Netgear is creating wireless networking solutions that focus on computing freedom and reduced infrastructure costs. NETGEAR's wireless LAN (WLAN) technology can help solve access in hard-to-reach areas improving workforce mobility and productivity. NETGEAR's WLAN solution also allows an infrastructure that can grow and move with an organization.

802.11b Standard

International standard for wireless networking that operates in the 2.4 GHz frequency range (2.4 GHz to 2.4835 GHz) and provides a throughput of up to 11 Mbps.

802.11b Benefits: *Optimal choice for less dense networks in larger areas*

- **Speed:** 11 Mbps Data Link Rate adequate for many applications
- **Adoption**: Large installed base in both business and homes for easiest migration between the two locations, also being deployed in "hot spots" such as hotels, airports and Starbucks.
- **Cost:** Lowest cost solution when implementing small wireless networks
- **Capacity:** 32 users per Access Point

Consider using 802.11b if:
- Range requirements are more important than network density
- End users are sparsely populated
- Fewer users competing for each access point's total throughput (i.e., warehouses,

802.11a Standard

An IEEE specification for wireless networking that operates in the 5 GHz frequency range (5.725 GHz to 5.850 GHz) with a maximum 54 Mbps data transfer rate.

802.11a Benefits: *Optimal choice for dense networks with bandwidth intensive applications*

- **Interference** - Free from interference from 2.4 GHz cordless phones, microwave ovens, etc.; seamlessly co- exists with Bluetooth™ and 802.11b devices
- **Speed** - 2 to 5 times the data link rate of 802.11b in a typical office environment up to 255 feet.
- **Range** - Similar range compared to 802.11b in a typical office environment up to 255 feet
- **Density** - 802.11a systems have more available non-overlapping channels than 802.11b to allow higher system capacity than 802.11b systems (up to 8 access points can be co-located before they begin sharing channel bandwidth versus 3 for 802.11b)
- **Cost** - Higher price point, but increased density and throughput potentially lowers costs per user and price per Mbps.
- **Capacity** - 64 users per Access Point

Consider using 802.11a if:
- Higher performance requirements/speed requirements
- bandwidth intensive applications such as voice, video & transmission of large files
- Presence of significant RF interference present within 2.4 GHz band (need for clean frequency)
- Cordless phones, Bluetooth & microwave ovens
- Densely populated network of end users
- More users per access point, i.e., dormitory, computer labs, convention centers
- Higher concentration of users offering better total throughput

Dual Band Offerings

Fully IEEE 802.11a (5 GHz) and 802.11b (2.4 GHz) compliant for wireless network

Dual Band Benefits: *Ultimate in interoperability and protects existing WLAN investment*

- **Access Points & Routers** - simultaneous 802.11a and 802.11b interoperability
- **Client Adapters** (PC Cards, USB & PCI cards) – 802.11a OR 802.11b connectivity
- **Seamlessly roam** - between 802.11b and 802.11a networks (home, hot spots, office)
- **Architecture** - eliminates any backward compatibility concerns and preserves infrastructure investment, maintaining overall affordability.
  - Will interoperate with IEEE 802.11g standard when it becomes available
  - Offers both 802.11a and 802.11b along with the option of using either

WIRELESS IEEE STANDARDS COMPATABILITY CHART

Physical Layer Protocol	802.11a IEEE & WiFi	802.11b IEEE & WiFi	Dual Band IEEE & WiFi	802.11g Est. May'03	802.11b+ (non-standard)
802.11a	Yes	No	Yes	No	No
802.11b	No	Yes	Yes	Yes	No
Dual Band	Yes	Yes	Yes	Yes	No
802.11g	No	Yes	Yes	Yes	No
802.11b+ (non-standard)	No	No	No	No	Yes

WIRELESS IEEE STANDARDS COMPARISON

	802.11b IEEE & WiFi	802.11a IEEE & WiFi	Dual Band IEEE & WiFi	802.11g Est. May '03	802.11b+ (non-standard)
Standard Ratified	Sept 99	Sept 99	Sept 99	Est. May '03	Never
Raw Data Rates	11 Mbps	54* Mbps	11 & 54** Mbps	54 Mbps	22 & 44 Mbps
Average Actual Throughput	4-5 Mbps	27 Mbps	27 Mbps	20-25 Mbps (tbd)	6 Mbps
Frequency	2.4 GHz	5 GHz	2.4 & 5 GHz	2.4 GHz	2.4 GHz
Available Spectrum	83.5 MHz	300 MHz	300 MHz	83.5 MHz	83.5 MHz
Modulation Encoding	DSSS/CCK	OFDM	DSSS/CCK & OFDM	DSSS/PBCC	PBCC
# Channels/ non-overlapping	11/3	12/8	11/3 + 12/8	11/3	11/3

* 72 Mbps in Turbo mode
** 108 Mbps in Turbo mode

Proprietary Offerings

Benefits: *(Example -> 802.11b+ PBCC-22 Mbps)*

- *Performance* -Typically delivers only marginal performance gains.
- *Latency -* Typically requires switching between coding schemes, adding latency and eliminating marginal performance gains.
- *Interoperability* - Not part of the IEEE or Wi-Fi standards - cannot be assured of interoperating with existing certified standards.