

Linksys ATA Installation & Provisioning Guide for IPtoPOTS

Minimum Requirements

- High speed Internet connection
- Internet enabled network equipment with a free port
- Alarm panel or digital communicator
- Suitable length network cable (RJ45)
- Suitable length telephone cable (RJ11)

Installation for adapters WITHOUT a built-in router

e.g. SPA1xxx, SPA3000, PAP2Tx & others



- 1.** Connect a network cable from the ETHERNET port (blue) into a spare port on your modem/router or other Internet enabled network equipment.
- 2.** Connect the mains adapter to the Linksys device and then plug it into an electrical power socket or UPS and switch on the power. *Alternatively, arrange a power source that comes from the alarm panel or other 12v backup power supply.*
- 3.** For initial setup, plug a telephone handset into the PHONE port (sometimes labelled PHONE 1 on a two line ATA). *After initial setup is complete, you will connect your alarm panel to this port.*

Installation for adapters WITH a built-in router

e.g. SPA3102, SPA2102 & others



- 1.** If you have an existing router, connect a network cable from the INTERNET port (blue) to a spare port on your router.

If you do not have an existing router (modem only), connect your existing computer equipment to the ETHERNET port (yellow) and connect a network cable from the INTERNET port (blue) to your modem.

2. Connect the mains adapter to the Linksys device and then plug it into an electrical power socket or UPS and switch on the power. *Alternatively, arrange a power source that comes from the alarm panel or other 12v backup power supply.*

3. For initial setup, plug a telephone handset into the PHONE port (sometimes labelled PHONE 1 on a two line ATA). *After initial setup is complete, you will connect your alarm panel to this port.*

Configuring your Linksys ATA via IVR or Web Browser

Before attempting to configure your ATA, you should take the time to familiarise yourself with the two different methods of communicating with it. The first method is to use the Interactive Voice Response (IVR) System. Your ATA has the ability to detect digits dialed from a telephone handset. When you're ready, try the following:

Dial ***** (do this even if you hear a busy signal or nothing at all)

You will hear a message - "Linksys configuration menu. Please enter option followed by the pound key...", then enter 1 1 0 # on your phone.

You will now hear a message giving you the internal IP address of your device such as - "192.168.0.5".

TIP: You will be asked to perform this step during the provisioning process, so you may want to write the number down. Hang up the phone or experiment with other IVR options shown towards the end of this document. Finding out and writing down the MAC address would be a good experiment as this is also required during the provisioning process.

The second method is to access the device's built-in web pages. Start up an internet browser (Internet Explorer 4 or Firefox 1.0.7 or later) and type the internal IP address of the device into the URL bar and depending on the model of your device, you should see a web interface similar to one of the following:

LINKSYS
A Division of Cisco Systems, Inc. *Linksys Phone Adapter Configuration*

Router Voice

Status Wan Setup Admin Login basic | advanced

Product Information

Product Name:	SPA-3102	Serial Number:	FM600G508087
Software Version:	5.1.7(GW)	Hardware Version:	1.4.5(a)
MAC Address:	000E08CD7662	Client Certificate:	Installed
Customization:	Open		

System Status

Current Time:	1/3/2003 12:34:54	Elapsed Time:	1 day and 22:40:33
Wan Connection Type:	DHCP	Current IP:	204.111.194.94
Host Name:	SipuraSPA	Domain:	calicentric.biz
Current Netmask:	255.255.255.192	Current Gateway:	204.111.194.65
Primary DNS:	66.193.176.41		
Secondary DNS:	204.11.193.12 204.11.192.20		
LAN IP Address:	192.168.0.1	Broadcast Pkts Sent:	3
Broadcast Bytes Sent:	1026	Broadcast Pkts Recv:	21434
Broadcast Bytes Recv:	2990023	Broadcast Pkts Dropped:	0
Broadcast Bytes Dropped:	0		

Undo All Changes Submit All Changes

Admin Login basic | advanced

LINKSYS
A Division of Cisco Systems, Inc. *Linksys Phone Adapter Configuration*

Phone Adapter with 2 Ports for Voice Over IP PAP2

Voice Info System User 1 User 2

Basic View (switch to advanced view) Admin Login

System Information

DHCP:	Enabled	Current IP:	192.168.1.108
Host Name:	LinksysPAP	Domain:	nys.ir.com
Current Netmask:	255.255.255.0	Current Gateway:	192.168.1.1
Primary DNS:	24.29.103.10		
Secondary DNS:	4.2.2.1 4.2.2.5		

Product Information

Product Name:	PAP2-NA	Serial Number:	FH000E903027
Software Version:	3.1.3(LS)	Hardware Version:	0.03.4
MAC Address:	0014B4CDDFE	Client Certificate:	Installed
Customization:	Not Customized		

System Status

Current Time:	1/1/2003 12:34:26	Elapsed Time:	00:34:20
Broadcast Pkts Sent:	3	Broadcast Bytes Sent:	1026
Broadcast Pkts Recv:	10	Broadcast Bytes Recv:	2296
Broadcast Pkts Dropped:	0	Broadcast Bytes Dropped:	0
RTP Packets Sent:	0	RTP Bytes Sent:	0
RTP Packets Recv:	0	RTP Bytes Recv:	0
SP Messages Sent:	372	SP Bytes Sent:	171364

Undo All Changes Submit All Changes

You do not need to adjust any of the settings at this stage and in the vast majority of cases you will never need to adjust any settings manually as they are all taken care of by the provisioning server.

You are now ready to check your firmware version, optionally upgrade your firmware and then provision your adapter.

Important: Upgrade your device firmware to the latest version

There are many different versions of firmware for Linksys adapters and it is essential to download the latest supported version and upgrade your adapter firmware.

You can check which version of firmware is currently installed on the Info tab of the Linksys ATA web interface. If you require an upgrade, download the relevant file, save it to a folder on your computer and carry out the following steps:

1. Extract (unzip) the downloaded file and double-click the executable (.exe) file to start the upgrade process.
2. When the firmware upgrade warning window appears, click Continue.
3. Enter the internal IP address of your ATA in the field provided. (To find out the internal IP address, dial ***** to enter the IVR menu and then 110

The Connecting Status screen appears while a connection is in progress. Another window appears when the upgrade is complete.

An alternative method of upgrading your firmware is to invoke the upgrade from the URL bar of your browser. You can enter something like...

<http://192.168.0.2/admin/upgrade?http://ipalarms.net/pap2t-5-1-6.bin> and replace 192.168.0.2 with the real internal IP address of your Linksys device.

To upgrade an SPA3102 with an internal IP address of 10.0.0.5 you would invoke the upgrade with <http://10.0.0.5/admin/upgrade?http://ipalarms.net/spa3102-5-1-10-gw.bin>

10 Step Guide to Provisioning for the IPtoPOTS Service

Each Linksys ATA needs to go through a process called provisioning before it can be used for alarm monitoring purposes. This is a method of downloading a predefined group of settings from a Provisioning Server into the adapter.

1. You must first reset your adapter to factory default settings by accessing the IVR menu. Connect a phone handset to the PHONE port of your device and dial the * key four times. A voice will ask you to "Please enter option followed by the pound key". Dial **73738#** and then 1 to confirm. You should hear a low tone and a voice announcing "option successful". Hang up and wait at least thirty seconds. The adapter will then be ready for provisioning.

If you do not hear "option successful" then you should try again but this time press the 1 key immediately after 73738#. After several failed attempts, power cycle the device to clear its memory and try again. It is quite common to have to repeat this step many times

in order to get the device to reset. If your device is locked, it will probably not allow you to do this.

NOTE: If the IVR asks you to enter a password then your device has been:

- a) Customized by Linksys for use by a single VoIP provider
- b) Locked by a VoIP provider during their provisioning process.

Refer to the section "Unlocking previously locked devices" later in this guide.

2. Pick up your telephone handset.

Dial **** (do this even if you hear a busy signal)

You will hear a message - "Linksys configuration menu. Please enter option followed by the pound key...", then enter 1 1 0 # on your phone.

You will now hear a message giving you the IP address of your device such as - "192.168.0.5". Write this number down.

If your device has a built-in router - do not hang up yet. You will need to enable web-based configuration, as by default web-based configuration for the WAN port is disabled. To enable web-based configuration:

You will hear the menu prompt again after acquiring the IP address. After hearing the prompt dial 7932# followed by 1# then 1 when asked to save the change.

You should now have the IP address for your device as well as the ability to configure your device through a web browser.

NOTE 1: If the IVR announces an IP address of 0.0.0.0 then your device has been unable to obtain an address from your network equipment.

NOTE 2: There is an alternative method of enabling the web interface for the WAN port explained after the 10 step guide.

3. Find out and make a note of the MAC address of your adapter by using the IVR menu and pressing **140#**. The monitoring provider will need this in order enable your adapter on their server. You will also need it to find your adapter on the provisioning server.

4. Start up an internet browser (Internet Explorer 4 or Firefox 1.0.7 or later) and navigate to the Login page at <http://www.ipalarms.net/login.aspx>

5. Enter the login credentials and you will be taken into the Virtual Monitoring platform. Go to the Account tab and click the Provision button. Select or type in the information required to provisioning your device.

6. Confirm that the "IPtoPOTS" option has been selected.

7. Enter your MAC address into the text box and click the button to confirm your MAC.

8. If you want to use a VoIP service on line 2, enter the line 2 settings before provisioning. During provisioning, click the Advanced button and then tick the box to indicate you want use line 2 for VoIP.

Advanced Settings

Leave the heartbeat interval at 300 seconds. You and your contacts will receive an email alert from our automated Virtual Monitoring platform if our server does not receive a heartbeat within 5-15 minutes.

Leave the Debug Level check box unchecked.

The Bandwidth setting allows you to change PSTN termination providers as well as to select which amount of bandwidth usage best suits your Internet connection. We recommend you use the Medium setting first and test your system. Your alarm company may reject calls based on the physical location of our PSTN termination server, so you may have to choose the maximum bandwidth setting that uses a server in a different location.

Only select Minimum bandwidth if you experience difficulties due to a slow Internet connection.

Change the Panel/Dialer Impedance only if you are outside of North America.

Leave the Upload/Download field empty.

Only enable the Analog Backup Port if you are using an SPA3102 and have a cellular backup device attached to the FXO port.

9. Click on the "Download Settings to Device" button to start the provisioning process.

10. If possible, pay attention to the lights on your ATA and you should see "blinking" on one or more of them as settings are being downloaded. The full provisioning process takes around one minute to complete so you should not lift up any handsets connected to the device. During this time, a message similar to the one below will appear in your browser...

SPA will resync the profile when it is not in use and reboot you can click [HERE](#) to return to the configuration page

Wait at least 60 seconds before clicking on the [HERE](#) link to open up the web interface of your ATA.

If all went well, the provisioning process will now be complete and the Admin level web interface will no longer be available. You should see a 403 Forbidden message when you click on the [HERE](#) link and this confirms that your device has provisioned correctly.

Wait at least 2 minutes before connecting your alarm panel and testing it with your monitoring company.

Put your alarm on test at the monitoring center and send some signals to confirm correct operation.

If the **SPA will resync** message does not appear in your browser, then the provisioning process failed and you should read the section on using locked devices and Client Side Router notes.

Alternative method of enabling the web interface for the WAN port

Prior to provisioning launch a web browser on a PC connected to the ETHERNET port of the Linksys adapter. Enter the adapters default IP address, 192.168.1.1/admin/advanced into the URL bar and press Enter. Select the Router tab and then the WAN Setup tab. Set Enable WAN Web Server to "yes" and click on the Submit button. You can now disconnect your PC from the ETHERNET port and reconnect it into the router.

NOTE: Make sure your computer's Ethernet adapter is set to obtain an IP address automatically (DHCP).

Setting your Linksys ATA to use a fixed internal IP address

Log into the web interface and go to the System tab. Set DHCP to "no". Enter a Static IP, NetMask and Gateway. Enter the required Primary and Secondary DNS Servers. Save your changes.

Re-Provisioning

Where an adapter has already been provisioned and it is necessary to load new settings, you must first reset it by accessing the IVR (* key four times) and pressing 73738# then 1 to confirm. You should hear a low tone and a voice announcing "option successful".

Wait at least thirty seconds and the adapter will once again be ready for provisioning using the above guidelines.

IVR Menu Options

Action	Code	User Input	Behavior Notes
Enter IVR Menu	* * * *	None	Ignore SIT or other tones until you hear, "Sipura configuration menu. Please enter option followed by the pound key or hang-up to exit."
Check DHCP	100	None	IVR will announce if DHCP is enabled or disabled.
Set DHCP	101	Enter 1 to enable Enter 0 to disable	Enter option followed by the pound key.
Check IP Address	110	None	
Set IP Address	111	Enter value using numbers on the telephone key pad. Use the * (star) key when entering a decimal point.	Enter value followed by the pound key. DHCP must be "Disabled" otherwise you will hear, "Invalid Option," if you try to set this value.
Check Net Mask	120	None	
Set Net Mask	121	Enter value using numbers on the telephone key pad. Use the * (star) key when entering a decimal point.	Enter value followed by the pound key. DHCP must be "Disabled" otherwise you will hear, "Invalid Option," if you try to set this value.
Check Gateway	130	None	
Set Gateway	131	Enter value using numbers on the telephone key pad. Use the * (star) key when entering a decimal point.	Enter value followed by the pound key. DHCP must be "Disabled" otherwise you will hear, "Invalid Option," if you try to set this value.

Unlocking previously locked devices

If you are unable to gain access to the web interface of a Linksys ATA, the device either has Customized firmware or it has been "locked" by a VoIP service provider.

If you are able to access the web interface, you will see a Customization setting on the Info tab. If this displays "Customized", the device will contain a special version of firmware customized to the requirements of a VoIP service provider.

If the Customization setting displays "Open", then the device will contain the standard Linksys firmware. That said, the device may still have been "locked" by a VoIP service provider during their provisioning process.

The problem with Customized and Locked devices

You will not be able to provision your locked device with alarm monitoring settings. Regardless of any settings our provisioning server may be able to download into your device, it would always "call home" to the VoIP service provider server and download new settings. It is highly recommended that you do not use locked devices for alarm monitoring service as we can never be certain whether or not the device will eventually "call home", however, it is possible to unlock them.

Options for "unlocking" your device

There are a small number of people that claim to be able to "remove" the firmware from Customized ATA's and they usually charge a small fee for doing so (approx US\$20).

Some VoIP service providers will provide you with unlocking instructions if they have disabled the ability to do a factory reset from the IVR.

Some VoIP service providers prevent web access to the internal settings but will allow you to factory reset the device from the IVR with 73738#.

Client Side Router (Notes)

The Linksys ATA is designed to operate from behind a single NAT router and there is generally zero configuration required. It may be possible for the device to function correctly behind two NAT routers but this type of setup is not supported.

The Linksys ATA uses the SIP protocol for the transport of data over the internet and this can sometimes be affected by a feature available on some routers called stateful packet inspection (**SPI**). If you experience a situation where alarm signals and heartbeats are received at the server but your alarm panel does not receive a kiss-off, then it is possible that SPI has caused the rejection of responses from the server.

If your Linksys ATA adapter is connected to your router wirelessly, then it should be understood that some wireless access points break up large packets into smaller packets. It is the job of the wireless router to reassemble them again, however, this can sometimes cause problems for the packets sent and received by the Linksys ATA and data loss can occur. Increasing the packet size or port forwarding are known fixes for this issue.

To improve the quality of the audio stream (where used) between the Linksys ATA and the monitoring server, it can be advantageous to make use of **QOS** (quality of service) on your router where available. This will give higher priority to alarm traffic and reduce network jitter at times when your Internet connection is under strain.

Things to try if you experience problems:

1. Try using Port Forwarding
2. Try placing the Linksys device into the DMZ
3. Unblock Anonymous Internet Requests
4. Turn off SPI – Stateful Packet Inspection.
5. Turn off DPI – Deep Packet Inspection
6. Turn off SIP ALG
7. Turn on Gaming Mode
8. Turn off Strict UDP Session Control