

**FCC Statement:**

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

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

**CE Marking Warning**

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Revision**

PLANET Internet Gateway User's Manual for model:

**IG-100 version 1.0**

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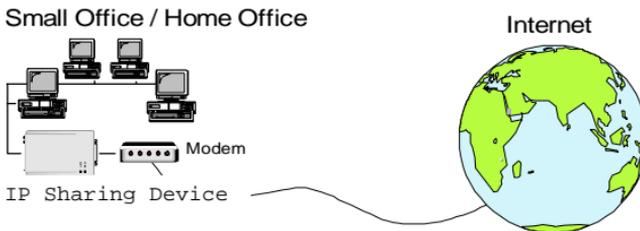
# Chapter 1

## Introduction



*This Chapter provides an overview of the Internet Gateway's features and capabilities.*

**C**ongratulations on the purchase of your new Internet Gateway. The Internet Gateway will allow multiple SOHO (Small Office Home Office) users to share an Internet user account. It provides a low-cost method of giving LAN users access to the vast resources available on the Internet.



**Figure 1: Office to Internet**

Once the Internet Gateway is installed and configured, the Internet is just a click away. You can seamlessly connect to the Internet as if you had a permanent connection. The Internet Gateway is able to use your modem to connect to your ISP (Internet Service Provider) and provide the required log-in information.

## Internet Gateway Features

The Internet Gateway incorporates many advanced features, carefully designed to provide sophisticated functions while being easy to use.

### LAN Features

- ***Hassle-free LAN Installation.*** An auto-sensing LAN connection eliminates the need for configuration during installation in a 10Base2 or 10BaseT network.
- ***DHCP Server Support.*** Dynamic Host Configuration Protocol provides a dynamic IP address to PCs and other devices upon request.  
The Internet Gateway can act as a **DHCP Server**.
- ***Multi Segment LAN Support.*** If you have a Router, PCs on other LAN segments can use the Internet Gateway to access the Internet.

### Internet Access Features

- ***Shared Internet Accounts.*** All users on the LAN can share Internet Accounts. You need only 1 account for each modem, not 1 account for each user.
- ***Dial-On-Demand & Auto-Disconnect.*** A connection is established to the Internet as required, and automatically disconnected when no longer needed. This reduces on-line charges to the minimum possible level.
- ***PPP Authentication.*** This is used to validate the log-on to your Internet Service Provider.

---

## Configuration & Management

- **Easy Setup.** Use your WEB browser from anywhere on the LAN for configuration.
- **Remote Management.** The Internet Gateway can be managed from a workstation anywhere on the LAN, using a WEB browser.
- **Remote Monitoring.** The modem and Internet connection can be monitored from any workstation on the LAN.

## Advanced Functions

- **E-Mail Gateway.** The Internet Gateway can act as a Gateway for incoming E-Mail, allowing LAN users to share E-Mail accounts. Up to 4 accounts and 50 users are supported.
- **Access Control Features.** The LAN Administrator can limit Internet Access by individual workstations.

## Security Features

- **Configuration Data.** Optional password protection is provided to prevent unauthorized users from modifying the configuration.
- **Access Control Features.** The LAN Administrator can limit Internet Access by individual workstations.
- **Firewall Protection.** All incoming data packets are monitored and all incoming server requests are filtered, thus protecting your network from malicious attacks from external sources.

## Firewall Protection

The firewall protection provided by the Internet Gateway is an intrinsic side effect of IP sharing. All users on the LAN share a single external IP address. From the external viewpoint, there is no network, only a single device.

For internal users, the Internet Gateway acts as a “transparent proxy server”, translating the multiple internal IP addresses into a single external IP address.

For external requests, any attempt to connect to local resources are blocked. The Internet Gateway will not “reverse translate” from a global IP address to a local IP address.

This type of “natural” firewall provides an impregnable barrier against malicious attacks.

## Package Contents

The following items should be included:

- The Internet Gateway Unit
- Power Adapter
- This User’s Manual / Installation Guide

If any of the above items are damaged or missing, please contact your dealer as soon as possible.

# IG-100

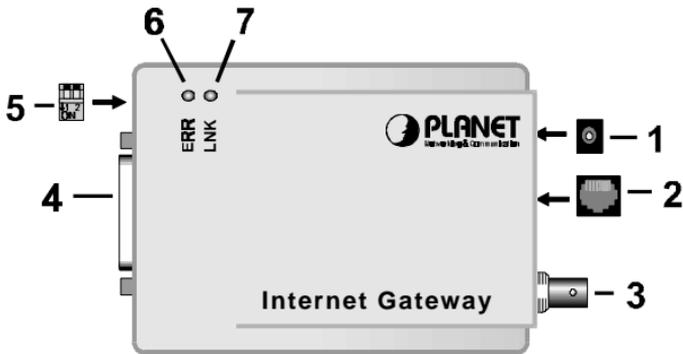


Figure 2: IG-100 1-port IP Sharing Device

Item	Description
1 Power port	Insert the power adapter plug here.
2 10BaseT port	Connect 10BaseT cabling here.
3 10Base2 port	Connect 10Base2 cabling here.
4 Serial Port	Connect the modem to this port.
5 DIP switches	Refer to the following <i>Dip Switches Table</i> .
6 Error LED	Indicates an error, but will normally light up during power On. See the <i>LED Status Table</i> for more details.
7 Link LED	This LED should be ON during normal operation. See the following <i>LED Status Table</i> for more details.

## LED Status Table

The following table details the operation of the *Link* and *Error* LEDs.

Link	Error	Description
On	On	During power On, both LEDs should light, then the Red LED should go off. If both LEDs stay on, there is a hardware problem.
On	Off	Power On Self Test OK.
Flashing	Off	Normal Operation (Receiving Packets from LAN).
Rapid intermittent flashing of each LED		Hardware error. Contact your dealer for technical support.

## DIP Switches Table

DIP Switch Setting	Description
<b>A</b>  1=off 2=off	Normal Operation.
<b>B</b>  1=off 2=on	Normal Operation.
<b>C</b>  1=on 2=off	Restore Default IP Address and clear Password. (See next section)
<b>D</b>  1=on 2=on	Normal Operation.

---

## Restore Default IP Address and Clear Password

---

If the Internet Gateway's IP Address or password is lost, the following procedure can be used to recover from this situation.

1. Turn the power to the Internet Gateway OFF.
2. Set the DIP switches to position C.
3. Turn the power to the Internet Gateway ON.
4. Operate the DIP switches in the following sequence (you have 15 seconds to complete the sequence):
  - Set to A
  - Set to C
  - Set to A
5. The Internet Gateway will now reset, and the Red LED flash. The following changes will have been made. (Other configuration data is unchanged.)
  - *IP Address* set to its default value of 192.168.0.1
  - *Network Mask* set to 255.255.255.0
  - The password cleared (no password).
6. You can now connect to the Internet Gateway and make any configuration changes required.



*Note!* If the DIP switches are simply left at position "C", the Internet Gateway will function normally.

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# Chapter 2

# Installation



*This Chapter explains how to install the Internet Gateway in your LAN.*

## Requirements

- Ethernet Network employing 10BaseT or 10Base2 cable and the TCP/IP protocol.
- External modem or ISDN TA (Terminal Adapter).
- Internet Access account with a local ISP (Internet Service Provider).

## Procedure

### 1. Choose an Installation Site

---

Select a place on the network to install the Internet Gateway. Remember that you need a phone jack and power outlets near your chosen location.

### 2. Connect Network Cable

---

The Internet Gateway supports two types of network cables:

- Thin Ethernet (10Base2, BNC connector)
- Twisted Pair Ethernet (10BaseT, RJ-45 connector).

During power up, the unit automatically detects the type of network cable and adjusts to that environment. Simply connect the cable to the Internet Gateway in the normal manner.



**Do not connect both types of cable or change the network cable while the Internet Gateway is powered On.**

### **3. Connect Modem & Phone Line**

---

Connect the modem, using a standard serial cable, to the Internet Gateway's serial port. Connect the modem to the phone line.

### **4. Connect Power Adapter**

---

Connect the modem's power adapter to the modem and the Internet Gateway's power adapter to the Internet Gateway. Power both devices On.



**Only use the power adapter provided. Using a different one may cause hardware damage.**

### **5. Check the LEDs**

---

When the Internet Gateway is powered On, both the Error and Link LEDs should light, then the Error LED should go off. The Link and Port LEDs will flash during normal operation.

If the Error LED stays on, there is a hardware problem. For more information on the LEDs, refer to the *LED Status Table* on page 6.

# Chapter 3

## Configuration



*This Chapter contains an overview of the configuration process.*

### Internet Gateway Configuration

The required configuration depends on which features and functions of the Internet Gateway you wish to use. Use the table below to locate detailed instructions for the required functions.

To Do this	Refer to
Provide Internet Access to all LAN users	Chapter 4: Internet Access
Configure for: <ul style="list-style-type: none"><li>• A non-standard modem</li><li>• Proprietary log-in with your ISP</li></ul>	Chapter 5: Advanced Port Settings
Change Internet Gateway defaults: <ul style="list-style-type: none"><li>• LAN settings</li><li>• Use the DHCP Server function</li></ul>	Chapter 6: Device Settings
Limit Internet Access by individual workstations	Chapter 7: Access Control
Allow many users to share Internet E-Mail Accounts	Chapter 8: E-Mail

Check the Internet Gateway's settings or operation: <ul style="list-style-type: none"><li>• Device status</li><li>• Port settings</li><li>• Monitor the port while in use</li></ul>	Chapter 9: Status & Monitoring
---	--------------------------------------



*Where use of a certain feature requires that PCs or other LAN devices be configured, this is also explained in the relevant chapter.*

## Configuration Program

The Internet Gateway contains a HTTP server. This enables you to connect to it, and configure it, using your Web Browser.

Most Browsers should work, provided they support HTML tables and forms.

### Preparation

Before attempting to configure the Internet Gateway, please check the following:

- Since configuration uses the LAN connection, the Internet Gateway must be installed on your LAN first, and powered ON.
- If the Internet Gateway's default IP Address (192.168.0.1) is already used by another device, the other device must be turned OFF until the Internet Gateway is allocated a new IP Address during configuration.

Refer to *LAN Settings* on page 34 for details on assigning a new IP Address to the Internet Gateway.

## Connecting to the Internet Gateway

To establish a connection from your PC to the Internet Gateway:

1. Start your WEB browser
2. In the *Address* box, enter "HTTP://" and the IP Address of the Internet Gateway, as in the following example:

HTTP://192.168.0.1

3. You should then see the *Home* screen. Select the desired option from the navigation bar.

### If you can't connect

If the Internet Gateway does not respond, check the following:

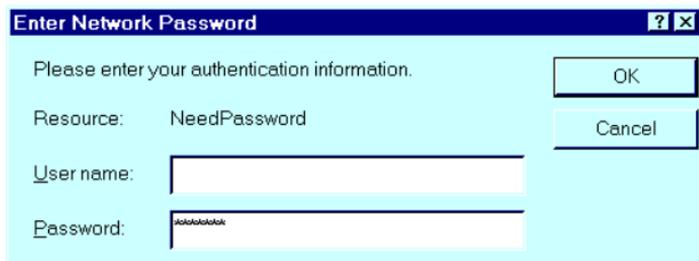
- The Internet Gateway is properly installed, LAN connections are OK, and it is powered ON.
- Ensure that your PC and the Internet Gateway are on the same network segment. (If you don't have a router, this must be the case.)
- Ensure that your PC is using an IP Address within the range 192.168.0.2 to 192.168.0.254 and thus compatible with the Internet Gateway's default IP Address of 192.168.0.1. Also, check that the *Network Mask* is set to 255.255.255.0

In Windows, the IP Address and Network Mask can be checked by using *Control Panel-Network* to check the *Properties* for the TCP/IP protocol.

## Password

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If a password has been set, you will be prompted for a password with the following dialog.



**Figure 3: Password Dialog**

Leave the *User Name* blank, and enter the current password.

If no password has been set, you will not see this screen, and will be taken immediately to the *Home* screen.

## Navigation & Data Input

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Most screens contain a navigation bar on the left of the screen allows you to move about. You can also use the "Back" button on your Browser.

Remember that changing to another screen without clicking "Save" does NOT save any changes you may have made.

HTML uses "forms based input" which means you must send (submit) the form (by clicking a button) or your data will be ignored.

# Chapter 4

## Internet Access



*This Chapter explains how to configure the Internet Gateway and your LAN for Internet Access.*

### Overview

To use the Internet Gateway for Internet Access, the following operations are required:

- The Internet Gateway's *Port* screen must be configured with details of the attached modem or ISDN TA, and the Internet Account to which the modem or ISDN TA will connect. Details are in this chapter.
- If you choose not to use the Internet Gateway's default IP Address, the LAN settings on the *Device* screen must be set correctly. Refer to *LAN Settings* on page 34 for details.
- PC's on the LAN may require configuration, as explained in this chapter.
- If you have an existing DHCP (Dynamic Host Configuration Protocol) Server, it may require configuration. Details are in this chapter.
- If you have a router, its address needs to be entered in the Internet Gateway. Refer to *LAN Settings* on page 34 for details.

Also, the router itself needs to be configured to use the Internet Gateway as its "Default Route" to ensure that packets are forwarded to the Internet as needed. Check your Router's documentation to see how this is done.

## Port Configuration

Selecting the **Port** hyperlink will take you to the **Port Configuration** screen. An example screen is shown below.

### Port Configuration

Advanced PortPort Status/Test

#### Internet Account Details (from ISP)

Account (User) Name	<input type="text" value="GUEST"/>
Account Password	<input type="password" value="*****"/>
Verify Password	<input type="password" value="*****"/>
IP Address provided by ISP	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
DNS IP Address	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
Connect to this account by:	<input type="text" value="Dial Up Line"/>

#### Dial-up Connection Details

Telephone 1	<input type="text" value="117"/>	
Telephone 2	<input type="text" value="0"/>	(Optional)
Telephone 3	<input type="text" value="0"/>	(Optional)
Modem	<input type="text" value="Other"/>	
Initial String	<input type="text" value="AT&amp;F"/>	"Other" Modems only

Figure 4: Port Configuration

## Operations

- **To enter or change data:**  
Type in, or select, the required data.  
Click *Save* when finished.
- **To move to *Advanced Port* or *Port Status/Test* Screen:**  
Click the appropriate link at the top of the screen.  
Any changes you have made on this screen will NOT be saved.
- **To retrieve the default values:**  
Click the *Get Defaults* button.  
Note that this does NOT change the configuration; you must still use the *Save* button.
- **To have any Data entered ignored:**  
Click the *Cancel* button. Changes since the last *Save* will be ignored. The previous data will reappear on screen.

---

## Internet Connection Data

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The following data is available from your ISP (Internet Service Provider).

<b>Account (User) Name</b>	Enter the account name provided by your ISP. This name will be used to log in to the ISP's server.
<b>Account Password</b>	Enter the current password for the above account.
<b>Verify Password</b>	Re-enter the password to ensure it is correct.
<b>IP Address provided by ISP</b>	Enter the IP address assigned to you by your ISP. If the ISP issues dynamic IP addresses, leave this field as 0.0.0.0. (With dynamic IP addresses, a valid address is provided upon connection.)
<b>DNS IP Address</b>	The DNS (Domain Name Server) translates names (e.g. micro-soft.com) to IP Addresses. Enter the DNS IP address supplied or recommended by your ISP.
<b>Connect to this Account by</b>	Select <b>Dial up line</b> if you connect by Modem or ISDN TA. Select <b>Leased Line(Null modem)</b> if you have a continuous connection. You can then ignore the <i>Dial-up Connection</i> section.

## Dial-up Connection Details

If you are using a dial-up connection, the following data must also be provided.

<b>Telephone</b>	One (1) number is essential; the other 2 are optional. Use the format described in your modem's user manual.
<b>Modem</b>	If your Modem or ISDN TA is listed, simply select it. Otherwise, try <i>Hayes compatible</i> . If this does not work, select <i>Other</i> and enter the required "Initial String" (see below)

## Initial String (AT Commands)

For the Internet Gateway to function correctly, the modem or ISDN TA must be configured correctly. The table below shows the required settings, and the usual AT command.

Setting	AT Command
Fixed baud rate setting	AT&B1
RTS/CTS flow control	AT&K3
DCD to track the presence of a carrier	AT&C1
DTR off to hang-up modem	AT&D2
DSR always on	AT&S0
Modem to return modem-to-modem data link speed	ATX4

Using these commands, the *Initial String* would be as follows:

```
AT&F&B1&K3&C1&D2&S0X4
```

The first command (AT&F) sets the modem to its factory defaults. See *Appendix B - AT Commands* for further details.

## **PC Configuration**

### **Simple LANs**

If your PC is **NOT** using **DHCP** and your LAN does **NOT** contain a **router**, check the following TCP/IP settings:

- IP Address
- Network Mask
- Gateway IP Address
- DNS (Domain Name Server) Address

### **IP Address**

---

Ensure that each PC has a unique IP Address from the same address range as the Internet Gateway's *Device IP Address*. For example, if the Internet Gateway uses the default IP Address (192.168.0.1) and Network Mask (255.255.255.0), the PCs must use addresses from 192.168.0.2 to 192.168.0.254.

### **Network Mask**

---

All PCs, and the Internet Gateway, must use the same value for the *Network Mask*. The default value is 255.255.255.0.

### **Gateway**

---

Set the PC's *Default Gateway Address* to the Internet Gateway's IP address (*Device IP Address*). The default IP Address for the Internet Gateway is 192.168.0.1.

### **DNS (Domain Name Server) Address**

---

This must match the DNS address entered into the *DNS IP Address* field of the Internet Gateway during configuration.

## If your PC is using DHCP

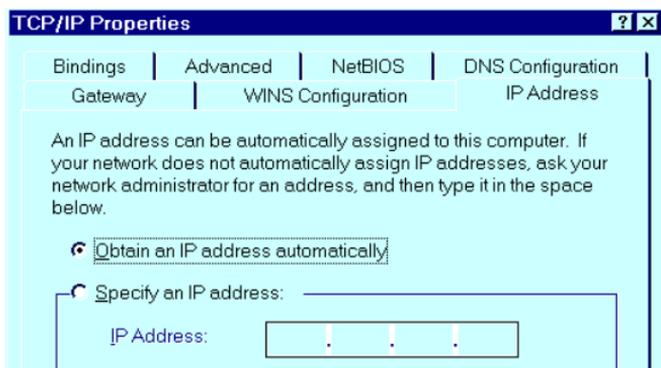
In this case, no configuration is required. The DHCP server will provide the following information when your PC (the DHCP client) boots up:

- IP Address & matching Network Mask
- Gateway IP Address
- DNS (Domain Name Server)

## To check if your PC is using DHCP

Under Windows 95, you can check if your PC is acting as a DHCP client by using the following procedure. For other operating systems, check your system documentation.

1. Select *Control Panel* ▶ *Network*
2. Select the TCP/IP protocol for your network card.
3. Click *Properties-IP Address* to see the following screen.



**Figure 5: IP Address (Win 95)**

4. If the radio button for "Obtain an IP address automatically" is checked, as shown above, then your PC is acting as a DHCP client.

## DHCP Server Configuration

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If you wish to use the DHCP Server in the Internet Gateway, refer to DHCP Server on page 36. If you already have a DHCP Server, check the following:

### IP Address

---

The IP Addresses assigned to PCs must be from the same address range as the Internet Gateway's *Device IP Address*. For example, if the Internet Gateway uses the default IP Address (192.168.0.1) and Network Mask (255.255.255.0), the PCs must use addresses from 192.168.0.2 to 192.168.0.254.

### Network Mask

---

All PCs, and the Internet Gateway, need to be using the same value for the *Network Mask*. The default value is 255.255.255.0.

### Gateway

---

This depends on whether your LAN has a router:

- **No Router.** Set the *Default Gateway Address* to the IP address (*Device IP Address*) assigned to the Internet Gateway during configuration. The default IP Address is 192.168.0.1.
- **Router.** Do not change the *Default Gateway Address*. Instead, configure the router to use the Internet Gateway as its "Default Route".

### DNS (Domain Name Server) Address

---

This must match the DNS address entered into the *DNS IP Address* field of the Internet Gateway during configuration.

## Router Configuration

If your LAN has a router, you must configure the router so that it passes all IP packets for devices not on the local LAN to the Internet Gateway, so that they can be forwarded to the Internet.

This is achieved by configuring the Router so that it uses the Internet Gateway as its "Default Route".

Check your Router documentation to see how this is done.

## Operation - Internet Access

Simply use your Browser as if you had a permanent connection.

If no connection currently exists, there will be a short delay while the modem connects to your ISP.

## Accessing AOL

To access AOL (America On Line) through the Internet Gateway, the following items are necessary :

- Internet account with an ISP.  
The details of this account must be entered in the Internet Gateway like any other Internet Access Account, as explained in this chapter.
- Version 2.5, 3.0 or later of *AOL for Windows* communication software.
- The *AOL for Windows* software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is described below.

## **AOL for Windows Configuration**

Ensure that the Internet Gateway is configured first, then carry out the following procedure.

- Start the *AOL for Windows* communication software. Ensure that it is Version 2.5, 3.0 or later.
- Click the *Setup* button.
- Select *Create Location*, and change the location name from "New Locality" to "Internet Gateway".
- Click *Edit Location*. Select *TCP/IP* for the *Network* field. (Leave the *Phone Number* blank.)
- Click *Save*, then *OK*. Configuration is now complete.
- Before clicking "Sign On", always ensure that you are using the "Internet Gateway" location.

# Chapter 5

# Advanced Port Settings



*This Chapter details the settings on the Internet Gateway's "Advanced Port Settings" screen.*

## Overview

Most users should not have to change these settings. They are provided for the following situations:

- You wish to temporarily disable the serial port, so that Internet access is not possible.
- Your modem uses non-standard AT commands.
- Your ISP does not use the standard PPP connection, and requires a special log-in procedure.
- You wish to change the "Time-out" period after which an inactive connection will be terminated.

## Advanced Port Screen

The Advanced Port Screen is reached by clicking the *Adv. Port* button on the *Port Configuration* screen.

You will then see a screen like the example below.

**Advanced Port Settings**

Port Configuration | Port Status/Test

**Port Settings**

Operation  Enable  Disable

Hang up after Idle Time  minutes

Serial Line Speed  bps

**Modem/ISDN Settings**

Dial Type  Tone  Pulse  Other

Dial String ("Other" only)

"Auto-answer Off" command

**Script File**

```
wait 3000
send "\r"
wait 3000
sent 100 "CIS\r"
wait 3000 "."
```

Retrieve Defaults | Save | Cancel

Figure 6: Advanced Port Settings

## Port Settings

<b>Operation</b>	Use this to temporarily suspend operation, by selecting <i>Disable</i> .
<b>Hang up after Idle Time</b>	If a connection remains inactive, it is terminated after this time period. Allowable range is 0-99 minutes. For a leased line, set this value to 0.
<b>Serial Line Speed</b>	Select the speed which is equal to or below the fastest SERIAL line speed (NOT phone line speed) of your modem or ISDN TA. Available speeds range from 4.8K to 230.4.K (bps).

## Modem/ISDN Settings

<b>Dial Type</b>	Select "Tone", "Pulse" or "Other" to match your system. For "Other", you must provide the <i>Dial String</i> below.
<b>Dial String</b>	Only required if you are NOT using Tone or Pulse dialing. Enter the command (sometimes called the "Dial Prefix String") your modem or ISDN TA requires to precede the phone number.
<b>"Auto Answer Off" Command</b>	Enter the command string which turns the "auto-answer" function in your modem or ISDN TA OFF.

## Script File

If your ISP uses a standard PPP connection and authentication, you do NOT need a script file.

Script files are used to automate the log-in process for ISPs that use non-standard log-ins or proprietary security measures. For example, if you connect to the Internet via CompuServe, you DO need a script file.

## Script File Commands

Three commands, listed below, can be used within a script file. Note the following points:

- Items in [ ] are optional, and the [ ] themselves are NOT used.
- Strings must be enclosed in double quotes.
- There must be spaces between commands and parameters (delay times and strings).

<b>Send [msec] string</b>	Send the characters in <i>string</i> , with a <i>msec</i> (milliseconds) delay between the sending of each character.
<b>Wait msec</b>	Wait for <i>msec</i> milliseconds before executing the next script line.
<b>Wait [msec] string</b>	Wait for <i>msec</i> milliseconds to receive the string. If the string is not received within the specified time, the connection is reset. If <i>msec</i> is not specified and the string is not received immediately, an error condition will arise.

## Script File Variables

Eleven string variables can be used within the *string* above. These are used to include special characters within the string.

Variable	Description
\a	alert (normally creates a beep)
\b	backspace
\f	form feed
\n	new line
\r	carriage return
\t	horizontal tab
\v	vertical tab
\?	Literal question mark
\'	literal single quotation mark
\"	literal double quotation mark
\\	literal back slash

- Quote characters are special characters.
- Because each of these variables starts with a backslash, the backslash character ( \ ) is also a special character.

As an example, to send the string "User Name" (including the quotes), the script file entry should be as follows:

```
send "\"User Name\""
```

## CompuServe Script

The following script file could be used to log on to CompuServe, and can be used as an example for other situations.

```
wait 3000
send "\r"
wait 3000
send 100 "CIS\r"
wait 3000 ":"
send 100 "user id\r"
wait 3000
send 100 "password\r"
wait 60000 "!"
send 100 "GO PPPCONNECT\r"
```

Command	Explanation
wait 3000	Pause for 3 seconds
send "\r"	Send the carriage return character.
wait 3000	Pause for 3 seconds
send 100 "CIS\r"	Send the string "CIS", then a carriage return character. Pause for 100 ms between characters.
wait 3000 ":"	Wait for 3 seconds to receive the character ":". If not received in time, the connection is dropped.
send 100 "user id\r"	Send the string <i>user id</i> , where <i>user id</i> is your log-in name, then a carriage return. Pause for 100 ms between each character.
wait 3000	Pause for 3 seconds

*Advanced Port Settings*

send 100 " <i>password</i> \r"	Send the string <i>password</i> , where <i>password</i> is your password, then a carriage return. Pause for 100 ms between each character.
wait 60000 "!"	Wait for 60 seconds to receive the character "!". If not received in this time, the connection will be dropped.
Send 100 "GO PPPCONNECT\r"	Send the string "GO PPPCONNECT", then a carriage return character. Pause for 100 ms between each character. This command tells the server to switch to a PPP connection.

*This page was deliberately left blank.*

# Chapter 6

## Device Settings

# 6

*This Chapter details the options available on the "Device Settings" screen.*

### Overview

The *Device Settings* screen is reached by selecting the *Device* link on the navigation bar. An example screen is shown below.

Device Settings	
<b>Device Password</b>	
New password	*****
Verify password	*****
<b>LAN</b>	Device IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="0"/> <input type="text" value="1"/>
	Router IP Address <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
	Network Mask <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="0"/>
<b>DHCP Server</b>	DHCP Server <input type="radio"/> Enable <input checked="" type="radio"/> Disable
	Start IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="0"/> <input type="text" value="11"/>
	Finish IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="0"/> <input type="text" value="60"/>
	DNS IP Address(1) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
	DNS IP Address(2) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
	DNS IP Address(3) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
<input type="button" value="Retrieve Defaults"/> <input type="button" value="Save"/> <input type="button" value="Cancel"/>	

**Figure 7: Device Settings Screen**

## Device Password

Once a password is entered, it is required in order to change the device configuration. Passwords are case sensitive and can be up to 8 alphanumeric characters (no spaces or punctuation).

To create or change the password, enter the required password in both the *New Password* and *Verify Password* input fields.



*If the password is lost, a DIP switch setting is available to clear the password. See the DIP Switches Table on page 6 for details.*

## LAN Settings

For most users, the default values for these fields should not need to be changed.

<b>Device IP Address</b>	IP address for the Internet Gateway. Use the default value of 192.168.0.1 unless: <ul style="list-style-type: none"><li>• The address is already in use.</li><li>• Your LAN is using a different IP address range (not 192.168.0.1 to 192.168.0.254). In this case, use an IP Address from within the address range used by your LAN.</li></ul>
<b>Router IP Address</b>	If you have a router, enter its IP Address. Otherwise, leave this at 0.0.0.0.
<b>Network Mask</b>	The default value 255.255.255.0 is standard for small (class "C") networks. For other networks, enter the Network Mask value used by PCs on the same LAN segment as the Internet Gateway.



If you have a router, it is essential that the router pass all IP packets for devices not on the local LAN to the Internet Gateway, so that they can be forwarded to the Internet.

This is done by configuring the router with the Internet Gateway as its "Default Route". Check your Router documentation to see how this is done.

## DHCP Server

A DHCP (Dynamic Host Configuration Protocol) server provides a valid IP address (and the Gateway and DNS addresses) to a DHCP client (PC or device) upon request. The Internet Gateway can act as a **DHCP server**.

### To use this feature:

- The Internet Gateway must be configured with the following data.
- The PCs must be configured to act as DHCP **clients**. This procedure is explained in the next section.

## Configuration Data

<b>Enable/Disable</b>	If Enabled, the Internet Gateway will function as a DHCP server. The default value is Disabled.
<b>Start IP Address Finish IP Address</b>	The <i>IP Start Address</i> and <i>IP Finish Address</i> fields set the values used by the DHCP server. This range also determines the number of DHCP clients supported. (Maximum number of clients is 253.)
<b>DNS IP Address</b>	The IP Addresses provided by your ISP. Only 1 is essential. Multiple entries should be entered in the order you want them accessed. (The first available DNS will be used.)



*The DNS field will display the DNS entered in the Port Configuration screen.*

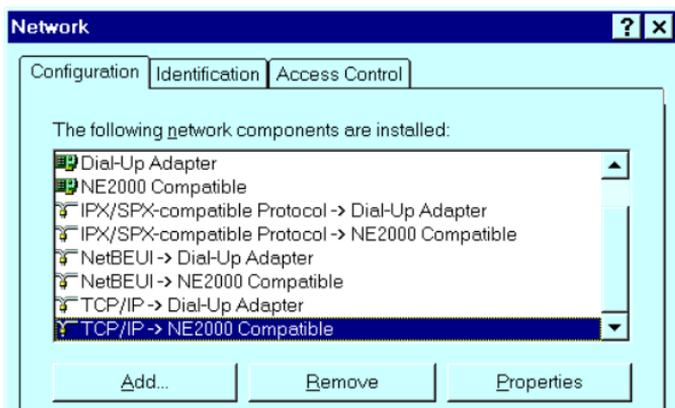
## PC Configuration

To use DHCP, you must also configure your PCs to act as **DHCP clients**. Client support for DHCP is provided in Win 95's TCP/IP stack. The procedure for enabling this is detailed below.

For operating systems other than Win 95, check your system documentation.

## Windows 95 DHCP Client Configuration

1. Select the *Control Panel - Network* option on the Start Menu. You should see a screen like the following.



**Figure 8: Network Configuration**

2. Select the TCP/IP protocol for your network card. Then click on the *Properties* button, and the *IP Address* tab. You should then see a screen like the following.

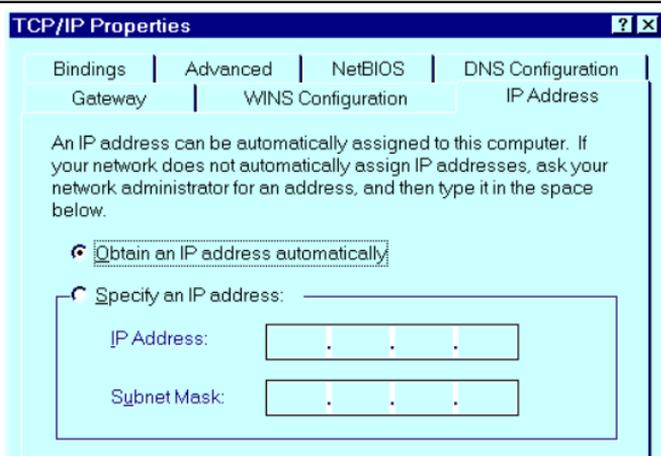


Figure 9: IP Address (Win 95)

3. Click on the radio button to obtain an IP address automatically, as shown above.
4. Click on the *Gateway* tab.  
The *Default Gateway Address* should be left blank. The DHCP server will provide this information.
5. Click on the *DNS Configuration* tab  
The DNS (Domain Name Server) should be “**Disabled**”.  
The DHCP server will provide this information also.



- Note!**
- *Information provided by the DHCP Server will not be visible on this screen. Use the "Run" dialog to start the WinIPcfg program to see the addresses allocated by the DHCP Server.*
  - *To reserve an IP Address for a particular DHCP client, so that it always receives the same IP Address, refer to Workstation Data on page 42.*

# Chapter 7

## Access Control



*This Chapter explains how to configure and use the Internet Gateway's "Access Control" feature.*

### Overview

The optional *Access Control* feature allows administrators to:

- Restrict Internet Access by individual workstations.
- Reserve an IP Address for a particular workstation or network device.

If you DON'T need to reserve IP Addresses or restrict Internet Access, you can ignore the *Access Control* screen.

To apply these features to a particular workstation or network device, you need to know its *Network Adapter Address* (Hardware Address).

### Access Control Screen

The *Access Control* screen is accessed from the hyperlink on the *Device Settings* screen. This screen allows you to:

- Identify individual workstations or devices on the LAN, by naming them and entering their *Network Adapter Address*.
- Reserve an IP Address for the workstation or network device, so that the DHCP Server in the Internet Gateway always gives them the same IP Address (optional).

- Impose restrictions on the Internet Access enjoyed by the workstation (optional).

An example screen is shown below.

The screenshot shows a web-based interface titled "Access Control". Under the "Workstations" section, there is a "Name" dropdown menu with "temp\_staff" selected, and two buttons: "Get Data" and "Clear Form". Below this is a text instruction: "Click 'Get Data' to see correct data for selected item." The main configuration area includes: "Workstation Name" (text box with "temp\_staff"), "Network Adapter Address" (text box with "0000E864110C"), "Reserve entry in DHCP Table" (checkbox checked), "Reserved IP Address" (four text boxes with values "192", "168", "0", "15"), and "Access Restrictions" (dropdown menu with "Block all access" selected). At the bottom are five buttons: "Add", "Delete", "Update", "List All", and "Cancel".

**Figure 10: Access Control Screen**

Note that the *Name* drop-down box lists all Workstations previously entered. If none have been entered, this box will be empty.

## Operations

- **To Add a New Workstation:**  
Ignore the drop-down box, click the *Clear Form* button, and enter the Workstation details in the fields provided. Click *Add* when finished.
- **To Delete an Existing Workstation:**  
Select the Workstation from the drop-down box, click *Get Details* to view the information and confirm that this is the correct Workstation, then click the *Delete* button.
- **To Change an Existing Workstation's Details:**  
Select the Workstation from the drop-down box, click *Get Details* to view their information, then change any fields you wish. Click *Update* when finished.
- **To Generate a List of all Workstations:**  
Just click on the *List All* button.

## Workstation Data

<b>Workstation Name</b>	Enter a name to identify this workstation.
<b>Network Adapter Address</b>	Hardware address for this workstation or LAN device. You can use the Windows "Winipcfg" program or your LAN management program to find this address.
<b>Reserve entry in DHCP Table</b>	Check this if you wish to reserve an IP address for this workstation. This is useful if you have to provide the IP Address for other programs or users  If this is left unchecked, the following entry can be ignored.
<b>Reserved IP Address</b>	This relates to the entry above. Enter the reserved address here. This <b>MUST</b> be within the range used by the DHCP server (set on the "Device" screen).
<b>Access Restrictions</b>	Select the desired level of access for this workstation. The available options are: <ul style="list-style-type: none"><li>• No restrictions</li><li>• Block all access (No Internet Access)</li><li>• E-Mail only</li></ul>

# Chapter 8

## E-Mail



*This Chapter the use of the E-Mail Account Sharing feature of the Internet Gateway.*

### Overview

The Internet Gateway allows many users to share the E-Mail Account(s) provided by your ISP. Up to 4 E-Mail accounts and 50 users are supported. The E-mail address is formed by combining the "User id" and the "Account name", as shown below. Note that the quotes ( " ") and braces ( < > ) ARE included in the E-mail address.

```
"user_name"<mail_account@mail_address>
```

e.g.

```
"jim"<sales@company.com>
```

#### To use this feature:

- Account data must be entered into the Internet Gateway's *E-Mail Account* screen for each E-Mail account you wish to share.
- Data for each user who wishes to share an E-Mail Account must be entered in the Internet Gateway's *Users* screen
- A *DNS IP Address* must be entered either on the *Port Configuration* screen or on the *Device* screen.
- Users must configure their E-Mail program so that their incoming mail is retrieved through the Internet Gateway, and that other people know their E-Mail address.

Each of these operations is described in the following section.

## Account Information

To enter data about the E-Mail accounts you wish to share, select *E-Mail - E-Mail Accounts* from the navigation bar. You will then see a screen like the following:

**Figure 11: E-Mail Accounts Screen**

<b>Account No.</b>	Select the desired account (1..4) Click <i>Get Data</i> to see existing data. Click <i>Clear Form</i> to prepare the form for a new entry.
<b>Enable Sharing</b>	This must be checked to allow sharing of the selected account.
<b>POP3 Mail Server Address</b>	Enter the address of the POP3 Mail Server, as provided by your ISP.

<b>POP3 Mail Server Account Name</b>	This name is provided by your ISP. Using a Department name (e.g. Sales) is recommended.
<b>Password</b>	The password for the above account.

## User Information

To enter information about the users who wish to share E-Mail accounts, select *E-Mail* from the navigation bar, then *Users*. You will then see a screen like the following:

**Users**

User Name 
Get Data
Clear Form

Click "Get Data" to see correct data for selected user.

**General**

Name

Password

Verify Password

**E-Mail**

Share Mail A/c

Mail Account

Recipient for unrouted mail

Add
Delete
Update
List All
Cancel

**Figure 12: Mail Users Screen**

Note that existing users are listed in a drop-down box. If no users have been entered, this box will be empty. Ignore this drop-down list when adding a new user.

## Operations

- **To Delete an Existing User:**  
Select the user from the drop-down box, click *Get Details* to view their information and confirm that this is the correct user, then click the *Delete* button.
- **To Change an Existing User's Details:**  
Select the user from the drop-down box, click *Get Details* to view their information, then change any fields you wish. Click *Update* when finished.
- **To Add a New User:**  
Ignore the drop-down box, click the *Clear Form* button, and enter the user details in the fields provided. Click *Add* when finished.
- **To Generate a List of all Users:**  
Just click on the *List All* button.

## User Data

For each user wishing to share an E-Mail account, the following data is required.

## General

---

<b>User Name</b>	When adding new users, ignore the drop-down list, and enter the new name here.  <b>Note the limitations on user names:</b> <ul style="list-style-type: none"><li>• Multiple words are NOT allowed</li><li>• Punctuation and special characters should NOT be used.</li><li>• User names are case insensitive (case is ignored).</li></ul>
------------------	---

<b>Password</b>	The password for the current user. This password will be entered into their E-Mail program. Passwords are case sensitive.
-----------------	---

## **E-Mail**

<b>Mail Account</b>	Select the E-Mail account that this user is going to share. Account information should have been previously entered.
<b>Set as Recipient for Unrouted Mail</b>	If this setting is ON (Checked), then when this user retrieves their E-mail, they will also receive all E-mail sent to this mail account when there is no user name, or the user name is invalid. More than one user can be set.

## **DNS Address**

A DNS (Domain Name Server) Address is required to enable the Internet Gateway to locate the Mail Server.

This address is on the *Port Configuration* screen and on the *Device* screen.

Ensure that the DNS Address has been entered.

## **E-Mail Program Configuration**

Each user wishing to share an E-Mail account must configure their E-Mail program with the following data.

<b>Name</b>	The <i>User Name</i> entered in the <i>E-Mail User</i> Screen of the Internet Gateway.
<b>E-Mail Address</b>	The full name of the E-Mail account which is being shared, as provided by your ISP. e.g. sales@provider.com
<b>SMTP Server (Outgoing Mail)</b>	The SMTP Server address as provided by your ISP
<b>POP3 Server (Incoming Mail)</b>	Set this to the IP Address of the Internet Gateway
<b>POP3 Account</b>	The <i>User Name</i> entered in the <i>E-Mail User</i> Screen of the Internet Gateway.
<b>Password</b>	The user password entered in the <i>User</i> screen of the Internet Gateway.

- Note that outgoing E-mail is sent normally; only incoming E-mail is processed by the Internet Gateway.
- If some of your incoming E-mail does not include your name, and thus becomes "Unrouted Mail", ask those senders to record your E-Mail Address in the following format. Note that quotes ( " " ) and braces ( < > ) ARE typed in.

"user\_name"<mail\_account@mail\_address>

e.g.

"jim"<sales@company.com>

Your printed E-Mail Address (e.g. on your business card) should also show your E-Mail address in the format above.

## Sharing E-Mail Example

Say your name was B. Jones, the Internet Gateway uses its default IP Address (192.168.0.1) and other information was as follows:

E-Mail Address as provided by your ISP	greatco@ms02.com
SMTP Server as provided by your ISP	smtp09.com
POP3 Server as provided by your ISP	ms02.com
POP3 Account Name as provided by your ISP	greatco
POP3 Account password as provided by your ISP	9087654

To share this E Mail Account, the entries on the following page would have to be made. Your E-Mail Address would become:

"bjones"<greatco@ms02.com>

### **Internet Gateway "Mail Account"**

Account No.	1
Enable Sharing	ON (Yes)
POP3 Mail Server Address	ms02.com
POP3 Mail Server Account Name	greatco
Password	9087654

### **Internet Gateway "Mail User"**

User Name	bjones
Password	Secret064
Mail Account	1
Set as Recipient for Unrouted Mail	ON (Yes)

### **E-Mail Program**

<b>Name</b>	bjones
<b>E-Mail Address</b>	greatco@ms02.com
<b>SMTP Server (Outgoing Mail)</b>	smtp09.com
<b>POP3 Server (Incoming Mail)</b>	192.168.0.1
<b>POP3 Account</b>	bjones
<b>Password</b>	Secret064

## Management of Shared E-Mail

This section describes some common operations which may be required at some time.

### Changing User Details

You can change any data at any time. For example, to move a user from 1 account to another:

- Navigate to the *Users* screen.
- Select the desired user, and click *Get Data* to view their information.
- Select the desired account for this user.
- Click *Update*



**Note!** Any mail sent to this user at their "old" account will now be considered "unrouted mail".

You can modify any user data in a similar fashion.

### Deleting a User

To delete a user from the database:

- Navigate to the *Users* screen.
- Select the desired user.
- Click *Delete* to remove them from the database.



**Note!** Any mail sent to this user will now be considered "unrouted mail".

## **Retrieving ALL Mail**

If you wish to retrieve all mail for the shared account, regardless of who it is addressed to:

- Run your E-Mail program, and navigate to the screen showing the details of the shared E-Mail account.
- Modify the account configuration so that the following fields match the data provided by your ISP:
  - POP3 account
  - POP3 Server address
  - Account password
- The other configuration data is already correct.

When you retrieve your mail with these settings, you will receive all the E-mail sent to this account.

## **Stop Sharing the Account**

If you wish to cease sharing this account:

- On the *E-Mail Accounts* screen, set *Enable Sharing* for this account OFF.
- To retrieve mail from this account, you will now have to configure your E-Mail program to access the account directly, as described above.
- You will receive all mail intended for users who have been sharing this account.
- Users who previously used this account need to configure their E-Mail programs to use a different account.

# Chapter 9

## Status & Monitoring



*This Chapter explains the Status and Monitoring features of the Internet Gateway.*

### Overview

The Internet Gateway allows you to connect to it through the LAN while it is operating, and view the device status, and monitor the operation of each port.

### Status Screen

The *Status* screen can be reached with the hyperlink on the navigation bar. An example screen is shown below.

Status		
<b>System</b>		
Firmware Version	Version 5.1 Release 01	
Physical Address	00-c0-02-90-74-23	
Hardware ID	041010344421	
<b>LAN</b>		
I.P. Address	192.168.0.1	
Network Mask	255.255.255.0	
Router I.P. Address	0.0.0.0	
DHCP	Enable	
E-mail Sharing	OFF	
Port	Enable	
<b>DHCP Table</b>		
I.P. Address	Physical Address	Status
192.168.0.4	00-00-e8-23-e0-e5	leased
192.168.0.10	00-c0-a8-35-dd-f3	leased
<input type="button" value="Refresh"/>		

Figure 13: Status Screen

## Data

### Device

<b>Firmware Version</b>	Version of the firmware (embedded software) which is currently installed. Technical support staff may ask for this information.
<b>Physical Address</b>	The hardware address of this device.
<b>Hardware ID</b>	The hardware ID is used by the manufacturer for identification.

### LAN

<b>IP Address</b>	The IP Address of this device.
<b>Network Mask</b>	The Network Mask value stored in this device. This must match the Network Mask for the LAN segment to which this device is connected.
<b>Router IP Address</b>	The IP Address of the router. If there is no router, this will show 0.0.0.0.
<b>DHCP</b>	Status of the DHCP Server function. ("Enabled" or "Disabled")
<b>E-Mail Sharing</b>	If E-mail sharing is used on any E-mail account, this will display "ON". Otherwise, the status will be "OFF".
<b>Port</b>	Possible values are "Enabled" or "Disabled", as set on the <i>Advanced Port Settings</i> screen.

## **DHCP Table**

---

This table will be empty unless DHCP has been "Enabled". If DHCP is being used, this table lists the devices which have been allocated IP Addresses by the DHCP server function. Only IP Addresses in use will be listed.

<b>IP Address</b>	The IP Address which has been allocated by the DHCP server to the other device.
<b>Physical Address</b>	The Physical Address (Hardware Address) of the device which has been allocated a IP Address.
<b>Status</b>	Possible Status values are "Leased" (the IP Address is allocated to the device shown) or "Reserved" (the IP Address is not available).

## Port Status/Test Screen

This screen is reached by clicking the *Port Status/Test* link on the *Port Configuration* or *Advanced Port Settings* screens. An example screen is shown below.

### Port Status& Test

**Status**

Physical Link	ON
PPP Link	ON
Serial Line Speed	57600
Phone Line Speed	26400
PPP IP Address	163.31.5.170

**Modem Log**

```
020:ppp up successfully
019:start PPP
018:physical line is connected
017:max phone line speed: 26400 bps
016:CONNECT 26400
015:send "ATDT9,4125678 "
```

**Figure 14: Port Status & Test**

## Operation

Select the action you wish to perform, by clicking on the appropriate button.

- **Hang-up** will hang up the modem, if it is currently connected
- **Dial** will dial the ISP, if not currently connected.
- **Clear Log** will remove all data in the *Log* window, making new data easier to read.
- **Refresh** will update the display with the current data.

## Status Data

<b>Physical Link</b>	If operating, the link will show ON. This means the modem was able to connect to the number dialed.
<b>PPP Link</b>	If ON, a PPP connection was successfully negotiated.
<b>Serial Line Speed</b>	The connection speed between this device and the modem.
<b>Phone Line Speed</b>	The connection speed over the phone line, between your modem and the number dialed.
<b>PPP IP Address</b>	The IP Address used by this device. This address is provided by the ISP on connection.

## Modem Log

This shows the commands sent to the modem, and any status messages returned by the modem. Note that this is not "live"; you must click *Refresh* to update the information.

The following table shows the more common messages, and their meaning.

Message	Description
Dialing	Dialing the ISP
Try to establish physical connection.	The device is trying to connect with the ISP, using the modem.
Busy error	The number dialed was busy.
Physical line is connected	Physical connection to ISP has been established.
CONNECT <i>nnnnnn</i>	Physical connection was successful; <i>nnnnnn</i> indicates the speed of the serial link as currently configured.
Max phone line speed <i>nnnnnn</i> bps	<i>nnnnnn</i> is the maximum speed of the modem, according to the current configuration.
DCD low, DSR low	Physical line break, connection lost.
send "-----" wait "-----"	"AT" commands sent to the modem are displayed as they are sent. Commands in the Script file are also displayed as they are executed.
Start PPP	Having established a physical connection, a PPP connection is now being established.

PPP up fail	The PPP connection could not be established.
PPP up successfully	The PPP connection was established successfully.
Stop PPP	The PPP connection was terminated. This will occur at the end of a session, or an error condition.
Try to hang up	Attempting to get the modem to hang up.
Time out	There was no response from the modem
No carrier No answer	The number dialed did not answer.
Idle timer expires	The time period (in the configuration) to disconnect if the link is not used is up.
No dial tone	The modem could not obtain a dial tone.
Set baudrate nnnn	The serial line speed is being set to the speed set in the configuration.

## **Normal Operation**

---

The following sequence of messages is typical of normal operation.

```
send "ATDT 0123456789"  
CONNECT 115200  
max phone line speed 28800 bps  
physical line is connected  
start PPP  
ppp up successfully
```

## **Error Conditions**

---

The following table shows messages which indicate an error condition, and the suggested corrective action.

<b>No dial tone</b>	The modem could not obtain a dial tone. Check your connections on the phone line and the modem.
<b>Busy error</b>	The number dialed was busy. Check that the number is correct. If it is, try dialing later. If this occurs regularly, check with your ISP.
<b>DCD low DSR low</b>	The connection was lost. This could indicate a bad line or poor connection. Normally, if a connection is lost, it will automatically be re-established.
<b>PPP up fail</b>	The ISP rejected the attempt at connection. Check that your username and password is correct. If it is, check with your ISP to see why the connection is being rejected.
<b>Time out</b>	No response. Check that the modem is ON and properly connected to the Internet Gateway.
<b>No carrier No answer</b>	There was no response from the phone number dialed. Check that the phone number is correct, and the modem is working. If both of these are OK, check with your ISP.

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# Appendix A

## Troubleshooting



*This Appendix covers the most likely problems and their solutions.*

### Overview

This chapter covers some problems that may arise and possible solutions to them. If you follow the suggested steps and the Internet Gateway still does not function properly, contact your dealer for further advice.

### Problems

<b>Problem 1</b>	<b>Can't connect to the Internet Gateway to configure it.</b>
Solution 1	<p>Check the following:</p> <ul style="list-style-type: none"><li>• The Internet Gateway is properly installed, LAN connections are OK, and it is powered ON.</li><li>• Ensure that your PC and the Internet Gateway are on the same network segment. (If you don't have a router, this must be the case.)</li><li>• Ensure that your PC is using an IP Address within the range 192.168.0.2 to</li></ul>

192.168.0.254 and thus compatible with the Internet Gateway's default IP Address of 192.168.0.1.

In Windows, you can check your PC's IP Address by using Control Panel-Network to check the Properties for the TCP/IP protocol.

**Problem 2**

**When I enter a URL or IP address I get a time out error.**

**Solution 2**

A number of things could cause this. Try the following troubleshooting steps.

1. If this is first time you have used your browser, ensure that your workstations IP settings are correct, including IP address, default gateway and DNS.
2. Ping the Internet Gateway. Use the "Run" command to enter the following command:  
Ping xxx.xxx.xxx.xxx  
where xxx.xxx.xxx.xxx is the IP address assigned to the Internet Gateway's LAN interface.
3. If the ping command fails, check that the Internet Gateway is connected and ON. If it is connected and on, there is a problem with your LAN.
4. Check that Port is "Enabled" (Advanced Port Settings). If not, you need to use the HTML program to establish a connection.
5. Run your Browser and connect to the Internet Gateway.
6. Switch to the *Status* screen, and exam-

	ine the Log. For details of the Log messages, see page 59.
<b>Problem 3:</b>	<b>My Modem/ISDN TA is working fine with a dial-up connection through the serial port. How do I find what "Initial String" it is using?</b>
Solution 3	Use the procedure described in <i>Finding the current Initial String</i> on page 68.
<b>Problem 4</b>	<b>Data Transmissions are very slow.</b>
Solution 4	Check and ensure that the Initial String is configured to RTS/CTS flow control.
<b>Problem 5</b>	<b>Some applications do not run properly when using the Internet Gateway.</b>
Solution 5	<p>The Internet Gateway processes the data passing through it, so it is not transparent. Some programs may have limited functionality when used with the Internet Gateway.</p> <p>The number of supported applications is being expanded as rapidly as possible. The following applications and protocols are supported by firmware V5.0:</p> <p>Telnet, FTP, HTTP, ping  POP/SMTP, Archie, NNTP  TFTP, IRC, Gopher  DNS, SNMP, Real Audio</p>

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# Appendix B

## AT Commands



### Required Settings

For the Internet Gateway to function correctly, the modem or ISDN TA must be set as follows.

Setting	AT Command
Fixed baud rate setting	AT&B1
RTS/CTS flow control	AT&K3
DCD to track the presence of a carrier	AT&C1
DTR off to hang-up modem	AT&D2
DSR always on	AT&S0
Modem to return modem-to-modem data link speed	ATX4 (see Note below)

*Note!*



- For some Mircocom and other modems, the “ATX4” command is not sufficient - a “W2” command (no “AT”) must be used as well.
- For an ISDN TA, the above commands may not be sufficient. Please check the following section and your ISDN TA's user manual.

For a modem which uses the standard AT commands shown above, the *Initial String* would look like the following:

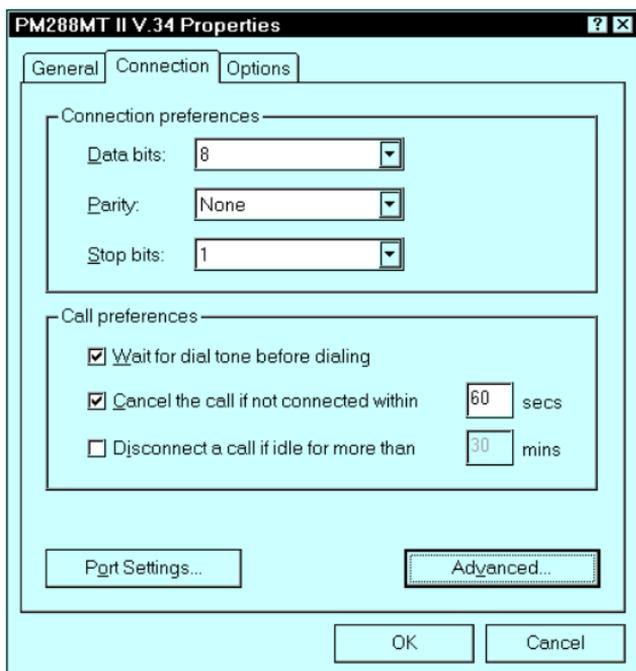
```
AT&F&B1&K3&C1&D2&S0X4
```

The first command (AT&F) sets the modem to the factory defaults, to ensure a consistent starting point.

## Finding the current Initial String

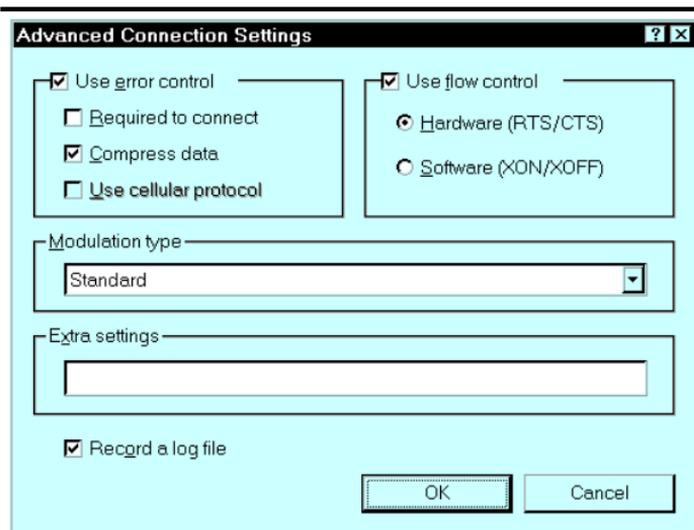
If your modem or ISDN TA is already working correctly under Windows 95, using the PC's serial port, you can use the following procedure to find the initialization string.

1. Select *My Computer*, then *Dial-Up Networking*.
2. Select the icon for your connection, then *Properties*.
3. Click the *Configure* button, then the *Connection* tab, as shown below.



**Figure 15:- Connection Properties (W95)**

4. Select *Advanced* to see the screen below.



**Figure 16:- Advanced Connection (W95)**

5. Check the option *Record a log file*. Then click *OK* and exit.
6. Use *Dial-up Networking* to make your on-line connection normally. A log file *MODEMLOG.TXT* will be created in your Windows directory.
7. Use Notepad or another editor to read and print the file *MODEMLOG.TXT*.
8. Examine the file to determine the *Initial String* value.

## AT Commands

Most modems use the standard AT commands, as shown in the following tables. Consult the manual for your modem or ISDN TA to see what AT commands it supports.

### Basic AT Command Set

Command		Description
<any key>		Terminate current connection attempt
+++		Escape sequence code, entered in data state, wait for modem to return to command state
ATA		Force answer mode on-line
ATBn		Handshake operation
	B0	Select ITU-T V.22 for 1200 bps communication
	B1	Select Bell 212A for 1200 bps communication
ATD		Dial number and options that follow
	P	Pulse dial
	T	Tone dial
	,	Pause for a specified time
	;	Return to command state after dialing
	!	Hook flash, call transfer
	W	Wait for second dial tone

	@	Wait for 5-second silence before proceeding, otherwise return O ANSWER”
	R	Reverse Dial (Originate a call in answer mode)
<b>ATDL</b>		Dial last number
<b>ATDSn</b>		Dial number stored in NVRAM at position <i>n</i> . n=0-9
<b>ATEn</b>		Command mode local echo of keyboard commands
	E0	Echo off
	E1	Echo on
<b>ATHn</b>		On/Off hook control
	H	Hang up modem
	H0	Hang up (on hook), same as ATH
	H1	Get off hook
<b>ATIn</b>		Display inquired information
	I0	Display product code
	I1	Display product information and ROM checksum
	I2	Link status report
<b>ATLn</b>		Speaker volume control. n=0-7
<b>ATMn</b>		Speaker control
	M0	Speaker always off
	M1	Speaker on until carrier is detected

	M2	Speaker always on
	M3	Speaker on after last digit dialed, off at carrier detect
<b>ATNn</b>		Ring volume control, <b>n=0</b> disables ring function. n=0-7
<b>ATO</b>		Return to on-line state
<b>ATP</b>		Pulse dial
<b>ATQn</b>		Result code displayed
	Q0	Modem returns result code
	Q1	Modem does not return result code
	Q2	Return result code but quiet in answer mode (will not show in AT&Vn)
<b>ATS0=n</b>		Number of rings required before modem answers. n=0 disables auto-answer.
<b>ATSr.b=n</b>		Set bit <b>b</b> of S-register <b>r</b> to <b>n</b> . (0 or 1)
<b>ATSr.b?</b>		Inquiry bit <b>b</b> of S-register <b>r</b>
<b>ATSr=n</b>		Set S-register <b>r</b> to value <b>n</b> , where <b>n</b> is a decimal number between 0-255
<b>ATSr?</b>		Display value stored in S-register <b>r</b>
<b>ATT</b>		Tone dial
<b>ATVn</b>		Verbal/Numeric result codes
	V0	Display result codes in numeric form
	V1	Display result codes in verbose form
<b>ATXn</b>		Result code options. n=0-7

<b>ATZn</b>		Reset the modem and set power-on profile. n=0-4
	Zn	Reset modem and load user profile <i>n</i> (0-3)
	Z4	Reset modem and load factory settings
<b>AT\$</b>		Help, Basic command summary
<b>AT&amp;\$</b>		Help, Extended AT& command summary
<b>AT*\$</b>		Help, Extended AT* command summary

## Extended “AT&” Commands

(Includes RTS/CTS Flow Control Commands)

Command		Description
<b>&amp;Bn</b>		Data rate, terminal-to-modem
	&B1	DTE/DCE rate fixed at DTE setting
<b>&amp;Cn</b>		Carrier Detect operations
	&C1	Carrier Detect tracks presence of carrier
<b>&amp;Dn</b>		Data Terminal Ready (DTR) operations
	&D2	DTR off causes modem to hang up
<b>&amp;F</b>		Load the default factory settings,
<b>&amp;Kn</b>		Data flow control, DTE/DCE, n=0,3,4
	&K0	Flow control disabled
	&K3	Hardware (RTS/CTS) flow control
	&K4	Software (XON/XOFF) flow control
<b>&amp;Sn</b>		Data Set Ready (DSR)
	&S0	DSR overridden, DSR always on

# Appendix C

## Specifications



### IG-100

Dimensions	120mm(W) * 86mm(D) * 30mm(H)
Operating Temperature	0° C to 40° C
Storage Temperature	-10° C to 70° C
Network Interface:	Ethernet 10Base2(BNC) 10BaseT (UTP)
Network Protocol:	TCP/IP
Serial Port:	One male DB-9 connector
Max. Asynchronous Serial Line. Speed	230.4 Kbps
LEDs	2
External Power Adapter	9V DC