	Linksys WPC11		Orinoco Silver		Desktop 1	Desktop 2
	Pwr Save On	Pwr Save Off	Pwr Save On	Pwr Save Off	Intel 10/100	Real-Tek 10/100
Internet Speed, Kbps (Speakeasy.net, No WEP)						
Average Speed - Down	725	1972	1500	2179		
Average Speed - Up	181	199	88	185		
Signal Strength, dBm (See the Map!)						
Location 1	-62	-61	-55	-55		
Location 2	-61	-64	-66	-56		
Location 3	-62	-62	-60	-60		
Location 4	-72	-71	-68	-68		
Location 5	-48	-46	-49	-46		
Location 6	-71	-73	-64	-71		
Location 7	-50	-48	-46	-36		
Location 8	-80	-82	-76	-76		
Location 9	-79	-72	-70	-68		
Location 10	-73	-72	-63	-62		
Average signal	**-65.8**	**-65.1**	**-61.7**	**-59.8**		
LAN Throughput, Kbps (Qcheck, Averaged, No WEP)						
2332		Endpoint 1		Endpoint 2		
2396		Endpoint 2		Endpoint 1		
2499		Endpoint 2	Endpoint 1			
2492		Endpoint 1	Endpoint 2			
561	Endpoint 1		Endpoint 2			
393	Endpoint 2		Endpoint 1			
4567				Endpoint 2	Endpoint 1	
4616		Endpoint 2			Endpoint 1	
4515				Endpoint 2		Endpoint 1
4678		Endpoint 2				Endpoint 1
4572				Endpoint 2	Endpoint 1	
491	Endpoint 2				Endpoint 1	
543	Endpoint 2					Endpoint 1
7100					Endpoint 1	Endpoint 2
LAN Throughput, Kbps (Qcheck, Averaged, 64bit WEP)						
2985				Endpoint 2	Endpoint 1	
LAN Throughput, Kbps (Qcheck, Averaged, 64bit WEP)						
2183		Endpoint 2			Endpoint 1	
LAN Throughput, Kbps (Qcheck, Averaged, 128bit WEP)						
2947		Endpoint 2			Endpoint 1	
Device Information						
Driver	0.29.4d	0.29.4d	7.08	7.08		
Utility Version	4.06.0.0	4.06.0.0	2.18	2.18		
Firmware	00.08.03.00	00.08.03.00	4.04	4.04		
BEFW11S4 Firmware	1.39.2	1.39.2	1.39.2	1.39.2		

Additional

ISP @home, Compaq M700 W2K & Dell Cpi Windows 98 Laptops, ZoneAlarm 2.6.357, Norton AntiVirus 2000
Desktop 1: ZoneAlarm Pro, Norton Internet Security 2002; Desktop 2: Norton Antivirus 2000, ZoneAlarm 2.6.357

Testing Notes

Each test was run three times, and a mean value used. Both cards were tested for functionality in each system. The Orinoco was installed in the Dell, the Linksys in the Compaq, for the values reported. The cards were swapped between laptops to test the effect of the hardware and operating systems. Preliminary results showed no appreciable changes, but were not completed when after repeated PC Card removal and insertions, Windows 2000 lost the native Orinoco driver. Despite several attempts, I was able to restore functionality only with an earlier rev W2K driver.

The house is two story, approximately 2200 sq ft, with stucco exterior. Qcheck was set to 100kBytes/S. Wlanexpert was used to measure signal strength in the WPC11, the Orinoco utility for the Silver. Only TCP/IP protocol was loaded on each system. The desktops connect to the router through category 5 LAN cable at 100mbps, full duplex.

Internet speed tests on Cnet, 2Wire, DSL Reports, CUSeeMe World and MSN were used as sanity checks against Speakeasy. Any number of variables, including the construct of the tests themselves, contribute to widely ranging results. I tested throughput between the desktops as a reference point.

Observations

Signal strength had virtually no effect on the LAN throughput, until it was so weak as to cause the intermittent loss of the link. Even small movements of the units, vertically or rotated with respect to the horizontal, caused a fluctuation of up to 10 dBm. I made the measurements from a practical user position in each room, i.e., couch, table. I made no effort to find the signal sweet spot in any case. In no case did I lose the link with the Orinoco. In two locations, the Linksys card did lose the link occasionally. I had no easy way to test how well the power settings actually conserve power. If the Linksys, for example, used less power in the saver mode, its performance might be acceptably slow to some under some circumstances.

Both devices installed easily and worked immediately. The client software is intuitive and did not conflict with any other applications or utilities. No blue screen or other instability was observed. The Orinoco client was more cumbersome when changing parameters, using a wizard type approach. One must page through each of five screens, even if only changing a setting on the first. Both allow easy toggle between profiles for roaming between different networks or for changing WEP or power settings. I observed no interference from microwave or wireless telephones.

There are many more brands of wireless PC Cards than there are manufacturers. Many identical cards are sold under different badges with very different prices. All radio frequency devices must be certified by the FCC, which maintains a database of the products. Look for the FCC certification code, beginning with a three character prefix. The Linksys is o7j, the Orinoco, imr. Go to fcc.gov for additional information on power output, specifications and manufacturer. Caution; firmware matters and different badges *MAY* contain different code.

Conclusions

• The Linksys bested the Orinoco slightly with the default settings and in the presence of a strong signal.
• The Orinoco was the better card, both in throughput and range, in the low power mode.
• While the Orinoco had a stronger, more stable link on the periphery of the test area, both covered my environment well.
• Power saver mode clearly affects performance critically, more so with the WPC11 than the Orinoco.
• The poorest throughput was obtained between two wireless links with both in power saver mode.
• Signal strength measurements do not vary widely in the same location, either between devices or with power saver mode enabled.
• Significant throughput is available with either client card under the proper circumstances. Slower than LAN.
• Internet speed tests, while able to provide general trend comparisons, are too variable to offer much value.
• Since I did not use a common signal strength tool (neither will work on both chipsets), those values should be viewed with caution.
• WEP did degrade performance, although 128 bit on the Linksys seemed to impose no penalty over 64 bit.
• 128 bit WEP is not available on the Silver. No Gold card was available, so no testing was done with that configuration.
• No WEP testing was done in power saver mode.
• The Silver has an external antenna jack. That feature alone may drive your decision if you need it.
• Your worst day with wireless beats the heck out of your best day on dial-up.

Recommendations

RF can be pretty finicky. Your environment may produce very different results. A flexible return policy may be the most important decision factor in buying and building a wireless solution. If you can, borrow a friend's gear for some experimenting first. If you're not the adventurous type, there are folks who do this for a living - and for a price.

10 ★
Patio table, 25' from rear of house

SECOND FLOOR PLAN

MASTER BATH

MASTER
BEDROOM

walk in closet

7 ★

6 ★

PLAYROOM

5 ★
BEDROOM

AP

BATH

dn

linen

BEDROOM 8 ★

BEDROOM
9 ★

Windows may vary
per elevation

FAMILY
ROOM

1 ★

NOOK

2 ★

island

KITCHEN

pantry

d/w

ref.
space

oven/
range

fireplace

media
alcove

LIVING
ROOM

DINING
ROOM

3 ★

4 ★

ENTRY

up

LAUNDRY

washer
space

dryer
space

w/h

POWDER

PORCH

Windows, columns and
posts may vary
per elevation

TWO-CAR GARAGE

FIRST FLOOR PLAN