Simple Setup for Wireless LAN hardware

Unwired access

Setting up a wireless LAN need not be a difficult or daunting task. The hardware that is discussed in this review was chosen because it promises easy Linux installation and intergration into your current network. Standard devices and options were chosen making it easy for you to do yourself.

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The popularity of wireless LANs continues unabated. However, as our WLAN special in issue 25 November 2002 showed, setting up a wireless LAN on Linux is not always easy, some distributions do not even allow you to compile the required drivers. This is one of the reasons why this article will be focusing on WLAN devices that provide easy Linux integration.

The technical specifications of modern WLAN devices continue to converge, major differences are now uncommon. All of our candidates provide WEP 128 encryption, for example, and you would be well advised to use it. It is more or less impossible to provide consistent range figures; at frequencies of 2.4 Ghz, a mere change in the weather is all it takes to drastically impact the data transfer rate or even cut off a connection.

We did not include any IEEE 802.11a adapters, with a theoretical transfer rate of 54 Mbit/s as test candidates – for one thing Linux drivers for these cards are still experimental, and for another IEEE 802.11a adapters are targeted at professional users working in office complexes, and this is reflected in their pricing. We will not be looking at 22 Mbit/s cards either, as there is only one binary available for the Texas Instruments chipset at present, and it proved unstable in our test series.

Lancom AirLancer MC-11 PC Card

This is exactly what we were looking for in a Wireless LAN adapter on Linux: Plug & Play. The Prism 2 chipset on Lancom’s ([1]) AirLancer MC-11, which is built like the original Lucent card, has had full PCMCIA card services support for quite a while now; any, more or less, up-to-date distribution should provide drivers. Complicated configuration steps are unnecessary – the hermes, orinoco, and orinoco_cs kernel modules load automatically on inserting the card, and conveniently add an Ethernet device whose device name will be ethX).

Figure 1: The Lancom AirLancer MC-11 is easily configured using YaST 2; you can enter the network name and WEP key at this point.

We had no trouble setting up the card on SuSE Linux 8.1 using the YaST 2 Network Card Configuration module, although hardware recognition did not work and we were forced to take a detour via Others (not recognized). In the dialog box that follows, click on PCMCIA (lower left) first, specify the Ethernet type, and device number 1 if you have another Ethernet card already installed, or 0 if not. After checking Wireless Device you can use the Wireless LAN settings to specify the WLAN parameters for your environment, such as the network name and encryption (Figure 1).
If the WLAN includes an access point, choose Managed mode, and ensure that the network name and key are identical for all devices on the WLAN. After completing and saving the configuration, you will need to remove and re-insert the WLAN card to apply the new settings.

The Lancom AirLancer MC-11 is a useful candidate both on account of its simple setup, and because it provides an interface for an external antenna, which can increase your range. A high-gain antenna that provides an even greater range is available, and at around 90 Euro you can’t complain about the price.

**Intel Pro/Wireless 2011B PC-Card**

The Intel Pro/Wireless 2011B is not quite as easy to set up as the Lancom AirLancer. Although a quick look under the hood reveals more or less the same hardware, the Intel card needs a driver with additional firmware from [2]. Unpack the sources in /usr/src, and then type the following commands:

```
make -f Makefile.standalone
make -f Makefile.standalone
install
```

to compile and install. After completing these steps, the driver statement for the Intel card in /etc/pcmcia/config needs some attention. Locate the following entry:

```
card "Intel PRO/Wireless 2011"
manfid 0x0089, 0x0001
bind "orinoco_cs"
```

and replace the orinoco_cs driver in the last line with spectrum_cs. After doing so, save the file and call /etc/init.d/pcmcia reload. The remaining steps are exactly like the ones described for the Lancom AirLancer MC-11.

**SMC EZ Connect Wireless Access Point**

SMC’s Wireless Access Point 2655W V.2 ([3]) is conveniently compact – about the same size as a packet of cigarettes. The attached antenna can be swivelled through 180 degrees and tilted through 90 degrees to provide a functional position for wall or surface mounting. The power input is located between the antenna and the Ethernet connector, and this is unfortunate as the power adapter has an L-shaped connector that tends to become tangled with the antenna and the Ethernet cable.

The access point’s factory setting uses the IP 192.168.2.50, and it does not use DHCP in contrast to the Lancom IL-11. The reset button on the rear of the access point is a good idea though – you can use the button to restore the factory settings to remove faulty hardware address entries from the access control list. There is no need to worry about inadvertently resetting the access point, however, as a reset requires pushing and releasing the button within a specific interval.

A web front-end is used to configure the access points (Figure 2). One annoying thing is the fact that the device reboots whenever you change a value.
that the access point literally reboots every time you change a value, and this means logging back on and calling the setup page time and time again. Lancom provides a far better solution for its IL-11.

One or two issues occurred using the Konqueror web browser: some options provided by the web front-end were impossible to be modified using Konqueror; these included activating WEP encryption or the access control list – the settings were not kept, although we did store them. However, these issues were easily resolved by switching to Mozilla.

**Lancom Wireless IL-11 ISDN Access Router**

The shape of this ISDN router by Lancom [1] is interesting: the rear panel is convex, which prevents you from mounting the router directly on a wall and thus improving the performance of the transmitter. The router is supplied with a separate WLAN card (a Lancom AirLancer MC-11) that slots into an opening at the top of the device. This will allow the Lancom router to comply with future standards – a firmware update to 54 Mbits is available, for example.

The external antenna connector is another advantage the AirLancer laptop card provides. The connector allows you to attach an external, gain-enhanced antenna for improved transmission range.

Congratulations go to Lancom for the IL-11’s excellent installation routine: this is what Plug & Play is supposed to be about. The IL-11 automatically scans the wire attached to its Ethernet port to find a DHCP server and checks for IP address collisions. If it finds a DHCP Server, the IL-11 assigns itself an address, otherwise it looks for an empty subnet and activates its own DHCP Server.

Setting up your own network card simply involves telling it to use DHCP, the IL-11 takes care of the details from there.

In addition to a DHCP server, the IL-11 also provides firewalls, masquerading, a DNS server, an access control list, and is configurable via its Telnet port. The browser based configuration routine is highly intuitive; Lancom provides a number of wizards that configure the network environment after prompting you for a few details. Of course, experts can customize all of these parameters manually, if required.

The Access Router’s accounting feature is another useful facility. If you have enabled accounting on your ISDN line, the IL-11 will keep an eye on the costs, and automatically drop the link if a pre-defined threshold is reached.

**SEH IC-154 Wireless Printserver**

The IC-154 wireless printserver by SEH [4] does not provide manual configuration, although the device has two parallel ports and USB connectors, you cannot attach it directly to a computer. You simply have to rely on the automatic configuration working. The easiest way to go, is to use an access point with a DHCP Server – we opted for the Lancom IL-11. After attaching your printer, you simply press the blue button on the rear of the printserver to output the status page for the printserver to output the status page for the printer. The page should contain both the network name and the IP address.

The configuration steps that follow are browser based. The most important thing to look out for is choosing the right interface for 1 in the Logical printer menu; the parallel port is configured by default.

Having completed this phase, SuSE 8.1 users can then launch the YaST 2 Printer module. Network printers will not respond to automatic hardware recognition, so you can skip that step. When choosing the printer type, select the Show more connection types to open the network printer dialog box; we opted for LPD filtering and forwarding queue, typed in the IP of the printserver and the remote queue name, lp1 in our case. After selecting the printer model and filters, you can print out a test page and store the configuration changes.

**Conclusion**

Setting up a wireless LAN on Linux need not be difficult, but having said that, a restricted choice of hardware is the price you may need to pay for all this convenience.

The distributors are partly to blame for this, as they fail to supply pre-compiled drivers for most WLAN cards. Also the lack of support for Prism 2.5 and Prism 3 particularly restricts the choice of devices.

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