LakeNet Communications
Wireless Internet Manual
January 2010

Name: _____

Address: _____

Phone: _____

LAKENET COMMUNICATIONS

As a member of LakeNet Communications, we want to ensure that you have all the information you need to enhance your internet service.
Please keep this manual available,
as it will assist us should
you require technical support.

CLP Antenna Information:

Antenna Type: ❑ Trango ❑ YDI ❑ Smart Bridges
❑ Other: _____

Signal Strength: _____ **Packet Loss:** _____

Customer Router/Computer Information:

Router WAN/Computer IP Address: _____

Subnet: 255.255.255.0 **Gateway:** _____

Primary DNS: 216.70.0.1 **Secondary DNS:** 216.70.0.2

Router: ❑ Yes ❑ No **Router Brand:** _____

Router LAN IP: _____

SSID: _____ **Mode:** _____

Router User Name: _____

Router Password: _____

Customer Router Encryption Information:

Type: ❑ WEP ❑ None
❑ 64 bit ❑ 128 bit
Encryption Key: 1) _____
2) _____
3) _____
4) _____

Authentication: ❑ Open ❑ Shared   Type: ❑ HEX ❑ ASCII

❑ WPA ❑ WPA2
Cipher Type ❑ TKIP ❑ AES ❑ Auto
❑ Personal ❑ enterprise ❑ Passphrase: _____

❑ Other: _____

Customer Email Information:

Email User Name: _____

Email Password: _____

Incoming Mail Server: (POP3) mail.lakenet.com

Outgoing Mail Server: (SMTP) mail.lakenet.com

Table of Contents

Contact Information:

If you require **DIAL-UP** Internet/email support,
please dial technical support 24-hours a day at:
888.246.0073

If you require **WIRELESS** support,
please dial Cooperative Light & Power's business office
Monday - Friday 8:00 am to 4:30 pm
(In the months of October - April)
OR
Monday - Thursday 7:00 am to 4:30 pm and
Friday 7:00 am to 11:00 am
(In the months of May - September)
at
218.834.2226 / 800.580.5881

You may also **EMAIL** our internet department at
kolson@clpower.com
or
sfabini@clpower.com

**To sign up for our email notification service,
please register under the Communications Section of
the Coop Light & Power website:
www.clpower.com**

Wireless Fair Access Policy (FAP)

On November 7, 2006, Cooperative Light & Power (CLP) installed hardware that was designed to ensure quality of service and fair access for all of our wireless broadband customers. This hardware affects all wireless customers. The FAP allows for a 45 MB upload or download before the customers' connection is set to 256 kbps (for example, a dial-up connection is 54 kbps). The FAP works as follows:

1. CLP has a total of 15,000 kbps available on the backbone network. Most wireless customers' antennas will only transmit a maximum of 2,500-3,000 kbps. With the FAP, customers can "burst" up to 2,500 kbps (312 KB) for 30 seconds.

2. After 30 seconds of bursting, the customer will be reduced to a maximum of 600 kbps (75 KB). The customer will remain at 600 kbps until the remainder of the 45 MB limit is transferred (about 8 minutes).

3. After the remainder of the 45 MB is transferred, the customer will be reduced to a maximum of 256 kbps (32 KB) for the remainder of the download or upload. The customer will then be reset to full bursting (see rule 1) after 5 minutes of averaging below 200 kbps.

During the ramp down period, you can download or upload 45 MB before your connection will be set to 256 kbps (32 KB). If you are just surfing the Internet, you should never be under control.

When CLP's overall network usage is above 9,800 kbps for 60 seconds, the FAP Device sets a threshold at which every session on the network is automatically slowed until an equilibrium is reached. During this time, flows are reduced and sessions are paced. All of this is done in a fair and economical way that doesn't require much processing power. Depending on your antennas maximum throughput, the best case scenario will be after 9 minutes of downloading, your connection will be set to 256 kbps.

The FAP Device that CLP utilizes also has the ability to limit the above rules to defined time periods, as well as monitor and control daily and monthly bandwidth transfer. CLP has decided **not to** implement these features at this time.

Trouble Shooting Frequently Asked Questions

Before you call CLP or LakeNet Technical Support, you may be able to check a few things on your own. The following Trouble Shooting Questions/Answers may be helpful.

Q: My service seems to be running slow? How can I check?

A: *We will always warranty a speedtest run from our website: www.clpower.com. Click on speedtest, then run a test to the city nearest Two Harbors.* *If the speedtest is consistently below 256 kbps (.25 Mbps), It is likely that the problem is a misaligned antenna or FAP issue. Please call CLP with this concern. If your speedtest is higher than 256 kbps (.25 Mbps) but your computer still seems slow, it is likely that the problem is caused by spyware on the computer or problems with wire - less routers. Make sure you update and run your virus/spyware software and see if this corrects the problem. If not, call CLP with this concern.*

Q: My Internet doesn't work, what do I do?

A: *If you have a router, try to reboot the power. Next, reboot the power to CLP's antenna. To do this, follow the red cord to the Trango Broadband box, unplug the power cord (DC in) and plug it back in.* ***Note:*** *Unplugging the red or black Ethernet cords will not solve your issue. If your wireless system has a "SmartBridges Powershot" or "DC Injector", unplug this device as well, then plug it back in. Restart the computer. If your issue is not resolved, call CLP and we will run some diagnostics on your system.*

Q: How do I reboot my router?

A: *Unplug the power cord and plug it back in.* ***Note:*** *Unplugging the red or black Ethernet cords will not solve your issue.*

Q: I pressed the RESET button on my router and nothing works. What do I do?

A: *Call CLP. You reset the router back to factory defaults and it will not work until it is reprogrammed.*

Q: I bought a new computer, will I need it programmed?

A: *Yes, if you do not have a router you will need it programmed. Call CLP, and we can do this over the phone.*

Trouble Shooting Continued

Q: I bought a router, came home and plugged it in. Why doesn't it work?

A: *Routers need special programming to work with our service. For your security, all of our customers have a unique static IP address. Please call CLP if you need to know yours. The routers are your property and you will be charged if we have to service or replace them. You may elect to have CLP's subcontracted wireless installer program it for you while he is installing the wireless service at no additional charge. You may also elect to bring your router to CLP's office and we will program it for you at no charge.*

Q: I just bought a laptop. Can I connect directly to your tower with it?

A: *No. Our wireless is called Fixed Wireless. Fixed Wireless means we physically mount a special antenna on your house that is aimed at our tower. There is an Ethernet cable that we run into the house which plugs into your laptop. Our service is NOT mobile like your cell phone.*

Q: My laptop says it connected to my wireless router but I cannot access the Internet. Does that mean that my router is fine?

A: *No. In fact, when a router fails, most of the time it is the WAN port. That means you are still connected to your router, but your router will not pass traffic to our antenna on the roof. Try to reboot the power to your wireless equipment. **Please follow all the detailed instructions under "My Internet Doesn't Work" section on page 3 of this manual.***

Q. My antenna looks mis-aligned. Should I fix it?

A: *No. Our antennas have very sensitive components and can be damaged accidentally. We have a qualified, trained installer that will re-align it at no charge. **Note:** If you attempt to re-align an antenna without being instructed to do so by CLP, you may be charged if you accidentally damage the equipment.*

continued on next page

Trouble Shooting Continued

Q: How fast is the wireless service?

A: *The service will be between 256 kbps (.25 Mbps) minimum and 2,500 kbps maximum, depending on what you are doing. You will always be at least 256 kbps (.25 Mbps,) which is the FCC definition of broadband. Please read CLP's Wireless FAP located on page 2 of this manual for full details.* **Please Note:** *As a comparison, DSL runs from 256 kbps to 1,500 kbps.* **We will always warranty a speedtest run from our website: www.clpower.com. Click on speedtest on the home page, then run a test to the city nearest Two Harbors.** *If the speedtest is consistently below 256 kbps (.25 Mbps,) call CLP.*

Q: I think my router burned out. To check this, _I bypassed my router by unplugging the red cord from your antenna and moving it from my router's WAN port to my computer._ The Internet does not work. Is this normal?

A: *Yes. Your computer will now need to be programmed with a unique static IP address that the router had programmed into it. You can find this information in the orange box in the front of this manual, with step by step instructions on pages 9-12 . If you follow the instructions and are still having problems, call CLP.*

Please use the instructions on pages 9-12 **ONLY** *if you are going to bypass your router.* **MAKE SURE** *that you unplug the red cord from your antenna and move it from your router's WAN port and plug it directly into your computer!*

General Frequently Asked Questions:

Q: Will I lose my Internet Service when the weather is bad?

A: *No. Before we install any service, we ensure that the signal is stronger than our minimum threshold of -80 dBm with 15% or less packet loss for our non-line-of-sight service (NLOS). By doing this, we leave a cushion to allow for bad weather. **Note:** For your reference, a -50 is stronger than -60. The service quits working at -88 dBm; therefore, if you had a -77 dBm and a storm rolls through, your signal may go to a -82 but you won't lose service. Seasonal changes such as rain, snow, sleet and tree leaf growth can cut about -5 dBm into the signal. Fog is the biggest concern for our frequency band and can cut -5 to -10 dBm into the signal. If we cannot get within our Quality of Service (QOS), we will not install the service and you will not be charged anything.*

Q: Can I have a wireless connection within my house?

A: *Yes. To do this, you must purchase a wireless router (we recommend the D-link brand.) You can purchase it yourself or buy it directly from our subcontracted wireless installer. A wireless router will allow you to have a wireless signal in your house, and allows more than one computer to be online at the same time. The router is your property and you will be charged if we have to service or replace it. You may elect to have our subcontracted wireless installer program it while he is installing the wireless service at no additional charge. You can also bring it to CLP's office and we will program it for you at no charge.*

Q: Can I do Limewire or other peer-to-peer (P2P) applications?

A: *No. Due to the abusive nature of these programs, we limit peer-to-peer traffic. If you run peer-to-peer your connection may be severely affected as stated in the Wireless FAP on page 2 of this manual.*

Q: Can I be on the phone at the same time as the Internet?

A: *Yes, our service does not require a phone line so you can be on the phone at the same time as the Internet.*

Q: Do you have the ability to disconnect my service remotely?

A: *Yes, and we do for non-payment. Be sure to pay your bill on-time to avoid disconnection for that purpose.*

General Continued

Q: Will Voice-Over-IP (VOIP), like Vonage, work on your system?

A: *Yes; however, we do not recommend or warranty it because the experience can vary. VOIP requires latency to run below 120 milliseconds (ms). CLP's network usually runs around 30 ms, and can get as high as 300 ms during peak hours. It is likely that calls during peak hours will be choppy. **Note:** VOIP doesn't need high bandwidth, it needs low latency. You can still experience an extremely fast internet connection, but your calls may not work. You can measure latency from the speedtest on the homepage of our website: www.clpower.com.*

Q: What do I do about lightening storms?

A: *Our equipment is properly grounded to code; however, that doesn't protect your router or computer from static electricity. Our equipment adheres to the Ethernet standard of allowing 24 volts of DC current to go through the cable into the house. Your router and Ethernet card on your computer can only handle 1 volt of DC current before it burns out. We found that connecting your equipment to an Uninterruptible Power Supply (UPS) with lightning protection does NOT protect your router or computer because it allows the standard 24 volts to pass through. To be 100% safe, unplug the red Ethernet cross-over cable from the back of your router or computer before a lightening storm. Remember to plug it back in after the storm for your service to work.*

Q: Can I watch movies, TV or gaming on your Service?

A: *Not for very long. It will work for a short period of time, but CLP's FAP will kick in after a couple minutes (please refer to the Wireless FAP on page 2 of this manual). For example, a Netflix movie requires a con - stant stream of 2,000 kbps. We give that to your computer until the FAP kicks you down to 256 kbps. After that, the movie or TV show won't play and instead will buffer. To work around this, after the movie starts playing, click pause and let it buffer for 1 to 2 hours. When you come back, you can hit play and then the movie will be buffered far enough ahead that you should be able to watch it with little interruption. **Note:** A typical movie online is equivalent to downloading 1,000 MB of data.*

General Continued

Q: Can I be notified of scheduled outages?

A: *Yes. Simply sign up for our email notification service under the communications section of our website at: www.clpower.com.*

Q: Does Virtual Private Networking (VPN's) work on your system?

A: *Yes. It works great because of the low latency. We have a lot of work-from-home consumers using VPN's to their corporate offices.*

Q: Who owns the equipment on my house?

A: *CLP owns the antenna on your house and power injector with power supply inside your house. If you discontinue your Lakenet service, CLP will uninstall the antenna and accessories.*

Q: Do I have to be able to see the tower to get service?

A: *That depends on the area you are in. Our non-line-of-sight service can be just that. Most of our coverage areas do NOT require line of sight. Trees in the way are O.K., distance from our tower matters more. Please see the coverage maps for details. You can find the maps under the communications section of our website at: www.clpower.com.*

Q: Do I get email with my service?

A: *Yes. You get up to 10 email accounts with your wireless internet service. Call CLP after you get the service installed to set these up.*

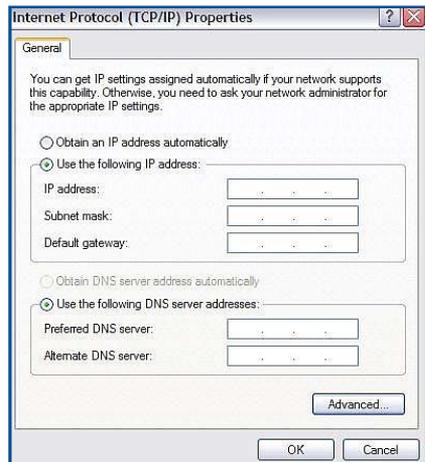## Static IP Configuration for Windows 2000/XP

Please use these instructions ONLY if you are going to bypass your router. MAKE SURE that you unplug the red cord from your antenna and move it from your router's WAN port and plug it directly into your computer!

1. Click on the "Start" button and click "Control Panel."

2. Select "Network Connections" and **right click** on the connection you use and select "Properties."

3. Select (single click) "Internet Protocol (TCP/IP)," click on "Properties." **Do NOT uncheck the box on the left.**

A window like the one pictured will pop up; select "Use the following IP address."

4. Enter in the IP Address, Subnet Mask, and Default Gateway information that is located in the orange box in the front of this manual. Enter in the IP Address of the DNS servers your computer will use. This is also located in the orange box in the front of this manual.

5. Click "OK" to finish the process, and reboot your computer.

9

Static IP Configuration for Windows Vista/7

STOP

*Please use these instructions **ONLY** if you are going to bypass your router. **MAKE SURE** that you unplug the red cord from your antenna and move it from your router's WAN port and plug it directly into your computer!*

1. Click on the "Start" button and click "Control Panel."

2. Select "Network and Internet," "Network and Sharing Center." In Vista, on the left side click "Manage Network Connections" from the list of tasks. In Windows 7, on the left side click "Change Adapter Settings" from the list of tasks.

3. Right click your "Local Area Connection" and click "Properties." You may be prompted for a password or need to click a button named "Allow", "Proceed", "Yes" or "continue."

4. Select (single click) "Internet Protocol (TCP/IP)." Click "Properties," and select "Use the following IP address." Enter the IP Address, Subnet Mask Default Gateway and DNS Server information that is located in the orange box in the front of this manual.

5. Click "OK" to finish the process. Select "Home" if prompted for a location and reboot your computer.

Static IP Configuration for Windows 98/ME

STOP

*Please use these instructions **ONLY** if you are going to bypass your router. **MAKE SURE** that you unplug the red cord from your antenna and move it from your router's WAN port and plug it directly into your computer!*

1. On your computer, go to "Control Panel" and select "Network."

2. In the "Configuration Tab," single click to highlight your network TCP/IP card component, and click "Properties."

3. In the "IP Address Tab," select "Specify an IP Address." Enter the IP address and Subnet mask information that is located in the orange box in the front of this manual.

4. In the "Gateway Tab," type the gateway address located in the orange box in the front of this manual.

5. In the "DNS Configuration Tab," enter the following information under each section:

Enable DNS: Select Enable DNS
Host: Enter a name for your computer (this can be any name you choose)
Domain: Do not change the existing entry (If blank, leave it blank)
DNS Server Search Order: Add the DNS Server IP addresses
  (located in the orange box in the front of this manual)
Domain Suffix Search Order: Do not change the existing entries
  (If blank, leave blank)

Please note: You do not need to make changes in the remaining tabs.

6. Click OK to finish the process.

7. You may be required to restart your computer. If so, do this now.

Static IP Configuration for Mac OS X

STOP

*Please use these instructions **ONLY** if you are going to bypass your router. **MAKE SURE** that you unplug the red cord from your antenna and move it from your router's WAN port and plug it directly into your computer!*

1. Click on the Apple in the upper left and select "System Preferences" from the pulldown menu.

2. In the "System Preferences" window double click on the "Network" icon.

3. In the "Network Control Panel" "Show" Choose Your Ethernet Device. Select the "TCP/IP Tab" and choose to "Configure" Manually. Enter in the IP Address, Subnet Mask, Router (also known as the default gateway) and DNS Server information located in the orange box in the front of this manual.

4. Click the **"Apply Now"** button to finish the process.

5. Reboot your computer to activate your network settings.

12