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#### **Revision**

User's Manual for PLANET Internet Subscriber Gateway:

Model: ISG-101

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Part No. EM-ISG101V2

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## 1 Introduction

The Internet Subscriber Gateway ISG-101 is deployed in a broadband service network for high-speed access the Internet. The Internet Subscriber Gateway can immediately recognize new users on the network (and remember returning users) and redirect their browser to a proprietary Web page. That is to say, user needn't change their network configuration to access the Internet, just plug and play.

The product is a freestanding or rack-mounted unit with two Ethernet ports (WAN and LAN), a serial port for system management and administration. After the initial setup and network configuration is established, the product is easily managed by a network administrator through a Web management interface or the onboard serial port.

### 1-1 Feature

#### ***Plug and Play-Support All Network Configurations***

The ISG-101 provides instant Internet access by using your own notebook PC without the hassle of configuration setting. This innovative sophisticated design enables instant Internet access wherever traveling may take you. Easy to use plug-and-play access to broadband networks.

#### ***Remote Authentication Dial-In User Service***

The Internet Subscriber Gateway supports RADIUS client. RADIUS enables ISPs to maintain a very large central database of users (potentially in the millions).

#### ***Proprietary Authentication Server***

The Internet Subscriber Gateway provides proprietary authentication server which is allowed administer to control user's login name and password.

### ***Remote Configuration***

The administrator can access this system by using web browsers such as Netscape Navigator or Microsoft Internet Explorer. This system allows a remote user to view and/or modify system configuration via Internet.

### ***Advertisement URL link***

ISP could specify the advertisement URL link. The advertisement Web page will show on the browser when the subscribers start Network access.

### **1-2 Precautions**

- Never remove or open the cover. You may suffer serious injury if you touch these parts.
- The ISG-101 is powered from 100/240 VAC. A standard IEC connector is used for the power cable.



## 2 Product Description

Chapter 2 provides illustrations of the front and rear panels of the ISG-101 and detailed technical specifications including information about LEDs, connectors, cables, environmental and compliance specifications.

### 2-1 Hardware

#### Outlook



Figure 2-1 ISG-101 Outlook

#### Front Panel



Figure2-2 ISG-101 Front Panel

1. **Console Ports:** Standard RS232 DB 9 female Connector for system configuration.
2. **System LEDs:** **Power LED** glows when the device is turned on.
3. **LAN Port:** crossover 10/100M Ethernet port connects to any Ethernet network.
4. **LAN Port LEDs:**
  - 10 Link LED:** glows when a 10M network is connected;
  - 100 Link LED:** glows when a 100M network is connected
  - Act LED:** flash when there is a reception or transmission of data occurring.
5. **WAN Port:** parallel 10/100M Ethernet port connects to any Ethernet

network.

#### 6. WAN Port LEDs:

**10 Link LED:** glows when a 10M network is connected;

**100 Link LED:** glows when a 100M network is connected

**Act LED:** flash when there is a reception or transmission of data occurring.

#### Rear Panel

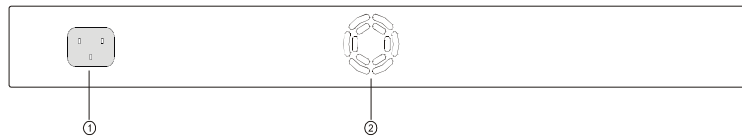


Figure 2-3 ISG-101 Rear Panel

1. **AC Power Connector:** Plug in the female connector of the provided power cord into the ISG-101 rear panel socket, and the male terminal into a power outlet. Input voltages range from 90~240 V.
2. **System Fan/Vents:** This fan is used to circulate air inside the ISG-101 and also to dissipate heat. The vents on both sides also serve the same purpose. Do not block these openings, and leave adequate space at the rear and sides of the device.

## 2-2 Technical Specifications

### Hardware Specifications

#### Network Specification

- . IEE802.3 10BaseT Ethernet
- . IEE802.3u 100BasedTX Fast Ethernet

- . Supports 1024 users concurrently
- . Throughput: Line rate at 20Mbps

#### Connectors

- . Ethernet Port: Two RJ-45 connectors for 10/100M Ethernet port
- . Serial Port: 1 DB9 Female RS232 Console Interface

#### Power Requirement

- . Internal universal switching power supply
- . 100-220 VAC, 50/60 Hz
- . Power Consumption: 5V, 15 Watts, 3 Amp.

#### Led Indicators

- . 10/100M Ethernet Ports: WAN, LAN port LINK10, LINK100, ACT indications
- . POWER ON/OFF Indication

#### Dimension

- . Size: 1U Rack-mount-sized 440(W) x 116(L) x 44(H) mm
- . Weight: About 1.7 kg (Net)

#### Environment Conditions

- . Operating Temperature: 0 to 45
- . Storage Temperature: -10 to 65
- . Humidity: 10% to 90% non-condensing

#### Compliance

- . FCC part 15 Class B
- . VCCI Class B

### **Software Specifications**

#### Address Translate Function

This function can accommodate all network configuration, including DHCP, DNS, proxies and dynamic and static IP address assignments. That is, whenever a subscriber login, the ISG-101 automatically translates their computer's network settings to provide them with seamless access to the

broadband network. Subscribers no longer need to alter their computer network configuration settings.

#### Email Redirection

The ISG-101 will rewrite subscriber's original message of E-mail according to SMTP rules and sent it out via the specified Email server. This function could help subscribers to send E-mail via the local E-mail server when their default Email server is out of work.

#### DNS Redirection

The DNS Redirection function would provide local DNS server when subscriber's configured DNS server is behind a firewall or located on a private intranet.

#### Home Page Redirection

The ISG-101 enables solutions providers to redirect subscribers to a portal web site of their choice. This allows the solution provider to generate online advertising revenues and increase business exposure.

#### DHCP Function

The Internet Subscriber Gateway will follow RFC2131 that is designed to supply dynamic IP addresses.

#### RADIUS Client

RADIUS (Remote Authentication Dial-In User Service) Attribute Support reduces costs and improves services levels by enabling service providers to easily manage and maintain a very large central database of subscribers.

#### Internal User Account Management

The Internet Subscriber Gateway contains a user account database. And when the subscriber starts to access the Internet, the ISG-101 will send a

Web page to ask checking user's ID and password.

Virtual Server

Enables administrator to expose WWW, FTP and other services on your LAN to be accessible to Internet users under the NAT Network.

Support VPN (Virtual Private Network)

The ISG-101 can allow subscriber to create VPN networks using the Internet as the medium for transporting data.

Customize Subscriber Login in page

For different market, ISG-101 allow administrator to set customize login page for the subscribers. The advance pattern includes welcome notes, company logo, page color, article, comments and information items.

Pass through IP and MAC Address

Some network devices might be constructed under the Internet Subscriber Gateway. However these devices needn't be checked and authorized. The ISG-101 provides a pass through table and the administrator can control which devices can be pass through with authentication.

## 3 Installation

This section describes equipments unpacking, pre-installation considerations and different applications.

### 3-1 Package Contents

Carefully unpack the contents of the package and verify them against the checklist below

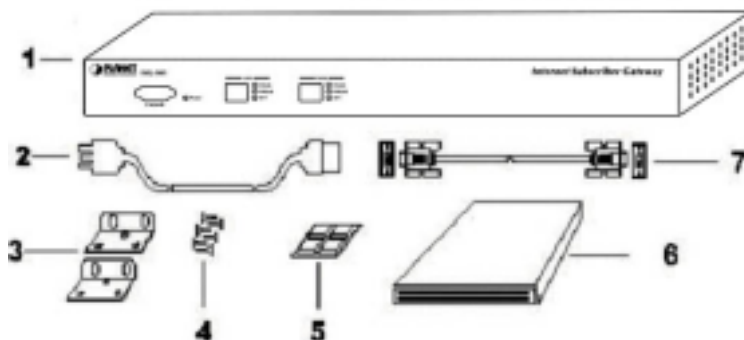


Figure 3-1 Package Contents

1. One ISG-101 Internet Subscriber Gateway body
2. One Power Code
3. Two rack-mounting brackets
4. Six screws
5. Four rubber feet
6. One User's Manual
7. One DB-9 male/Female serial cable (RS-232 console cable)

### 3-2 Installation Requirements

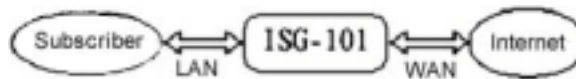
Before installing the ISG-101 Internet Subscriber Gateway, make sure your network meets the following requirements.

### **Mechanical Requirements**

The ISG-101 is to be installed only in a restricted access area per National Electrical Code Articles 110-16, 110-17, and 110-18. It is suitable for mounting over a noncombustible surface only. The ISG-101 can be mounted in a rack, or on the table or shelf. Locate the unit near the outlet. And the ISG-101 ships with two brackets and six screws for mounting in a 19" rack.

### **Network Requirements**

The ISG-101 will access the Internet through XDSL, Cable Modem or other type of leased-line with one EIA/TIA-568 Category 5 UTP Ethernet cable.



*Figure 3-2 Network diagram*

### **Electrical Requirements**

The ISG-101 is powered from 100/240 VAC. A standard IEC connector is used for the power cable. Follow all applicable electrical codes. Frame ground should be tied to a common grounding point using #18AWG cable.

### **3-3 Getting started**

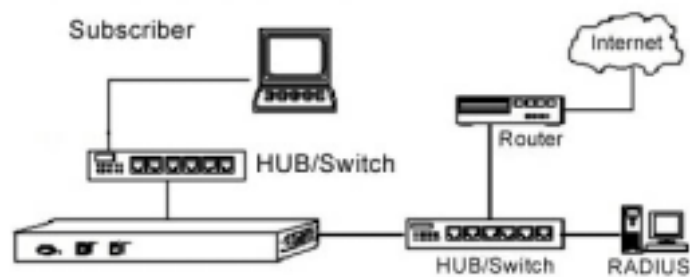
#### **Installation Steps:**

1. Place the ISG-101 on a flat work surface.
2. Connect the power cord
3. Connect the DB9 male-to-female serial cable between the ISG-101 and your computer.
4. Power up your computer and turn on the ISG-101.
5. Start a Hyper Terminal session to communicate with the ISG-101 via the serial interface.
6. Log in to the Console User Interface.

7. Establish the start-up configuration parameters for the ISG-101.
8. Logout and restart for saving the ISG-101 parameters.
9. Connect the WAN network to the ISG-101.
10. Configure the further parameters via a web browser.
11. Connect the LAN network to the ISG-101 and ISG-101 system is now ready for provide Internet plug and play service.

#### **Network Architecture**

The Internet Subscriber Gateway sits in a local aggregation access points on a network, usually paired with a router. For example:



*Figure 3-3 ISG-101 basic connections*



## 4 User Interface

The PLANET ISG-101 offers friendly user interface, one is console user interface and other is Web user interface. However, the Console UI provides only basic system configuration and Status. For advanced function, please use the Web Configurator.

### 4-1 Console

To access the ISG-101 User Interface, the system operator needs to connect a VT100 terminal and a PC running a VT100 compatible terminal emulation program to the ISG-101 Console port by using the provided DB9 RS-232 cable.

Follow these steps to set up your first local serial console port session using the Window98/2K Terminal emulation program HyperTerminal.

1. From the Windows screen, click on the Start button.
2. From the Start menu, choose "Programs" (or Open file Hypertrm.exe).
3. From the Programs menu, choose "Accessories"
4. From the Accessories menu, select the HyperTerminal folder. Click on the HyperTerminal icon.
5. From the connection Description windows, enter a name (i.e., ISG-101) and choose an icon for the connection. Click "OK".
6. When the Phone Number window opens, click on the "Cancel" button.
7. From the File menu, choose "Properties."
8. From the Properties windows, click on the "Configure" button.
9. From the COM1 Properties windows, set the following parameters:

Baud Rate: 9600  
Data bits: 8  
Parity Checking: None  
Stop bits: 1  
Flow control: None

Click "OK"

10. If you intend to use this PC and serial connection in the future, save this configuration by selecting "Files/Save As" and entering the name of the file for this configuration.
11. Once you have completed configuring your serial terminal, use the following steps to logon to your ISG-101. If you have not already done so, use a male-female DB-9 serial communication cable to connect the COM port on your PC to the Console port on the front of the ISG-101.
12. Go to the Call menu and select Connect.
13. If you have not completed initial power up, power up the ISG-101 now. You will see Figure 4-1.
14. To verify that you have a correctly configured your Console port press <Enter> and the Login Display screen will display.
15. If your serial terminal remains blank, make sure that you entered the correct parameters in Step7. Also, verify that you are using the correct cable, that the cable is not damaged, and that you have good cable connections.

ISG-101 Boot ROM Version 1.00  
Ethernet Address:  
-----  
-----  
-----  
Loading..

*Figure 4-1 Serial/Session Display*

#### 4-1-1 Login



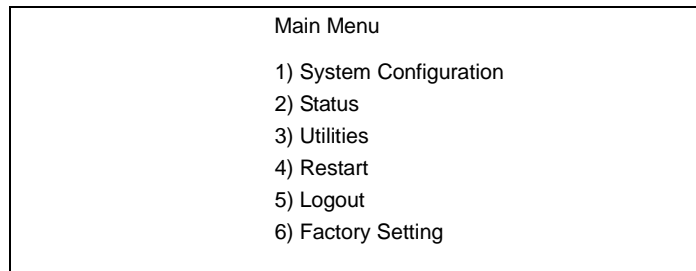
ISG-101 Internet Subscriber Gateway  
(c) 2002 Copyright PLANET Technologies Inc. All Rights Reserved.  
Version 1.02.11  
Username:  
Password:

*Figure 4-2 Login menu display*

The default Username is **"admin"**. The default Password is **"password"**. User can change password setting after accessing the ISG-101 system.

**Notice:** The administrator can change the password via the utilities item.

#### 4-1-2 Main Menu



Main Menu  
1) System Configuration  
2) Status  
3) Utilities  
4) Restart  
5) Logout  
6) Factory Setting

*Figure 4-3 Main Menu Screen*

1) System Configuration: Including ISG-101 system basic parameter setting.

2) Status: Display ISG-101 system basic status.

3) Utilities: Including firmware and configuration upload/download and change password capability.

4) Restart: Restart the ISG-101 system

5) Logout: Logout the ISG-101 serial session

6) Factory Setting: Erase all setting and back to the original factory setting

Enter a numeric that you need between 1-6 and press 'Enter' to the subdirectory.

### 4-1-3 System Configuration

System Configuration	
System Name	: ISG-101
Console Baud Rate	: 9600
Auto Logout Timer	: 10
WAN Configuration	
IP Address	: 210.1.1.2
Subnet Mask	: 255.255.255.0
Gateway	: 210.1.1.1
Web Server Port	: 80
DHCP Configuration	
DHCP Service? (D/R/S)	: D
E-Mail Server IP Address	:
Primary DNS IP Address	:
Secondary DNS IP Address	:
Enter system name.	

Figure 4-4 System Configuration Screen

- 1) **System Name:** You can assign a name to this unit. Up to 32 characters are allowed.
- 2) **Console Baud Rate:** The *Console Baud Rate* is only relative to connection of console. There are three different rates: 9600, 19200, or 38400.
- 3) **Auto Logout Timer:** Enter 0 for never time out or 1 to 60 for timeout minutes.
- 4) **WAN Configuration:** Enter WAN port IP Address Configuration such like IP address, subnet mask and gateway. The Web server port default is 80, however some user may set up the ISG-101 under the NAT network. The administrator has to set the special Web server port so that ISG-101 can be remote access under NAT network.

**Notice:** The web server port allowed range is from **8000** to **8099** if administrator wants to remote access under NAT Network. For access the ISG-101 system under NAT, please tab the "**http://WAN Port IP Address: Port Number**".

5) **DHCP Configuration:** There are three types of DHCP Services. Enter '**D**' to disable the DHCP server function, '**R**' to enable DHCP Relay function, or '**S**' to enable DHCP Server function.

**Notice:** The parameters will display on the screen only when the relative item is chosen.

**DHCP Relay function:** To route DHCP through an external server, the administrator needs to enable the DHCP Relay and assign a valid DHCP server IP address.

*Server IP Address:* Tab the DHCP relay server IP address.

*Agent IP Address:* Tab the relay agent IP address, normally enter the ISG-101 WAN IP is OK.

**Notice:** You must disable the DHCP server before enable the DHCP relay. Both features can't be enabled concurrently.

**Enable DHCP server function:** ISG-101 include a DHCP sever inside. To enable this function please choose the DHCP service as '**S**', and set the DHCP server information.

*Server IP Address:* Tab the DHCP server IP address.

*Start IP Address:* Tab the DHCP pool start IP.

*End IP Address:* Tab the DHCP pool end IP.

*Subnet Mask:* Tab the DHCP subnet mask.

*Lease Time:* Tab the DHCP lease time. The maximum of DHCP lease time is 71582788 minutes.

**Notice:** To set up the DHCP pool that is the same network with WAN port you just tab the WAN port IP address. If you want to set up a NAT DHCP pool please type the same network IP Address with NAT network as the DHCP server IP address.

6) **DNS IP Address:** Enter the IP address for the DNS servers (located at the customer's network operating center where DNS requests are sent)

**Notice:** The secondary DNS servers are only initialized if the primary DNS server is unavailable.

7) **E-mail Server IP Address:** To prevent some subscriber's original Email server may protect by firewall or NAT network. ISG-101 provides an extra Email server parameter to forward the subscriber's Email. The ISG-101 not only forwards the subscribers' E-mail via other E-mail server but also changes the SMTP header. The recipient of your E-mail sees the message as if you sent it from your local Internet Service Provide, not form the hotel or other place.

**Notice:** Before setting this sever, please make sure the E-mail sever relay function is opened.

#### 4-1-4 System Status

System Status	
System Name	: ISG-101
Console Baud Rate	: 9600
Auto Logout Timer	: 10
WAN Configuration	
IP Address	: 210.1.1.2
Subnet Mask	: 255.255.255.0
Gateway	: 210.1.1.1
Web Server Port	: 80
DHCP Configuration	
DHCP Service? (D/R/S)	: Disable
E-Mail Server IP Address	: N/A
Primary DNS IP Address	: 168.95.1.1
Secondary DNS IP Address	: 140.112.1.2

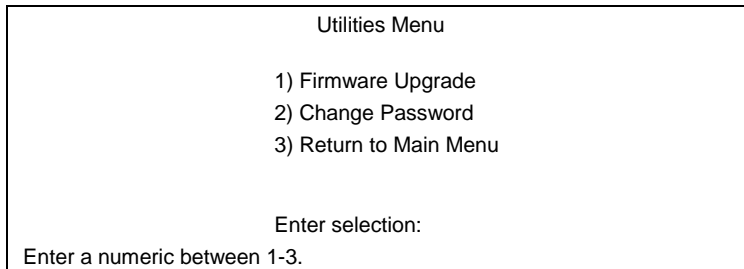
Press any key to return.

Figure 4-5 System Status Screen

System Status is only displaying system information from screen no authority to change any setting.

**Notice:** If the system parameter information is not available, the column will display N/A.

#### 4-1-5 Utilities Menu



Utilities Menu

- 1) Firmware Upgrade
- 2) Change Password
- 3) Return to Main Menu

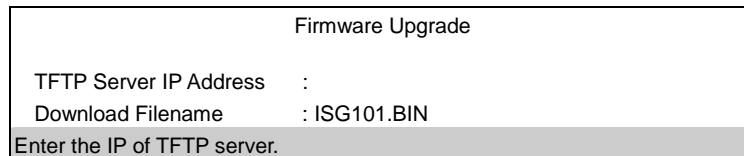
Enter selection:

Enter a numeric between 1-3.

*Figure 4-6 Utilities Menu Screen*

- 1) **Firmware Upgrade:** ISG-101 allow user to upgrade last firmware.
- 2) **Change Password:** ISG-101 allow user to change password.
- 3) **Return to Main Menu:** Leave this page and return to Main Menu screen.

#### 4-1-6 Firmware Upgrade



Firmware Upgrade

TFTP Server IP Address :

Download Filename : ISG101.BIN

Enter the IP of TFTP server.

*Figure 4-7 Firmware Upgrade Screen*

The ISG-101 uses TFTP Download to upgrade firmware. User needs to specify TFTP server IP address and the filename that you wish to download.

*TFTP server IP Address:* Enter the TFTP server IP address.

*Download Filename:* Enter the Download file name.

#### **How to make a TFTP download**

Step 1. Get the TFTP server software first.

You can get TFTP server from all PLANET distributors or PLANET web site or any other TFTP server software.

Step 2. Copy the TFTP server application to a specified folder (any folder is ok).



- Step 3. Execute the TFTP server application by double click on it.
- Step 4. Specify the firmware located folder by selecting the menu item "setup".
- Step 5. Connect to the ISG-101 with console port or web browser.
- Step 6. Access to *Figure 4-7* screen and specify the TFTP server IP address and the filename that you wish to upgrade.
- Step 7. Executive and you will finish the upgrade procedures.

#### 4-1-7 Change Password

Change Administrator Password	
Enter the old password	:
Enter the new password	:
Confirm the new password	:
Enter the old password.	

Figure 4-8 Change Password Screen

The Password Change screen allows you to change an existing password.

**Notice:** A permitted password string is from 8 to 20. The characters are limited by alphabets and numerals.

#### 4-1-8 Restart

Restart System (Y/N)?
Enter the command key and press enter.

Figure 4-9 Restart Screen

ISG-101 system can be restart by software; the administrator doesn't need to turn off the power. This function can help you when making multiple changes to different menu function and you want to reboot just one time after completing all your changes.

Tab 'Y' and then press 'Enter' key to restart the system. Tab 'N' and then press 'Enter' to return to the Main Menu screen.

#### 4-1-9 Factory Setting

Change to factory setting and the system will be restarted! Are you sure (Y/N)? Y
To reserve the user profiles (Y/N): Y
Enter the command key and press enter.

Figure 4-10 Factory Setting Screen

If you enter “Y” the ISG-101 system will erase all setting, and back to the original factory setting. There are two different choices after you decided to change to the factory setting.

One is to change all the parameters into factory setting but only reserve the user profiles (subscribers' table). The other is to clear all the parameters into factory setting including the user profiles.

#### 4-2 Web-Based Configurator

Before first time use of PLANET ISG-101's Web-based configuration utility, make sure your system meets both of the following requirements:

1. You have already obtained an IP address for your ISG-101 assigned by your ISP. You can check ISG-101 system status via the RS-232 console cable.
2. You have already connected the ISG-101 to the Network.

After you check this point you may connect by using any Web-browser to access the ISG-101 Web-based Configurator form any remote location via the Internet!

**Notice:** ISG-101 Firmware version V1.00.01 didn't support remote access if the ISG-101 is under the NAT function Network (masquerade IP). The new function will support this feature. For new released information please check the PLANET Web site or contact with PLANET Support Team.

### Using the Web-based Configurator

The PLANET Web-based Configurator makes it easy for you to access the ISG-101 configuration utility without direct cable connection. It allows a remote control to modify the ISG-101's configuration settings via Internet, by using any regular Web-such as Internet Explorer or Netscape Navigator.

To access the PLANET Web-based Configurator, please follow these operations:

1. Start your Web-browser program (for example, IE) on your workstation.
2. In the host IP or location box in your web browser session, type ISG-101's IP address: `http:// "ISG-101's IP-address"` and press <Enter>.
3. After the Internet connection with ISG-101 is established, you will be prompted to enter your username ("**admin**") and password (default is "**password**") in the Login screen.
4. ISG-101 Web-based Configurator session has now started and you can navigate in this configuration utility just as easily as in a regular Internet www site.

#### 4-2-1 Login



Figure 4-11 Web-based Configurator Login Screen

The ISG-101 default Username is "admin" and Password is "password".

**Notice:** The capital letters and lowercase letters need to be differentiated.

#### 4-2-2 Main Menu



Figure 4-12 Web-based Configurator Main Menu Screen

After a valid username and password have been provided, the ISG-101 Web-based Configurator displays the Main Menu available.

- 1) Configuration: Including ISG-101 system parameter setting.
- 2) Status: Display ISG-101 status.
- 3) Utilities: Including firmware and configuration change password capability.
- 4) Restart: Restart the ISG-101 system form the remote site.
- 5) Logout: Logout the ISG-101 Web Configurator session.

#### 4-2-3 Configuration Menu



Figure 4-13 Web-based Configurator Configuration Menu Screen

- 1) System: Define the ISG-101 System configuration.
- 2) Subscriber Management: Manage subscribers information such like management type (using RADIUS or internal accounting management), customize login page, subscriber logout timer etc.
- 3) Advertisement Link: Send the plus advertisement link to the subscribers when the subscriber starts the ISG-101 service.
- 4) Pass Through IP & MAC: allow administrator to set some special devices pass through the ISG-101 system. Because some network devices might be constructed under the Internet Subscriber Gateway. However these devices needn't be checked and authorized. The ISG-101 provides a pass through table and the administrator can control which devices can be pass through with authentication.
- 5) Virtual Server Table: Enables administrator to expose WWW, FTP and other services on your LAN to be accessible to Internet users under the NAT Network.

#### 4-2-4 System Configuration



Figure 4-14 Web-based Configurator System Configuration Screen

- 1) System Name: You can assign a name to this unit. Up to 32 characters are allowed.
- 2) Console Baud Rate: The *Console Baud Rate* is only relative to connection of console. There are three different rates: 9600, 19200, or 38400.
- 3) Date/Time: The valid setting of year is from 1999 to 2035.
- 4) WAN Configuration: Enter WAN port IP Address Configuration such like IP address, subnet mask and gateway. The Web server port default is 80, however some user may set up the ISG-101 under the NAT network. The administrator has to set the special Web server port so that ISG-101 can be remote access under NAT network.

**Notice:** The web server port allowed range is from **8000** to **8099** if administrator wants to remote access under NAT Network. For access the ISG-101 system under NAT, please tab the “**http://** WAN Port IP Address: Port Number”. For Example: “**http://**210.1.1.5:8002”. The function of remote access ISG-101 system will be released after V1.00.02 version. For the release news please check the PLANET Web Site or contact PLANET Support Team.

5) DHCP Configuration:

**DHCP Disable: Disable DHCP function.**

**DHCP Relay function:** To route DHCP through an external server, the administrator needs to enable the DHCP Relay and assign a valid DHCP server IP address.

*Server IP Address:* Tab the DHCP relay server IP address.

*Agent IP Address:* Tab the relay agent IP address, normally enter the ISG-101 WAN IP is OK.

**DHCP Server:** ISG-101 include a DHCP sever inside. To enable this function please choose the DHCP Server item, and set the DHCP server information.

*Server IP Address:* Tab the DHCP server IP address.

*Start IP Address:* Tab the DHCP pool start IP.

*End IP Address:* Tab the DHCP pool end IP.

*Subnet Mask:* Tab the DHCP subnet mask.

*Lease Time:* Tab the DHCP lease time. The maximum of DHCP lease time is 71582788 minutes.

**Notice:** 1. You must disable the DHCP server before enable the DHCP relay. Both features can't be enabled concurrently.  
2. To set up the DHCP pool that is the same network with WAN port you just tab the WAN port IP address. If you want to set up a NAT DHCP pool please type the same network IP Address with NAT network as the DHCP server IP address.

6) DNS IP Address: Enter the IP address for the DNS servers (located at the customer's network operating center where DNS requests are sent)

**Notice:** The secondary and tertiary DNS servers are only initialized if the primary DNS server is unavailable.

7) E-mail Server IP Address: To prevent some subscriber's original Email server may protect by firewall or NAT network. ISG-101 provides an extra Email server parameter to forward the subscriber's Email. The ISG-101 not only forwards the subscribers' E-mail via other E-mail server but also changes the SMTP header. The recipient of your E-mail sees the message as if you sent it from your local Internet Service Provide, not form the hotel or other place.

**Notice:** Before setting this sever, please make sure the E-mail sever relay function is opened.

#### 4-2-5 Subscriber Management



Figure 4-15 Web-based Configurator Subscriber Management Screen

- 1) Subscriber Control: Including deciding to check subscriber's username & password or not and which authentication function will be used.
- 2) Customize Login UI: For some Hotels or ISPs, they may hope to have a customize subscriber's login page to the users. This function helps they to



realize the ideal. The page elements are including company logo, welcome note, background color, article etc. Certainly the administrator can decide to use only stand form.

3) Add subscribers: Add the subscribers' username and password in the internal database.

**Notice:** This item will display only when the subscriber management type is "Proprietary". See also "Subscriber Control" item.

4) Subscriber List: List all the subscribers' table and the administrator can click the check box to delete the listing subscribers' data.

5) Current Users: Display currently on line subscriber's information, such like username, password and MAC address.

6) Import Subscribers: To maintain a subscriber database via web UI might not be so convenient. Therefore, the ISG-101 provides to import a subscriber's data base file via TFTP server.

#### 4-2-6 Subscriber Control

The screenshot shows the 'Subscriber Control' configuration page in the Internet Subscriber Gateway. The page has a blue header with the PLANET logo and the title 'Internet Subscriber Gateway'. On the left, there is a 'Main Menu' sidebar with links for 'Configuration', 'Status', 'Restart', and 'Logout'. The main content area is titled 'Subscriber Control' and contains three sections:

- Subscriber Center:** Includes a radio button for 'Enable' (checked) and a text field for 'Legal Title' containing '184011-1840'.
- Management Type:** Includes a radio button for 'Proprietary' (checked), a dropdown menu for 'Start User Account' set to 'Enabled', and text fields for 'Username' (admin@101) and 'Password' (password).
- Billing Mechanism:** Includes a radio button for 'Enable' (checked), a dropdown menu for 'Unit Type' set to 'By Hour', and text fields for 'Unit Cost' (100) and 'Currency' (R).

At the bottom of the form, there are 'Apply' and 'Clear' buttons.

Figure 4-16 Web-based Configurator Subscriber Control Screen

#### 1) Subscriber Control:

**Enable:** If to enable this function means the subscribers' user ID must be checked. That is to say, when subscriber wants to access the Internet, they must click the Web browser. And then there will display the subscriber login web page. And after entering the username and password, the subscriber can use the Internet service.

**Disable:** If to disable this function means that subscribers can access the Internet without any check. The subscriber can just click the web browser and surf the Internet.

*Logout Timer:* This item will display only when the Subscriber Control is set as "Enable". If the Logout Timer is set as 3 minutes, it means if the subscriber doesn't send packet in 3 minutes, the subscriber will logout automatically. If the subscriber is off-line over the logout time, he must re-login again for Internet service.

#### 2) Management Type:

There are two different types for subscriber management. One is the proprietary or internal authentication system and the other is RADIUS server. The maximum subscriber number of internal authentication system is 250. The RADIUS parameters will display only when the RADIUS item is selected.

*Proprietary:* Internal authentication system, allow administrator to control the subscriber database via ISG-101 internal function.

*RADIUS:* The ISG-101 supports Remote Authentication Dial-In User Service (RADIUS). RADIUS is an authentication and accounting system used by many Internet Service Providers (ISPs).

RADIUS enables ISPs to maintain a very large central database of subscribers. By using RADIUS, Service Providers can implement policy –based management of their subscriber database. The RADIUS also helps ISP to collect accounting data such like login time and logout time.

*RADIUS Server IP:* Enable or Disable connects with RADIUS server.

*Authentication Port:* Enter the authentication port number, and the number must match with the Radius server setting. The allowed numbers are from 0 to 34463.

*Accounting Port:* Enter the accounting port number, and the number must match with the Radius server setting. The allowed numbers are from 0 to 34463.

*Radius Secret Key:* Enter the Radius secret key, and the key number also has to match with the Server setting. Up to 64 characters are allowed.

*Accounting Service:* Enable or Disable the accounting service.

**Notice:** The RADIUS Server follows the RFC 2138 and RFC 2139 stand. And the authentication port number is 1645 and 1812. The administrator can configure the port number according to his own RADIUS server.

For more detail information of RADIUS please check the manual of your RADIUS server.

#### 4-2-7 Customize Login UI



Figure 4-17 Web-based Configurator Customer Login UI Screen

**Selection:** The ISG-101 provides two different login page formats. One is "Standard", this is ISG-101 default login page, can't be changed. The other is "Advanced", that is to say, administrator can design the subscriber login page by himself.

**Welcome Image:** You can choose "**None**" or "**Default Image**".

**Welcome Slogan:** The maximum allowed length is 80 characters.

**Page Background:** The page background can be none or specified color. For the background color format please views the color grid. The allowed format is Hexadecimal (RGB values of Red, Green, and Blue, where each component has a hexadecimal value of from 00 to FF. 000000 is black and FFFFFFFF is white.)

**Article:** The article is allowed the administrator to input a paragraph in the subscriber login page for advisement or announcement. The maximum character of the article is 1024.

*Article Text Color:* The article text color can be specified color. For the specified text color format please views the color grid. The allowed format is Hexadecimal

*Article Background Color:* The article background can be specified color. For the background color format please views the color grid. The allowed format is Hexadecimal (RGB values of Red, Green, and Blue, where each component has a hexadecimal value of from 00 to FF. 000000 is black and FFFFFFFF is white.)

*Information:* Allow the administrator to input the text information such like address, telephone number and fax information. The maximum character of the information is 80.

*Comments:* Allow the administrator to input the text comments such like "Please Contact to our Customer Service Center, EXT 142". The maximum character of the information is 80.



*Figure 4-18 Standard Subscriber Login Page Screen*



Figure 4-19 Advanced Subscriber Login Page Screen Sample

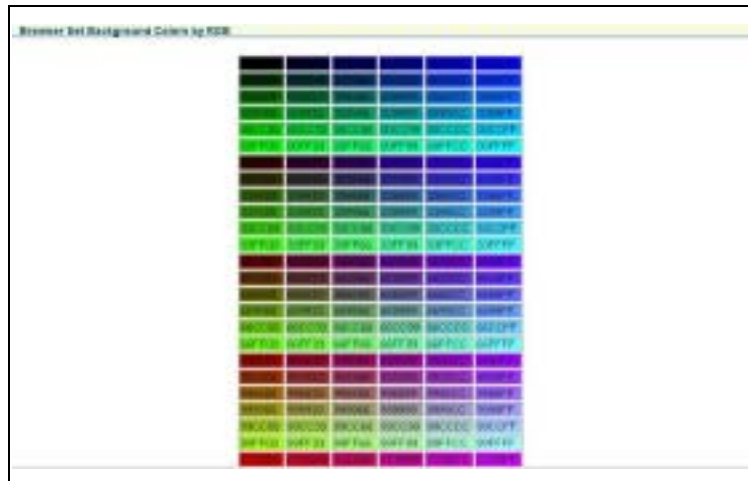


Figure 4-20 Web-Based Configurator Background Color Grid Screen

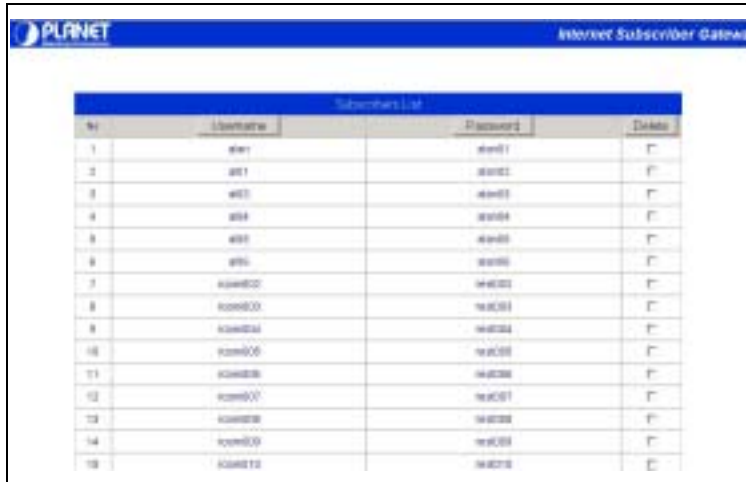
#### 4-2-8 Add Subscribers

Add New Subscriber		
Username	Password	Go
<input type="text"/>	<input type="password"/>	<input type="button" value="Go"/>
<input type="button" value="Create Account"/>		
<input type="button" value="Account Info"/>		
<input type="button" value="Account Information"/>		

*Figure 4-21 Web-Based Configurator Add Subscribers Screen*

The internal authentication database allows 250 user's records. To add the subscribers to the database please enter the username in the "username" column and password in the "password" column. For the username 1-32 characters are allowed. For the password 0-20 characters are allowed. And you can add 10 records for once.

#### 4-2-9 Subscribers List



No	Username	Password	Delete
1	adm1	adm1	<input type="checkbox"/>
2	adm1	adm1	<input type="checkbox"/>
3	adm1	adm1	<input type="checkbox"/>
4	adm1	adm1	<input type="checkbox"/>
5	adm1	adm1	<input type="checkbox"/>
6	adm1	adm1	<input type="checkbox"/>
7	adm000	adm00	<input type="checkbox"/>
8	adm000	adm00	<input type="checkbox"/>
9	adm000	adm00	<input type="checkbox"/>
10	adm000	adm00	<input type="checkbox"/>
11	adm000	adm00	<input type="checkbox"/>
12	adm000	adm00	<input type="checkbox"/>
13	adm000	adm00	<input type="checkbox"/>
14	adm000	adm00	<input type="checkbox"/>
15	adm000	adm00	<input type="checkbox"/>

Figure 4-22 Web-Based Configurator Subscribers List Screen

The Subscriber List will list all the user profiles in the internal database. And the administrator can press the "Username" button or "Password" button to sort the data column. And the administrator can click the checking boxes and press "Delete" button to delete subscribers' data from the table.



#### 4-2-10 Current Users

Account of online					
ID	Username	Password	MAC Address	Login Time	Logout
18	000	123	08:40:24:01:15:08	12:00:01	7

Figure 4-23 Web-Based Configurator Current Users Screen

The Current Users table lists the on-line subscribers. The Administrator can press the button on top of the columns to sort the data. The current users information includes the username, password and MAC address.

#### 4-2-11 Import Subscribers

Figure 4-24 Web-Based Configurator Current Users Screen

To maintain a subscriber database via web UI might not be so convenient.

Therefore, the ISG-101 provides to import a subscriber's data base file via

Internet Subscriber Gateway

TFTP server.

Enter your TFTP server IP address in the "TFTP Server IP Address" column and import file name in the "File Name" column. The import file text format is as followings:

```
user1,password1  
user2,password2  
user3,passowrd3  
user4,password4
```

*Figure 4-25 Import Subscribers File Format Screen*

Username and password divide by common. For different users please divide by Enter Key.

**Notice:** For the username 1~32 characters are allowed. For the password 0-20 characters are allowed. The wrong data might cause the user profile error.

#### 4-2-12 Advertisement Link Configurations

Figure 4-26 Import Subscribers File Format Screenshot

The Frequency can be chosen *One Time Only* or *Multi-sending*. *One Time Only* means to send the advertisement link once after the subscriber Login. *The Multi-sending* means to send the advertisement link every interval minutes.

The Advertisement Link Configuration allows the administrator to input ten different websites in the table for advertisement. And these 10 websites will display to the subscribers at random when the subscribers login in the ISG-101 system. The input format can be "http://www.planet.com.tw" or "www.planet.com.tw".

**Notice:** The maximum allowed input string is 80 characters.

#### 4-2-13 Pass through IP & MAC

No.	IP Address	No.	IP Address
1		2	
3		4	
5		6	
7		8	
9		10	
11		12	
13		14	
15		16	
17		18	
19		20	
21		22	
23		24	
25		26	
27		28	

Figure 4-27 Import Subscribers File Format Screen

There are some devices such like server or gateway must pass through the ISG-101, or ISG-101 will check their packets and ask for username and password.

There are 40 entries can input the pass through IP Address and 10 entries can input the MAC address. For input the IP address, please use this format such like "210.208.122.1".

For input the MAC address please use this format "00-50-BA-8D-22-96".

**Notice:** The MAC address must use the "-" symbol for input the data string.

#### 4-2-14 Virtual Server Table

No.	IP Address	Server Port	Virtual Port (8000-8002)	Application	MAC Address
1	192.168.123.1	21	8000	FTP	08-00-2B-8A-33-22
2	192.168.123.2	80	8002	HTTP	08-00-2B-8A-A3-7C
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Figure 4-28 Virtual Server Table Screen

This product's NAT firewall filters out unrecognized packets to protect your Intranet, so all hosts behind this product are invisible to the outside world. If you wish, you can make some of them accessible by enabling the *Virtual Server table*. A virtual server is defined as a **Service Port**, and all requests to this port will be redirected to the computer specified by the **IP Address**. For example, if you have an FTP server (port 21) at 192.168.123.1 and a Web server (port 80) at 192.168.123.2, then you need to specify the following virtual server-mapping table:

IP Address	Server Port	Virtual Port	Application
192.168.123.1	21	80001	FTP
192.168.123.2	80	80002	HTTP

**Notice:** All the parameters must be set for the sake of regular execute. The Virtual Port controls the corresponding mapping table; do not type the same virtual port number in this column. The permitted virtual port numbers are from 80001 to 80002.4-2-14 Status Menu



Figure 4-29 Web Configurator Status Menu Screen

- 1) System: Display the all the system configuration parameter.
- 2) DHCP Client Table: Display the DHCP client status. The client IP and MAC address are showed in the table.

#### 4-2-15 System Status

System Status	
System Name	PLANET 101
Console Port Baud Rate	19200 bps
Class	300000000
Time	14:22:01
WAN	
MAC Address	80-90-0E-60-13-4D
IP Address	202.76.208.198
Subnet Mask	255.255.250.0
Default Gateway	202.76.208.254
Web Server Port	80/80
HTTP	80/80
DHCP	
Server IP Address	192.168.0.1
Start IP Address	192.168.0.11
End IP Address	192.168.0.40
Subnet Mask	255.255.250.0
Lease Time	3000 (Min)
E-mail Server IP Address	202.76.208.1

Figure 4-30 Web Configurator System Status Screen

Display the ISG-101 system basic information including the System Name, Console Port Baud Rate, WAN, DHCP Configuration, DNS, E-mail Server Information.

#### 4-2-16 DHCP Client Table

IP ADDRESS	MAC ADDRESS
192.168.1.11	00:03:48:00:11:3E

Figure 4-31 Web Configurator DHCP Client Table Screen

Display the DHCP clients' information including the assigned IP address and DHCP clients' MAC address. The buttons on the top of the columns can sort the column data.

System Status is only displaying system information from screen no authority to change any setting.

**Notice:** If the system parameter information is not available, the column will display N/A.

#### 4-2-17 Utilities Menu



Figure 4-32 Web Configurator Utilities Menu Screen

- 1) Firmware Upgrade: Allow administrator to upgrade the ISG-101 last firmware.
- 2) Change Password: Allow administrator to change password.

#### 4-2-18 Firmware Upgrade

The screenshot shows the PLANET Internet Subscriber Gateway web configurator. The page title is 'Internet Subscriber Gateway'. On the left, there is a navigation menu with categories: Home, Configuration (System, Advanced Management, Advanced Setup, Power System E & M, Maintenance), Status (Status, LAN, WAN, LAN/WAN Link Status), Utilities (System Upgrade, Group Management), Restart, and Logout. The main content area is titled 'Firmware Upgrade' and contains two input fields: 'TFTP Server IP Address' and 'Filename'. Below these fields are 'Apply' and 'Clear' buttons.

Figure 4-33 Web Configurator Firmware Upgrade Screen

The ISG-101 uses TFTP Download to upgrade firmware. User needs to specify TFTP server IP address and the filename that you wish to download.

**TFTP server IP Address:** Enter the TFTP server IP address.

**File Name:** Enter the Download file name.

**Notice:** How to make a TFTP download please refer to the **4-1-6**



#### 4-2-19 Change Password

Change Password	
Old Password	<input type="text"/>
New Password	<input type="text"/>
New Password Confirm	<input type="text"/>

Apply Clear

Figure 4-34 Web Configurator Change Password Screen

The Password Change screen allows you to change an existing password.

**Notice:** A permitted password string is from 8 to 20. The characters are limited by alphabets and numerals.

#### 4-2-20 Restart

Do you want to restart the (80-191) system?

Restart Back

Figure 4-35 Web Configurator Restart Screen

Press the "Restart" button and the system will be restart after 30 seconds. Or press the "cancel" button return to the main menu.

#### 4-2-21 Logout



Figure 4-36 Web Configurator Logout Screen

Press the “Logout” button and the System would logout to the Login page. Or press Cancel to return to the main menu.

#### 4-3 Subscriber Applications

The subscribers that connect under the ISG-101 can surf the Internet without change any network configuration. Just plug the hardware connection and enter the *Username* and *Password*, which was provided by the Local Service Provider.

**Notice:** If the Service Provider set the *Subscriber Control* as Disable then the subscribers need no username and password. See also 4-2-6.

##### 4-3-1 Subscriber Login Steps



Figure 4-37 Standard Subscriber Login Screen

- 1) After connecting all the hardware devices, subscriber must run the Web Browser program, such like Microsoft Internet Explore or Netscape Communications Navigator to register the account to the ISG-101. And after running the Web Browser program, there will be displaying the ISG-101 login page like *Figure 4-37* or *Figure 4-38*
- 2) Enter the Username and Password, which is configured in the ISG-101 system (Proprietary- Internal authentication system) or RADIUS server.
- 3) After Login, the Advertisement link will display on the screen such like the *Figure 4-39*



*Figure 4-38 Sample for Advanced Subscriber Login Page*



Figure 4-39 Sample for Advanced Subscriber Login Page

4) After finishing the register process, subscriber can use E-mail, Web Browser, NetMeeting, and so on.

If user disconnects over the Logout timer set in Subscriber Control (see also 4-2-6), the ISG-101 will regard as the user already logout. If user wants to connect the Internet again, he must have to re-login.

#### 4-3-2 Subscriber Limitation

The ISG-101 Internet Subscriber Gateway is designed for Global IP (Public IP) used. However, some Service Provider might construct in Private IP (NAT IP). This might easy to make IP conflict problem. Some IP conflict samples as followings:

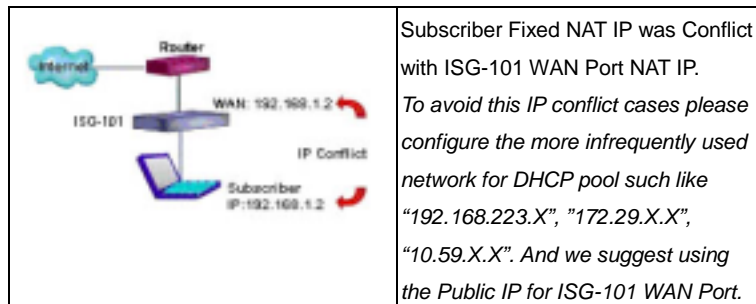


Figure 4-40 IP Conflict Case A

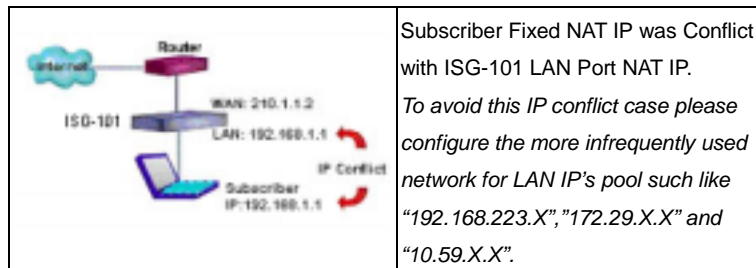


Figure 4-41 IP Conflict Case B

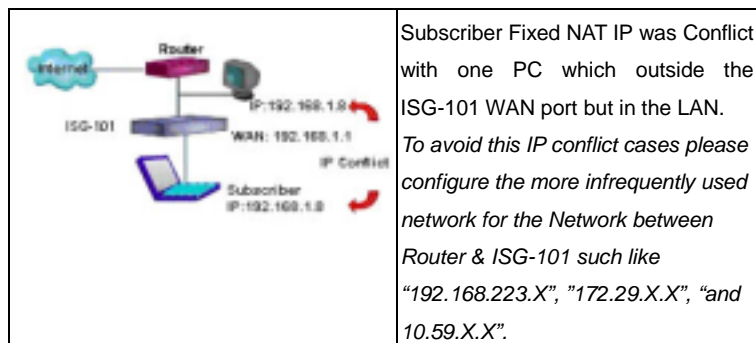


Figure 4-42 IP Conflict Case C

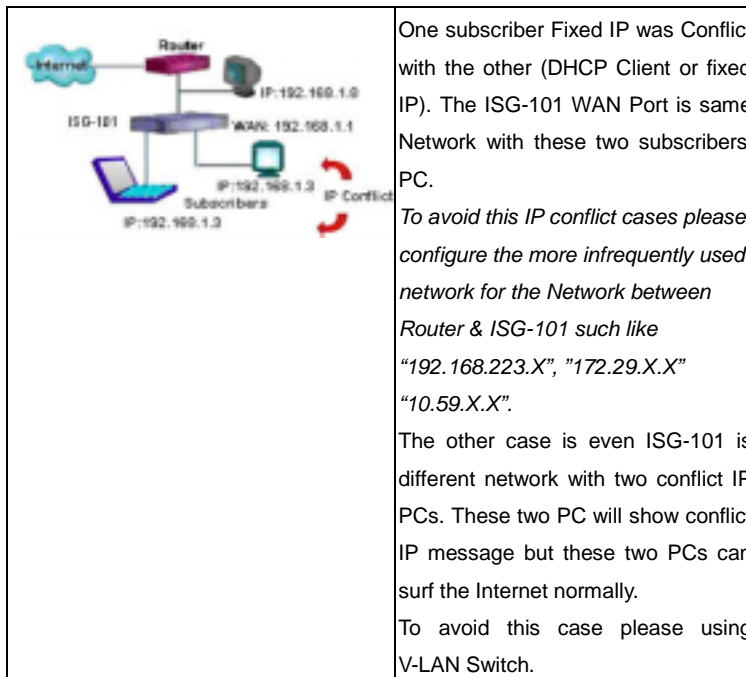


Figure 4-43 IP Conflict Case D

**Notice:**

1. Some subscribers might have the proxy server configuration in the web browser, for this case the subscribers must cancel the proxy server settings. However, PLANET will support the new firmware in the future to leave out this effort. For late released information, please check the PLANET Web Site.
2. Some subscribers can access the Internet regularly but might not be able to send and receive the E-mail normally. This is according to the subscriber's settings and the subscriber's E-mail service provider. Some ISP doesn't support the Internet mail, users are limited to send and receive E-mail from the specified network. Furthermore, some subscribers are unable to send/receive E-mail because their E-mail server address is private IP (IP masquerade). For **E-mail redirection** function please check the page 22 "*7) Email server IP address*"
3. The Internet Subscriber Gateway supports Plug and Play function to the subscriber who's PCs can access the Internet regular in his company or home except by PPP or PPPoE. That is said the IP settings of Subscriber's PC must be DHCP Client or Fixed IP with fully parameter. For example: the subscriber's IP is fixed IP but the DNS setting is empty.

### 4-3-3 Extra Feature

#### 1. On Line Sign up

The screenshot shows the PLANET Internet Subscriber Gateway configuration interface. The page is titled 'Subscriber Control' and includes a 'Main Menu' on the left with links for Configuration, Status, Utilities, and Logout. The main content area is divided into three sections:

- Subscriber Control:** Includes radio buttons for 'Enable' and 'Disable', and a 'Logout Time' field set to '00:00:00'.
- Management Type:** Includes radio buttons for 'Proprietary' and 'Radius'. The 'Radius' option is selected. Fields include:
  - Radius Server IP: 10.20.249.78
  - Authentication Port: 1812
  - Accounting Port: 1813
  - Radius Secret Key: (empty)
  - Accounting Service: (Disabled)
  - Authentication Method: CHAP
- On Line Sign up:** Includes radio buttons for 'Enable' and 'Disable'. The 'Enable' option is selected. Fields include:
  - Connecting Duration: 30
  - Account Server:
    - IP/Domain Name: www.planet.com.tw
    - URL Page: /en/app/Radius/1.htm

This function supports the unauthorized user can register their username and password on line. This function support only when you enable the Radius Server, the Connecting Duration will control the time "how many minutes the user can connect to the server. And please enter the IP of the Account Server and URL page that you would like subscriber linked.



## 2. POP Server

FRQNO	One Time Only	Publishing Server	Unit
SPLINK 1			
SPLINK 2			
SPLINK 3			
SPLINK 4			
SPLINK 5			
SPLINK 6			
SPLINK 7			
SPLINK 8			
SPLINK 9			
SPLINK 10			
SPLINK 11			
SPLINK 12			

POP Server:  Enable  Disable  
Server IP/Domain Name Address: 200.11.240.1  
Validation:  Enable  Disable

Apply Close

The Advertisement POP server settings will allow this server IP pass through so that the server can send the advertisement page to Subscriber without obstruction.

## 3. RADIUS Prepaid dialogue

**Logout Window**

You can use Internet now!

There is a prepaid window. Do not close this window before you want to Logout. You login times is still working.

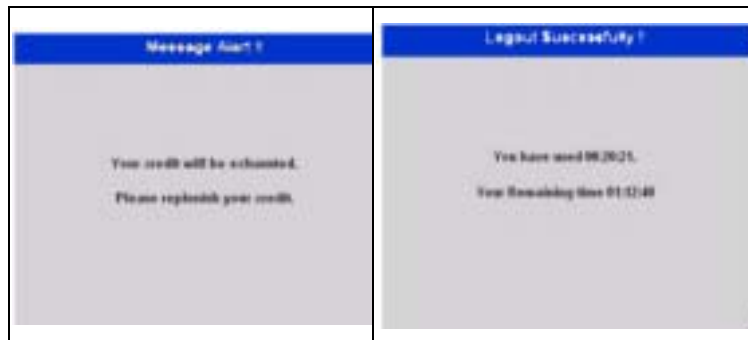
Remaining Usage 00:30:13

If you don't want to continue to use Internet, please remember to Logout. Just click the following button.

Logout

**Invalid Logout**

For valid logout procedure, please press the "Logout" button.



If we start the RADIUS prepaid function, the system will show the Logout Window on the subscriber's PC. If the subscriber would like logout, he must press the Logout button in this window and the system will disconnect. For the illegal closed session window, the "Invalid Logout" window will pop-up to the subscriber. And if the credit of usage is going to run out the "Message Alert" will pop up and ask you to replenish your credit. Furthermore, if you logout successfully the system will also pop up a window and remind your remaining time.

#### 4. Simple Billing System for Propriety Account management



Select billing mechanism "Enable" and will display "Unit Time" and "Unit Cost"

and “Currency “ column. The **unit time** can select “by Day” or “by hour”. These mean that the charge unit may base on day or hour. The **unit cost** can help administrator to account subscriber usage fee. And the currency parameter can show on the screen to notify your billing currency.

No	Username	Password
1	post user	post
2	post user 2	post
3	post user 3	post
4		
5		
6		
7		
8		
9		
10		

The add subscriber allows administrator creating the subscriber's account one by one. And for the prepay service, please select the number of the purchased unit. The counter will start to count when the subscriber login the system. Once the purchased timing is exhausted, the system will kick the subscriber out. For the post-pay service please set the purchase unit as “0”, the system would not kick out any subscriber until the administrator delete this account.

PLANET Internet Subscriber Gateway					
Account List					
Username	Password	Register Time	Login Time	Check out Time	Purchase Price
1230	1230	15-10-17	18:30:04	20:30:00	7
123456	1234	16			
Total:	166 800000	16			

Press the “**Create Account**” button after typing the account information. And the screen will display the charge form (including username, password, register time, price parameter etc.) The administrator or clerk may print out this page as a receipt.

Account Modify					
Username	Login Time	Expired Time	User	Display	Delete
<input type="checkbox"/> 1234			1234	Display	Delete
<input type="checkbox"/> 1235			1235	Display	Delete
<input type="checkbox"/> 1236			1236	Display	Delete
<input type="checkbox"/> 1237			1237	Display	Delete
<input type="checkbox"/> 1238			1238	Display	Delete
<input type="checkbox"/> 1239			1239	Display	Delete
<input type="checkbox"/> 1240			1240	Display	Delete
<input type="checkbox"/> 1241			1241	Display	Delete
<input type="checkbox"/> 1242			1242	Display	Delete
<input type="checkbox"/> 1243			1243	Display	Delete
<input type="checkbox"/> 1244			1244	Display	Delete
<input type="checkbox"/> 1245			1245	Display	Delete

If administrator presses the “**Account Modify**” button the account information will list on the screen. If the subscriber already login, the system will list the login time and count the expired time (if prepay the fee already).

Notice: For the post-pay service the system wouldn’t show the expired time.

Click the check box and press “**Delete**” button if you wish to kick out the subscriber. And then the check box will become a “\*” symbol. Once you press the “**Delete**” button again, the subscriber record will be erased entirely.

You can also press the “**Display**” button and will display the **Account List page**. And if the subscriber asked to change his purchase units, the administrator can modify the units’ column and press “**Apply**” button. And administrator can press the Username, Login Time or Expired Time button to sorting the subscriber’s information.



The screenshot shows the PLANET Internet Subscriber Gateway interface. On the left is a navigation menu with options like 'Main Menu', 'Configuration', 'Status', 'Reset', and 'Logout'. The main area displays a table titled 'Account Information' with the following data:

ID	Username	Password	MAC Address	Login Time	Units
10	plan	plan	00401400F33E	13:44:40	0

The **Account Information** can display the information of username, password, MAC address and Login Time and purchased units.

## Appendix A: Signal Connection Arrangements

### RJ-45 Ethernet Port

The ISG-101 **RJ-45 Ethernet port** can connect to any networking device that use a standard LAN interface, such as a Hub/Switch Hub or Router. Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable to connect the networking device to the RJ-45 Ethernet port.

Depending on the type of connection, 10Mbps or 100Mbps, use the following Ethernet cable, as prescribed.

**10Mbps:** use EIA/TIA-568-100-Category 3,4 or 5 cable.

**100Mbps:** use EIA/TIA-568-100-Category 5 cable.

**Notice:** To prevent loss of signal, make sure that the length of any twisted-pair connection does not exceed 100 meters.

### The WAN Port:

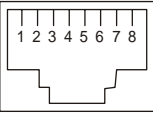
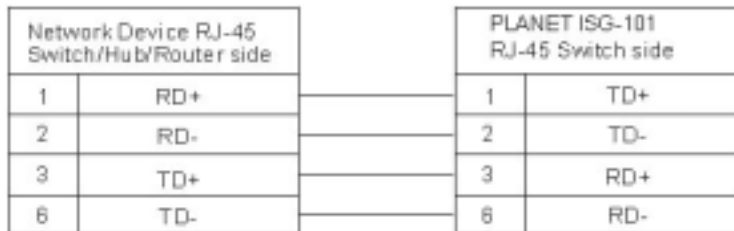
	PIN	RJ-45 Signal Assignment	Designation
	1	Output Transmit Data +	TD+
	2	Output Transmit Data -	TD-
	3	Input Transmit Data +	RD+
	4	Unused	N/U
	5	Unused	N/U
	6	Input Transmit Data -	RD-
	7	Unused	N/U
	8	Unused	N/U

Table A-1 RJ-45 Uplink Connector

Check that the straight twisted-pair cable connection between the ISG-101 and the hub/router conforms to the pin assignments show in the following diagram:

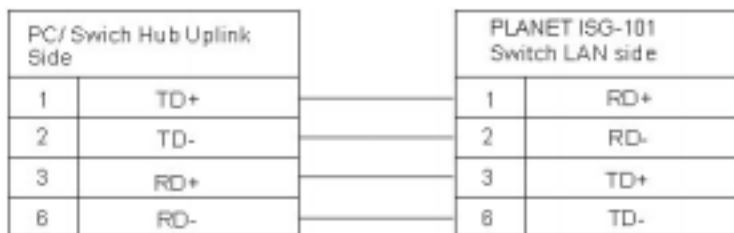


The LAN Port:

	PIN No.	RJ-45 Signal Assignment	Designation
	1	Input Transmit Data +	RD+
	2	Input Transmit Data -	RD-
	3	Output Transmit Data +	TD+
	4	Unused	N/U
	5	Unused	N/U
	6	Output Transmit Data -	TD-
	7	Unused	N/U
	8	Unused	N/U

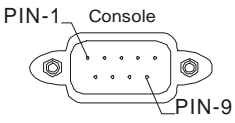
*Table A-1 RJ-45 Uplink Connector*

Check that the straight twisted-pair cable connection between the ISG-101 LAN port and the WAN port conforms to the pin assignments show in the following diagram:



### DB9 Serial Console Port

PIN	Mnemonic	Function		
		Received	Line	Signal
1	DCD	Received	Line	Signal
2	TXT	Transmitted	Data	from
3	RXT	Received	Data to	ISG-101
4	DTR	Data	Terminal	Ready from
5	GND	Signal	Ground	(Common)
6	DSR	Data	Set Ready to	ISG-101
7	RTS	Request	to	Send from
8	CTS	Clear	to	Send to ISG-101
9	RI	Ring	Indicator	to ISG-101





## **Appendix B: Regulations/EMI Compliance**

### **FCC Regulatory Statement**

Part 15-Class B compliant device

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including that which may cause undesired operation.

This equipment has been test and found to comply with the limits for a computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected the outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.

Changes or modification not expressly approved be the party responsible for compliance could void the user's authority to operate the equipment.