Wi-Fire with Linux

• Long Range, High Performance	• Quick Installations for Most Distributions
• Take Advantage of Free Hotspots	• Freedom of Movement, Ease of Use
• Avoid deadspots	• Wander Around Indoors & Outdoors

The Wi-Fire has been widely enjoyed in the Linux market, where wireless in general, and long range wireless specifically, is often difficult to achieve.

The Wi-Fire is fully compatible with the Linux Community's zd1211rw driver modules, which make it easy to install and use right "out of the box" **on most recent distributions**. With this module, the Wi-Fire supports most standard wireless features, including WEP and WPA encryption, local regulation compliance (through channel masking), and even monitor mode and MAC address modification capabilities.

Requirements

- zd1211rw-module
- Userspace Device Firmware
- Kernel version 2.6.24 or more recent

zd1211rw Module

The Wi-Fire uses the community re-written driver, the zd1211b-rw module.

The zd1211rw has been included in the mainline kernel since Linux 2.6.18 However, although the hardware is supported by the current driver, the Wi-Fire uses the UW2453 radio which was not supported until Linux 2.6.23.

The zd1211rw module is located in your kernel's drivers' folder, under net -> wireless -> zd1211rw -> zd_usb.c

and can be also be downloaded from here [http://www.linuxwireless.org/en/users/Download] as part of the wireless drivers package. But since the module has been included since 2.6.18, it is unlikely you will need to download the driver.

However, the Wi-Fire was added as a Device ID to the zd1211brw's ID List only in March 2008, so if you have a kernel older than that, you will need to manually add the Wi-Fire to the Device ID list. This can be accomplished by:

Install and configure the kernel sources as you normally would, including the zd1211rw driver.

Open up drivers/net/wireless/zd1211rw/zd_usb.c in your favorite text editor. Towards the top of the file, you will see a table called **usb_ids**. The start of it looks like:

```
static struct usb_device_id usb_ids[] = {
        /* ZD1211 */
        { USB_DEVICE(0x0ace, 0x1211), .driver_info =
DEVICE_ZD1211 },
        { USB_DEVICE(0x07b8, 0x6001), .driver_info =
DEVICE_ZD1211 },
```

Look up the USB ID for your product (you can find this with **lsusb**). In this example we'll assume your device ID is 1111:2222. Add an entry similar to the one below to the table, so the start of the table now reads:

```
static struct usb_device_id usb_ids[] = {
        /* ZD1211 */
        { USB_DEVICE(0x1111, 0x2222), .driver_info =
DEVICE_ZD1211 },
        { USB_DEVICE(0x0ace, 0x1211), .driver_info =
DEVICE_ZD1211 },
        { USB_DEVICE(0x07b8, 0x6001), .driver_info =
DEVICE_ZD1211 },
```

The line that was added is highlighted in red. It is fairly self explanatory - you can how 1111:2222 was inserted into the table.

If you have a ZD1211B device (such as the Wi-Fire) then you must use DEVICE_ZD1211B instead of DEVICE_ZD1211.

To verify the Wi-Fire is recognized by your Linux system and the zd1211rw module successfully loaded, use *lsusb* and *lsmod* :

```
[root@localhost ~]# lsusb
Bus 001 Device 003: ID 0cde:001a Z-Com ZD1211B
```

```
[root@localhost ~]# lsmod
.
.

zd1211rw                44741  0
.
.
.
```

Userspace Device Firmware

The necessary device firmware is stored on the host computer, and loaded into the device RAM every time it is plugged in. The Device Firmware must be pulled in from user space.

Many distributions include the device firmware by default, including the most recent versions of Ubuntu and Fedora Core (if you can confirm this on other distros, please inform us). The location the firmware has to be put to varies from distribution to distribution. If the firmware loads correctly upon plug in, you should see something similar to the information below.

```
[root@localhost ~]# dmesg
.
.
.
usb 1-2: new full speed USB device using uhci_hcd and address 3
usb 1-2: configuration #1 chosen from 1 choice
usb 1-2: reset full speed USB device using uhci_hcd and address
3
phy0: Selected rate control algorithm 'pid'
zd1211rw 1-2:1.0: phy0
usbcore: registered new interface driver zd1211rw
udev: renamed network interface wlan0 to wlan2
zd1211rw 1-2:1.0: firmware version 4725
zd1211rw 1-2:1.0: zd1211b chip 0cde:001a v4810 full 00-60-b3
AL2230_RF pa0 g--NS
.
.
.
```

If your distribution did not include the firmware by default, it can be downloaded here:

http://sourceforge.net/project/showfiles.php?group_id=129083

or potentially included with standard upgrades through a distribution's periodic updates.

Sources

Please note: a great deal of information for this page was contributed by LinuxWireless.org and LinuxWireless.org developer Daniel Drake, to whom we are grateful for the support and helpful information.

Typical Usage

Once installed, the Wi-Fire works like any wireless network adapter, and you can use your preferred network utility to control the connections. GUI's such as knetmanager have been reported successful in the past, as well as the traditional command line utilities ifconfig and iwconfig.

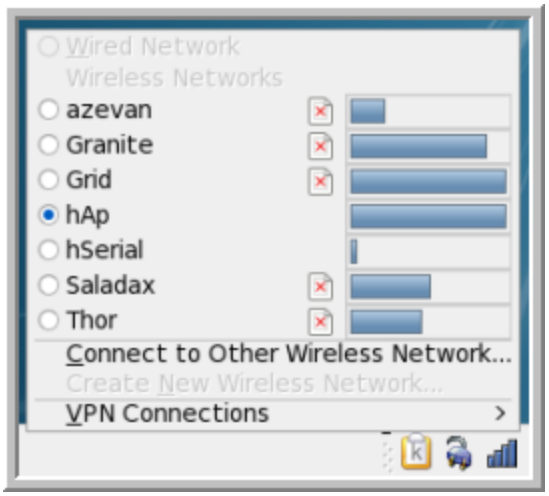

Figure 1 - Screenshot of knetmanager on a Suse machine

```
[root@localhost ~]# ifconfig wlan2
wlan2     Link encap:Ethernet  HWaddr 00:60:B3:98:F2:BB
          inet addr:192.168.149.56  Bcast:192.168.149.255
          Mask:255.255.255.0
          inet6 addr: fe80::260:b3ff:fe98:f2bb/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2 errors:0 dropped:0 overruns:0 frame:0
          TX packets:27 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:694 (694.0 b)  TX bytes:5277 (5.1 KiB)
```

Figure 2 – Screen capture of the Wi-Fire in use with *ifconfig* .

Links

LinuxWireless.org 's wireless package Wiki [http://www.linuxwireless.org/en/users/Download]

LinuxWireless.org's zd1211rw Wiki [http://www.linuxwireless.org/en/users/Drivers/zd1211rw]

Firmware Download [http://sourceforge.net/project/showfiles.php?group_id=129083]

iwconfig Man Page [http://linuxcommand.org/man_pages/iwconfig8.html]

ifconfig Man Page [http://linux.die.net/man/8/ifconfig]

Suse's knetmanager Site [http://en.opensuse.org/Projects/KNetworkManager]

Support

Although we have made every effort to provide you with accurate and informative Linux installation and usage instructions for the Wi-Fire, please understand that due to the inherently complex nature of Linux environments, from differences in distributions, setups, and kernel versions, we will be unable to provide technical support for the Wi-Fire on Linux machines. Most often, the best support is found in the Linux community in Wiki's and Forums, including the links shown above. Of course, hField is eager to offer support and troubleshooting on other issues including your WiFi environment and how to obtain the best performance out of your Wi-Fire once it is installed.

Contact

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