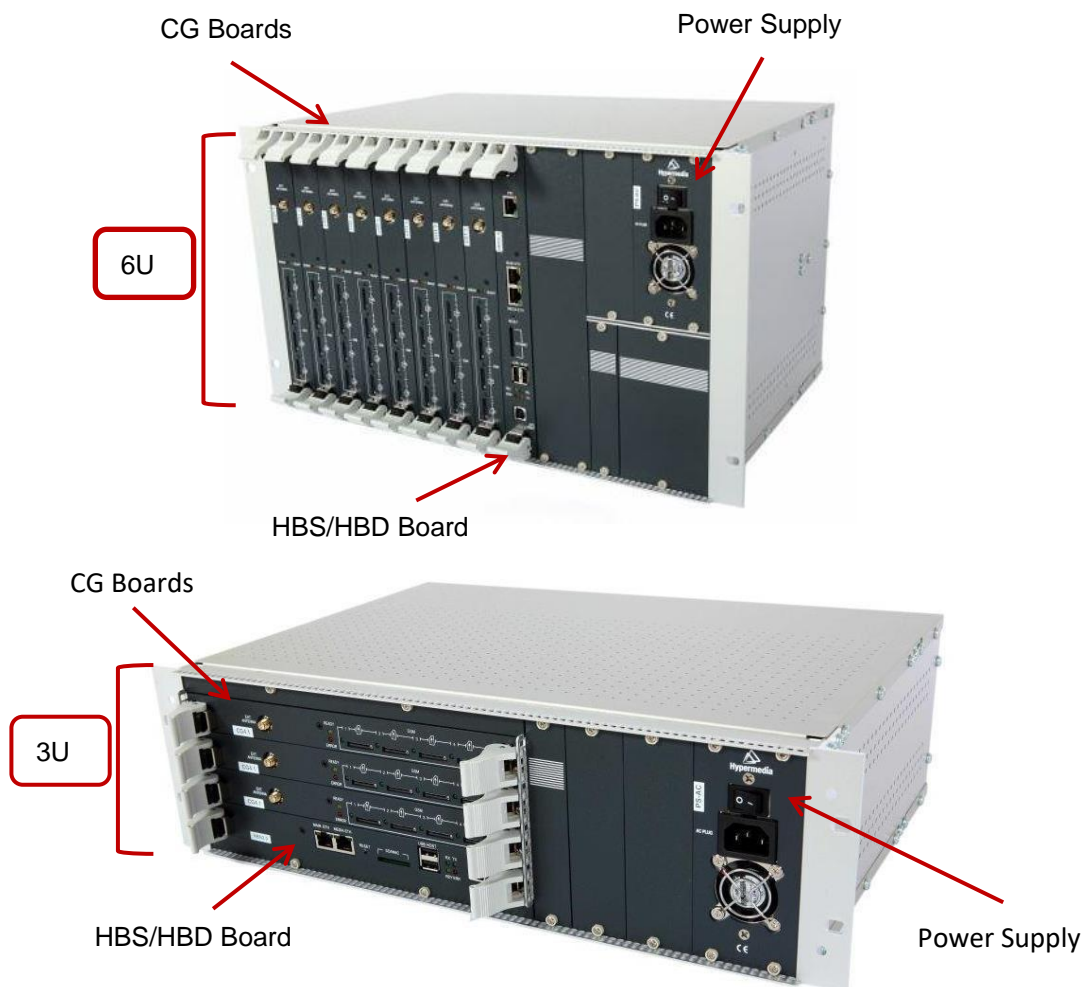
Hardware and Installation  
System Components

## 1.3 System Components

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The Hypermedia Gateway system consists of the components described below:

- The Hypermedia Gateway is a 19" x 6U or 19" x 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. 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.



**Figure 1. Examples of Boards in a Hypermedia Gateway**

- Depending upon system configuration, the **Hypermedia Server** is an application that is embedded on the 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.

**Table 1. Hypermedia Gateway Boards**

<b>Board Name</b>	<b>Description</b>
<b>CG41/CC41/CU41</b> Cellular Cards	CG41 for GSM, CC41 for CDMA and CU41 for UMTS is a single-slot card that enables inbound and outbound cellular voice calls for the various cellular networks.
<b>HBD and HBS</b> Hybrid Cards	These cards provide both the gateway management function as well as PRI connectivity. Optionally, these cards can also support VoIP functionality. The HBD supports dual PRI ports and the HBS supports a single PRI port.
<b>MC1.1 and MC1.2 card</b>	These cards provide the PRI connectivity function. Installed on PC-based systems where the above Hybrid Cards do not exist. The MC1.2 card supports dual PRI ports and the MC1.1 card supports a single PRI port.
<b>PC1/PC2 cards</b>	The PC card provides the gateway management function. Installed on HG3xxx systems along with an MC card instead of a Hybrid card on specific gateway configurations.

The HG3xxx systems come in two main configurations:

- Hybrid-based: with an HBS/HBD card (depending on the amount of PRI ports) and cellular cards.
- PC-based: with a PC1/2 card, an MC1.1/1.2 card (depending on the amount of PRI ports) and cellular cards.

Additional boards might be added to provide various capabilities, such as VoIP, SIM server connectivity, etc.

## 1.4 Installation

➡ **Note:** Installation varies depending upon the boards included with the Hypermedia Gateway system. Skip the sections that do not apply to your system. This section is subdivided into:

- Pre-Installation and Preparation (section 1.4.1 )
- Installing the Hybrid (HBD or HBS) Card (section 1.4.2 )
- Preparing the PRI Connection (section 1.4.3 )
- Inserting the SIM Cards (section 1.4.4 )
- Inserting the SD Card (section 1.4.5 )

### 1.4.1 Pre-Installation and Preparation

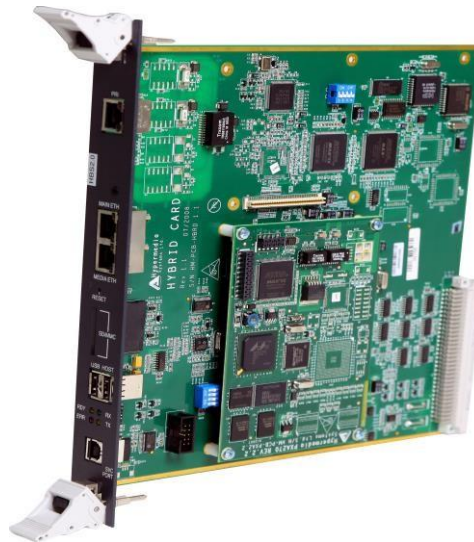
1. Install the Hypermedia Gateway in a 19" rack. Depending upon the physical configuration, the unit requires a height of either 3U or 6U. In addition, the following should be noted:
  - Avoid installing the device near computer rooms, computer monitors, electrical cabinets, metal objects, and windows 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 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 antennas provided 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 and a pre-allocated fixed IP address
  - A spare PRI card in your PBX
  - SIM cards from your GSM operator. At least one SIM card is required for each GSM channel



### 1.4.2 Installing the Hybrid (HBD or HBS) Card

The Hybrid cards enable flexible, pre-defined, and dynamic allocation of GSM channels, E1 and PRI B-channels. Optionally, these can also support VoIP connectivity.

The HBD supports dual PRI channels and the HBS supports a single PRI channel.



**Figure 2. A Hybrid Card To**

install the card in the unit:

3. Slide the card into the unit.
4. Close the two side locking levers to lock the card in place.



**Figure 3. Card in unit**

### 1.4.3 Preparing the PRI Connection



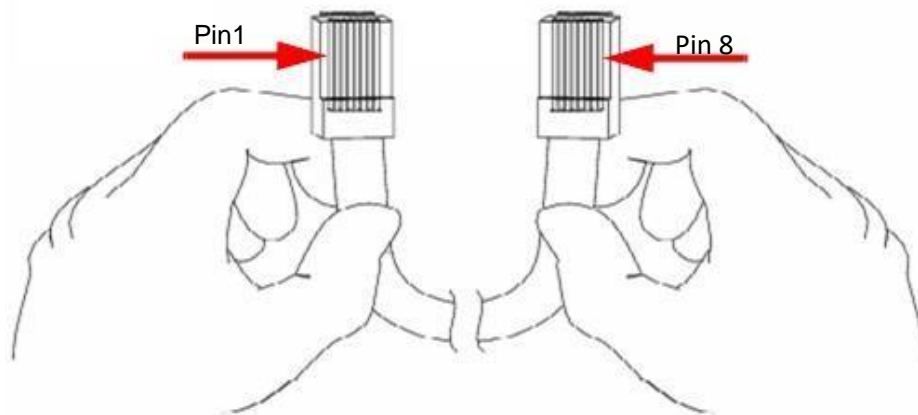
**Danger:** The ISDN connection is regarded as a source of voltage that should be inaccessible to user contact. Do not tamper with, or open, any public telephone operator provided equipment or hardware. Any hard-wired connection (other than by a nonremovable, connect-one-time-only plug) must be made by trained engineers.

1. The Hypermedia Gateway's PRI connection operates in a point-to-point configuration. The default setting is NT, that is, the Hypermedia Gateway assumes that it is connected to a PBX as a Network Terminal. Either leave it or change it to TE.
2. Set the Clock Synchronization. The default setting is Slave; that is, the PBX provides synchronization for the mutual PRI clock (see section 5.2 , Connection Settings).



**Note:** In most cases, the PBX is also configured as a Synchronization Slave. The Master on the network is the telephone company which provides the PRI connection to the PBX.

3. Check the RJ-45 connector that will be used to connect the PRI module to the PBX or network operator. In most cases it must have the pin layout defined in Table 2. In other cases it must have the pin layout defined in Table 3.





**Figure 4. RJ-45 Connector Orientation**

**Table 2. Straight Cable PRI RJ-45 Pinout**

<b>RJ-45 Pin</b>	<b>Straight Cable</b>	
1	Blue	Blue
2	Blue / White	Blue / White
3	n/a	n/a
4	Orange	Orange
5	Orange / White	Orange / White
6	n/a	n/a
7	n/a	n/a
8	n/a	n/a

**Table 3. Cross Cable PRI RJ-45 Pinout**

<div>RJ-45 Plug</div> 	<div>RJ-45 Port</div> 	
<b>RJ-45 Pin</b>	<b>Cross Cable</b>	
1	Blue	Orange
2	Blue / White	Orange / White
3	n/a	n/a
4	Orange	Blue
5	Orange / White	Blue / White
6	n/a	n/a
7	n/a	n/a

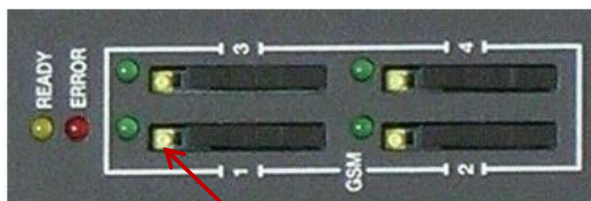
	8	n/a	n/a
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### 1.4.4 Inserting the SIM Cards

1. Insert the GSM SIM Cards. One SIM card should be used per each cellular channel.



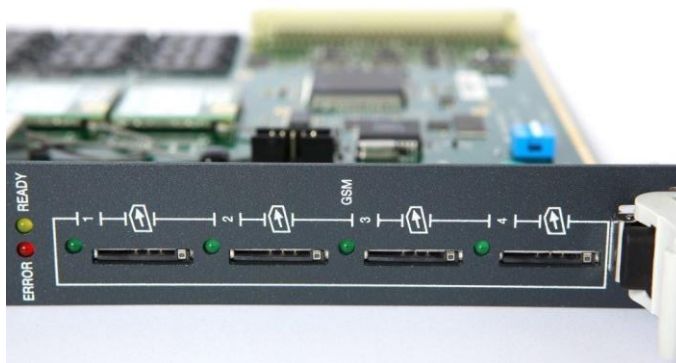
**Note:** Some versions of the CG board have SIM drawers. Push the small yellow button for the SIM drawer to exit. Remove the SIM drawer, place the SIM card in the SIM drawer and replace the SIM drawer.



Yellow button for drawer

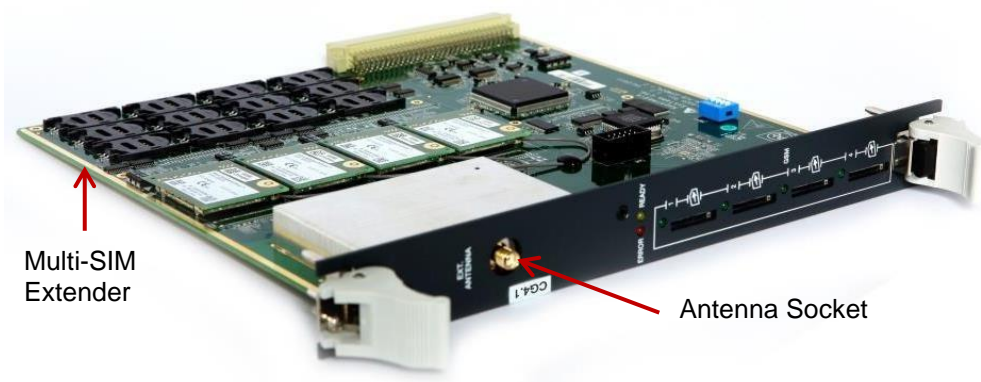


The SIM port is spring loaded. Slide the SIM card into the slot and it will latch in place. To remove a SIM card, press the SIM card and it will pop out.



Optionally, use the CG board's multi-SIM extender:

- a. Pull out the CG board.



**Figure 5. CG Card Multi-SIM Extender**

- 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 5).
    - 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.

**1.4.5 Inserting the SD Card**

The Gateway saves Call Detail Records (CDRs) on a Secure Digital (SD) flash memory card that is supplied by Hypermedia. Insert the SD card into the SD port of the HBS/HBD card.



**Figure 6. SD Card and Port Insert**

or remove SD cards as required.



**Note:** CDRs are displaced on a FIFO basis.

## 1.5 Powering Up and LEDs

### 1.5.1 Powering Up

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



Figure 7. 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 **HBS/HBD PRI port** LEDs, see Table 4.
- For **HBS/HBD status** LEDs, see Table 5.
- For **Cellular Card Green SIM** LEDs, see Table 6.




## 1.5.2 LEDs

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

**Table 4. HBS/HBD PRI port LEDs**

LED	Status		
	On	Off	Blinking
			
<b>Green</b>	PRI connection OK	—	Powering-up
<b>Yellow (Alarm)</b>	Connection Error	Normal	Connection Error

**Table 5. HBS/HBD status LEDs**


LED	Status		
	On	Off	Blinking
			
<b>1. Ready/Yellow</b>	Connected on 95%	Power is off	Maintenance mode
<b>2. Error/Red</b>			Error
<b>3. RX/Green</b>	Internal communication		
<b>4. TX/Yellow</b>	Internal communication		



**Note:** the LED roles on MC1.1/MC1.2 cards are the same as on the above HBS/HBD cards.

### Powering Up and LEDs

**Table 6. Cellular Card Green SIM LEDs**

	State	Explanation
	<b>Flashing</b>	A SIM card is not installed in this channel or the port is still being initialized.
	<b>LED is off</b>	No reception; the channel is not registered to a cellular network.
	<b>Short blink</b>	Stand by; the channel is registered but no call is in progress.
	<b>Long blink</b>	User is either dialing out or receiving a call on this channel.
	<b>Steady on</b>	In use. A call is in progress.



## 1.6 Cable Connections

There are two types of connections:

- For Hybrid Cards (HBS/HBD)
- For PC

### 1.6.1 Hybrid Cards (HBS/HBD)

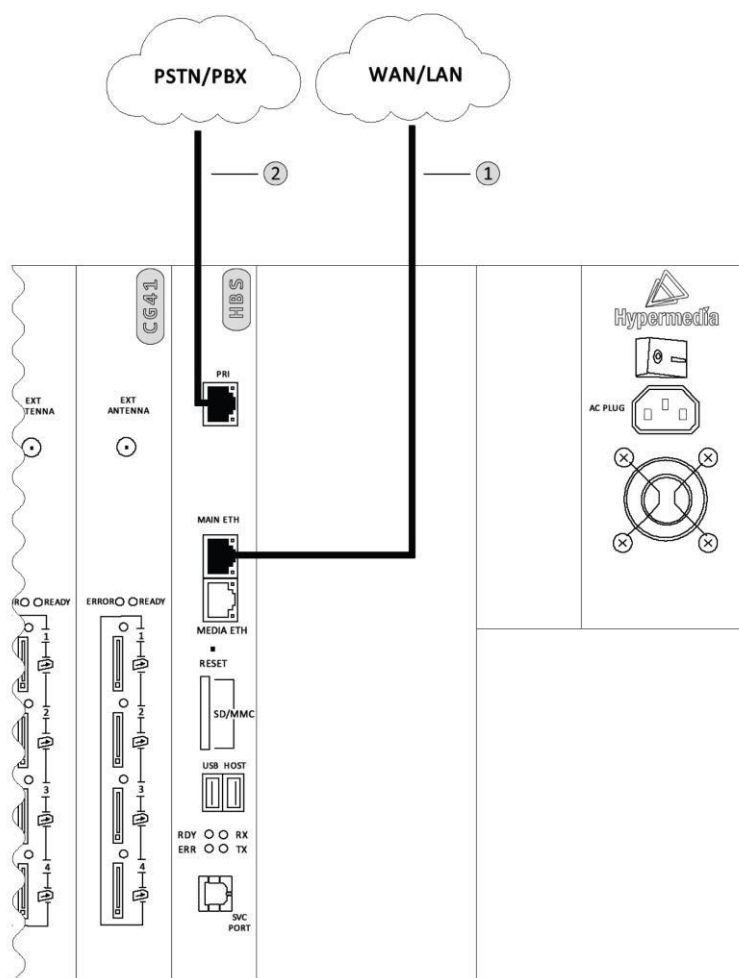
To install the HG3000 with an HBS or HBD card (see Figure 8 and Figure 9):

1. Install the Hypermedia Software (included in the CD).
2. Connect a PC or Laptop with a straight Ethernet cable to the Main ETH port at the HBX card.
3. Ping the HG default IP address, **192.168.9.2**, to test the connection.
4. Check and verify your PC/Laptop IP is configured as follows:
  - **IP: 192.168.9.5** ▪ **Subnet mask: 255.255.255.0**
5. Open the Server list application and add **192.168.9.2** as a server (the default password is **admin**).
6. Use the HGS setup parameters application (first from the left):
  - a. Login with the password **admin**.
  - b. Change the IP address with the desired IP address of the client's subnet.
7. Connect the Main ETH port to the client's network.

Cable Connections

# HG3100 Connection Settings

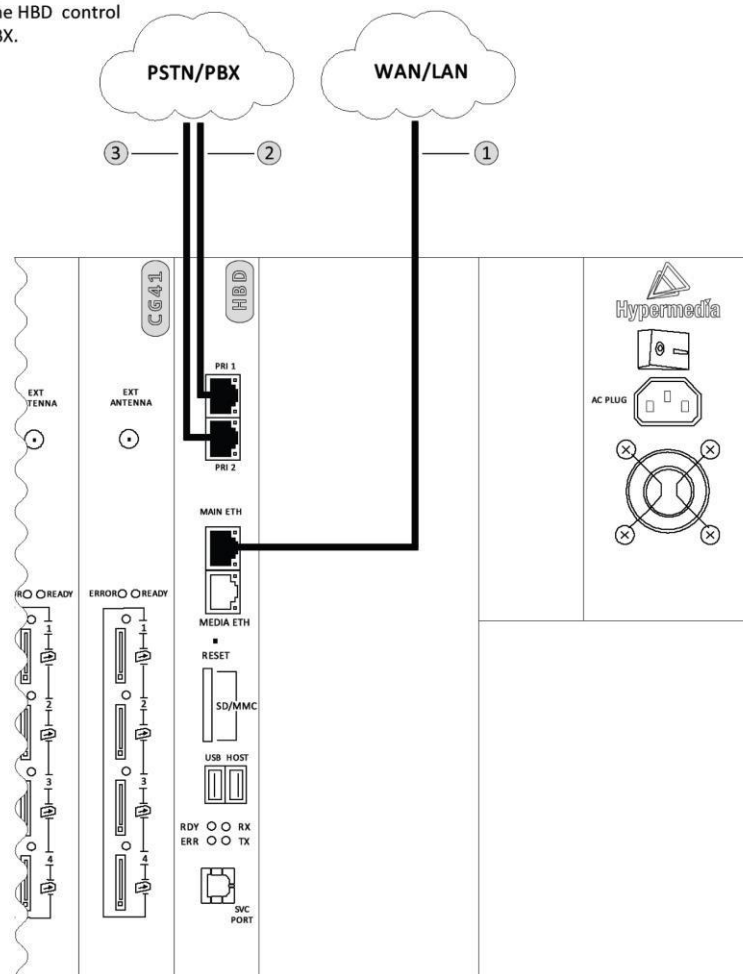
- ① Connect the Main Ethernet socket on the HBS control board to the WAN/LAN.
- ② Connect the PRI socket on the HBS control board to the PSTN or to the PBX.



**Figure 8. HG3100 Connection Settings**

## HG3200 Connection Settings

- ① Connect the Main Ethernet socket on the HBD control board to the WAN/LAN.
- ② Connect the PRI 1 socket on the HBD control board to the PSTN or to the PBX.
- ③ Connect the PRI 2 socket on the HBD control board to the PSTN or to the PBX.



---

## Figure 9. HG3200 Connection Settings

### Cable Connections

#### 1.6.2 PC

To install the HG3000 with a PC:

1. Install the Hypermedia Software (included in the CD).
2. Connect a PC or Laptop with a straight Ethernet cable to the LAN1 port at the PC1 card.
3. Ping the HG default IP address, **192.168.0.2**, to test the connection.
4. Check and verify your PC/Laptop IP is configured as follows:
  - **IP: 192.168.0.5** ▪ **Subnet mask: 255.255.255.0**
5. Open the Server list application and add **192.168.0.2** as a server (the default password is **admin**).
6. Use the HGS setup parameters application (first from the left):
  - a. Login with the password **admin**.
  - b. Change the IP address with the desired IP address of the client's subnet.
7. Connect the LAN1 port to the client's network.

## 2 HMC Quick Start

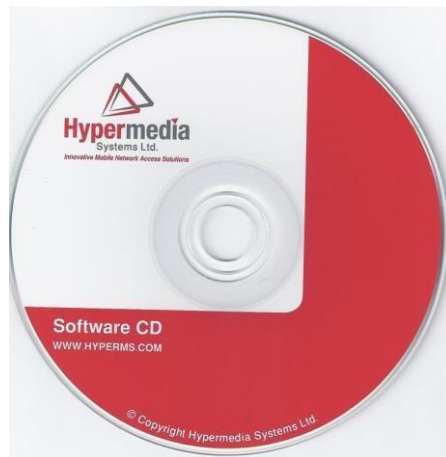
Use the Hypermedia Management Console (HMC) to configure and monitor a Hypermedia Gateway. Access to the Gateway is over TCP/IP using a standard version of Internet Explorer. This section includes:

- Installation (section 2.1 )
- Setting the IP Address (section 2.2 )
- Start-up and Initial Connection (section 2.3 )
- Save, Backup and Restore (section 2.4 )

## 2.1 Installation

To install the Hypermedia Management Console program:

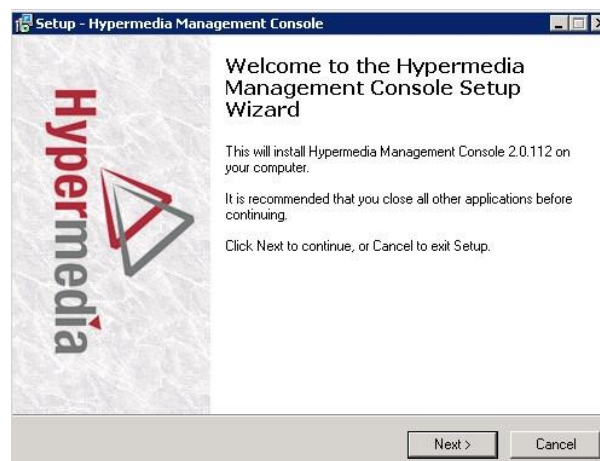
1. Ensure that the computer matches the following minimum system requirements:
  - Windows XP, Vista, Windows 7 or 8
  - Internet Explorer 7 or above
2. Ensure that you have access to the installation file. It is included with the Hypermedia Gateway CD-ROM.



**Figure 10. Hypermedia Gateway CD-ROM**

The installation file name begins with the letter **HMC** and ends with the extension **.exe**. The specific name depends upon the type of installation.

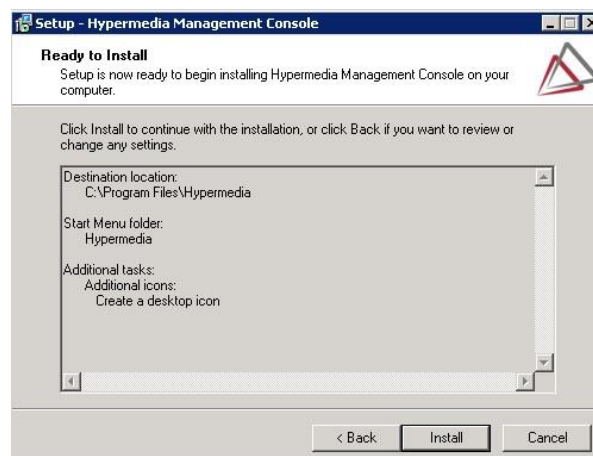
3. Double-click the file **HMCxxx-xxx.exe** file. The Setup program starts.



**Figure 11. Setup Welcome Screen**

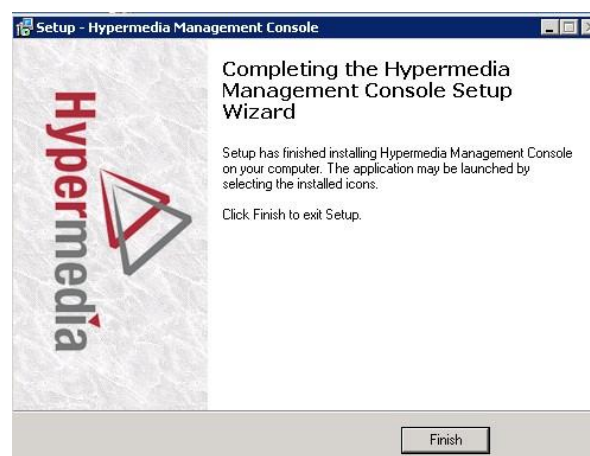
4. Click **Next**. The License Agreement is displayed.

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.



**Figure 12. Setup Ready to Install Screen**

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



**Figure 13. Setup Finish Screen**

## 2.2 Setting the IP Address


To change or set the IP address:

1. From the Hypermedia program group, select **Server List**. The Hyper-Gateway Servers Address List screen opens in the default browser.
2. When required, 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.



**Figure 14. 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. Your Gateway appears in the Server List with its default address.

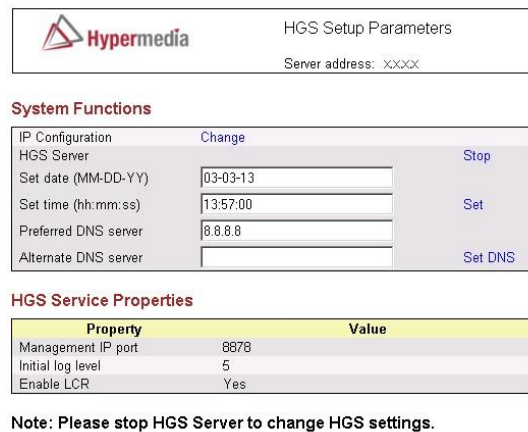
3. Click  (Change Server Settings). The Login screen is displayed.



**Figure 15. The Login Screen**

4. Enter the password and click **Submit**. The default password is **admin**. The HGS Setup Parameters screen is displayed.





**System Functions**

Property	Value	Action
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

**HGS Service Properties**

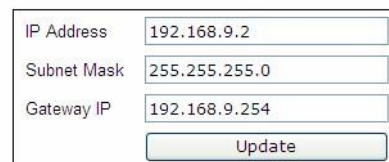
Property	Value
Management IP port	8878
Initial log level	5
Enable LCR	Yes

**Note:** Please stop HGS Server to change HGS settings.

**Figure 16. HGS Setup Parameters Screen**

- From the HGS Server system function line, click **Stop**. A confirmation message indicates that the service was stopped successfully.
- On the IP Configuration line, click **Change**. The IP Address screen is displayed.

*Note! you must stop server in order to edit and submit HGS parameters!*



IP Address: 192.168.9.2

Subnet Mask: 255.255.255.0

Gateway IP: 192.168.9.254

Update

**Figure 17. IP Address Screen**

- Enter the new IP Address parameters.
- ➡ **Note:** Setting the IP address through this page will permanently affect the gateway IP address settings once rebooted.
- Click **Update**. Focus is returned to the HGS Setup Parameters Screen.
  - From the HGS Server line, click **Start**. A confirmation message indicates that the service was started successfully.

Start-up and Initial Connection

## 2.3 Start-up and Initial Connection

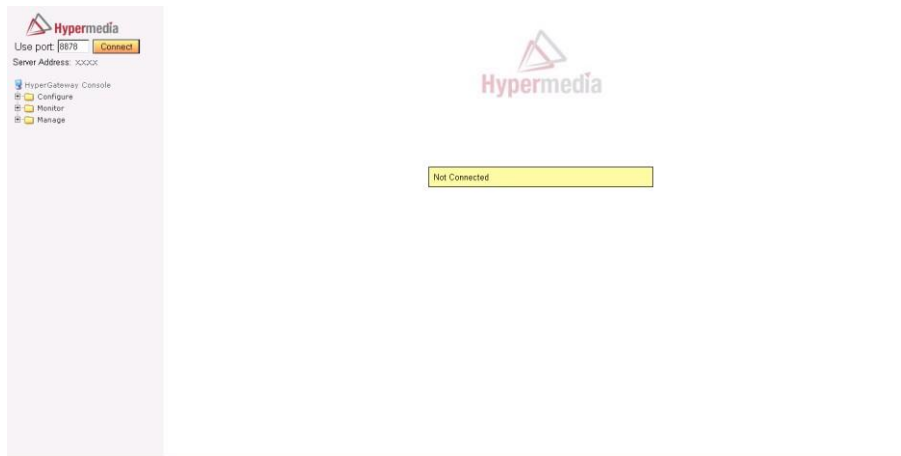
To run the Hypermedia Management Console:

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



**Figure 18. 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.

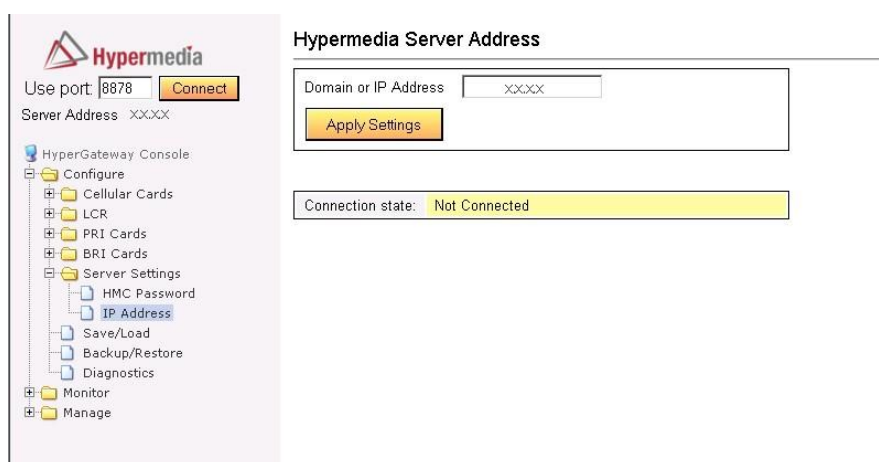


**Figure 19. HMC Connection Screen**



**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.



**Figure 20. HMC Server Address Screen**

d. Enter the IP address and click **Apply Settings**.

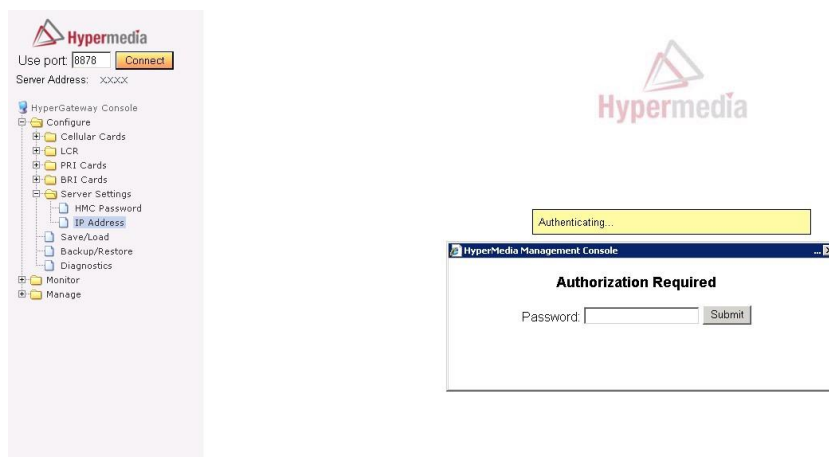


**Note:** If the Gateway is located behind a firewall, enable traffic on TCP ports 8878, 8879 and 80. Contact the network administrator for details.



**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.



**Figure 21. HMC Login Authorization Request**



**Note:** The default password is admin.

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	2.0.137	
Model	HBS BP	
Media Card		
HGS	2.0.3747	ok
SGW	2.1.68	inactive
HyperConnect	2.0.28	inactive
HyperID	2.0.3747	inactive
NPS	2.0.96	inactive
SMSPPro	2.1.244	inactive
WebSMS	1.1.217	inactive

**Figure 22. HMC Connection State Display**

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

## 2.4 Save, Backup and Restore

## 2.4.1 Save All

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

### Save All Settings

<b>Store settings on cards</b> Permanently save all the configuration settings in the HyperGateway. This process might take up to 60 seconds.	<b>Save All Settings</b>
--	--------------------------

**Figure 23. Save All Settings configuration branch**

## 2.4.2 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.

## 2.4.3 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 performing a system restore.

### Backup and Restore

<b>Backup</b>	
Save current configuration to backup file	<b>Create Backup</b>
Last backup: Monday, February 25, 2013 11:28:11 PM	<b>Download Backup</b>
<b>Restore</b>	
Never restored	
Restore configuration from backup file	
<input type="text"/> <b>Browse...</b>	<b>Upload and Restore</b>

**Backing up**

Backing up LCR card at address LCR

**Figure 24. Backup and Restore**

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## 3 Configuring a Cellular Card

This section includes:

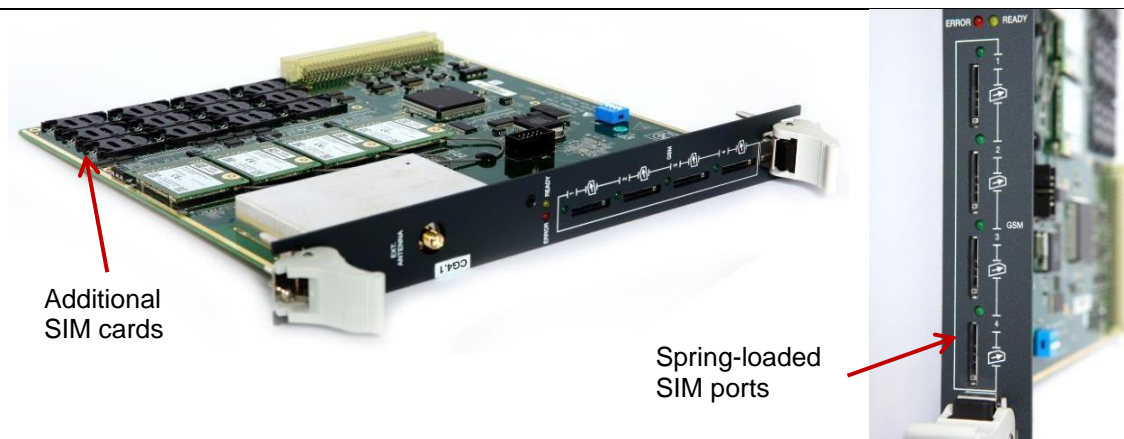
- Cellular Card and System Terminology (section 3.1 )
- Volume Settings (section 3.2 )
- Media Connections (section 3.3 )
- PIN Codes (section 3.4 )
- MSN Values (section 3.5 )
- Reset (section 3.6 )
- Information Screens (section 3.7 )
- Locks (section 3.8 )
- SIM Select (section 3.9 )
- SIM Counters (section 3.10 )
- SIM Auto Manage (section )
- 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.



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.

*Hypermedia recommends not adjusting these.*

Cellular Card Volume Settings

Select cellular card

Slot ☐ 3

Selected card at slot 3 (GSM)

☒ Module Settings ☐ Entire Card ☐ Entire System

Module 1:

In  5

Out  5

Echo Cancellor ☐

Module 2:

In  5

Out  5

Echo Cancellor ☐

Module 3:

In  5

Out  5

Echo Cancellor ☐

Module 4:

In  5

Out  5

Echo Cancellor ☐

**Figure 25. 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

“Out” adjusts the volume heard by the remote party.

**Note:** Changes to volume are saved automatically. The message “New volumes set successfully” is displayed.

4. Select or clear the Echo Canceller checkbox. There are several different causes of the echo effect. Selecting Echo Canceller minimizes or cancels the echo effect.
5. After enabling Echo Canceller, 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 PRI channel. In this case, every time there is an incoming call from a specific PRI 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

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Channel	Target Link (Select to change)   <a href="#">Unlink All</a>
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 26. 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

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Channel	Target Link <a href="#">Edit</a>   <a href="#">Unlink All</a>
1	-
2	-
3	-
4	-

Cellular Cards Media Matrix

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Channel	Target Link <a href="#">Save</a>   <a href="#">Auto Link</a>   <a href="#">Cancel</a>
1	E1.0(12) Channel 1
2	-
3	-
4	-

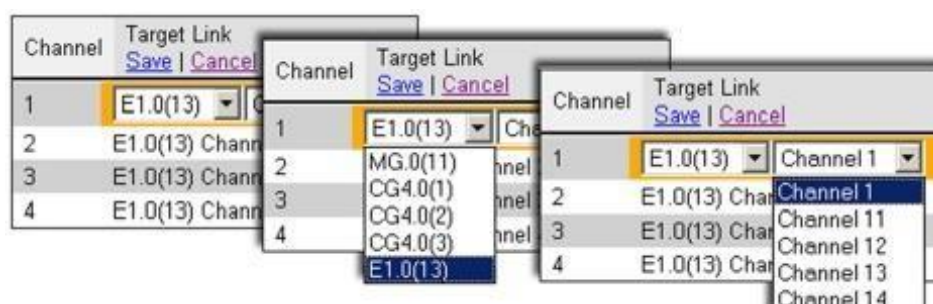
**Figure 27. Media Matrix Row when Configurable**

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 allocated" appears.

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



**Figure 28. Assigning a Target Link**

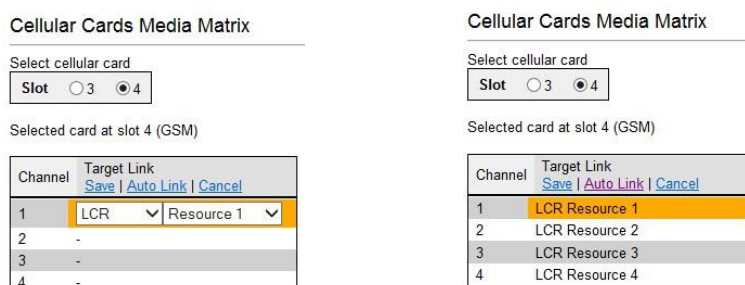
- Click **Save**. The configuration dropdown boxes are hidden.
- Optionally, repeat the process for additional channels and other media types.
- Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

### 3.3.2 Auto Linking

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

To create an auto-link:

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



**Figure 29. Auto Media connecting**

- If more than one slot is displayed, select a specific cellular card. The Media Matrix of that cellular card is displayed.
- Click within a channel row. The row turns yellow.
- Click **Auto Link**.
- 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.

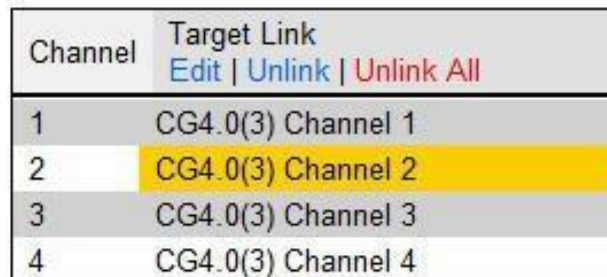
Media Connections

---

### 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 30. Breaking a Target Link**

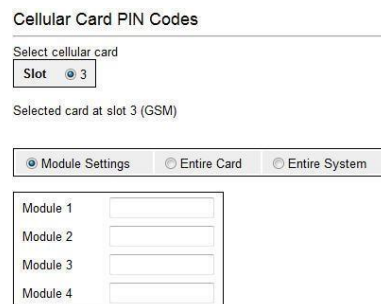
3. Click **Unlink**.
4. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

## 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.



**Figure 31. 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.

Cellular Card MSN Values

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Module 1	<input type="text"/>	<input type="checkbox"/> Auto MSN
Module 2	<input type="text"/>	<input type="checkbox"/> Auto MSN
Module 3	<input type="text"/>	<input type="checkbox"/> Auto MSN
Module 4	<input type="text"/>	<input type="checkbox"/> Auto MSN

**Figure 32. 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 “A” called a remote user “B” through a cellular module and later “B” calls the cellular module’s number, the system will automatically route the incoming call to “A”. The system remembers that “A” was the last local user to call “B” 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.

Cellular Card Reset

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Reset Card	<input type="button" value="Reset"/>
Reset module 1	<input type="button" value="Reset"/>
Reset module 2	<input type="button" value="Reset"/>
Reset module 3	<input type="button" value="Reset"/>
Reset module 4	<input type="button" value="Reset"/>

**Figure 33. 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	
Slot	3
Selected card at slot 3 (GSM)	
Reset Card	Reset
Reset module 1	Reset
Reset module 2	Reset sent.
Reset module 3	Reset sent.
Reset module 4	Reset

**Figure 34. Reset Screen After Sending the Reset Command**

Information Screens

## 3.7 Information Screens

Several of the HMC screens display information.

### 3.7.1 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.

Cellular Card / Modules Information	
Select cellular card	
Slot	3
Selected card at slot 3 (GSM)	
<b>Module 1</b> Cellular Engine Type: Q2686RD Cellular Firmware Version: R7.47.0.201202010317.Q2686RD	
<b>Module 2</b> Cellular Engine Type: Q2686RD Cellular Firmware Version: R7.47.0.201202010317.Q2686RD	
<b>Module 3</b> Cellular Engine Type: Q2686RD Cellular Firmware Version: R7.47.0.201202010317.Q2686RD	

**Figure 35. 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.

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

Cellular Card Serial Numbers

---

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Module	Module IMEI	SIM IMSI	SIM CCID
Module 1	353943045287442		
Module 2	353943045286584	425010380055284	89972010609030552657
Module 3	353943045286527	425010390622707	89972011008032956983
Module 4	353943045287020	425010391416037	89972011110031631680

**Figure 36. HMC Serial Numbers Screen**

3. 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.



**Cellular Card Locks**

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

**SIM Lock**

Module 1	<input type="text"/>
Module 2	<input type="text"/>
Module 3	<input type="text"/>
Module 4	<input type="text"/>

**Operator Lock**

Module 1	<input type="text"/>
Module 2	<input type="text"/>
Module 3	<input type="text"/>
Module 4	<input type="text"/>

**Figure 37. 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.

## 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 a module's SIM cards are 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

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

	<input checked="" type="radio"/> Module Settings	<input type="radio"/> Entire Card	<input type="radio"/> Entire System	
Module 1	<input checked="" type="radio"/> SIM1	<input type="radio"/> SIM2	<input type="radio"/> SIM3	<input type="radio"/> SIM4
Module 2	<input checked="" type="radio"/> SIM1	<input type="radio"/> SIM2	<input type="radio"/> SIM3	<input type="radio"/> SIM4
Module 3	<input checked="" type="radio"/> SIM1	<input type="radio"/> SIM2	<input type="radio"/> SIM3	<input type="radio"/> SIM4
Module 4	<input checked="" type="radio"/> SIM1	<input type="radio"/> SIM2	<input type="radio"/> SIM3	<input type="radio"/> SIM4

**Figure 38. 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.

Selected card at slot 3 (GSM)

<input type="radio"/> Module Settings	<input checked="" type="radio"/> Entire Card	<input type="radio"/> Entire System		
All Modules	<input checked="" type="radio"/> SIM1	<input type="radio"/> SIM2	<input type="radio"/> SIM3	<input type="radio"/> SIM4

### Entire System

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

Selected card at slot 3 (GSM)

<input type="radio"/> Module Settings	<input type="radio"/> Entire Card	<input checked="" type="radio"/> Entire System		
All Cards	<input type="radio"/> SIM1	<input type="radio"/> SIM2	<input type="radio"/> SIM3	<input type="radio"/> SIM4

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

## 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 Counters**

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Module 1	002:04:10	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	<a href="#">Reset All</a>
Module 2	002:00:59	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	<a href="#">Reset All</a>
Module 3	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	<a href="#">Reset All</a>
Module 4	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	000:00:00	<a href="#">Reset</a>	<a href="#">Reset All</a>

[Refresh](#)

**Figure 39. 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.

SIM Auto Manage

## 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 ☒ 3

Selected card at slot 3 (GSM)

Enable Auto Switch	SIM1	SIM2	SIM3	SIM4	Minutes until SIM is switched	Minutes until SIM is blocked
<input checked="" type="checkbox"/> Module 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1000	4000
<input checked="" type="checkbox"/> Module 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1000	4000
<input checked="" type="checkbox"/> Module 3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1000	4000
<input checked="" type="checkbox"/> Module 4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1000	4000

**Apply Settings**

**Figure 40. 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 40, 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 using it.
7. Click **Apply Settings** and wait for **Configuration Saved** to be displayed.

## 3.12 Call Counter Steps

Steps, Time Periods and Repetitions work as follows: If Time Period = 60 seconds and the Repetition = 3, and the caller speaks for 10 seconds, he will be charged for the Time Period = 60 seconds. If the caller speaks for 110 seconds, he will be charged for the Time Period = 120 seconds. This charging policy—that is, step—expires after 180 seconds that being the Time Period (= 60 seconds) times the

Repetition (= 3). Then, the next step is applied. The final step will always have unlimited repetitions.

**Cellular Card Call Counters Steps**

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Enabled <input checked="" type="checkbox"/>	Enabled <input checked="" type="checkbox"/>	Disabled <input type="checkbox"/>	Disabled <input type="checkbox"/>
Minutes	Minutes	Seconds	Seconds
Module1	Module2	Module3	Module4
Time Period Repetitions	Time Period Repetitions	Time Period Repetitions	Time Period Repetitions
1 2	1 0	1 Unlimited	1 Unlimited
2 2	1 0		
5 2	1 Unlimited		
10 2			
2 Unlimited			

Save Settings

**Figure 41. HMC Cellular Call Counter Steps Screen To**

configure Counter 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.

CLI Blocking

### 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.

**Cellular Card CLI Blocking**

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

☒ Module Settings ☐ Entire Card ☐ Entire System

Module 1	<input type="radio"/> Block enforced	<input checked="" type="radio"/> Block not enforced
Module 2	<input type="radio"/> Block enforced	<input checked="" type="radio"/> Block not enforced
Module 3	<input checked="" type="radio"/> Block enforced	<input type="radio"/> Block not enforced
Module 4	<input checked="" type="radio"/> Block enforced	<input type="radio"/> Block not enforced

**Figure 42. 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 modules.

- **Unblock**

Click **Unblock** to allow CLI for all 4 of a card's modules.

#### **Module**

- **Block enforced**

Select **Block enforced** to block CLI for a specific module.

- **Block not enforced**

Select **Block not enforced** to allow CLI for a specific module.

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

## 3.14 Call Limits

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

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 ☒ 3

Selected card at slot 3 (GSM)

Set the limit for an outgoing cellular call to be answered:	
Enabled <input checked="" type="checkbox"/>	15 Seconds
Set the maximum length of an outgoing call:	
Enabled <input checked="" type="checkbox"/>	5 Minutes
Round the call length up to the maximum length (above) even if shorter:	
Enabled <input type="checkbox"/>	
(This feature cannot be used together with Call Counter Steps)	
Grace period before disconnecting a call when counter has reached "Minutes until SIM is blocked":	
0	Minutes

**Figure 43. HMC Cellular Call Limits Screen**

- If more than one slot is displayed, select a specific Cellular Card. The Call Limits screen of that cellular card is displayed.
- 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) that is 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).

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

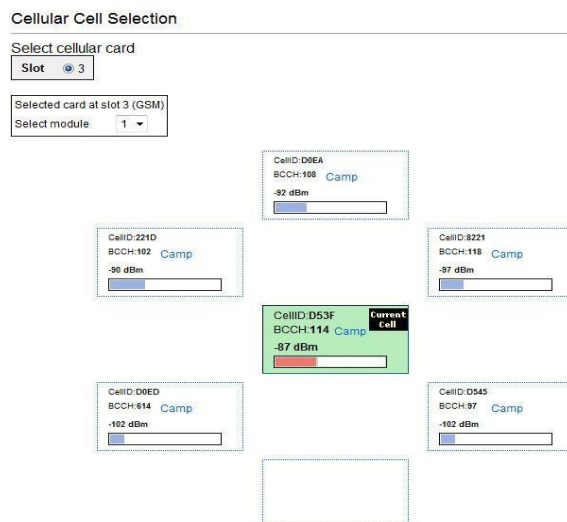
Cell Selection

## 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.

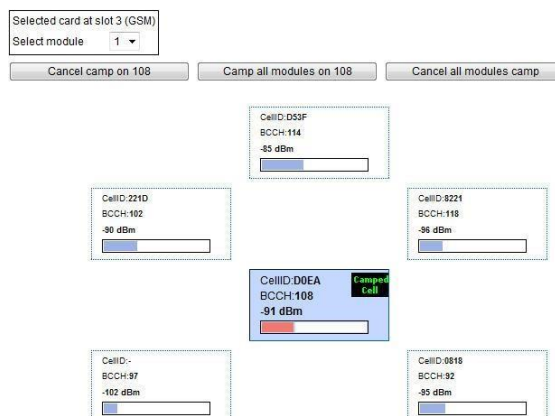
To camp on a site:

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



**Figure 44. 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.



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.



**Cellular Card Settings**

Select cellular card

Slot ☒ 3

Selected card at slot 3 (GSM)

Send an immediate dummy ALERTING message upon establishment of an outgoing call through cellular:
Enabled <input type="checkbox"/>
Wait before sending a dummy ALERTING message on an outgoing call through cellular (unless such a real message is indicated by the network before that time):
Enabled <input type="checkbox"/> 0 Seconds
(Irrelevant if immediate dummy ALERTING above is enabled)
Send a fixed cause code upon termination of all outgoing calls through cellular (assuming these have at least led to alerting, if not answering, on the remote side):
Enabled <input type="checkbox"/> 0 (decimal)
Cause code sent by the cellular card on failed outgoing calls (with an unknown reason):
31 (decimal)
Use GSM 03.38 Hexadecimal encoding on SMS sending and receiving:
Enabled <input checked="" type="checkbox"/>
(effective only after saving changes to the system)

**Figure 45. 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.

1. 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

Select cellular card

Slot ☒ 1

Selected card at slot 1 (GSM)

☒ Module Settings ☐ Entire Card ☐ Entire System

#### Band Selection

Module 1	900E / 1800 MHz ▼
Module 2	900E / 1800 MHz ▼
Module 3	900E / 1800 MHz ▼
Module 4	900E / 1800 MHz ▼

**Figure 46. 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 [en.wikipedia.org/wiki/Mobile\\_country\\_code](http://en.wikipedia.org/wiki/Mobile_country_code).
4. From the HMC navigation pane, click the **Save/Load** branch and then click **Save All Settings**.

## 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 (recharge/top-up) a SIM card.

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.

Slot	Ch.	Media Link	Check All	Check Balance	Recharge Balance	USSD Reply	Reply Date
3	1	-	<input type="checkbox"/>				
3	2	-	<input type="checkbox"/>				
3	3	-	<input type="checkbox"/>				
3	4	-	<input type="checkbox"/>				

Figure 47. 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 removing a layer of ink that hides the string.
  - b. Enter the string into the Recharge Balance field.
  - c. 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 the Monitor > Cellular branch of the Hypermedia Management Console. 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.

Cellular Card Receptions

Module	Type	Operator	RX Level	RX BER	Status
1 / 1	GSM	orange (8221)	-67 dBm	<0.2%	Idle
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

**Figure 48. Cellular Cards Reception Screen** The

screen displays the following information:

#### Module

This indicates the card and the SIM slot number.

#### Type

The module can support GSM, CDMA or UMTS.

#### 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 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 “noisy” calls. If this occurs, find a better location for the antenna or check the connections to the antenna.

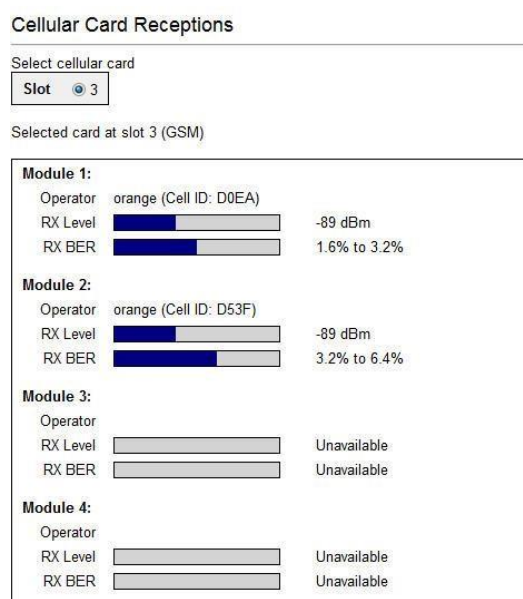
#### Status

This displays the status of the specific module.

### 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.



**Figure 49. 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

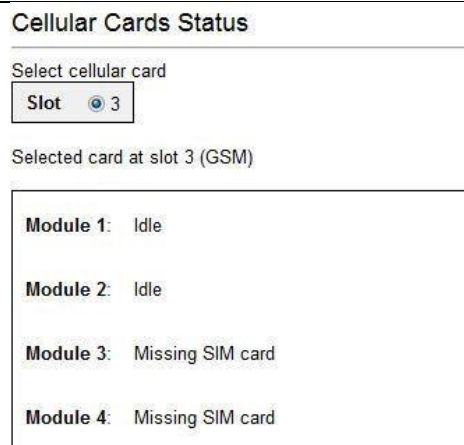
Bit Error Rate (BER) is a calculated figure for the quality of the signal received from the cellular base-station.

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.



**Figure 50. 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 LCR

This section includes:

- Overview (section 4.1 )
- Linking to LCR (section 4.2 )
- Groups (section 4.3 )
- Resource Map (section 4.4 )
- Rules (section 4.5 )
- Filters (section 4.6 )
- Advanced Call Routing (ACR) (section 4.7 )
- Number Filters (section 4.8 )
- CDR (section 4.9 )
- Activating LCR (section 4.10 )

## 4.1 Overview

Gateways with Least Cost Routing (LCR) route calls based on rules 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 of building the LCR plan is:



**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.

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

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.

## 4.2 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.

### 4.2.1 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.



### Cellular Cards Media Matrix

Select cellular card

Slot ☐ 1 ☐ 2

Selected card at slot 1 (GSM)

Channel	Target Link (Select to change)
1	-
2	-
3	-
4	-

### PRI Media Matrix

Select PRI card

Slot ☐ 12 ☐ 13

Selected card at slot 12 (E1 PRI)

Channel	Target Link (Select to change)
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

### VoIP Media Matrix

Select Media Gateway card

Slot ☐ 11

Selected card at slot 11 (Media Card)

Channel	Target Link (Select to change)
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 51. Media Matrix before LCR

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

Channel	Target Link <a href="#">Edit</a>
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Channel	Target Link <a href="#">Save</a> <a href="#">Cancel</a>
1	LCR Resource 65
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 52. Channel Row when Configurable

Linking to LCR

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

### LCR Media Matrix

Resource	Target Link <a href="#">Save</a> <a href="#">Cancel</a>
1	LCR Resource 65
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

### LCR Media Matrix

Resource	Target Link <a href="#">Save</a> <a href="#">Cancel</a>
1	E1.0(12) Resource 65
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 53. Channel Row Dropdown Lists

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

Channel	Target Link
1	LCR Resource 0
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-

Figure 54. Channel Row Configured

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

Resource	Target Link (Select to change)
1	E1 0(12) Channel 1
2	E1 0(12) Channel 2
3	E1 0(12) Channel 3
4	E1 0(12) Channel 4
5	E1 0(12) Channel 5
6	E1 0(12) Channel 6
7	E1 0(12) Channel 7
8	E1 0(12) Channel 8
9	E1 0(12) Channel 9
10	E1 0(12) Channel 10
11	E1 0(12) Channel 11
12	E1 0(12) Channel 12
13	E1 0(12) Channel 13

Resource	Target Link (Select to change)
33	E1 0(13) Channel 23
34	E1 0(13) Channel 24
35	E1 0(13) Channel 25
36	E1 0(13) Channel 26
37	E1 0(13) Channel 27
38	E1 0(13) Channel 28
39	E1 0(13) Channel 29
40	E1 0(13) Channel 30
61	CG4 0(2) Channel 1
62	CG4 0(2) Channel 2
63	CG4 0(2) Channel 3
64	CG4 0(2) Channel 4
65	-

Figure 55. Two Views of the LCR Media Matrix Display

## 4.2.2 Linking from the LCR Branch

To link a media to LCR:

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

Resource	Target Link
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 56. LCR Media Matrix 2.

Click within a Resource row. The row turns yellow.

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

LCR Media Matrix

Resource	Target Link <a href="#">Edit</a>
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

LCR Media Matrix

Resource	Target Link <a href="#">Save</a>   <a href="#">Auto Link</a>   <a href="#">Cancel</a>
1	LCR   Resource 65
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 57. LCR Row when Configurable

Linking to LCR

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

LCR Media Matrix

Resource	Target Link <a href="#">Save</a>   <a href="#">Auto Link</a>   <a href="#">Cancel</a>
1	LCR   Resource 65
2	MG.0(11)
3	CG4.0(4)
4	E1.0(12)
5	E1.0(28)
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

LCR Media Matrix

Resource	Target Link <a href="#">Cancel</a>
1	E1.0(12)   Resource 65
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 58. LCR Row Dropdown Lists

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

LCR Media Matrix

Resource	Target Link <a href="#">Cancel</a>
1	E1.0(12)   Channel 1
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Figure 59. LCR Row Configured

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

### 4.2.3 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.

LCR Media Matrix

Resource	Target Link (Select to change)   <a href="#">Unlink All</a>
53	- E1.0(13) Channel 23
54	- E1.0(13) Channel 24
55	- E1.0(13) Channel 25
56	- E1.0(13) Channel 26
57	- E1.0(13) Channel 27
58	- E1.0(13) Channel 28
59	- E1.0(13) Channel 29
60	- E1.0(13) Channel 30
61	- CG4.0(2) Channel 1
62	- CG4.0(2) Channel 2
63	- CG4.0(2) Channel 3
64	- CG4.0(2) Channel 4
65	-

**Figure 60. 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.

### 4.2.4 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

## 4.3 Groups

Creating Groups simplifies consistent application of LCR strategies.

### 4.3.1 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 Groups

Save Settings

Group #	Group Name	Cyclic	In Filter	Out Filter	Route to	Int. Routing	Report Calls
Group 1	GSM	Yes	-none-	-none-	LCR	<input type="checkbox"/>	<input type="checkbox"/>
Group 2	VoIP	Yes	-none-	-none-	GSM	<input type="checkbox"/>	<input type="checkbox"/>
Group 3		Yes	-none-	-none-	LCR	<input type="checkbox"/>	<input type="checkbox"/>
Group 4		Yes	-none-	-none-	LCR	<input type="checkbox"/>	<input type="checkbox"/>
Group 5		Yes	-none-	-none-	LCR	<input type="checkbox"/>	<input type="checkbox"/>
Group 6		Yes	-none-	-none-	LCR	<input type="checkbox"/>	<input type="checkbox"/>

☒ Deselect All

**Figure 61. 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 4.6 , Filters.
5. Optionally, and if already defined, from the **Out Filter** dropdown menu, select an Out Filter. See 4.6 , 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.

**< 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.

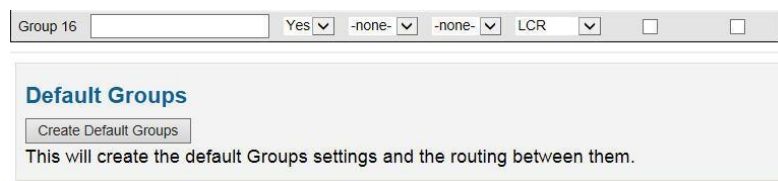
8. Select or clear the **Report Calls** checkbox. When selected, calls are sent to an external Hypermedia application for billing.
9. Click **Save Settings**.

### 4.3.2 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 62. Create Default Groups Button**

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

Resource Map

## 4.4 Resource Map

Use the LCR Resource Map to assign Resources to Groups.

### 4.4.1 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) 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	EMPTY
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	EMPTY
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	EMPTY	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	EMPTY	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 63. Sample Resource Assignment

## 4.4.2 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	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	EMPTY
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	EMPTY
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	EMPTY	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	EMPTY	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 64. 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.



## Configuring LCR

### LCR Resource Map

Your Selection: Channel 1 - (hold shift key to select a range of channels)

Set Group: -none- Set Resource Type: Bi Directional

1 Group: GSM (1) BDirect	2 Group: GSM (1) BDirect	3 Group: GSM (1) BDirect	4 Group: GSM (1) BDirect	5 Group: GSM (1) BDirect	6 Group: GSM (1) BDirect	7 Group: GSM (1) BDirect
8 Group: GSM (1) BDirect	9 Group: GSM (1) BDirect	10 Group: GSM (1) BDirect	11 Group: GSM (1) BDirect	12 Group: GSM (1) BDirect	13 Group: GSM (1) BDirect	14 Group: GSM (1) BDirect
15 Group: GSM (1) BDirect	16 Group: GSM (1) BDirect	17 Group: GSM (1) BDirect	18 Group: GSM (1) BDirect	19 Group: GSM (1) BDirect	20 Group: GSM (1) BDirect	21 Group: GSM (1) BDirect
22 Group: GSM (1) BDirect	23 Group: GSM (1) BDirect	24 Group: GSM (1) BDirect	25 Group: GSM (1) BDirect	26 Group: GSM (1) BDirect	27 Group: GSM (1) BDirect	28 Group: GSM (1) BDirect
29 Group: GSM (1) BDirect	30 Group: GSM (1) BDirect	31 Group: GSM (1) BDirect	32 Group: GSM (1) BDirect	33 Group: BDirect	34 Group: BDirect	35 Group: BDirect
36 Group: BDirect	37 Group: BDirect	38 Group: BDirect	39 Group: BDirect	40 Group: BDirect	41 Group: BDirect	42 Group: BDirect

### LCR Resource Map

Your Selection: Channel 1 - Channel 18

Set Group: -none- Set Resource Type: Bi Directional

1 Group: GSM (1) BDirect	2 Group: GSM (1) BDirect	3 Group: GSM (1) BDirect	4 Group: GSM (1) BDirect	5 Group: GSM (1) BDirect	6 Group: GSM (1) BDirect	7 Group: GSM (1) BDirect
8 Group: GSM (1) BDirect	9 Group: GSM (1) BDirect	10 Group: GSM (1) BDirect	11 Group: GSM (1) BDirect	12 Group: GSM (1) BDirect	13 Group: GSM (1) BDirect	14 Group: GSM (1) BDirect
15 Group: GSM (1) BDirect	16 Group: GSM (1) BDirect	17 Group: GSM (1) BDirect	18 Group: GSM (1) BDirect	19 Group: GSM (1) BDirect	20 Group: GSM (1) BDirect	21 Group: GSM (1) BDirect
22 Group: GSM (1) BDirect	23 Group: GSM (1) BDirect	24 Group: GSM (1) BDirect	25 Group: GSM (1) BDirect	26 Group: GSM (1) BDirect	27 Group: GSM (1) BDirect	28 Group: GSM (1) BDirect
29 Group: GSM (1) BDirect	30 Group: GSM (1) BDirect	31 Group: GSM (1) BDirect	32 Group: GSM (1) BDirect	33 Group: BDirect	34 Group: BDirect	35 Group: BDirect
36 Group: BDirect	37 Group: BDirect	38 Group: BDirect	39 Group: BDirect	40 Group: BDirect	41 Group: BDirect	42 Group: BDirect

Figure 65. Selecting LCR Resources

### Resource Map

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

### LCR Resource Map

Your Selection: Channel 1 - Channel 18

Set Group: -none- Set Resource Type: Bi Directional

1 Group: GSM (1) BDirect	2 Group: GSM (1) BDirect	3 Group: GSM (1) BDirect	4 Group: GSM (1) BDirect	5 Group: GSM (1) BDirect	6 Group: GSM (1) BDirect	7 Group: GSM (1) BDirect
8 Group: GSM (1) BDirect	9 Group: GSM (1) BDirect	10 Group: GSM (1) BDirect	11 Group: GSM (1) BDirect	12 Group: GSM (1) BDirect	13 Group: GSM (1) BDirect	14 Group: GSM (1) BDirect
15 Group: GSM (1) BDirect	16 Group: GSM (1) BDirect	17 Group: GSM (1) BDirect	18 Group: GSM (1) BDirect	19 Group: GSM (1) BDirect	20 Group: GSM (1) BDirect	21 Group: GSM (1) BDirect
22 Group: GSM (1) BDirect	23 Group: GSM (1) BDirect	24 Group: GSM (1) BDirect	25 Group: GSM (1) BDirect	26 Group: GSM (1) BDirect	27 Group: GSM (1) BDirect	28 Group: GSM (1) BDirect
29 Group: GSM (1) BDirect	30 Group: GSM (1) BDirect	31 Group: GSM (1) BDirect	32 Group: GSM (1) BDirect	33 Group: BDirect	34 Group: BDirect	35 Group: BDirect
36 Group: BDirect	37 Group: BDirect	38 Group: BDirect	39 Group: BDirect	40 Group: BDirect	41 Group: BDirect	42 Group: BDirect

Figure 66. Group Dropdown List

- Click **Set**. The assignment is applied and saved.
- 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.

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

## 4.5 Rules

Rules determine to which Group a call is routed.

### 4.5.1 Creating a Rule

To create a Rule:

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

LCR Rules

Save Settings

Default Rule: -none- ☐ ACR

Default Text Rule: -none- ☐ ACR

TF = Time Frame. | TF1: - | TF2: - | TF3: - | TF4: - |

Rule #	Prefix	1st Group	2nd Group	3rd Group	ACR
Rule 1	05468603	GSM	-none-	-none-	<input type="checkbox"/>
Rule 2		-none-	-none-	-none-	<input type="checkbox"/>
Rule 3		-none-	-none-	-none-	<input type="checkbox"/>
Rule 4		-none-	-none-	-none-	<input type="checkbox"/>
Rule 5		-none-	-none-	-none-	<input type="checkbox"/>
Rule 6		-none-	-none-	-none-	<input type="checkbox"/>
Rule 7		-none-	-none-	-none-	<input type="checkbox"/>
Rule 8		-none-	-none-	-none-	<input type="checkbox"/>
Rule 9		-none-	-none-	-none-	<input type="checkbox"/>
Rule 10		-none-	-none-	-none-	<input type="checkbox"/>
Rule 11		-none-	-none-	-none-	<input type="checkbox"/>
Rule 12		-none-	-none-	-none-	<input type="checkbox"/>
Rule 13		-none-	-none-	-none-	<input type="checkbox"/>
Rule 14		-none-	-none-	-none-	<input type="checkbox"/>

**Figure 67. LCR Rules Screen**

- Place the cursor in an empty Rule # Prefix cell.
- 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.
- 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**.

### 4.5.2 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**.

## 4.6 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 Settings

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 68. 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**.

## 4.7 Advanced Call Routing (ACR)

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.

### 4.7.1 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 sub-branch. The ACR Number Lists screen is displayed.

The screenshot shows the 'ACR Number Lists' interface. At the top, it displays 'Total lists on database:9' and 'Total Numbers in all lists:12'. Below this is a section titled 'Choose a CSV file to upload:' which includes a text input field and a 'Browse...' button. Underneath are two radio buttons: 'Overwrite' (unselected) and 'Append' (selected). To the right of these are 'Import' and 'Export' buttons. At the bottom, an 'Upload Result:' message states: 'The file 2008-12-09.csv has been uploaded' and 'File total rows=12'.

**Figure 69. 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 (ACR)

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.

### 4.7.2 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 “list” indicates all entries that 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.

Total lists on database:9  
Total Numbers in all lists:12

Choose a CSV file to upload:

☐ Overwrite

☒ Append

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

**Figure 70. 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.

Advanced Call Routing (ACR)

### 4.7.3 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 - Advanced Call Routing - Rules

Priority	Name	Description	Edit	Delete
Default	Allow call		<input type="button" value="block"/>	

**Figure 71. ACR Rules Screen**

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

**Figure 72. 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 73. 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.

#### 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.

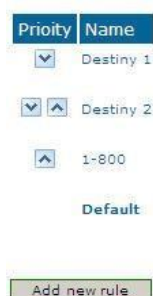
**On Destination**

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.

## Advanced Call Routing (ACR)

9. Prioritize the rule. Use the arrows in the Priority column to increase or decrease a rules prioritization.



**Figure 74. 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**.



## 4.8 Number Filters

Use Number Filters to manipulate 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:** Number Filters belong to the HyperConnect Package and require a separate license.

### 4.8.1 Creating a Number Filter

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.

Filter Name	Delete	Edit
014	Delete	Edit
add9	Delete	Edit
cut972	Delete	Edit
newplan	Delete	Edit
tanik	Delete	Edit
tanik2	Delete	Edit

**Figure 75. 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
Rule	Out	Submit

Out Filter Rules	
Match Pattern	Action

In Filter Rules	
Match Pattern	Action

**Figure 76. Edit Number Filters Screen**

6. Select a Rule **Direction**.

**In**

Use In filters to apply the filters to incoming calls.

Number Filters

## 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\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\d+) 9$1`

- 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>

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

Rules for Filter "014"

Direction	Match Pattern	Action
Rule Out ▼		

**Out Filter Rules**

Match Pattern	Action

**In Filter Rules**

Match Pattern	Action
<code>^014(d\d\d\d\d\d\d+) \$1</code>	Delete

**Figure 77. New Filter is Displayed**

- Click the **Number Filters** sub-branch.

- Click **Update Filters**.

## 4.9 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.

### 4.9.1 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.



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.

### 4.9.2 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.

LCR CDR Files

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.

### 4.9.3 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 7. 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

**Table 7. CDR Line Entries Explained**

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.)
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.


Activating LCR

## 4.10 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.



**HGS Setup Parameters**  
 Server address: XXXXX

**System Functions**

IP Configuration	Change	
HGS Server		<a href="#">Stop</a>
Set date (MM-DD-YY)	<input type="text" value="03-03-13"/>	
Set time (hh:mm:ss)	<input type="text" value="13:57:00"/>	<a href="#">Set</a>
Preferred DNS server	<input type="text" value="8.8.8.8"/>	
Alternate DNS server	<input type="text"/>	<a href="#">Set DNS</a>

**HGS Service Properties**

Property	Value
Management IP port	8878
Initial log level	5
Enable LCR	Yes

**Note:** Please stop HGS Server to change HGS settings.

**Figure 78. 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.

**System Functions**

IP Configuration	Change	
HGS Server		<a href="#">Stop</a>
Set date (MM-DD-YY)	<input type="text" value="03-03-13"/>	
Set time (hh:mm:ss)	<input type="text" value="13:57:00"/>	<a href="#">Set</a>
Preferred DNS server	<input type="text" value="8.8.8.8"/>	
Alternate DNS server	<input type="text"/>	<a href="#">Set DNS</a>

**HGS Service Properties**

Property	Value
Management IP port	8878
Initial log level	5
Enable LCR	Yes

**Figure 79. HGS Setup Parameters Screen in Edit Mode**

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

**HGS Service Properties**

Property	Value
Management IP port	8878 <a href="#">Edit</a>
Initial log level	5 <a href="#">Edit</a>
Enable LCR	Yes <a href="#">Save</a>
Enable VoIP	Yes <a href="#">Edit</a>

Yes  
 No

**Figure 80. Editable Disable LCR Value Field**

7. Enter **0** (zero). Zero indicates that LCR is enabled.
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.

## Activating LCR

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## 5 Configuring the PRI Card



**Note:** For information on Callback and Callthrough, see the Business Applications Users Guide.

This section includes:

- PRI Media Connections (section 5.1 )
- Connection Settings (section 5.2 )
- PRI Card Dial Plan (section 5.3 )
- Monitoring PRI Card Status (section 5.4 )



## PRI Media Connections

## 5.1 PRI Media Connections

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

### 5.1.1 Associating/Linking PRI Channels

To associate a PRI channel with another media channel:

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

**PRI Media Matrix**

Select PRI card

Slot ☒ 12 ☐ 13

Selected card at slot 12 (E1 PRI)

Channel	Target Link (Select to change)
1	E1.0(12) Channel 1
2	E1.0(12) Channel 2
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

**Figure 81. HMC PRI Media Matrix**

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

Channel	Target Link <a href="#">Edit</a>
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

Channel	Target Link <a href="#">Save</a>   <a href="#">Cancel</a>
1	LCR Resource 65
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-

**Figure 82. Media Matrix Row when Configurable**

- 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 allocated” appears.

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

Channel	Target Link
1	CG4.0(1) Channel 1
2	CG4.0(1) Channel 1 Fully allocated
3	CG4.0(1) Channel 3
4	CG4.0(1) Channel 4
5	CG4.0(2) Channel 1
6	CG4.0(2) Channel 2
7	CG4.0(2) Channel 3
8	CG4.0(2) Channel 4
9	E1.0(13) Channel 9
10	E1.0(13) Channel 10
11	-
12	-
13	-

Channel	Target Link
1	CG4.0(1) Channel 1
2	CG4.0(1) Channel 1 Fully allocated
3	MG.0(11) Channel 3
4	CG4.0(1) Channel 4
5	CG4.0(3) Channel 1
6	E1.0(13) Channel 2
7	CG4.0(2) Channel 3
8	CG4.0(2) Channel 4
9	E1.0(13) Channel 9
10	E1.0(13) Channel 10
11	-
12	-
13	-

Channel	Target Link
1	CG4.0(1) Channel 1
2	CG4.0(3) Channel 1
3	CG4.0(1) Channel 1
4	CG4.0(1) Channel 2
5	CG4.0(2) Channel 3
6	CG4.0(2) Channel 2
7	CG4.0(2) Channel 3
8	CG4.0(2) Channel 4
9	E1.0(13) Channel 9
10	E1.0(13) Channel 10
11	-
12	-
13	-

**Figure 83. Assigning a PRI Target Link**

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

PRI Media Connections

### 5.1.2 Unlinking PRI Allocations

To break an allocation:

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

Channel	Target Link
	<a href="#">Edit</a>   <a href="#">Unlink</a>
1	CG4.0(1) Channel 1
2	CG4.0(1) Channel 2
3	CG4.0(1) Channel 3

**Figure 84. Breaking a PRI Target Link**

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

## 5.2 Connection Settings

The PRI card typically connects between the Hypermedia Gateway and a PBX. It can also be assigned to connect directly to the landline operator's network.

To configure the PRI parameters:

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

**Figure 85. PRI Connection Settings**

2. If more than one slot is displayed, select a specific PRI card. The General Settings of that PRI card is displayed.
3. Configure the settings:

### PLL Clock Sync

ISDN device clocks must be synchronized. Some PBXs are Masters, that is, they deliver the clock signal. In this case, the Gateway should be set to Slave. Otherwise, the Gateway should be set to Master.

### Remote Device

Define if the Gateway is connected to a PBX or to an operator's network.

### Line Coding

A line code is a code chosen for use within a communications system for transmission purposes. Select the line coding that is used by the remote device.

### Framing Type

ISDN transmissions are framed using one of several existing framing methods, for example, Cyclic Redundancy Check 4 (CRC-4). Select the framing type that is used by the remote device. CRC-4 support is required for all network switches in Europe. However, some older switches including private branch exchanges (PBXs) do not support CRC-4.

**Long Haul**

If the Gateway is connected to a PBX, select Short. Short Haul connections are connections between user-owned devices. If the Gateway connects to the telephone company's network, optionally select Long Haul.

**Inbound Dialing**

ISDN supports two dialing methods – enblock (all digits dialed within one message) and overlap (each message includes one or more dialed digits). Select the dialing method required for calls from the PBX to the gateway.

**Country Code**

ISDN varies from one country to the next. Select the ISDN country code being used.

**ISDN Version**

There are several versions of ISDN. Select the ISDN version being used.

4. Click **Apply Settings**.
5. From the HMC navigation pane, click **Save Configuration** Initialization takes about 15 seconds.

## 5.3 PRI Card Dial Plan

A dial plan establishes the expected number and pattern of digits for a telephone number. This includes country codes, access codes, area codes and all combinations of digits dialed. Most PBXs support variable-length dial plans that use 3 to 11 digits. Dial plans must comply with the telephone networks to which they connect. Use the PRI Card Dial Plan screen to configure the local dial plan:



**Note:** This feature is only available in OVERLAP mode and will possible shorten the delay after a destination number is dialed and until the remote party phone starts ringing. OVERLAP mode is set on the Connection Settings branch (see section 5.2 , Connection Settings).

1. From the PRI Card branch of the HMC navigation pane, click the **Dial Plan** subbranch. The PRI Dial Plan screen is displayed.

**Figure 86. HMC PRI Card Dial Plan Screen**

2. If more than one slot is displayed, select a specific PRI card. The Dial Plan of that PRI card is displayed.
3. Enter the prefix to which the specific dial plan entry will be applied.
4. Click **Edit**. A dropdown list of Number Lengths is displayed.
5. Expand the list and select a Number Length value corresponding to the expected dialed number length (for a number beginning with the prefix entered above).
6. Click **Save**.
7. Click **Apply Settings** and wait for **Saved successfully** to be displayed.

Monitoring PRI Card Status

## 5.4 Monitoring PRI Card Status

To view information about the status of PRI channels on a specific PRI cards:

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

PRI Card Status

Select PRI card

Slot ☒ 12 ☐ 13

Selected card at slot 12 (E1 PRI)

PRI Status Layer 1 Signal loss error			
Channel	Status	Source	Destination
1	Idle	-	-
2	Idle	-	-
3	Idle	-	-
4	Idle	-	-
5	Idle	-	-
6	Idle	-	-
7	Idle	-	-
8	Idle	-	-
9	Idle	-	-
10	Idle	-	-
11	Idle	-	-
12	Idle	-	-
13	Idle	-	-
14	Idle	-	-
Total		Connected: 0	Dialing: 0 Incoming: 0

**Figure 87. PRI Card Status Screen**

3. Review the PRI Status. Errors and other PRI Status information are displayed above the channel status table.
4. Review the status of channels. Common messages include:
  - Idle
  - Incoming call from PRI network
  - Remote side ringing
  - Call connected
  - Call cleared
  - Dialing out through PRI network
5. Review the totals. The total number of connected, dialing, and incoming calls are displayed below the channel status table.

---

## 6 Managing via the HMC

This section includes:

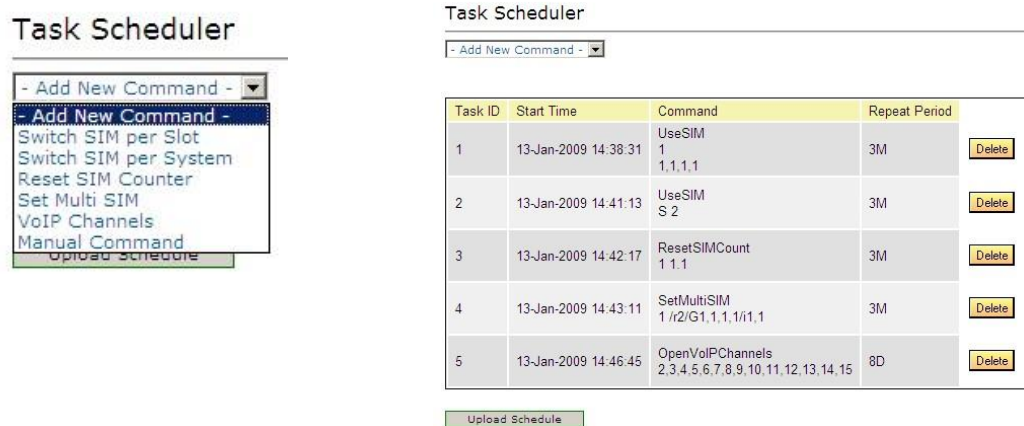
- Scheduler (section 6.1 )



## Managing via the HMC Scheduler

### 6.1 Scheduler

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



**Figure 88. Dropdown Menu of Tasks and Table of Scheduled Tasks**

#### 6.1.1 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.

## Task Scheduler

### Switch SIM per Slot

Set one or more multi-SIM GSM cards to use the specified SIM cards.

- **Slot:** Specifies slot numbers on the HyperGateway device where the GSM card is inserted (counting from the left) or S for all cards.
- **SIM:** SIM which the modules on the GSM card should use. If four SIM-num parameters are specified, each module will be set to use the corresponding SIM.

Slot ☐ 1

Module	SIM
1	As Is ▼
2	As Is ▼
3	As Is ▼
4	As Is ▼
All:	As Is ▼

< Back Next >

**Figure 89. Task Scheduler Switch SIM per Slot Screen**

6. 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 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.

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

Task Scheduler

Start Time	<input type="text"/>	
Command	<input type="text"/>	
Repeat	Yes ▼	
Repeat Period	Months ▼	<input type="text"/>
<input type="button" value="set command"/>		
<input type="button" value="menu"/> <input type="button" value="back"/>		

**Figure 90. Task Scheduler Set Command Screen**



**Caution:** Clicking menu deletes the new task. The table of schedules tasks is redisplayed.

8. Configure the task's schedule:

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

Managing via the HMC

## Scheduler



**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.

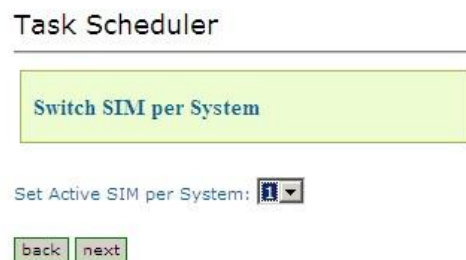
- b. Enter the time that the command will start.
  - c. Enter the date that the command will start. When you click the date, the browser tab closes and the date and time are entered into the Start Time field.
  - d. From the Repeat drop-down menu, select either Yes or No.
  - e. If the task is configured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

---

## 6.1.2 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.

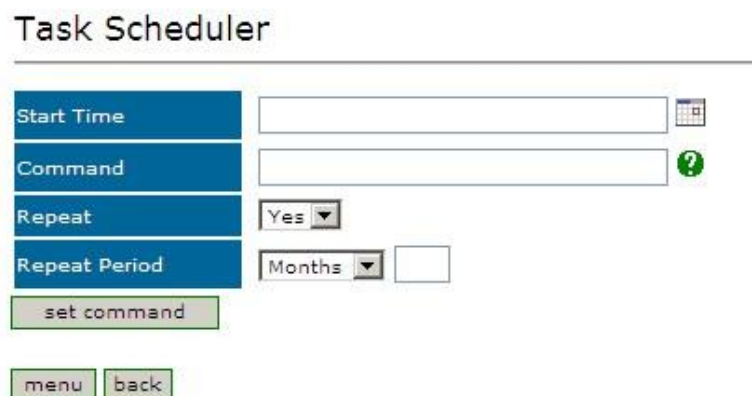
1. From the HMC navigation pane, expand the **Manage** branch.
2. Click the **Scheduler** sub-branch. The Task Scheduler screen is displayed.
3. From the **Add New Command** dropdown menu, select **Switch SIM per System**. The Task Scheduler automatically advances to the next screen.



The screenshot shows the 'Task Scheduler' interface. At the top, there's a title 'Task Scheduler'. Below it, a green button labeled 'Switch SIM per System' is highlighted. Underneath, there's a label 'Set Active SIM per System:' followed by a dropdown menu showing a SIM card icon. At the bottom, there are two buttons: 'back' and 'next'.

**Figure 91. 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.




The screenshot shows the 'Task Scheduler' interface for setting a command. It has a title 'Task Scheduler'. Below it, there are four blue buttons: 'Start Time', 'Command', 'Repeat', and 'Repeat Period'. To the right of 'Start Time' is a text input field with a calendar icon. To the right of 'Command' is a text input field with a green question mark icon. To the right of 'Repeat' is a dropdown menu showing 'Yes'. To the right of 'Repeat Period' is a dropdown menu showing 'Months' and a text input field. Below these buttons is a green button labeled 'set command'. At the bottom, there are two buttons: 'menu' and 'back'.

**Figure 92. 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.

Managing via the HMC

## Scheduler

- 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.

### 6.1.3 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.

Task Scheduler

Set Multi SIM

Slot ☐ 1 ☐ 2

Module	SIM
<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Switch Period	<input type="text"/>
Lock Period	<input type="text"/>

back next

**Figure 93. Task Scheduler Reset SIM Counter Screen**

9. 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.

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

The screenshot shows the 'Task Scheduler' interface. It has a title bar 'Task Scheduler' and a light blue header. Below the header are four blue-labeled input fields: 'Start Time' (with a calendar icon), 'Command' (with a green question mark icon), 'Repeat' (with a 'Yes' dropdown), and 'Repeat Period' (with a 'Months' dropdown and a numeric input field). Below these fields is a green 'set command' button. At the bottom are two green buttons: 'menu' and 'back'.

**Figure 94. Task Scheduler Set Command Screen**



**Caution:** Clicking menu deletes the new task. The table of schedules tasks is redisplayed.

11. 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.
12. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.
13. Click **Upload Schedule**. The Server activates the schedule according to the defined dates and times.

Managing via the HMC  
Scheduler

### 6.1.4 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.

Task Scheduler

Set Multi SIM

Slot ☐ 1 ☐ 2

Module	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
SIM	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Switch Period	<input type="text"/>
Lock Period	<input type="text"/>

back next

**Figure 95. 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.

---

## Task Scheduler

Start Time	<input type="text"/>	
Command	<input type="text"/>	
Repeat	<input type="button" value="Yes"/>	
Repeat Period	<input type="button" value="Months"/>	<input type="text"/>
<input type="button" value="set command"/>		
<input type="button" value="menu"/> <input type="button" value="back"/>		

**Figure 96. 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.

Managing via the HMC  
Scheduler


### 6.1.5 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.



## Task Scheduler


Start Time	<input type="text"/>	
Command	<input type="text"/>	
Repeat	<input type="button" value="Yes"/>	
Repeat Period	<input type="button" value="Months"/>	<input type="text"/>
<input type="button" value="set command"/>		
<input type="button" value="menu"/> <input type="button" value="back"/>		

**Figure 97. Task Scheduler Manual Command Screen**




**Caution:** Clicking menu deletes the new task. The table of schedules tasks is redisplayed.

9. 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.

10. Click **Set Command**. The new Task is displayed in the Task Scheduler screen.

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

## 7 Console Suite and other Tools

This section includes:

- Service Console (section )
- PRI Cause Conversion (section 7.2 )
- Hypermedia Gateway Server List (section 7.3 )

## Service Console

## 7.1 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.

Hypermedia Service Console

I2C Destination

Opcode

Packet String

Log Level  Set

Full Command  Send

Send Packet All Card Diagnostics Delete All Card Links

History << >>

Reply from 192.168.123.166:

MG.0=MG CG4.0=23

**Figure 98. Service Console Screen**

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

## 7.2 PRI Cause Conversion

Cause codes represent the reason for releasing the 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.

To run the PRI Cause Conversion tool:

1. Click the Windows **Start** button > **All Programs**.
2. From the Hypermedia program group, select **PRI Cause Conversion**. The PRI Cause Conversion 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 PRI Cause Conversion screen is displayed.

Code Description	Code Value	Convert to Value
Valid cause code not yet received	00 (0)	00 (0)
Unallocated (unassigned) number	01 (1)	01 (1)
No route to specified transit network (WAN)	02 (2)	02 (2)
No route to destination	03 (3)	03 (3)
Send special information tone	04 (4)	04 (4)
Misdialled trunk prefix	05 (5)	05 (5)
Channel unacceptable	06 (6)	06 (6)
Call awarded and being delivered in an established channel	07 (7)	07 (7)

**Figure 99. PRI Cause Conversion Screen**

PRI Cause Conversion

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

Code Description	Code Value	Convert to Value	
Valid cause code not yet received	00 (0)	00 (0)	<a href="#">Edit</a>
Unallocated (unassigned) number	01 (1)	01 (1)	<a href="#">Edit</a>
No route to specified transit network (WAN)	02 (2)	02	<a href="#">Save</a>
No route to destination	03 (3)	03 (3)	<a href="#">Edit</a>
Send special information tone	04 (4)	04 (4)	<a href="#">Edit</a>
Misdialled trunk prefix	05 (5)	05 (5)	<a href="#">Edit</a>
Channel unacceptable	06 (6)	06 (6)	<a href="#">Edit</a>
Call awarded and being delivered in an established channel	07 (7)	07 (7)	<a href="#">Edit</a>
<a href="#">Show Converted</a> <a href="#">Reset Codes</a> <a href="#">Save Conversions</a>			

Figure 100. Editable Value Field

6. Select a new value.
7. Click **Save**.
8. Click **Submit**.
9. Two additional options exist:  
**Show Converted**  
Displays the converted values.

**Reset Codes**

Assigns the original cause code values.

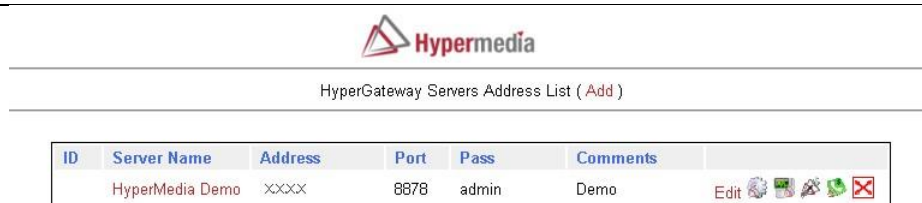
10. Click **Save Conversions**.

## 7.3 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.



**Figure 101. 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.


### 7.3.1 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.



**Figure 102. Add a New Server Screen**

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

Hypermedia Gateway Server List

ID	Server Name	Address	Port	Pass	Comments
192.168.123.164	192.168.123.164	8878			Edit SCP SCL HW IE8080
test demo	192.168.123.166	8878			Edit SCP SCL HW IE8080






**Figure 103. New Server Appears in List**

### 7.3.2 Accessing Other Tools via the Server List

Use the Gateway Server List to open:

**Table 8. Tools Available from the Server List**

Clicking Action	Click Result
Clicking the name that appears in the Server Name column	Opens the Hypermedia Management Console
Clicking Edit	Opens the Server Information window

	Opens the HGS Setup Parameters tool
	Launches the Log Console
	Launches the Service Console
	Launches the CDR Console
	Deletes the entry

## 7.4 Troubleshooting

**Table 9. Power**

Display	Problem	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 10. PRI**

Display	Problem	Solution
Sync. LED (Orange) is blinking	No synchronization of PRI card	<ul style="list-style-type: none"> <li>Check connections to the PRI card at the PBX or line.</li> <li>Verify that the PRI cable is connected.</li> <li>Verify that all pins in the PRI connector are connected in accordance to the PRI specifications.</li> </ul>

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 "Slave".

**Table 11. Cellular**

<b>Display</b>	<b>Problem</b>	<b>Solution</b>
No sync. with network (Green LED is off)	Antenna is not located properly	Position the antenna in a place with better reception.
No sync. with network (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.

Troubleshooting

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## 8 Index

### 1

1st Group .....  
65

### 2

2nd / 3rd Group .....  
65

### A

ACR ..... 53, 65,  
69

ACR Numbers Lists .....  
69

ACR Rules .....  
72

Add Left .....  
67

Adding a New Server .....  
105

Advanced Call Routing (ACR) .....  
69

Allow Blocked Content..... 22,  
24

Auto Link .....  
33

### B

Bi Directional .....  
64

### C

Call Limits .....  
45

Camp .....  
46

Camp all modules on .....  
46

Card .....  
44

Cell Selection .....  
46

CLI Blocking .....  
44

Connection Settings .....  
87

Country Code .....  
88

### D

dBm .....  
50 Default Rule  
..... 66

Dial Method .....  
88

Dial Plan.....  
89

Direction .....  
75

### E

Entire Card .....  
40

Entire System .....  
40

### F

---

Framing Type .....	Media Connections ..... 32, 33, 55,
87	84
<b>G</b>	Module .....
Groups .....	44
60	Module Info .....
<b>H</b>	38
HBD .....	Module Settings .....
5	40
HBS.....	MSN Values .....
5	36
HGS Setup Parameters .....	Index
80	Troubleshooting
Hypermedia Management Console.....	<b>N</b>
5	Network Parameter .....
<b>I</b>	48
In Filter .....	<b>O</b>
60	On Destination .....
Int. Routing .....	72
61	On Source.....
IP address .....	72
25	Operator Lock .....
ISDN Version .....	39
88	Out Filter .....
<b>L</b>	60
Line Coding .....	Outbound Only.....
87	64
Lock Period .....	<b>P</b>
98	PIN Codes .....
Locks .....	35
39	PLL Clock Sync .....
Long Haul .....	87
88	Prefix .....
<b>M</b>	65
Match Condition .....	PRI Cause Conversion .....
67	103
	PRI Status.....
	90

---

**R**

Reception .....	51
Refresh .....	41
Remote Device .....	87
Repeat Period .....	94
Report Calls .....	61
Reset .....	37, 41
Reset All.....	41
Reset Codes .....	104
Resource Map .....	63
Route to Group .....	60
Rules .....	65
Rules for Filter .....	75
RX BER .....	50 RX Level
	..... 50

**S**

Scheduler .....	92
SD Card .....	11
Select module .....	46
Serial Numbers .....	38

Server List .....	22, 105
Service Console .....	102
Set Multi SIM .....	98
Settings .....	47
Show Converted .....	104
SIM Auto Manage .....	42
SIM Cards .....	10
SIM Counters .....	41
SIM Lock .....	39
SIM Select .....	40
Status.....	52
Switch Period .....	98
Switch SIM per System .....	95

**T**

tag,number .....	69 Trim Left
	..... 67

**U**

USSD SIM Balance .....	49
------------------------	----

**V**

versions .....	26 Volume Settings
	..... 31





