



Linksys SPA2102 Install Guide

The Linksys SPA2102 is a low cost Analogue Telephone Adapter that offers 2 ports allowing you to connect 2 phone lines to OrcaCom. It is widely available from various suppliers in New Zealand. The SPA2102 (unlike the PAP2T) also support T.38 for reliable fax transmission over IP, so you can also connect a fax machine to the OrcaCom service.

NOTE: It has been reported that Fax calls do not work or work intermittently on the latest versions of firmware from Linksys for the SPA-2102 (Versions > 5.1.10). If you need fax to work on your ATA then you should download a firmware version <= 5.1.10 (or stay with the version that your ATA came shipped with if it is version 5.1.10 or below). If you need to downgrade your ATA then you can download Version 5.1.9 from:

<http://www.orcacom.co.nz/firmware/spa2102-5.1.9.bin>

The SPA2102 also functions as a router and offers QoS (Quality of Service) features, so you can either plug your existing switch or PC into the LAN port or set up the unit in 'Bridge' mode to use the routing functionality of your existing DSL/Modem (usually recommended).

First, you should read the Quick Install guide and then the User guide to get setup and familiar with the Linksys SPA-2102 featureset. Links to all these documents can be found from the link below:

http://www.linksys.com/servlet/Satellite?c=L_Product_C2&childpagename=US%2FLayout&cid=1146582254856&pagename=Linksys%2FCommon%2FVisitorWrapper

Once you have familiarised yourself with the ATA and have logged into the web interface then you are ready to configure it to run on OrcaCom's service. It is recommended to leave the ATA in DHCP mode for networking, although how you setup the 'Network' settings is really up to you and your needs. Please refer to the User Guide for more info.

First you should click on 'Admin Login' and then 'Advanced' to get access to all of the ATA's settings. You will see that there are a LOT of settings you can change the ATA. We will only discuss those that are important to the OrcaCom service in this article. If you wish to experiment with the other settings then please consult the User Guide for more information. The following settings refer to the pages which you can select using the tabs along the top of the page. If you do not see a setting mentioned then you should leave this as the default setting.

Below are detailed instructions on configuring the SPA-2102 to work with OrcaCom's service:

1. Reset your SPA-2102 to factory default settings

If you purchase a second hand SPA-2102 or one that has been setup to work with a particular carrier then the safest bet is to reset the settings to the factory defaults so that you start with a clean slate and can be sure that some previously entered setting is not causing you a problem.

To reset the SPA-2102 to factory defaults follow these steps:

- Plug in power adapter
- Plug in a phone to 'Phone 1' port of the SPA-2102
- Dial ****
- You should hear 'Configuration Option Menu'
- Dial 73738# (RESET#)
- Press 1 to confirm the reset

The SPA-2102 should now have been reset to factory default settings.

You may need to do the following to set up web management depending on which interface you are coming in on:

- Dial **** into the phone connected to the ATA device

- You should hear 'Configuration Option Menu'
- Dial 7932 then press 1 to enable.
- Hang up when you hear option saved.



2. Get access to your SPA-2102 web interface

- Plug in Ethernet cable to router and wait for several seconds
- Dial ****110#
- Listen to IP Address which is read back to you
- Plug your PC into the LAN (Ethernet) port of the SPA-2102
- Enter IP Address into your web browser (For example. <http://192.168.1.10>)
- You should now see the Linksys SPA-2102 Web Interface

3. Upgrade firmware (optional)

Your SPA-2102 may work well on it's current firmware, but it is always a good idea to upgrade the firmware on your SPA-2102 to ensure that you are running the latest recommended firmware on it. Upgrading the firmware is relatively easy with the SPA-2102.

- Visit <http://www.linksys.co.nz>
- Click on Downloads
- Select VoIP Routers from drop down menu under the VoIP category
- Select SPA-2102 from the drop down menu under the picture that looks like your SPA-2102 (centre, middle)
- Select Version 1.0
- Click on firmware to download the Firmware ZIP file (e.g. SPA-2102-5-2-5.ZIP)
- Open the ZIP file in a ZIP utility such as WinZip
- Click Extract and extract your files to a folder you choose (e.g. C:\SPA2102)
- Use Windows Explorer to open a window on your selected folder
- Click on the .exe Application (named something like upg-spa2102-5-2-5.exe)
- Accept the warning and Click Continue
- Enter the IP Address of the SPA2102 above into the Window and click OK
- Click Upgrade to update your SPA2102 firmware to the new version you have downloaded
- Wait until the progress indicator has finished doing the upgrade. Do NOT unplug your SPA2102 during the upgrade.
- When successfully upgraded you should see a message like 'Your SPA has been successfully upgraded to the version shown below' (Latest version at time of writing was 5.2.5)
- Now in your web browser put in the SPA-2102 IP Address again and on the Info page you should see the new firmware version displayed beside 'Software Version'

4. Changing your System Settings

- Click on the 'System' tab
- It is recommended you set a User and Admin password on the web interface of the SPA2102 to avoid unauthorised access.
- Set 'Admin Passwd' and 'User Password' to a password of your choosing and write it down so you don't forget it.
- Click 'Save Settings'
- The unit will reset and now prompt you for your username and password.
- Enter 'admin' as the username and your new password to access your SPA2102

SIP Page

- Click on the 'SIP' tab
- Change the following SIP Timer Values:
 - Reg Max Expires = 600
 - Reg Retry Intvl = 10
 - Reg Retry Long Intvl = 20

(Changing the above will allow your SPA2102 to recover from registration failures more quickly.)

- Change the following SDP Payload Types:
 - RTP-Start-Loopback-Codec: G711a

- RTP Parameters:
 - Stats in BYE: yes
- Change the following NAT Support Parameters (optional):
 - STUN Enable: yes
 - STUN Test Enable: yes
 - STUN Server: stun.OrcaCom.co.nz

(The STUN settings should be optional. Your SPA2102 should work fine without STUN enabled, so you can enable/disable these settings if you are having issues registering.)

- Click on 'Save Settings'

Changing your Provisioning Settings

- Click on the 'Provisioning' tab
- Change the following in the Configuration Profile:
 - Provision Enable: no
- Change the following in the Firmware Upgrade parameters:
 - Upgrade Enable: no
- Click on 'Save Settings'

Changing your Regional settings

If you wish to support the New Zealand Tones for your phones and set the date/time then you can setup the following. There are a lot of settings here that are not strictly necessary for a functional phone, but if you wish the SPA2102 to behave similar to a Telecom landline then you are best changing the settings on this page.

- Call Progress Tones
 - Dial Tone: 400@-9;30(*0/1)
 - Second Dial Tone: 420@-19,520@-19;10(*0/1+2)
 - Outside Dial Tone: 420@-16;10(*0/1)
 - Prompt Tone: 520@-19,620@-19;10(*0/1+2)
 - Busy Tone: 400@-9;*(.5/.5/1)
 - Reorder Tone: 400@-9;15(.25/.25/1+2)
 - Off Hook Warning Tone: 400@-10,680@0;*(.125/.125/1+2)
 - Ring Back Tone: 400@-19,450@-19;*(.4/.2/1+2,.4/.2/1+2,2/0/0)
 - Confirm Tone: 600@-16;1(.25/.25/1)
 - SIT1 Tone: 985@-16,1428@-16,1777@-16;20(.380/0/1,.380/0/2,.380/0/3,0/4/0)
 - SIT2 Tone: 914@-16,1371@-16,1777@-16;20(.274/0/1,.274/0/2,.380/0/3,0/4/0)
 - SIT3 Tone: 914@-16,1371@-16,1777@-16;20(.380/0/1,.380/0/2,.380/0/3,0/4/0)
 - SIT4 Tone: 985@-16,1371@-16,1777@-16;20(.380/0/1,.274/0/2,.380/0/3,0/4/0)
 - MWI Dial Tone: 400@-19;2(.1/.1/1);28(*0/1)
 - Cfdw Dial Tone: 350@-19,440@-19;2(.2/.2/1+2);10(*0/1+2)
 - DND Dial Tone: 350@-19,440@-19;2(.2/.2/2);10(*0/1+2)
 - Holding Tone: 600@-19;*(.1/.1/1,.1/.1/1,.1/9.5/1)
 - Conference Tone: 350@-19;20(.1/.1/1,.1/9.7/1)
 - Secure Call Indication Tone: 397@-19,507@-19;15(0/2/0,.2/.1/1,.1/2.1/2)
 - Feature Invocation Tone: 350@-16;*(.1/.1/1)
- Distinctive Ring Patterns
 - Ring1 Cadence: 60(.4/.2,.4/2)
 - Ring2 Cadence: 60(.3/.2,1/.2,.3/4)
 - Ring3 Cadence: 60(.8/.4,.8/4)
 - Ring4 Cadence: 60(.4/.2,.3/.2,.8/4)
 - Ring5 Cadence: 60(.2/.2,.2/.2,.2/.2,1/4)
 - Ring6 Cadence: 60(.2/.4,.2/.4,.2/4)
 - Ring7 Cadence: 60(.4/.2,.4/.2,.4/4)
 - Ring8 Cadence: 60(0.25/9.75)
- Distinctive Call Waiting Tone Patterns
 - CWT1 Cadence: 30(.3/9.7)
 - CWT2 Cadence: 30(.1/.1,.1/9.7)
 - CWT3 Cadence: 30(.1/.1,.3/.1,.1/9.3)
 - CWT4 Cadence: 30(.1/.1,.1/.1,.1/9.5)
 - CWT5 Cadence: 30(.3/.1,.1/.1,.3/9.1)
 - CWT6 Cadence: 30(.1/.1,.3/.2,.3/9.1)
 - CWT7 Cadence: 30(.3/.1,.3/.1,.1/9.1)



- CWT8 Cadence: 2.3(.3/2)
- Ring and Call Waiting Tone Spec
 - Ring Waveform: Sinusoid
 - Ring Frequency: 25
 - Ring Voltage: 70
 - CWT Frequency: 400@-10
 - Synchronized Ring: no
- Miscellaneous Local Date (mm/dd): (Set current month and day)
- Set Local Time (HH/mm): (Set current hour and minute)
- Time Zone: GMT+12
- FXS Port Impedance: 220+8200 - - 120nF
- Daylight Saving Time Rule: start=4/1/7/3:0:0;end=9/-1/7/2:0:0;save=-1
- FXS Port Input Gain: -3
- FXS Port Output Gain: -3
- DTMF Playback Level: 0
- DTMF Playback Length: .1
- Detect ABCD: no
- Playback ABCD: yes
- Caller ID Method: Bellcore(N.Amer,China)
- FXS Port Power Limit: 4

Line 1/Line 2 page

Line Enable = yes

Network Settings:

- Network Jitter Level: very high (suitable for most Internet connections, increase this if you have voice quality problems to extremely high)
- Jitter buffer adjustment: up and down

Proxy and Registration

- Proxy: OrcaCom.co.nz (specify 'fax.OrcaCom.co.nz' for a Fax machine line)
- Outbound Proxy: OrcaCom.co.nz (specify 'fax.OrcaCom.co.nz' for a Fax machine line)
- Use Outbound Proxy: yes
- Use OB Proxy in Dialog: yes
- Register: yes
- Make call with Reg:yes
- Register Expires: 600
- Make call without Reg:yes
- Use DNS SRV: yes
- DNS SRV Auto Prefix: no
- Proxy Fallback Intvl: 600
- Proxy Redundancy Method: normal

Subscriber Information

- Display Name: Your Name (e.g. Fred Bloggs)
- User ID: 099749000 (replacing 099749000 with your own OrcaCom phone number)
- Password: abc123 (replacing abc123 with your OrcaCom password)
- Use Auth ID: yes
- Auth ID: 099749000 (replacing 099749000 with your own OrcaCom phone number)

Supplementary Service Subscription

- If you choose to leave many of the supplementary services enabled on the SPA2102 then the star codes that you use to activate/deactivate services with OrcaCom will not work as the SPA2102 uses many of the same star codes and will intercept them when you try to dial through to OrcaCom. It is therefore recommended that you disable some of the key services such as:
 - Block CID Serv: no

- Block ANC Serv: no
- Cfdw All Serv: no
- Cfdw Busy Serv: no
- Cfdw No Ans Serv: no
- Cfdw Sel Serv: no
- Cfdw Last Serv: no
- Block Last Serv: no
- Accept Last Serv: no
- DND Serv: no
- Call Return Serv: no
- Speed Dial Serv: no

- **NOTE:** However if you are plugging in a fax machine then you should set the “Call Waiting Serv: No” and “MWI Serv: No”

Audio Configuration

- Preferred Codec: G729a (specify G711a for a fax machine line)
- Second Preferred Codec: G711a (specify G711u for a fax machine line)
- Third Preferred Codec: G711u (specify G729a for a fax machine line)
- Use Pref Codec only: no (specify ‘yes’ for a fax machine line)
- Silence Supp Enable: no
- Silence threshold: medium
- G729a Enable: yes
- Echo Canc Enable: yes (must be ‘no’ for fax lines.)
- Echo Canc Adapt Enable: yes (must be ‘no’ for fax lines.)
- Echo Supp Enable: yes (must be ‘no’ for fax lines.)
- FAX CED Detect Enable: yes (on fax lines in particular)
- FAX CNG Detect Enable: yes (on fax lines in particular)
- FAX Passthru Codec: G711a (on fax lines in particular)
- FAX Codec Symmetric: yes (on fax lines in particular)
- DTMF Process INFO: no
- DTMF Process AVT: yes (specify ‘no’ instead for fax machine lines)
- DTMF Tx Method: AVT (specify ‘InBand’ instead for fax machine lines)
- DTMF Tx Mode: Strict
- DTMF Strict Hold off Time: 90
- FAX Passthru Method: NSE
- FAX Process NSE: yes (on fax lines in particular)
- FAX Disable ECAN: yes (on fax lines in particular)
- Hook Flash Tx Method: none
- Release Unused Codec: yes
- FAX Enable T38: yes (required for fax lines)
- FAX T38 Redundancy: 1 (you may set this higher if you are having problems with Fax transmissions)
- FAX Tone Detect Mode: caller or callee

Dial Plan

- Dial Plan: (0[2-9][2-9]xxxxxx|[2-9]xxxxxx|021x.|0508x.|0800x.|025x.|027x.|028x.|029x.|00x.|1xx|*x.)

(The example Dial Plan is an example for New Zealand only and may be incomplete. Please send feedback to support@OrcaCom.co.nz if you have any amendments that should be made to the dial plan string)

- Enable IP Dialing: no
- Emergency Number: 111

FXS Port Polarity Configuration

- Idle Polarity: Forward
- Caller Conn Polarity: Forward
- Callee Conn Polarity: Forward

User 1/User 2 page



Most of the settings on this page are up to the customer and whether they wish to support call waiting, caller ID etc. However we recommend the following settings be applied:

- Block CID Setting: no (This must be set to 'no' otherwise you will experience problems calling out)
- CW Setting: yes (You should use the OrcaCom Call Waiting setting to control this feature)
- DND Setting: no (You should use the OrcaCom Do Not Disturb setting to control this feature)

Troubleshooting Tips

If you are still having problems getting your SPA-2102 to register with OrcaCom then you can try disabling or enabling the STUN settings.

Another thing you can try is changing your SIP Port from '5060' to '50600' in the SIP Settings under each line and change the 'Proxy' and 'Outbound Proxy' from 'OrcaCom.co.nz' to 'OrcaCom.co.nz:50600' in the Proxy and Registration settings under each line

If you are still having problems connecting to OrcaCom then email us at support@OrcaCom.co.nz