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Installation with a DSL Connection.

DSL connections can be more challenging since most DSL modems are also routers and supply DHCP. Some even have firewalls and will do SPI *state-full packet inspection*. This can cause double NAT issues, one-way audio and other connectivity problems. When installing for the first time you may want to follow these steps:

- With an Ethernet cable connecting the IAD directly to the DSL modem, and a phone connected into the first phone port, power up the IAD. Check for dial tone, after waiting for a minute or two. If you have dial tone then check for two-way audio. If you have two way audio, then:
- Connect the router to the DSL modem, using the router as a switch (disabling DHCP).
- If you do not get a dial tone, or have one-way audio then, you will need to make the DSL modem a bridge and set the router to connect using PPPoE. This will require the correct username (in the correct format) and password for your DSL account.

After configuring the DSL modem to a bridge the next step will be to configure the router/IAD to use PPPoE as it's connection type.

Installation in a Business Networked Environment.

Installation in more complicated networks may require special configurations, depending on the actual network. One of the most important correctable issues would be to check for double NAT. A few ideas to overcome installation problems are:

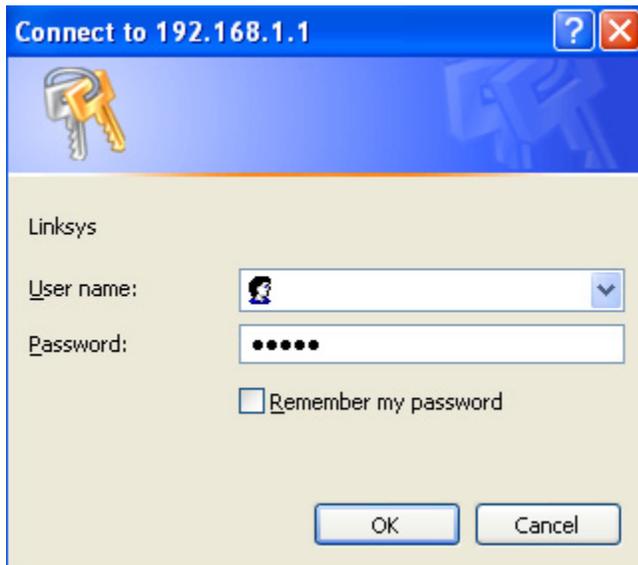
- Connect the IAD directly to the first device and check for two-way audio. If you get one-way audio or no dial tone, then the issue will most likely be SIP unfriendly NAT, or a firewall that is not allowing the needed packets to cross.
- Try port forwarding or IP tunneling; send the needed packets directly to the IAD. These will usually be UDP ports 5060, 5061 and a range of higher UDP ports. You will need to get the exact ports from VoiceLift.
- Place the IAD in a DMZ or perimeter zone, or
- Place the IAD outside any firewall and NAT, allowing it to receive a public IP address.

Remember that different NAT transversals and firewalls can play havoc with SIP. The issue occurs due the nature of the VoIP protocols. The signaling of the device is handled by one protocol, but the voice is handled by another protocol. The voice protocol may not be associated with the device, so the router does not know where to send that information. The result can be one-way audio.

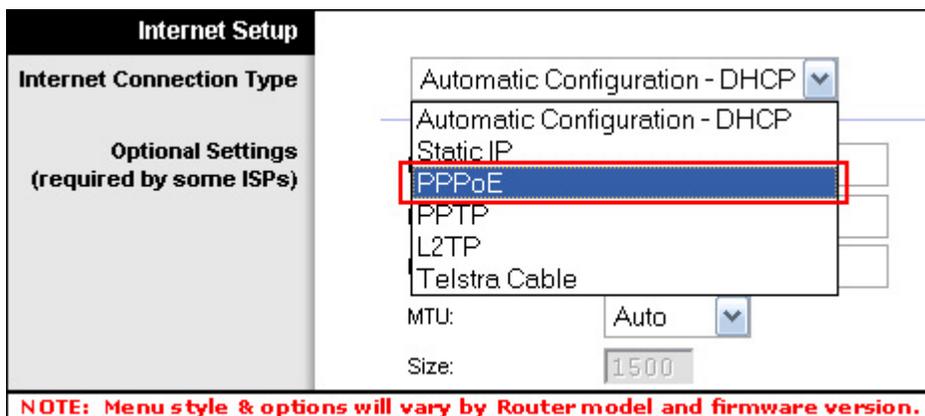
How to configure a Linksys Router to use PPPoE.

The first step in configuring the Linksys router would be to connect the Ethernet cable directly from the computer to one of the numbered Ethernet ports in the Linksys Router. Then power up the Linksys router and then power up the computer. After the computer has opened to it's desktop, double click on Internet Explorer and let it completely open. It may display "Page cannot be Displayed", but that is all right. Type the following address into the address bar of Internet Explorer <http://192.168.1.1> and click on go.

A box requesting a user name and password prompt will appear. Type admin (lowercase) for both the user name & password.



A Setup page should display in Internet Explorer. In the section labeled Internet Connection Type, or WAN Connection Type select the PPPoE option from the drop down list.



Once PPPoE is selected, **enter your PPPoE DSL username and password provided by your Internet Service Provider into the router's User Name and Password fields.** Backspace over the password field making sure you start from the very beginning of the field and use the correct case. **Your username format can vary from so you will need to know exactly how the complete username should be entered. If you are in doubt, your ISP should be able to verify the correct name, format and password.**

Internet Setup	
Internet Connection Type	PPPoE ▼ User Name: <input type="text" value="username@isp.net"/> Password: <input type="password" value="....."/> <input type="radio"/> Connect on Demand: Max Idle Time <input type="text" value="5"/> Min. <input checked="" type="radio"/> Keep Alive: Redial Period <input type="text" value="30"/> Sec.
NOTE: Menu style & options will vary by Router model and firmware version.	

If the **Keep Alive** option is not selected, be sure to select it instead of the 'Connect on Demand' option. The 'Keep Alive' option will ensure that your connection stays connected even when it is not in use.

Scroll down to the bottom of the page and click on the **Save Settings**, or the **Apply** button depending on router model, to save your changes. You may be prompted that a reboot will be required. Click on OK and you should be returned to the previous page. Close and exit the web browser.

Un-power all devices and your PC.

Connect an Ethernet cable from the DSL modem to the Internet port of the Linksys router. Keep the Ethernet cable from the computer connected directly to the Linksys router. **Power on the DSL modem, waiting until it has had an opportunity to resync with the DSL provider. Observe the indicator lights located on the modem and wait for the lights to stop blinking.** A light indicating **Power** as well as **DSL (or Internet, Online, Ready, etc.)** should become solid to indicate that a connection to your Internet Service Provider has been established. Next you should power up the Linksys router waiting about 15 seconds before turning on your computer.

The following steps can be taken to check that your connection to your Internet Service Provider is established.

Log back into the Linksys router following the same procedure as above.

After the Linksys Internal pages have displayed, click on the Status tab. Once on this page look for the Internet IP Address. **You should see a valid public IP address, in most cases this address should be a public IP address. (You should not see 0.0.0.0)**

Once on the Status page, you should see for a section labeled **Login Status** (or **PPPoE Status** depending on router model and firmware version). This will indicate the status of the connection.

The following statuses may appear:

- **Connecting**
If the status repeats with **Connecting**, your Linksys Router is having problems connecting to your Internet Service provider. Repeat the Power Cycle and try again. Be sure to check for solid status and activity lights on the modem and the **Internet** light on the router. If this light does not turn on or does not display any activity, try using different network cables and then power cycle all devices to try again.
- **Disconnected**
If the status shows **Disconnected**, your Linksys Router was not able to establish a connection to your Internet Service provider. Repeat the Power Cycle and try again. Be sure to check for solid status and activity lights on the modem and the **Internet** light (or **WAN** lights) on the router. If these lights do not turn on or do not display any activity, try using different network cables, power cycle all devices to try again.
- **Connected**
If the status is **Connected**, your Linksys Router successfully established a connection to your Internet Service provider and you should be able to connect to the Internet.

Login Type:	PPPoE
Login Status:	Connected <input type="button" value="Disconnect"/>

OR

Login:	PPPoE
Status:	Connected

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Troubleshooting steps that can be taken if the connection fails.

In the router's Status page, you may be prompted with one of the following error messages:

- **PPPoE Authentication Failed**
This indicates the PPPoE user name and password that you used are incorrect. Repeat the router configuration step and verify the spelling, case and/or format of your login user name and password are correct. Then, perform the 'Power Cycle' steps in Step 5 and try again. If the same message appears, contact your ISP and confirm your username and password.
- **Cannot Connect to PPPoE Server**
The router was unable to connect to your Internet Service Provider. Repeat the Power Cycle to try again. Be sure to check for solid status and activity lights on the modem and the **Internet** (or **WAN**) lights on the router. If these lights do not turn on or do not show activity, try using different network cables, power cycling all devices again.
- **PPPoE LCP Negotiation Failed**
The router was unable to make a connection to your Internet Service Provider. Repeat the router configuration steps verifying the spelling and/or format of your login or use another user name and password. Then perform the power cycle again.

How to connect a Linksys RT31P2-AT Router/IAD to use PPPoE.



Front Display

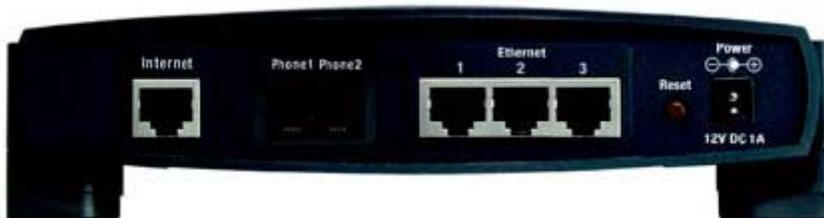
Description of Lights

Power This light should be solid green. It will light up when the router is powered on, and will flash as it is booting up, which will last for a brief time. If the power light continues to flash, this could indicate a problem with router's firmware.

Ethernet 1-3 Each corresponding light should display a solid green if there is a corresponding active device plugged into that port. It will flash when it is sending or receiving data. If no light is lit, this could indicate a problem with the device, router port or cable.

Phone 1-2 The phone ports will flash when a connected phone is being used or an incoming call has been detected. When the phone is not in use the LED will be solid as long as the ATA is registered. If the LED is not lit, then the ATA has no current registered connection.

Internet The Internet light will light green when it is connected to your ISP's modem and will flash as data is received or transmitted.



Rear View

The first step in configuring the Linksys router would be to connect the Ethernet cable directly from the computer to one of the three numbered Ethernet ports in the Linksys Router/IAD. Then power up the Linksys Router/IAD and then power up the computer. After the computer has opened to it's desktop, double click on Internet Explorer and let it completely open. It may display "Page cannot be Displayed", but that is all right. Type the following address into the address bar of Internet Explorer <http://192.168.15.1> and click on go.

A box requesting a user name and password prompt will appear. Type admin (lowercase) for both the user name & password. Then click on OK. A Setup page should display in Internet Explorer. In the section labeled Internet Connection Type, select the PPPoE option from the drop down list.



PPPoE

User Name:

Password:

Service Name:

Connect on Demand: Max Idle Time Min.

Keep Alive: Rollover Period Sec.

Once PPPoE is selected, **enter your PPPoE DSL username and password provided by your Internet Service Provider into the router's User Name and Password fields.** Backspace over the password field making sure you start from the very beginning of the field and use the correct case. **Your username format can vary from so you will need to know exactly how the complete username should be entered. If you are in doubt, your ISP should be able to verify the correct name, format and password.**

If the Keep Alive option is not selected, be sure to select it instead of the 'Connect on Demand' option. The 'Keep Alive' option will ensure that your connection stays connected even when it is not in use.

Scroll down to the bottom of the page and click on the Save Settings, or the Apply button depending on router model, to save your changes. You may be prompted that a reboot will be required. Click on OK and you should be returned to the previous page.

Close and exit the web browser.

Un-power all devices and your PC.

Connect an Ethernet cable from the DSL modem to the Internet port of the Linksys Router/IAD. Keep the Ethernet cable from the computer connected directly to the Linksys Router/IAD. **Power on the DSL modem, waiting until it has had an opportunity to resync with the DSL provider. Observe the indicator lights located on the modem and wait for the lights to stop blinking.** A light indicating **Power** as well as **DSL (or Internet, Online, Ready, etc.)** should become solid to indicate that a connection to your Internet Service Provider has been established. Next you should power up the Linksys IAD/router waiting about 15 seconds before turning on your computer.

The following steps can be taken to check that your connection to your Internet Service Provider is established.

Log back into the Linksys router following the same procedure as above.

After the Linksys Internal pages have displayed, click on the Status tab, then on the Router option. Once on this page look for the Internet IP Address. **You should see a valid public IP address, in most cases this address should be a public IP address. (You should not see 0.0.0.0)**

Once on the Status page, you should see for a section labeled **Login Status** (or **PPPoE Status** depending on router model and firmware version). This will indicate the status of the connection.

The following statuses may appear:

- **Connecting**

If the status repeats with **Connecting**, your Linksys Router/IAD is having problems connecting to your Internet Service provider. Repeat the Power Cycle and try again. Be sure to check for solid status and activity lights on the modem and the **Internet** light on the router. If this light does not turn on or does not display any activity, try using different network cables and then power cycle all devices to try again.

- **Disconnected**

If the status shows **Disconnected**, your Linksys Router/IAD was not able to establish a connection to your Internet Service provider. Repeat the Power Cycle and try again. Be sure to check for solid status and activity lights on the modem and the **Internet** light (or **WAN** lights) on the router. If these lights do not turn on or do not display any activity, try using different network cables, power cycle all devices to try again.

- **Connected**

If the status is **Connected**, your Linksys Router successfully established a connection to your Internet Service provider and you should be able to connect to the Internet.



Troubleshooting steps that can be taken if the connection fails.

Go to the Status page, then select the Router option, you may be prompted with one of the following error messages:

- **PPPoE Authentication Failed**

This indicates the PPPoE user name and password that you used are incorrect. Repeat the router configuration step and verify the spelling, case and/or format of your login user name and password are correct. Then, perform the 'Power Cycle' steps in Step 5 and try again. If the same message appears, contact your ISP and confirm your username and password.

- **Cannot Connect to PPPoE Server**

The router was unable to connect to your Internet Service Provider. Repeat the Power Cycle to try again. Be sure to check for solid status and activity lights on the modem and the **Internet** (or **WAN**) lights on the router. If these lights do not turn on or do not show activity, try using different network cables, power cycling all devices again.

- **PPPoE LCP Negotiation Failed**

The router was unable to make a connection to your Internet Service Provider. Repeat the router configuration steps verifying the spelling and/or format of your login or use another user name and password. Then perform the power cycle again.