Network Terms

10Base-T: 10Base-T is the Ethernet wiring standard for 10 Mbps (megabits per second) for a maximum distance of approximately 100 meters per segment over unshielded twisted pair cables terminated with RJ-45 connectors.

RJ-45 Connectors: Similar connector to your telephone connections (Cables/wall plugs – RJ-11) but larger.

BNC: A BNC (Bayonet Neil-Concelman, or sometimes British Naval Connector) connector is used to connect a computer to a coaxial cable in a 10BASE-2 Ethernet network. 10BASE-2 is a 10 MHz baseband network on a cable extending up to 185 meters - the 2 is a rounding up to 200 meters - without a repeater cable. The wiring in this type of Ethernet is thin, 50 ohm, baseband coaxial cable.

CAT 5e/CAT 6: **Cat6 cables**, also called **Category 6** or **Cat 6** cables, provide lower crosstalk, a higher signal-to-noise ratio, and are suitable for 10GBASE-T (10-Gigabit Ethernet), while **Cat5e** cables support only up to 1000BASE-T (Gigabit Ethernet). Cat5e and Cat6 cables are both backwards compatible, which means newer Cat6 cables can be used with older Cat5e, Cat5 and even Cat3 equipment.

Crossover Cable: A cross-over cable is a segment of cable that crosses over pins 1&2 and 3&6. This cable is normally used to connect two PCs without the use of a hub, or can be used to cascade two hubs without using an uplink port. Some DSL modems require a crossover cable to the PC or hub they are connected to.

MAC Address (Ethernet HW Address): The Media Access Control (MAC) address is a binary number used to uniquely identify computer network adapters. These numbers (sometimes called "hardware addresses" or "physical addresses") are embedded into the network hardware during the manufacturing process, or stored in firmware, and designed to not be modified.

IP Address: An **IP address** (abbreviation of **Internet Protocol address**) is an identifier assigned to each computer and other device (e.g., printer, router, mobile device, etc.) connected to a TCP/IP network that is used to locate and identify the node in communications with other nodes on the network. IP addresses are usually written and displayed in human-readable notations, such as 172.16.254.1 in IPv4, and 2001:db8:0:1234:0:567:8:1 in IPv6.

Version 4 of the Internet Protocol (IPv4) defines an IP address as a 32-bit number. However, because of the growth of the Internet and the depletion of available IPv4 addresses, a new version of IP (IPv6), using 128 bits for the IP address, was developed in 1995, and standardized in 1998. Its deployment commenced in the mid-2000s and is ongoing.

TCP/IP: TCP/IP stands for **Transmission Control Protocol/Internet Protocol**, which is a set of networking protocols that allows two or more computers to communicate.

DHCP: Dynamic Host Configuration Protocol (**DHCP**) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.

Network Terms

IEEE 802.11 Standards: There are 25 standards (802.11A – Y) but the ones that mainly concern general use is the 802.11a, b, g, n & ac. The main ones are 802.11n & 802.11ac although 802.11g is applicable.

802.11 Wireless Standards					
IEEE Standard	802.11a	802.11b	802.11g	802.11n	802.11ac
Year Adopted	1999	1999	2003	2009	2014
Frequency	5 GHz	2.4 GHz	2.4 GHz	2.4/5 GHz	5 GHz
Max. Data Rate	54 Mbps	11 Mbps	54 Mbps	600 Mbps	1 Gbps
Typical Range Indoors*	100 ft.	100 ft.	125 ft.	225 ft.	90 ft.
Typical Range Outdoors*	400 ft.	450 ft.	450 ft.	825 ft.	1,000 ft.

Wireless Bands: Currently the main two bands used are 2.4GHz and 5GHz.

2.4GHz band - all versions of Wi-Fi up to and including 802.11n (a, b, g, n) operate between the frequencies of 2400 and 2500MHz. These 100MHz are separated into 14 channels of 20MHz each. This means there are overlapping channels (2 to 4 channels)

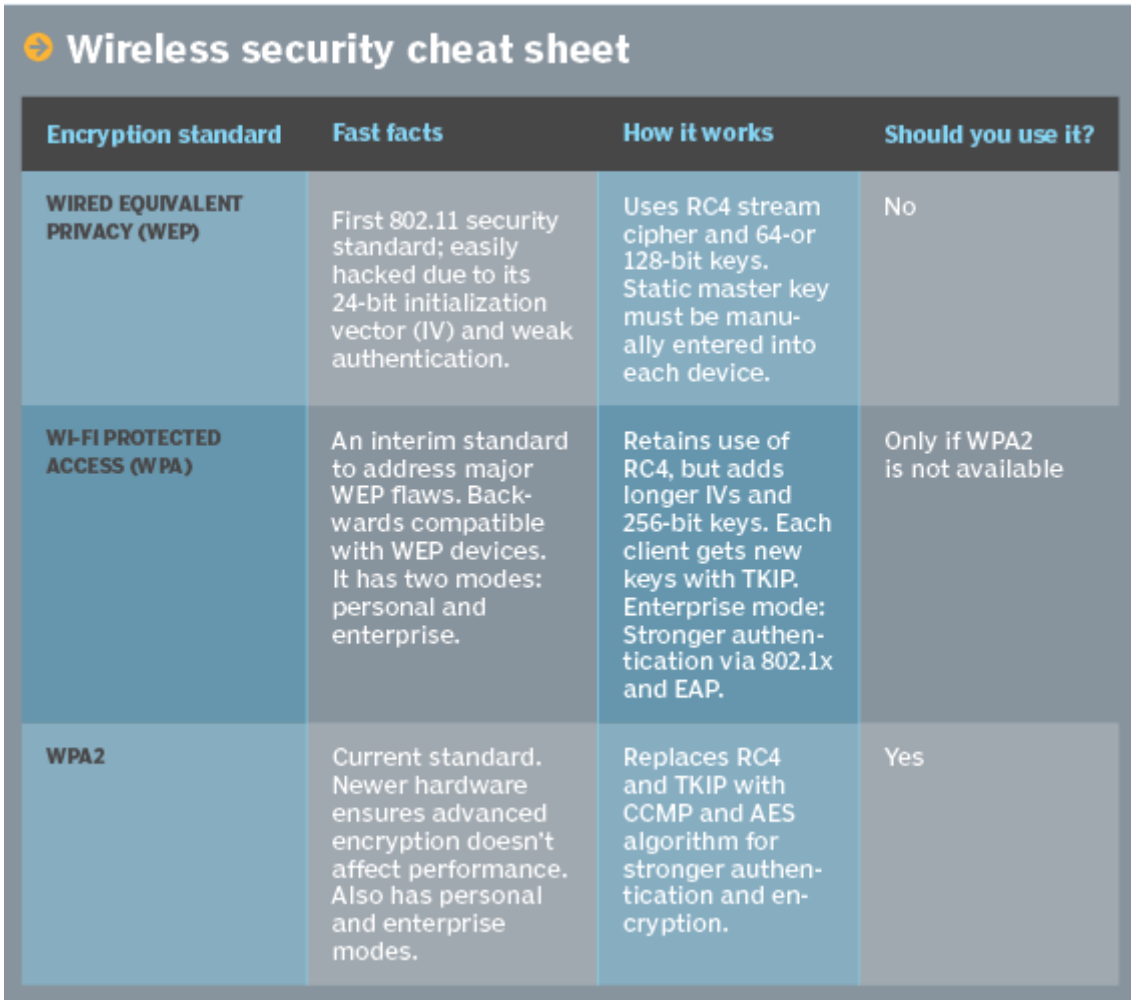
The great thing about 5GHz (802.11n and 802.11ac) is that because there's much more free space at the higher frequencies, it offers 23 non-overlapping 20MHz channels.

Starting with 802.11n and continuing with 802.11ac, wireless technology in general became much more advanced than the earlier days of 802.11b and g. If you own at least a decent 802.11n or 802.11ac router (i.e. if you bought a router in the last several years), it likely has some hardware inside that chooses the right channel automatically and modifies the output power to maximize throughput and minimize interference.

SSID: A Service Set Identifier (SSID) is a sequence of characters that uniquely names a wireless local area network (WLAN). An SSID is sometimes referred to as a "network name." This name allows stations to connect to the desired network when multiple independent networks operate in the same physical area.

Wireless Network Security: Most wireless access points come with the ability to enable one of three wireless encryption standards: Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA) or WPA2. WPA2 is the latest and currently the most widely used.

Network Terms



Wireless security cheat sheet

Encryption standard	Fast facts	How it works	Should you use it?
WIRED EQUIVALENT PRIVACY (WEP)	First 802.11 security standard; easily hacked due to its 24-bit initialization vector (IV) and weak authentication.	Uses RC4 stream cipher and 64-or 128-bit keys. Static master key must be manually entered into each device.	No
WI-FI PROTECTED ACCESS (WPA)	An interim standard to address major WEP flaws. Backwards compatible with WEP devices. It has two modes: personal and enterprise.	Retains use of RC4, but adds longer IVs and 256-bit keys. Each client gets new keys with TKIP. Enterprise mode: Stronger authentication via 802.1x and EAP.	Only if WPA2 is not available
WPA2	Current standard. Newer hardware ensures advanced encryption doesn't affect performance. Also has personal and enterprise modes.	Replaces RC4 and TKIP with CCMP and AES algorithm for stronger authentication and encryption.	Yes

URI: A Uniform Resource Identifier (URI) is an addressing technology for identifying resources on the Internet or a private intranet. The terms URI and URL are used synonymously.

Depending on how you communicate with your device you may need to specify a URI for your printer.
Here are some examples using sample IP addresses and hostnames.

TCP/IP Print Server / Jet Direct
socket://3.4.5.66:9100/

Internet Printing Protocol
http://printhost:631/printers/*printername*
ipp://printhost/printers/*printername*

LPD/LPR Host or Printer (Line Printer Daemon protocol/Line Printer Remote protocol (or **LPD**, **LPR**))
lpd://printhost2/*printername*

To create a HP Printer URI use the console/terminal (Using HPLIP software/drivers)

Enter this command to search for the printer URI: (Example: "hp-makeuri 192.168.1.100")