Packet8

Broadband Phone Gateway BPG510
Technical Users Guide

(Firmware version 0.14.1 and later)
Revision 1.0

Table of Contents

About your Broadband Phone Gateway (BPG510)

FRONT

(1) Power – The Power light is solid green when the power is on.
(2) Service – The Service light is solid green when you are authenticated with Packet8
(3) WAN – The WAN light is green to indicate that your modem is connected properly to the Internet. It blinks rapidly when information is being sent over the port between BPG510 and the modem.
(4) LAN – The LAN light is green when a PC or other networking device is connected to the BPG510 with a network cable.
(5) Line – The Line light is green when you go off hook to indicate that your BPG510 is ready to make a call.
(6) Message – The Message light is green when you have a message waiting in your mailbox.

REAR
(picture)

(1) Power Jack – Connect the included power cord to this jack.
(2) Reset Switch – The "Reset" button is used in rare cases when the BPG510 may function improperly. Resetting the BPG510 will restore the BPG510's normal operation while maintaining the programmed settings. We recommend you consult a Packet8 customer service representative before using this button.
(3) WAN – The WAN port is for connection to your cable or DSL modem or to connect to your existing router.
(4) LAN – The LAN port is for connection to your computer or other networking device.
(5) Line – The Line port is for connection to your telephone handset. Use the telephone cable to connect the telephone to this port.

Opening the BPG510's Configuration Utility

Your BPG510 VoIP phone provides a browser-based configuration utility. You can configured the phone using the same web browser you use to surf the Internet. To open your phone's configuration utility, follow these instructions:

1. Connect a computer with a web browser directly to the LAN port of your BPG510. (You may be able to connect to the BPG510 through a router or wireless access point, but if you have any difficulty connecting, try connecting directly to BPG510's LAN Ethernet port.)

2. Be sure that this computer is configured to dynamically get an IP address (e.g., has the DHCP client enabled).

3. Type the IP address of your BPG510's into the address bar of your web browser. The default IP address of your BPG510 is **192.168.88.1.** Then press the ENTER key. You will be prompted to enter a password (the default password is *admin*).

▶ *Note: If you change the LAN IP address of your phone, be sure to make note of it.*
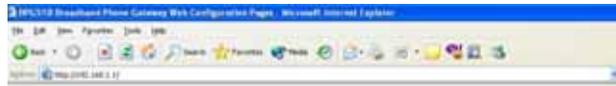
4. You should now see the your BPG510's System Information Screen:

▶ *If you have any trouble opening the utility, first check the connection between your computer and the BPG510. Then, reboot your computer while it is connected to the BPG510.*

Connecting to Your Broadband Modem

Setting up with DHCP

The BPG510 is configured for use with Dynamic Host Configuration Protocol (DHCP) by default. If your broadband connection uses DHCP, then you simply have to connect your phone's WAN port to your broadband modem and then connect the power on the phone. (See the BPG510 Router configuration Guide for detailed connection diagrams.)

If you have disabled the DHCP client (for example, it you have used your phone in a network requiring either PPPoE or a static IP address) and need to re-enable it, follow the steps below:

1. Open the configuration utility.

2. In the menu bar down the left side of the screen, select *WAN*.

3. In the top menu bar, select *WAN Settings.* This will open the Wan Configuration screen.

4. Select the radio button labeled OBTAIN WAN CONFIGURATION DYNAMICALLY.

5. Click SAVE WAN SETTINGS.

Setting up with PPPoE

Point to Point Protocol over Ethernet (PPPoE) is often used by DSL broadband providers to connect and authenticate users on their networks. The service provider will give you a user name and password, and usually some additional software you need to run in order to go online. The BPG510 can take the place of the additional PPPoE software, allowing you to establish and maintain your broadband connection without running any extra programs on your computer.

Follow the steps below to configure the BPG510 to use a PPPoE-based connection:

1. Open the configuration utility.

2. In the menu bar down the left side of the screen, select *WAN.*

3. In the menu bar on the top of the screen, select *PPPoE.* This opens the WAN PPPoE Configuration screen.

4. Under **ENABLE PPPOE**, click the drop-down arrow and select **YES**.

5. Under **AUTHENTICATION**, enter the **USERNAME** and **PASSWORD** that were provided by your ISP. Username and password are often case-sensitive, so be sure enter capital and small letters correctly.

6. Under **SETTINGS**, enter the **SERVICE NAME** and **AC NAME** required by your ISP. If you are not sure, leave this blank.

7. Click **SAVE PPPOE SETTINGS**.

Connecting Local Computers

Connecting a single computer

If you want to connect a single computer to the Internet through your BPG510, use a standard CAT5 Ethernet cable to connect the BPG510's LAN port to your computer's Ethernet port. You may have to reboot your computer after you connect it to the phone, but no other configuration should be necessary.

Connecting a local network

If you have more than one device you want to connect to the Internet, then you will need to use an intermediary device such as a switch, a router, or a wireless access point. We strongly recommend that you connect your BPG510 directly to your broadband modem and connect your switch, router, or access point to the LAN port of your phone. The BPG510 performs essential Quality of Service (QoS) function that allows for superior voice quality. Placing any other device between the BPG510 and your broadband modem, may reduce the quality of your VoIP phone calls due to the traffic on your network.

Supporting a host server on the local network (port forwarding)

If you plan to set up a computer on your local network to host files or programs accessible to the Internet, you will need to configure your BPG510 to forward the data associated with the specific type of service you want to support (such as a web server, an FTP server, game server, etc.) to the host server. Internet protocol separates data traffic for different services into port ranges. To configure the BPG510 to forward any data that comes in on the port range of the service, follow the steps below.

1. Determine the TCP/UDP ports used by the application you are hosting. A list of commonly used ports can be found at http://www.iana.org/assignments/port-numbers.

2. Open the configuration utility.

3. In the menu bar down the left side of the screen, select *LAN.*

4. In the menu bar on the top of the screen, select *Port Forwarding.* This opens the Port Forwarding Configuration screen.

Port Forwarding Configuration

Reserved Ports
The following ports have been reserved by the CPE, and may not be forwarded to the LAN
    68, 44655, 8000-8019

Port Forwarding to LAN
    Port Range   Protocol   Destination Address
    [_____]-[_____]   [Both ▼] 192.168.1.[_____] [Add]

5. Under *Port Range*, enter the first port of the range you want to forward in the first box and the last port of the range in the second box. If the service you are supporting only uses one port, enter the same port number in both boxes.

▶ *Ports in each range must be consecutive. If your service uses non-consecutive ports, simply enter them as two separate port ranges.*

6. Under *Protocol*, select whether the ports in the range are UDP ports, TCP ports, or BOTH.

7. Under *Destination Address*, enter the IP address of the computer you want the data sent to.

8. Click ADD. The BPG510 will add this port range to list of forwarded ports.

9. Repeat steps 5 through 8 for any additional ports ranges you want to forward. To remove any port ranges from the list of forwarded ports, click the REMOVE button beside the port range you want to delete.

Setting up a DMZ

If you want to have one computer on your network receive all un-forwarded data that arrives at your firewall (for instance, because you want to monitor network traffic on the WAN side or you have one computer running too many services to configure all the forwarded ports), you can establish a single computer as a *DMZ*. Any data that is not in a port forwarding range will be sent to the DMZ. Follow the steps below to configure a computer as a DMZ.

CAUTION
The BPG510 cannot protect a computer running as a DMZ from malicious access.
Any computer running as a DMZ should be running a PC based firewall.

► *Traffic sent to the DMZ is still subject to translation by NAT. This means that applications that are damaged by NAT will still be affected.*

1. Open the configuration utility.

2. In the menu bar down the left side of the screen, select *LAN.*

3. In the menu bar across the top of the screen, select *DMZ.* This will open the DMZ Host Configuration screen.

DMZ Host Configuration

DMZ Host IP Address: 192.168.1.[   ]

[Save DMZ Host Configuration]

4. Enter the IP address of the computer you wish to configure as a DMZ and click **SAVE DMZ HOST CONFIGURATION.**

Detailed Screen Reference

WAN Menu

WAN Status

The WAN Status screen displays information about the connection between the BPG510 and the DSL or cable modem.

Interface Status

ENABLED	YES indicates the WAN interface has been activated. NO indicates the interface has not been activated.
PROTOCOL	Displays the protocol the BPG510 uses to communicate with the modem.
INTERFACE STATUS	UP indicates the interface is functioning. DOWN indicates the interface is not functioning.

Network Settings

DYNAMIC IP ASSIGNMENT	Shows whether the BPG510 is configured to receive an IP address automatically from the modem or the service provider.
IP ADDRESS	Displays the BPG510's IP address.
MAC ADDRESS	Displays the BPG510's MAC (hardware) address.
SUBNET MASK	Displays the BPG510's subnet mask.
DEFAULT GATEWAY	Displays the IP address of the Default Gateway used by your service provider.
DNS ADDRESS	Displays the IP address of the Domain Name System (DNS) server used by your service provider.
DOMAIN NAME	Displays the domain name of the WAN-side (service provider's) network.

WAN Configuration

The WAN Configuration screen allows you to set the BPG510 to operate with your DSL/cable modem.

CAUTION
Saving the WAN Configuration reboots the BPG510.

Device Operating Mode

This section allows you to select BPG510 as a switch or a router device. If you connect BPG

▶ *If you are connecting BPG510 as a client behind another router then you will select BPG510 as a SWITCH.*

Obtain WAN configuration dynamically

Select this option if you do not have a static IP address; the BPG510 will automatically obtain its IP address and other information from your service provider.

Specify fixed WAN configuration

If your provider gave you a static IP address, select this option and fill out all the information below:

IP ADDRESS	Enter the IP address you received from your service provider in the following format: XXX.XXX.XXX.X
SUBNET MASK	Enter the subnet mask you received from your service provider in the following format: XXX.XXX.XXX.X
DEFAULT	Enter the default gateway address in the following format: XXX.XXX.XXX.X This

GATEWAY   is the IP address of your service provider's router.

DNS ADDRESS   Enter the IP address of the Domain Name System (DNS) server used by your service provider. Use the following format: XXX.XXX.XXX.X

PPPoE

The WAN PPPoE screen configures the BPG510 to support point-to-point protocol over Ethernet.

WAN PPPoE Configuration

Enable PPPoE: No

Authentication
    Username:
    Password:

Settings
    Service Name:
    AC Name:

Save PPPoE Settings

CAUTION
Saving the PPPoE Configuration reboots the BPG510.

Enable PPPoE
Select YES to activate the PPPoE protocol.

Authentication
Enter the USERNAME and PASSWORD you use to login to the PPPoE service.

Settings
Enter the SERVICE NAME and AC NAME required by your ISP. If you are not sure, leave this blank.

MAC Cloning

The MAC address is a unique hardware address assigned to each Ethernet device. If your provider requires you to have a single MAC address, enter the MAC address that your provider expects. The BPG510 will then transmit all packets as if they originated from that MAC address.

MAC Cloning Configuration

WAN MAC Address (Cloned): [   ]

[Save MAC Cloning Settings]

LAN Menu

LAN Configuration

The LAN Configuration screen controls the IP address of the LAN port on the BPG510. If you have an another device controlling IP address assignments on your local network, you may need to change the BPG510's local IP address to place it on the same network and subnet.

LAN Configuration

Network Settings

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Save LAN Settings

DHCP Server Configuration
The DHCP Server Configuration screen enables the router to automatically assign IP address to attached computers using the Dynamic Host Control Protocol.

DHCP Server Configuration

Server Settings

⦿ Enabled ○ Disabled

Client IP Address Range: 192.168.1. 100 - 131

Client Network Information (Optional)

Domain Name:

DNS Server 1:   2:

Static Address Assignments

Identify Using   Host Identifier   Internal Address

Hostname   192.168.1.   Add

Save DHCP Settings   View DHCP Table

Server Configuration
Select **ENABLED** to activate the DHCP server and have the BPG510 assign IP addresses for connected devices.

Client IP Address Range
Enter the range of IP addresses available to local devices. The BPG510 can support 32 IP addresses, and the address range must be consecutive numbers between 1 and 255.

Client Network Information

Domain Name
Enter the domain name used by the local LAN, if any.

DNS Server 1 & 2
Enter the IP addresses of the primary (1st) and secondary (2nd) DNS servers used by the local LAN.

Static Address Assignments
Complete this information to make the BPG510 assign the same IP address to a device every time. Assign a static IP address if the device serves as a host for any Internet services. You can assign up to eight static IP addresses.

To assign new static IP addresses, click *Add*. Once a static IP address is assigned, you can remove it by clicking the *Remove* button beside it.

Identify Using
Select whether you want to identify the local device by a HOST NAME of by the MAC ADDRESS.

Host Identifier
Enter the name or the MAC address of the host.

Internal Address
Enter the IP address you want the DHCP server to assign to this device.

DHCP Client Table
The DHCP Client Table screen displays the name and ID (based on the MAC address) of connected devices; it also shows the IP address and how long each address is leased.

DHCP Client Table - Microsoft Internet Explorer

DHCP Client Table

Computer Name	Client ID	IP Address
LT107	01000D60FDF1C4	192.168.1.100

Update   Close   Clear client binding table

Router Configuration

Router Configuration

Dynamic Routing

RX Mode: Disabled ▾   TX Mode: Disabled ▾

Static Routing

Subnet Mask	Gateway IP	Dest IP Address	Metric	Interface	
				LAN ▾	Add

Save Router Settings   View Routing Table

Dynamic Routing

Dynamic routing allows the BPG510 to learn routing tables from other network devices by means of the Routing Information Protocol (RIP). With RIP, network devices can broadcast messages containing information on the status of network connections.

RX Mode means we listen to and process RIP messages, TX Mode means we send RIP information to other routers.

RX Mode
Select ENABLED to have the BPG510 process any RIP messages it receives from other network devices. Select DISABLED to have the BPG510 ignore any RIP messages it receives.

TX Mode
Select ENABLED to have the BPG510 broadcast RIP messages to other network devices. Select DISABLED to prevent the BPG510 from broadcasting RIP messages.

Static Routing

Static routing lets you configure particular IP addresses to be routed to the LAN port or the WAN port of the adapter.

Subnet Mask
Enter the subnet mask of the destination device.

Gateway IP
Enter the IP address of the gateway (i.e., the next router in the network path) to the destination device.

Destination IP Address
Enter the IP address of the device you want to configure static routing for. Any Ethernet packets destined for this IP address will be routed according to this configuration.

Metric
Enter the metric associated with this static route. The Metric field corresponds roughly to the number of hops it takes to get to the network or host being entered.

Interface
Select LAN to route packets destined for this device to the LAN port; Select WAN to route packets destined for this device to the WAN port.

Port Forwarding

The Internet uses *ports* to specify different types of service requests. For instance, an email message contains a code for port 110 (POP3 mail services) while a web page request contains a code for port 80 (HTTP services). This allows the router to send the requests to the correct host: any marked as port 110 is routed to the mail server, and any data marked as port 80 is routed to the web server.

If you want to set up one or more computers as a host, you must tell the router what services should be sent to that host. This configuration is called *port forwarding*. There are over four thousand ports defined for different services. Of these, about one thousand are used most often and considered "well-known" ports. Complete lists of all well-known ports are available on the Internet; search for "well-known ports".

Port Forwarding Configuration

Reserved Ports
The following ports have been reserved by the CPE, and may not be forwarded to the LAN
68, 44655, 8000-8019

Port Forwarding to LAN
Port Range   Protocol   Destination Address
[   ]-[   ]   [Both ▼]   192.168.1.[   ]   [Add]

Reserved Ports
The adaptor reserves ports 5060-5061 and 10000-10015.

Port Forwarding to LAN

PORT RANGE	Enter the first and last numbers of the port range you wan to map to this computer. If you want to forward a single port only, enter the same port number in both spaces.
	NOTE: Port ranges are consecutive. If you need to assign non-consecutive ports to a computer, you must enter that computer twice with different port ranges.
PROTOCOL	Select TCP, UDP, or BOTH (TCP/UDP) according to the needs of your network.
DESTINATION ADDRESS	Enter the IP address of the computer you want to use as the host computer for these services, then click ADD.

Filtering Configuration
The Filtering Configuration screen lets you block certain computers from accessing the Internet or from accessing certain services on the Internet. You can filter computers by IP address or by MAC address.

Filtering Configuration

Filtered LAN IP Addresses

IP Address   Protocol
192.168.1.[ ] [Both ▼] [Add]

Filtered LAN IP Addresses
Enter the IP addresses you want to block from accessing the Internet connection. Select Both. The computer at the IP address you specified will now be blocked from Internet.

DMZ Host Configuration

If you want to have one computer on your network receive all un-forwarded data that arrives at your firewall (for instance, because you want to monitor network traffic on the WAN side or you have one computer running too many services to configure all the forwarded ports), you can establish a single computer as a *DMZ*. Any data that is not in a port forwarding range will be sent to the DMZ. Follow the steps below to configure a computer as a DMZ.

CAUTION
The BPG510 cannot protect a computer configured to operate as the DMZ from malicious access.

▶ *Traffic sent to the DMZ is still subject to translation by NAT. This means that applications that are damaged by NAT will still be affected.*

DMZ Host Configuration

DMZ Host IP Address: 192.168.1.___

Save DMZ Host Configuration

SYSTEM Menu

Set Security Password

Set Security Password

No password installed

New password: _____
Confirm new password: _____

Save Password

New password
Enter the password you wan to use for this account.

Confirm new password
Enter the same password again for confirmation.

Localization
The Localization screen controls the time and place settings.

Country
Select the country the BPG510 is currently operating in.

NTP Server
Enter the Network Time Protocol (NTP) server you want the BPG510 to use to automatically update the date and time settings. If you don't enter an NTP server, the time and date stamp on Caller ID messages may not work correctly.

Time Zone
Select the time zone where the BPG510 is currently operating.

Adjust clock for daylight savings
Select this box to have the BPG510 automatically adjust the time one hour for Daylight Standard Time (DST). If your area does not observe DST, do not enable this option.

Call Log

The Call Log displays the last 10 calls received or transmitted by the BPG510.
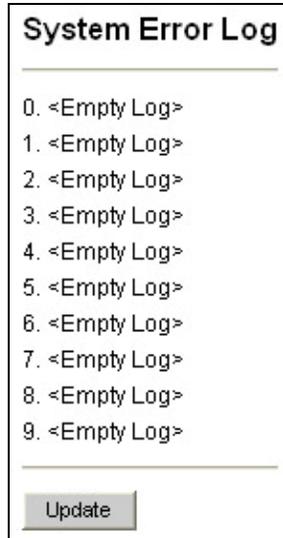

DATE/TIME	Displays the date and time of the call.
LINE	Displays the line the call used.
I/O	Displays whether the call was inbound our outbound.
NUMBER	Displays the phone number of the other party to the call.
CALL-ID	Displays the Call-Id header value in the SIP messages. Your service provider

uses this information to locate/manage calls during troubleshooting.

AUDIO/RTP
STATISTICS   Displays RTP/RTCP statistics for the call (e.g. the number and percentage of lost packets, jitter, latency etc.)

Error Log

The error log screen is used for gathering diagnostic information that could be used later by a Packet8 technician to help investigate a network problem or a disruption of service. This screen will be needed if you call Packet8 customer support

System Error Log

0. <Empty Log>
1. <Empty Log>
2. <Empty Log>
3. <Empty Log>
4. <Empty Log>
5. <Empty Log>
6. <Empty Log>
7. <Empty Log>
8. <Empty Log>
9. <Empty Log>

Update

Handset Configuration

This section is to configure your connected analog telephone handset to command advanced features.

Enable Simple Key Setting
Select this setting if you just want to enable simple key setting to your connected handset.

Complex Key Settings (Advanced feature commands)
Select this setting if you want your connected telephone handset to use the following feature.

Press "Flash" and then "1" on your connected telephone key pad for Hold/Unhold command

Press "Flash" and then "*" on your connected telephone key pad for Alternate command

Press "Flash" and then "7" on your connected telephone key pad for Conference command

Press "Flash" and then "8" on your connected telephone key pad for Drop Conference command

Upgrade Firmware Menu

Upgrade Firmware
Warning! The firmware upgrade process will reset the unit into the upgrader mode.
This will terminate all network connections and reset your browser connection.

Filename: [   ] [Browse...]
[Start Firmware Upgrade]

Upgrades will automatically be performed by your BPG510 periodically as upgrades become available. This feature is included to allow packet8 upgrading options for future product enhancement

CAUTION
The Upgrade Firmware process will reset the unit into the Upgrade Firmware mode. This will terminate all network connections and reset your browser connection.

The Upgrade Firmware screen is used to update the firmware in your BPG510. You should not use the Upgrade Firmware screen except on the advice of a Customer Service Representative.

RESET Menu

```
Reset
Warning! Resetting the system will terminate all
network connections and reset your browser
connection.
─────────────────────────────────────────────

  ⦿  Reset and execute Main Application

  ○  Reset and execute Downloader Application
─────────────────────────────────────────────

  [ Reset ]
```

CAUTION! Resetting the system will terminate all network connections and reset your browser connection.

Reset and execute Main Application
Select this option to reset the BPG510.

Reset and Execute Downloader Application
Select this option to have the BPG510 reset and automatically go into the Upgrade Firmware mode.

CAUTION
Resetting into the Upgrade Firmware mode will terminate all network connections and reset your browser connection. You should not use the Reset and Execute Downloader Application option except on the advice of a Customer Service Representative.