
Wireless LAN

This appendix describes Wireless LAN features and TOSHIBA Wireless LAN card specifications. For details on Wireless LAN settings, refer to the LAN Card Settings and Client Manager help file. These references have the latest information.

About Toshiba Wireless Solution

The Wireless LAN Card Kit enables you to:

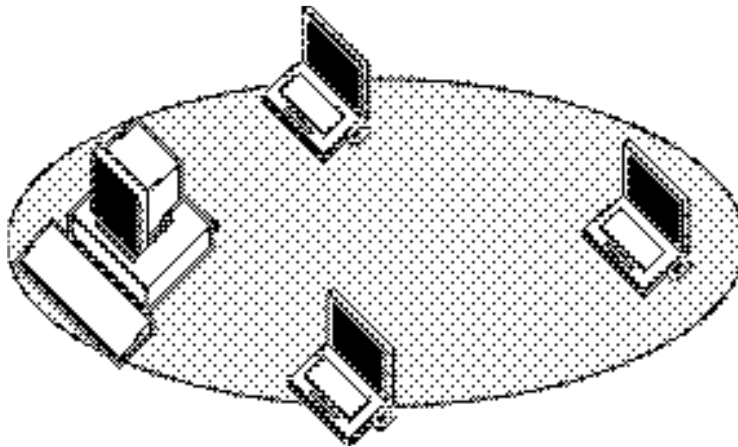
- Connect your computer to a peer-to-peer workgroup of wireless computing devices.
- Connect your computer to a Local Area Network (LAN) Infrastructure that includes Wireless LAN Access Points, or other IEEE802.11 compliant LAN systems.
- Expand the capabilities of your Wireless LAN Access Points, to support wireless devices that have been equipped with Wireless LAN Card.

NOTE: The internal Wireless LAN Card can't be used with the "Toshiba Wireless LAN PC Card".

Peer-to-Peer Workgroup

The Peer-to-Peer workgroup configuration enables you to quickly set up a small wireless workgroup, where the workgroup participants can exchange files using features such as *Files and Printer Sharing* as supported by Microsoft Networking.

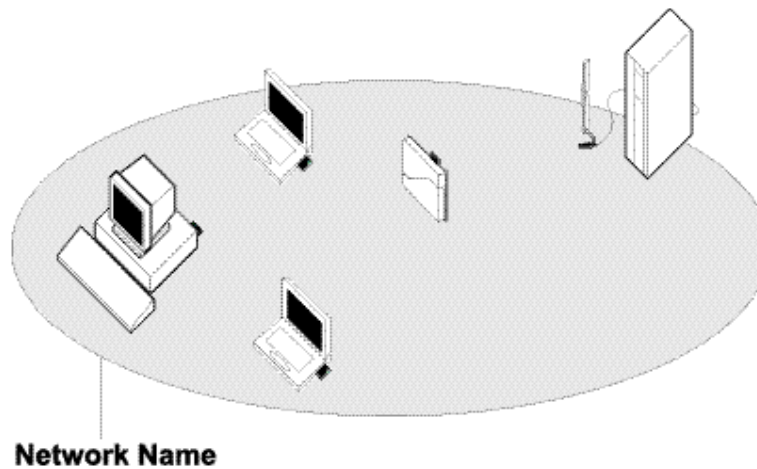
Figure 1-1 **Peer-to-Peer Wireless Workgroup**



You can use this option to setup a temporary or ad-hoc network in environments where no access points are available, for example in Small Office/Home Office (SOHO) environments.

As long as the stations are within range of one another, this is the easiest and least expensive way to set up a wireless network.

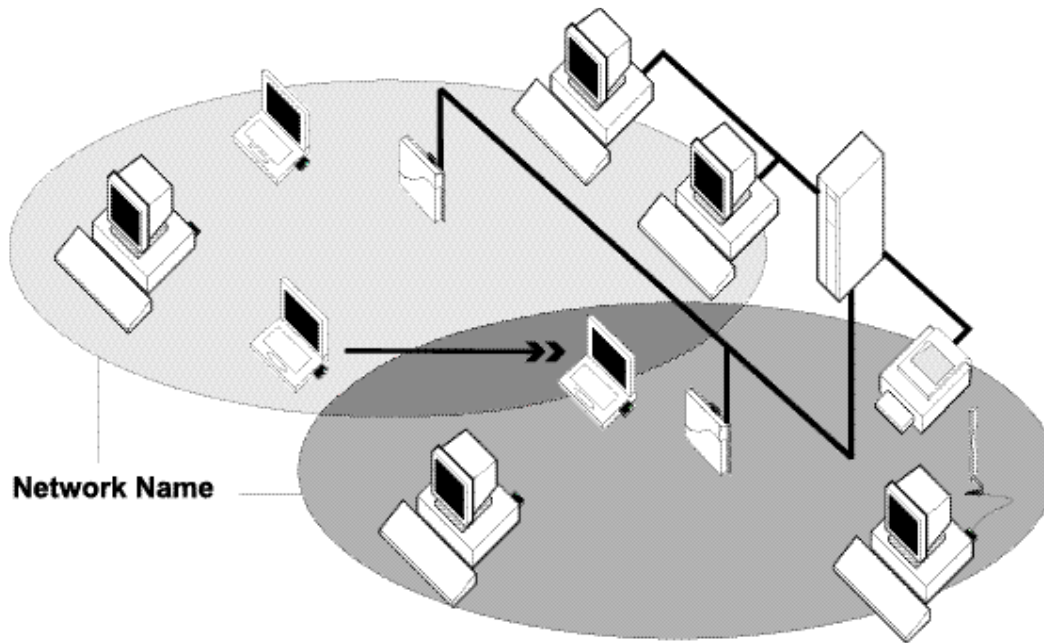
Figure 1-2 Stand Alone Wireless LAN



With the Wireless LAN Access Points you can connect to a corporate Local Area Network (LAN) infrastructure to have wireless access to all network facilities. LAN Infrastructures may either be.

- Stand-alone wireless LANs as pictures in Figure 1-2
- Wireless network infrastructures connected to an existing Ethernet network as pictured in Figure 1-3.

Figure 1-3 LAN Infrastructure



Configuration

The Wireless LAN Card functions like any standard wired Ethernet card except it gives you the freedom of Wireless connections.

Where an Ethernet card requires a cable connection to a hub and/or patch panel, the cable physically limits the location of the wired connection.

A Wireless LAN allows you connect your computer to a Local Area Network (LAN) from anywhere within the Wireless coverage area.

NOTE: The Wireless LAN Card is a radio product. Refer to the flyer Information to the User for regulatory information that may apply in your country/region.

Wireless LAN Card Features

Toshiba Wireless LAN mini-PCI Card is a wireless network card that fits into a Mini-PCI TypeIII slot.

Wireless LAN Card Types

The Wireless LAN Card is a wireless network card that complies with the IEEE 802.11 standard on wireless LANs (Revision A ,B, Turbo Mode). Revision A supports data rates up to 54 Mbit/s. Revision B supports data rates up to 11 Mbit/s. Turbo Mode supports data rates up to 108 Mbit/s.



is a Certification Mark of the Wireless Ethernet Compatibility Alliance, Inc.,

- Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA). This means that your Wireless hardware will communicate with other vendors' IEEE 802.11 compliant wireless LAN product.
- Fully compatible with any other wireless LAN system based on Direct Sequence Spread Spectrum (DSSS) radio technology that complies with the "IEEE 802.11 standard on wireless LANs (Revision A or B).

Wireless LAN Cards

The Wireless LAN Card supports the following wireless LAN features:

- Automatic Transmit Rate Select mechanism in the transmit range of 54,48,36,24,18,12, 9 and 6 Mbit/s. (Revision A)
- Automatic Transmit Rate Select mechanism in the transmit range of 11, 5.5, 2 and 1 Mbit/s. (Revision B)
- Automatic Transmit Rate Select mechanism in the transmit range of 108,96,72,48,36, 24,18 and 12 Mbit/s. (Turbo Mode)
- Frequency Channel Selection (5GHz:Revision A / 2.4GHz:Revision B).
- Roaming over multiple channels.
- Card Power Management.
- Wired Equivalent Privacy (WEP) data encryption, based on 152bit encryption algorithm.
- Advanced Encryption Standard (AES) data encryption, based on 256bit encryption algorithm.

Card Specifications

Form Factor	- Mini PCI TypeIII
Capability	- IEEE 802.11 Standard for Wireless LANS (DSSS) Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA)
Network Operating System	- Microsoft Windows® Networking
Media Access Protocol	- CSMA/CA (Collision Avoidance) with Acknowledgment (ACK)
Data Rate	- 54/48/36/24/18/12/9/6 Mb/s (Revision A) - 11/5.5/2/1 Mb/s (Revision B) - 108/96/72/48/36/24/18/12 Mb/s (Turbo Mode)

Radio Characteristics

Radio Characteristics of Wireless LAN Cards may vary according to:

- country/region where the product was purchased
- Type of product

Wireless communication is often subject to local radio regulations. Although Wireless LAN Wireless networking products have been designed for operation in the license-free 2.4GHz and 5GHz band, local radio regulations may impose a number of limitations to the use of wireless communication equipment.

NOTE: Refer to the flyer "Information to the User" for regulatory information that may apply in your country/region.

R-F Frequency	-Band 5GHz (5150-5850 MHz) (Revision A, Turbo Mode) -Band 2.4GHz (2400-2483.5 MHz) (Revision B)
Modulation Technique	Direct Sequence Spread Spectrum -CCK, DQPSK, DBPSK (Revision B) -OFDM-BPSK, OFDM-QPSK, OFDM-16QAM, OFDM-64QAM (Revision A)

The range of the wireless signal is related to the Transmit Rate of the wireless communication. Communications at lower Transmit range may travel larger distances.

- The range of your wireless devices can be affected when the antennas are placed near metal surfaces

and solid high-density materials.

- Range is also impacted due to “obstacles” in the signal path of the radio that may either absorb or reflect the radio signal.

Supported Frequency Sub-bands

Subject to the radio regulations that apply in your country, your Wireless LAN Card may support a different set of 5GHz and 2.4 GHz channels

Consult your Authorized Wireless LAN or TOSHIBA Sales office for information about the radio regulations that apply in your country/region.

Wireless IEEE 802.11 Channels Sets (Revision B)

Frequency Range	2400-2483.5 MHz
Channel ID	
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457*
11	2462

* Factory-set default channels

When installing Wireless LAN Cards, the channel configuration is managed as follows:

- For wireless clients that operate in a Wireless LAN Infrastructure, the Wireless LAN Card will automatically start operation at the channel identified by the Wireless LAN Access Point, When roaming between different access points the station can dynamically switch to another channel if required.
- For Wireless LAN Cards installed in Wireless clients that operating in a peer-to-peer mode, the card will use the default channel 10.
- In a Wireless LAN Access Point, the Wireless LAN card will use the factory-set default channel (printed in bold), unless the LAN Administrator selected a different channel when configuring the Wireless LAN Access Point device.

Wireless IEEE 802.11 Channels Sets (Revision A)

Frequency Range	5150-5850 MHz	Area
Channel ID		
36	5180	EU,US
40	5200	EU,US
44	5220	EU,US
48	5240	EU,US
52	5260	EU,US
56	5280	EU,US
60	5300	EU,US
64	5320	EU,US
149	5745	US
153	5765	US
157	5785	US
161	5805	US

Wireless Channels Sets (Turbo Mode)

Frequency Range	5150-5850 MHz	Area
Channel ID		
42	5210	US
50	5250	US
58	5290	US
152	5760	US
160	5800	US