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Client Mode

Client Mode can be used on the La Fonera to turn it from a router receiving a network connection through it's WAN RJ45 port (from a host router or modem), to a wireless adapter receiving a network connection through it's wireless interface (from a host router). You can then plug a device (Laptop, PC, Games console, etc) in to the RJ-45 port of the Fonera that connects the device to the network of the host router (albeit a separate subnet), allowing access to any internet connection or network file shares on that network. A virtual wireless AP can also be added to the Fonera to allow devices to connect to the Fonera wirelessly instead of by cable (again, still with a separate subnet but allowing the same features of wired devices).

In other words, the Fonera acts as a portable network port, only needing a power cable, allowing connections to your network and internet connection. It can also act as the source of a new wireless network with separate SSID.

Separate Guides

Information in this guide was originally gained from [Joksi's Client Mode info](#) on the DD-WRT forums, and [Dltv's Client Mode guide](#). Both contain shorter versions of the following info which you may find more useful if you know what you're doing.

Thanks to both for the help, and thanks to Dltv for many of the images used in the guide.

Requirements

The following instructions assume you are using the following:

1. A host router with an internet connection and wireless capability, preferably using DD-WRT firmware but by no means compulsory.
2. A La Fonera using DD-WRT firmware 03/10 or 03/23 revision. Most later revisions should work, but none have been tested for this guide.
3. The La Fonera must be in range of the wireless signal broadcast by the host router.

Quick Setup

Only use the following quick setup instructions if you know what you're doing. All other settings than those mentioned are assumed to be at default.

1. With the Fonera in DHCP Internet Connection mode, change the Fonera's Local IP to a subnet other than that of the host router (Eg. Host = 192.168.1.1, Fonera = 192.168.2.1).
2. Change the Fonera's Wireless settings to the same channel, SSID and encryption as those on the host router. Then change the Wireless mode to Client.

3. You should now be able to connect directly to the Fonera's ethernet socket. View the wireless status page, click site survey and join the host router's SSID.
4. If successful, the routers should show in each others wireless connections list, and the Fonera should gain a WAN IP from the host router.
5. You may now create a Virtual wireless interface if required.

Host Router Settings

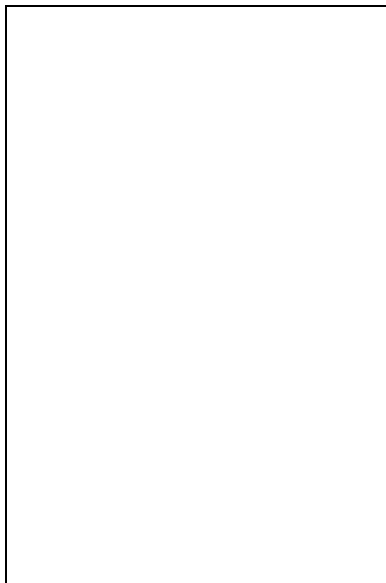
The host router is the main router you want your La Fonera to connect to as a client. It is likely the router you use to connect to the internet with, and connect other wired / wireless PCs to.

Test router is a Linksys WRT54GL version 1.1 using DD-WRT firmware 03/05/07 (5th March 07), labeled 03/04/07 in web setup pages. Also tested with a separate La Fonera as host.

Other routers should work fine, basically as long as their wireless interface is set up and you know the SSID and encryption method for it, and you know the main IP of the router, the following should work.

Start from default settings (Admin > Factory Defaults > Yes > Save, or hold reset button for ~ 30 secs). All settings other than those mentioned can be assumed to be at default. Changing many of them should not affect the guide.

==== Setup > Basic Setup ====



Host Basic Setup. Note that in this case, an IP of 192.168.2.1 is being used.
Internet Connection Type: Whatever gets you connected to the internet.

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Optional Settings: Anything you like, though my MTU = 1492.

Local IP: 192.168.X.Y, where X and Y are anything between 1 and 255, though note that X must be different in the La Fonera settings.

Subnet: 255.255.255.0, though others will work as long as you have identical settings in the La Fonera.

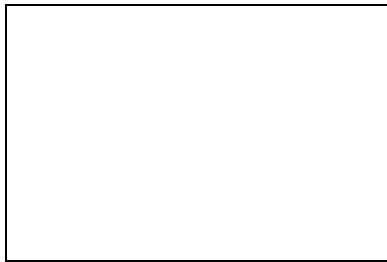
Gateway & Local DNS: I have blank, I'm not sure if these affect anything.

DHCP Type: DHCP Server

DHCP Server: Enable

Start IP Address: 100

Wireless > Basic Settings



Host Wireless settings.

Wireless Mode: AP

Wireless Network Mode: Mixed (This should work on either G, B or Mixed).

Wireless Network Name: Anything you like, though it must be identical in the La Fonera set up. I keep the default "dd-wrt" name.

Wireless Channel: 1, 6 or 11 should work. Chose whatever is least used in your area. Others may work too, though are untested. I use 11. You need to set the identical channel while configuring the La Fonera.

Host Router Settings

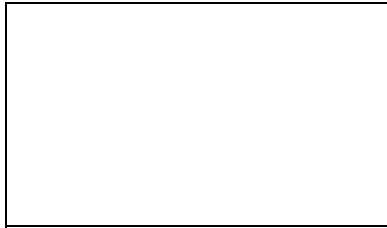
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Wireless SSID Broadcast: Enable. This is needed for the first time you setup client mode, ("Disabled" is untested at this point.)

Sensitivity Range (ACK Timing): I have 2000. Not sure if anything else matters.

Network Configuration: Bridged.

Wireless > Security



Host Security Settings. Here using WEP.

Security Mode: WPA Personal. WEP 64 bit works too. Other modes are untested.

Identical settings need to be used in the La Fonera.

If WPA,

WPA Algorithms: AES. (TKIP works too, other modes untested.)

WPA Shared Key: I use a 13 character key. This will only work if the key is the right length.

Key Renewal Interval (in seconds): 3600. Others untested.

If WEP,

Default Transmit Key: 1

Encryption: 64 bits 10 hex digits. Other modes untested but should work.

Key 1: A 10 digit key will work. I used 0123456789 to test.

Other Settings

All other settings can assumed to be at their default values. These include SPI Firewall enabled and DMZ disabled.

Note that there were no WDS settings or any Virtual wireless interfaces added when tested.

Other Routers

As mentioned, other routers should work just as well as long as you know what settings they are using / can change these if needed.

A test with a host La Fonera at default settings was carried out, with the only change to the settings on the client La Fonera being the SSID name and encryption (as the IP subnet was already different, and subnet the same, from the host La Fonera's). You will probably want to change the SSID / encryption details on the host La Fonera before hand though.

Fonera Settings

The La Fonera acts as a client for the host router, connecting itself to the host router and, among other things, receives an internet connection from the host router (so long as it has one) allowing anything connected to the La Fonera to use this internet connection. Essentially the Fonera acts as a movable network port or wireless network emitter.

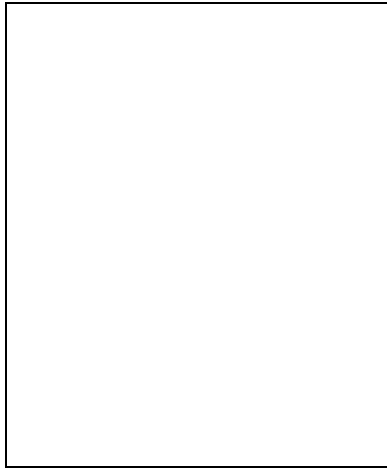
The La Fonera model used in the tests was a FON2100A/B/C revision using DD-WRT firmware 10th March 07 (03/10/07) and firmware 23rd March 2007 (03/23/07).

Technically the following probably applies to any other type of router running DD-WRT with a wireless Client mode option available, or even other firmwares employing a wireless client mode.

Note: The following assumes you start with default settings on the La Fonera, either Admin > Factory Defaults > Yes > Save, or hold the reset button for ~75 seconds until the WAN light flashes. All settings other than those mentioned can be assumed to be at their default setting. Changing most of them may not affect the use of Client mode, though those marked in red are critical and if changed will stop client mode working.

If you have problems accessing the La Fonera to begin with, connect it via cable to your host router, access the status pages of the host router to find a list of DHCP clients, find the La Fonera's mac address in this list and enter the associated IP address in a browser followed by :8080. In my case, this was 192.168.2.102:8080 . This should take you to the La Fonera's web setup page.

Setup > Basic Settings



Client Mode Setup. Note that in this case, an IP of 192.168.1.1 is being used as the host router is using 192.168.0.0

Internet Connection Type: Automatic Configuration - DHCP.

STP: Disable. Enabled is untested.

Optional Settings: Anything you like, though my MTU = Auto (1500). You may also wish to change the Host name so that you can distinguish your router by name in your host router's DHCP list. My domain name is blank, filled in is untested.

Local IP: 192.168.Z.Y, where Z is any number between 1 and 255 that IS NOT the same as X in the host router settings. I used 192.168.3.1 for my tests.

Subnet: 255.255.255.0, or whatever is identical to the same setting in the host router.

Gateway & Local DNS: Leave these blank or the same as your host router's Local IP.

DHCP Type: DHCP Server.

DHCP Server: Enable.

Start IP Address: 100.

Static DNS: You may add static DNS server IPs if you wish, otherwise the Fonera will use the same DNS servers as your host router.

Once these settings are filled in, hit Save.

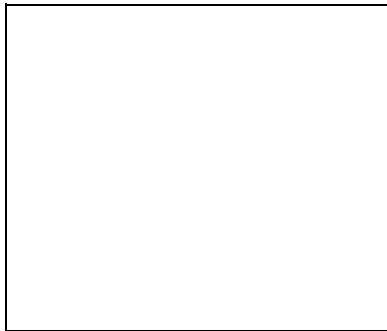
Security > Firewall

Firewall settings seem to have little practical affect other than making you use :8080 to access the status page through a network when enabled. Unless you find that the firewall causes you any problems when left enabled, I would suggest leaving it that way for security reasons.

Wireless > Basic Settings

Browse to the Basic Settings tab under the Wireless section and alter the following settings.

Before altering the following, change Wireless Channel to an identical setting to the host router's Wireless Channel. In my tests I used 11 (2.426 GHz). Hit save settings and continue with the guide. This setting will be unavailable after changing to Client mode.



PHysical wireless settings. Note that SSID / Network mode should correspond to your host router's settings. Regulatory Domain: Chose your country here. UNITED_STATES and UNITED_KINGDOM both work.

Tx Power: 16. Others untested and I suggest you leave it at this to avoid heat issues..

Antenna Gain: 6. See above.

Wireless Mode: Client.

Wireless Network Mode: Mixed. A setting identical to the host router is all that has been tested. Either using mixed on the La Fonera, or a separate **setting that is identical to the same Wireless Network Mode used on the host router**, will probably work.

[08-1220] **using v24-sp1/2 "G-Only" on host OR both host & fon will not work** - freonchill

Short Preamble: Disabled. Others untested.

Extended Range: Disabled. Others untested.

Diversity: Disabled. Others untested.

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TX Antenna: Primary. Unless you've modded a second antenna, keep this.

RX Antenna: Primary. As above.

AP Isolation: Disabled. Enabled seems to have no practical affect.

Wireless Network Name (SSID): Identical to the same SSID in the host router. I used the default dd-wrt in tests.

Sensitivity Range (ACK Timing): 2000. Others untested.

Network Configuration: Bridged. This setting will dissappear once you save settings.

Now click Save Settings.

Connect Directly To La Fonera

Once you have changed the Fonera's Wireless settings to Client mode and hit Save, the Fonera will start to work in Client mode right away. This means that, if you are already doing so, you will no longer be able to access the Fonera through a seperate router and you must connect to it directly with a PC.

Disconnect the Fonera from your main router (if not already) and connect the Fonera directly to a LAN port on a PC. The PC should gain an IP address by DHCP in the range 192.168.Z.YYY from the Fonera. Open a web browser and go to 192.168.Z.Y (the fonera's local IP) to get back to the web settings page (the additional :8080 is no longer needed).

Wireless > Wireless Security



Wireless security. This example uses WEP.

On the Wireless Security tab, **change the Security Mode for the Physical Interface to the same settings used on the host router.** Currently only WEP and WPA-Personal have been tested, though others should work. The settings I used in my test were:

Security Mode: WPA Personal.

WPA Algorithms: AES.

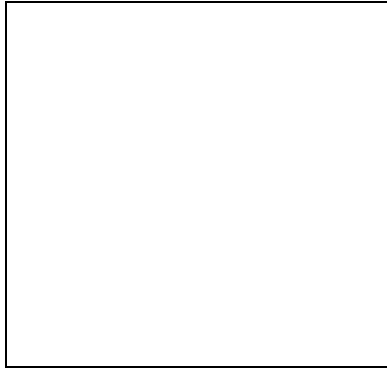
WPA Shared Key: I used a 13 character key.

Key Renewal Interval (in seconds): 3600.

Wireless > Basic Settings

Now click Save Settings.

Status > Wireless



Fonera Status page. This example has already connected to a host, which is listed as an AP. Now browse to the the Status > Wireless tab.

Scroll down to the Wireless Nodes list and click the Site Survey button. Hopefully you will see your host router's SSID in the new popup window (recognized by the host router's MAC address). If you do not see any SSIDs in the popup window, try rebooting the router by going to Admin > Reboot Router and looking at the site survey again after the reboot.

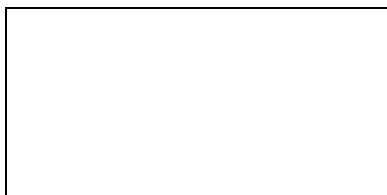
Click join next to your host router's entry and a message should pop up saying "Successfully joined the following network as a client: SSID" where SSID is your host router's actual SSID . In my case, I was using the SSID dd-wrt.

Click Continue. The router may reboot now, but do not make it if it does not.

Again browse to the Status > Wireless tab and scroll down to the Wireless Nodes list. You should see your host router's MAC address listed there as an Access Point with a suitable signal strength.

Now check your **host** router and look for a list of connected wireless clients (for me it was under Status > Sys-Info). You should see the Fonera's MAC address listed here and also in a list of DHCP clients along with an IP address.

At this point, if all settings are correct and the Fonera has connected as a client to the host router, **the Fonera should now have gained an IP address from the host router.**





Host Status page. Here you should see the Fonera as a wireless and DHCP client.

You can check this on the Fonera's web setup pages on the top right of each page where it says WAN IP:. This IP should correspond to the same IP listed on the host router for the Fonera's MAC address. In my case, the WAN IP: 192.168.2.145. If the WAN IP = 0.0.0.0 then something has gone wrong. First try to reboot the Fonera (then status > wireless > site survey > join), if that fails then reboot the host router, and finally if still not working then try to go through the previous guide settings and see where you may have gone wrong.



Successful join message.

Fonera Wired Connections

The Fonera can now be used as a Wireless adapter for any device that will connect via an RJ45 network cable to it, and receive network settings by DHCP.

If you do not wish to / cannot use DHCP on a connected system then change it's IP address to 192.168.Z.Y, where Z is identical to the Local IP on the La Fonera, and Y is any number other than that used on the Fonera. I used a setting of 192.168.3.145 in my tests. You must also change the subnet to 255.255.255.0, or the identical setting used on the Fonera.

Any devices connected by cable to the Fonera should now have Internet access (so long as the host router does) and be able to access network shares by typing in a direct IP in a file browser on Windows. For example, I have a PC connected to my host router which is given the IP 192.168.2.111. On a device connected to the Fonera, typing \\192.168.2.111 in Windows Explorer takes me to my PC's network file shares.

Virtual Access Points

If you wish to connect a device to the Fonera using Wireless instead of cable, you can do so by adding a Virtual Access Point. Client mode is not the recommended way of extending wireless range given that the Fonera's VAP will use a unique SSID and subnet from your main router, essentially meaning you will have two independent wireless networks running. That said, the VAP works in much the same way as the wired connection does, allowing a connected PC to access the internet and other network file shares.

Note that many have experienced disconnections while connected to a VAP in client mode. I get disconnected from Fonera every 20 minutes or so, but can reconnect almost straight away. This is likely a bug in the firmware that should be fixed at a later date. Also, see below for Wireless connection setup details on your PC.

Wireless > Basic Settings



Fonera VAP settings. This example shows a Virtual interface in AP mode. To set up a VAP, first make sure your previous settings work.

Now go to the Wireless > Basic settings tab on the Fonera, scroll down to Virtual Interfaces and click Add.

Wireless Network Name (SSID): Anything other than the SSID used by the Physical interface / host router.

Wireless SSID Broadcast: Enabled. Disabled is untested.

Wireless Mode: AP. Other modes are untested and are used for different purposes.

AP Isolation: Either, though what affect they have I've not noticed. Network shares are available with both. I've used both successfully, though started off with Disabled.

Network Configuration: Bridged. You will not be able to connect to the VAP if you chose Unbridged.

Now click Save Settings.

Wireless > Wireless Security



Fonera VAP security settings. This example shows a Physical interface using WPA, and a Virtual interface using WPA2.

You can add security to your VAP if you so wish, though it also works without security (not recommended as network file shares are available once connected).

Go to the Wireless > Wireless Security tab and under Virtual Interfaces chose the following:

Security Mode: Disabled, WEP, WPA-Personal and WPA2-Personal have all been tested to work. Personally I use WPA2-Personal with the following settings:

WPA Algorithms: AES. Others untested.

WPA Shared Key: A 13 character key.

Key Renew Interval (in seconds): 3600.

Now click Save Settings.

Connecting To The VAP

Note that the VAP's SSID will only be broadcast once the physical wireless interface has connected to the host router (i.e. you have a WAN IP listed on the Fonera's web config pages). If you have problems connecting, first try rebooting the router and once rebooted, check via cable that the same settings are still applied, and your router has received a WAN IP.

The below applies to the 03/10 firmware, later versions may be better.

Connecting to the VAP may appear to be hit-and-miss. I found that, while just searching for Wireless networks and connecting to the Fonera VAP when found, I would not always connect. This also seemed to be more the case when using encryption.

To overcome this, I added the SSID and encryption mode manually to a list of "Wireless Profiles", and removing any other wireless networks' details. The PC would then connect to the VAP automatically whenever it was disconnected.

In windows you can achieve the previous by going to the Network Connections page in Control Panel, right click your wireless adapter, click properties, and go to the Wireless Networks tab. Click Add and add in your VAP's details manually. Once done, remove all other SSID entries, or at least move the VAP SSID to the top of the list.

Others have also reported that they needed to disable any other network connections on the Network Connections page before their wireless connection would work.

As mentioned earlier, once you are connected to the VAP, the connection appears to be dropped periodically, around every 20 to 30 minutes. This is likely a bug in the DD-WRT firmware that may be fixed in revisions later than 03/10. If you have set up automatic wireless connection as just mentioned, you should reconnect within a minute or so of a disconnection. (**Update Oct 6, 2007:** Still not fixed. Tested with DD-WRT pre-RC4-reloaded. Wireless connection from laptop to Fonera drops every 10 minutes and Fonera cannot join Host Router. On the other hand, Fonera as Client works fine, I'm updating this using it.)