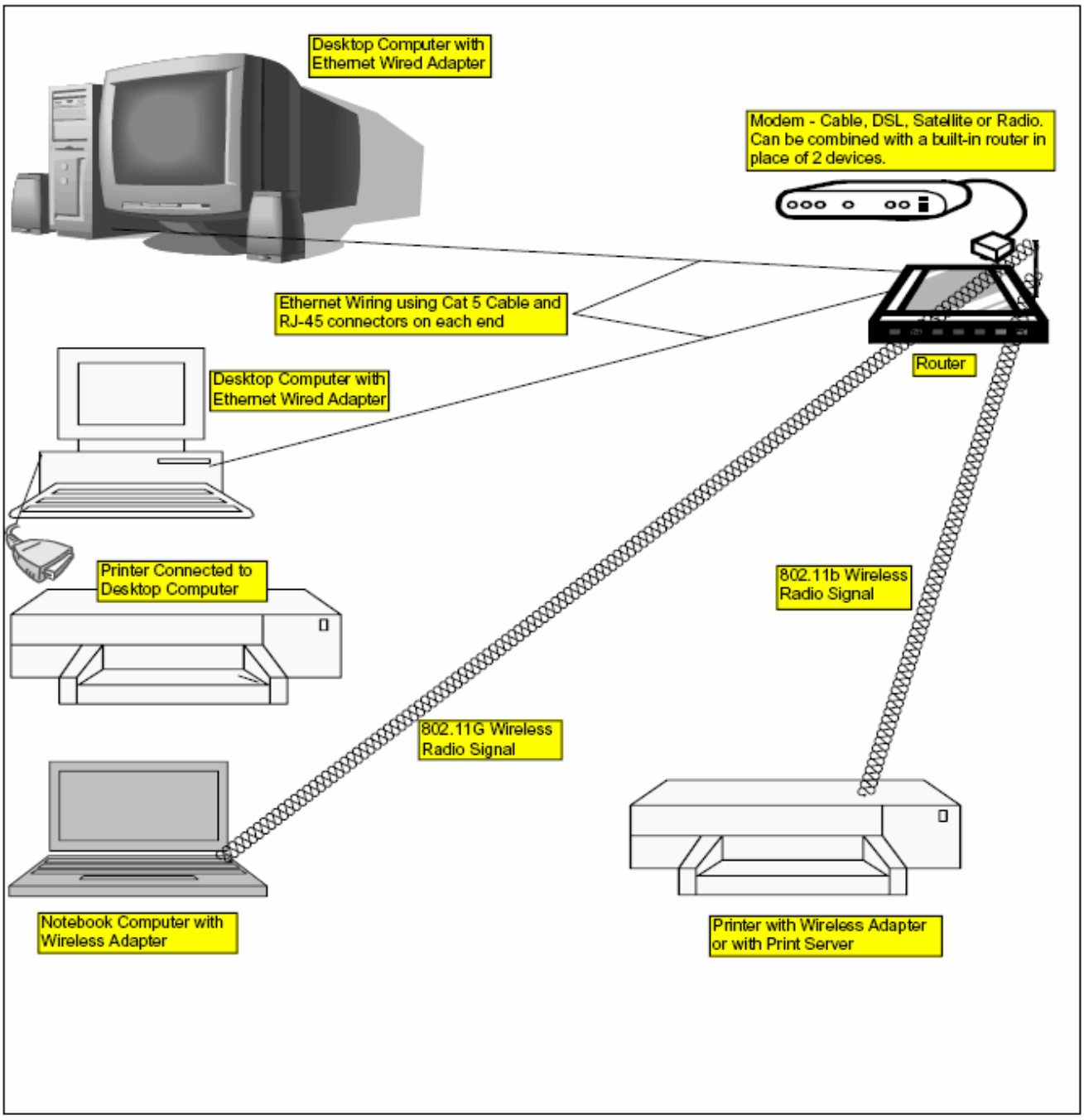
Basic Home and Small Office Networking
Equipment Options

See next page for recommended hardware items

By Ron Mettler November 5, 2006



Suggested Equipment Choices for Pictured Configuration

Routers

D-Link WBR-2310 or DI-624	Approximate Price	$80
or		
Linksys WRT54GS	Approximate Price	$80

Wireless Adapters for Computers

D-Link Desktop Computer Card		
DWL-G520	Approximate Price	$70
D-Link USB Adapter		
DWL-G132	Approximate Price	$70
D-Link Notebook Cardbus Adapter		
DWL-G650	Approximate Price	$70
or		
Linksys Desktop Computer Card		
WMP54GS	Approximate Price	$70
Linksys USB Adapter		
WUSB54GSC	Approximate Price	$70
Linksys Notebook Cardbus Adapter		
WPC54GS	Approximate Price	$70

Wireless All-In-One Printer/Scanner/FAX

HP Officejet 6310	Approximate Price	$213

Print Server for USB Printer

D-Link DP-G310	Approximate Price	$90
or		
Linksys WPS54G	Approximate Price	$100

Ethernet Cables are available in pre-assembled lengths with connectors installed. Cable may also be purchased in bulk to be cut to length. The installation of connectors, wall outlets and plates requires special tools and skills.

Note – There are several additional brands on the market for all of the above items. This author has configured and used all of the above listed options. The above options provide for Speed-Booster equipment that may or may not provide additional speed in any given installation. Other brands may be just a good or possibly better in some cases. Sale prices are found almost weekly. Recent sale prices for the routers were $60 and for the various cards, the sale prices were $50.

Windows operating systems that support networking include all versions from Windows 95 through Windows XP. Windows XP and the upcoming Windows Vista include enhanced support for configuring network systems including wireless devices.

Linksys Devices – WRT54GS router with wireless radio, WMP54GS PCI wireless desktop computer card, WUSB54GSC USB wireless adapter, WPC54GS card bus wireless adapter.

D-Link Devices – DI-624 router with wireless radio, DWL-G520 PCI wireless desktop computer card, DWL-G132 USB wireless adapter, DWL-G650 card bus wireless adapter.

This is an Ethernet wired network interface card (NIC). The Cat 5 Ethernet cable from a router would connect to this desktop computer NIC with an RJ-45 connector on the end of the cable. A notebook computer may also contain an Ethernet NIC in which case the connector shown on the card below would be visible somewhere on the notebook computer.

Desktop computer Ethernet card

RJ-45 Connectors on Cat 5 Ethernet Cable

Category 5

The original specification for category 5 cable was defined in ANSI/TIA/EIA-568-A, with clarification in TSB-95. These documents specified performance characteristics and test requirements for frequencies of up to 100 MHz.

Category 5 cable includes four twisted pairs in a single cable jacket. It is most commonly used for 100 Mbps networks, such as 100BASE-TX Ethernet, although IEEE 802.3ab defines standards for 1000BASE-T - Gigabit Ethernet over category 5 cable. Cat 5 cable typically has three twists per inch of each twisted pair of 24 gauge copper wires within the cable.

The twisting of the cable reduces electrical radio frequency interference which causes crosstalk. Also, the wires are insulated with a plastic (FEP) that has low optical dispersion, that is, the dielectric constant of the plastic does not depend greatly on frequency. Special attention also has to be paid to minimizing impedance mismatches at connection points.