Lenovo(Japan), Ltd., Date: **July 9, 2008**
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User's Manual

The attachment is the user's manual of the specific Lenovo host PC devices in this application, which indicates the regulatory notice concerning the FCC Part 2, 15B, 22H and 24E.

In addition, some electronic information referred to in the user's manual is installed in each host PC device, and it is displayed on the LCD screen.

The contents are similar for all the Lenovo host PC devices, so the manual for ThinkPad X300 Series represents hereafter.

Part Number: MP_Eric

ThinkPad® Regulatory Notice for Wireless WAN adapter

Read first — regulatory information

Please read this document before you use the ThinkPad computer. Be sure to also read *ThinkPad Regulatory Notice*, included with your computer. ThinkPad computer complies with the radio frequency and safety standards of any country or region in which it has been approved for wireless use. You must install and use your computer in strict accordance with the instructions as described hereafter.

USA — Federal Communications Commission (FCC)

If your computer integrates the Wireless WAN adapter (Model: F3507g), you may connect it to the radiocommunication Public Network in the USA. This Wireless WAN adapter is only certified with the FCC.

I. FCC ID of wireless module

The Wireless WAN adapter (Model: F3507g) was certified under the FCC ID: VV7-MBMF3507G-L, but there is no FCC ID for the card shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the FCC ID on the bottom side of your computer. For the location of the FCC ID indicator, see the "Location of the FCC ID and IC Certification number label" section in *Access Help*. The FCC ID is affixed on the approved module installed in the Mini PCI Express Card slot. For the location of the slot, see the "PCI Express Mini Card slot for wireless WAN" section in *Access Help*.

II. Installation of approved wireless module

If no integrated wireless WAN Mini PCI Express Card has been preinstalled in your ThinkPad computer, you can install one, provided by Lenovo as an option. Plug the wireless card option into the Mini PCI Express Card slot. For the installation procedure, see the "Installing and replacing the PCI Express Mini Card for wireless WAN connection" section in *Access Help*.

Attention: The ThinkPad computers contain an authentication mechanism. If you install an unauthorized wireless WAN Mini PCI Express Card that is not approved for use in your computer, the computer will not start, but only displays an error message and emits beeps.

III. FCC RF safety requirement

The radiated output power of the Wireless WAN Mini PCI Express Card authorized to use for your ThinkPad computer is far below the FCC radio frequency exposure limits. Nevertheless, it shall be used in such a manner that the potential for human contact during normal operation is minimized as follows:

Caution: To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm (8 inches) must be maintained between the antenna for the integrated Wireless WAN Mini PCI Express Card built into the screen section and all persons. You are not allowed to disable ″sleep (standby) mode″ for the power management function, if you cannot maintain the sufficient antenna separation (at least 20 cm) in any case the LCD is left opened or closed.

For the location of the antenna, see the ″About your computer″ section in Access Help.

IV. Emergency Calls

The Wireless WAN adapters embedded in the ThinkPad computer do not support voice calls, hence their use for essential communication is not possible, including emergency calls regarding the E911 rule.

V. Simultaneous use of RF transmitters

If your ThinkPad computer contains the Wireless LAN adapter (FCC ID: PPD-AR5BHB63-L, PD9LEN512ANMU or PD9533ANMU), the Bluetooth module (FCC ID: QDS-BRCM1033) or the Wireless USB Card (FCC ID: V4EUWB3480MPE), the Wireless WAN adapter (Model: F3507g) is approved for simultaneous use with these radio devices.

Please make sure of the following conditions on use of these wireless features:

1. When you use any other RF option device, all other wireless features including the above integrated devices in your ThinkPad computer are required to be turned off.
2. Users must follow the RF Safety instructions on wireless option devices that are included in the RF option device’s user’s manual.

Electronic emission notices

Federal Communications Commission (FCC) Statement

- Model: F3507g

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

Lenovo (United States) Incorporated
1009 Think Place-Building One
Morrisville, NC 27560
Telephone: 1-919-294-5900

Tested To Comply
With FCC Standards

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Lenovo
ThinkPad

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Printed in China

For Barcode Position Only

The screen copies of electronic user's guidance are extracted hereafter.

ThinkPad tour

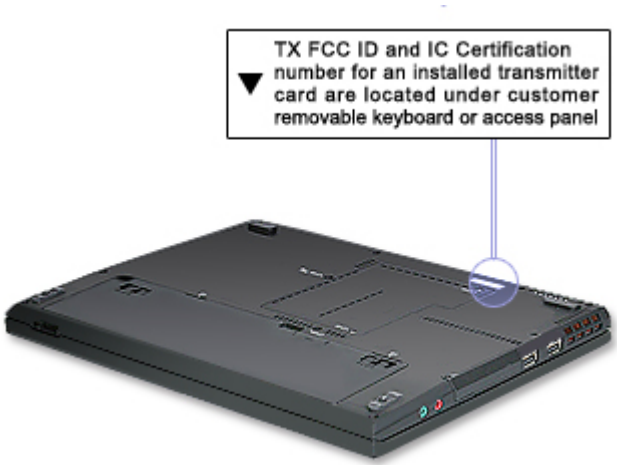
Click a view to see the location of the computer features and hardware.

Front
Right side
Left side
Bottom
Rear

Location of the FCC ID and IC Certification number label

There is no FCC ID or IC Certification number for the PCI Express Mini Card shown on the enclosure of your ThinkPad® computer. Instead you will find an indicator pointing to the location of the FCC ID and the IC Certification number for the installed transmitter card on the bottom side of your ThinkPad as shown below. The FCC ID and IC Certification number label is affixed on the card installed in the Mini PCI Express Card slot of your ThinkPad computer.

Note: The wording of the label may vary depending on the model.

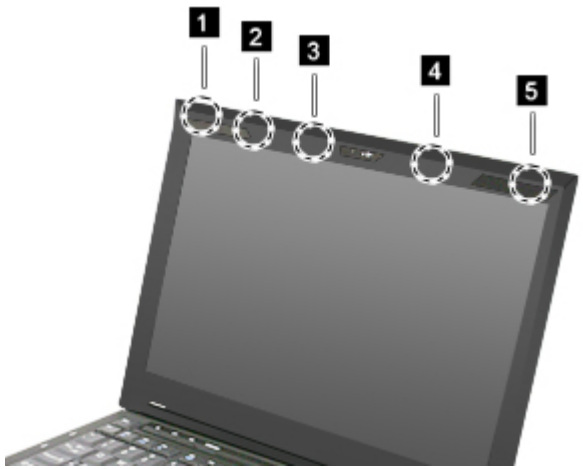


If no integrated wireless PCI Express Mini Card has been preinstalled in your ThinkPad computer, you can install one. To do this, follow the procedure in Installing and replacing the PCI Express Mini Card for wireless LAN connection or Replacing the PCI Express Mini Card for wireless WAN connection.

Location of the UltraConnect wireless antennas

ThinkPad® models feature an integrated diversity antenna system built into the display for optimal reception, enabling wireless communication wherever you are.

The following shows the location of each built-in wireless antenna.



1. Wireless LAN and WiMAX combo antenna (Main)
The main antenna for the wireless LAN or WiMAX feature is located at the top left corner of the computer display.

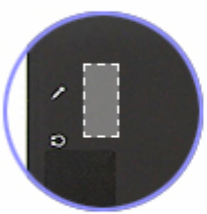
2. Wireless WAN antenna
If your computer comes with a wireless WAN feature, its transmitter antenna is located at the top left portion of the computer display, next to the wireless LAN main antenna.

3. Wireless LAN antenna (Third)
If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is located at the top left portion of the computer display, near the center.

4. Wireless USB antenna
If your computer comes with a wireless USB feature, the antenna is located at the top right portion of the computer display, near the center.

5. Wireless LAN and WiMAX combo antenna (Auxiliary)
The auxiliary antenna for the wireless LAN or WiMAX feature is located at the top right corner of the computer display.

Front view



18. *Bluetooth* antenna

If your computer comes with the Integrated *Bluetooth* features, the antenna is located under the left side of the palm rest.

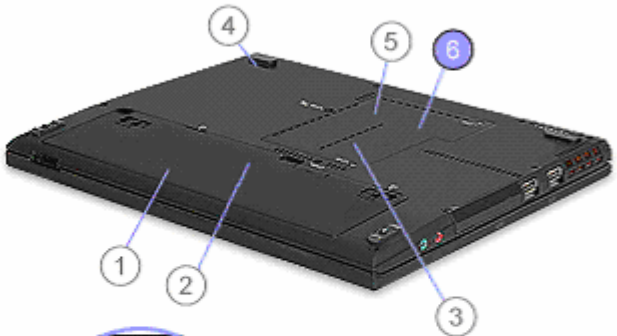
Front view

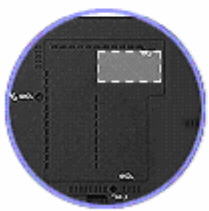
Front Right Side Left Side Bottom Rear

8. PCI Express Mini Card slot for wireless WAN

Your computer might include a PCI Express Mini Card for wireless WAN in the PCI Express Mini Card slot which enables wireless WAN communications.

Bottom view





6. PCI Express Mini Card slot for wireless LAN/WiMAX

Your computer might include a PCI Express Mini Card in the PCI Express Mini Card slot which enables wireless LAN/WiMAX communications.

Replacing the PCI Express Mini Card for wireless WAN connection

Before you start, print these instructions.

Some models have a PCI Express Mini Card slot for connection to a wireless WAN. To replace the PCI Express Mini Card with a new one, follow the procedure below.

Prerequisites for the procedure

Replacing a PCI Express Mini Card for wireless WAN

Prerequisites for the procedure

When installing or replacing the card, be sure to follow the precautions.

Danger: During electrical storms, do not connect the cable to or disconnect it from the the telephone outlet on the wall.

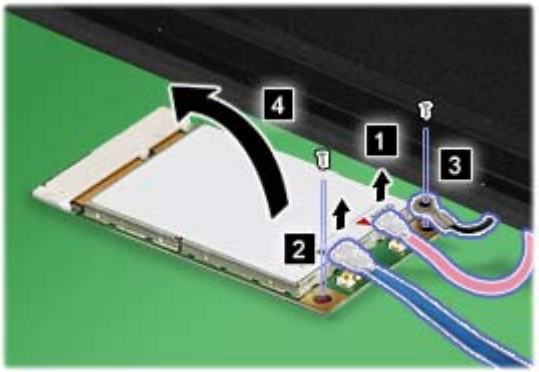
Danger: Electric current from power, telephone, and communication cables is hazardous. To avoid shock hazard, disconnect the cables before opening the cover of this slot.

metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

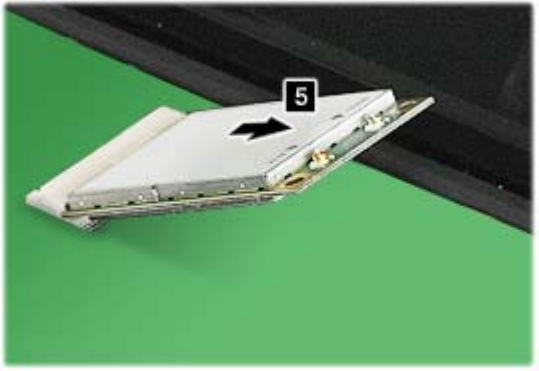
Replacing the PCI Express Mini Card for wireless WAN

1. Turn off the computer; then disconnect the AC adapter and all cables from the computer. Wait for a few minutes, till the inside of the computer cools, before you start the following procedures.
2. Close the computer display, and turn the computer over.
3. Remove the battery.
4. Remove the keyboard.
5. If a tool for removing connectors is included in the package with the new card, use it to disconnect the antenna cables from the card **(1)**. If no such tool is included, pick up the antenna cables **(1)** with your fingers and gently unplug them. Remove the screws **(2)** and the ground cable **(3)**. The card pops up **(4)**.

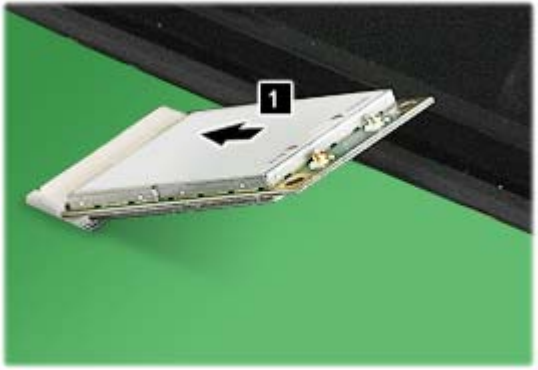
   Note: Some PCI Express Mini Cards have only one connector.



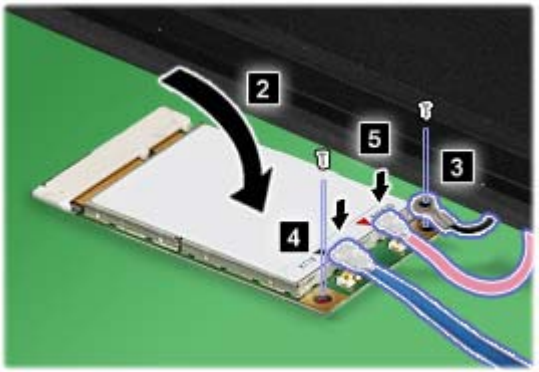
6. Remove the card **(5)**.



7. Align the contact edge of the new PCI Express Mini Card with the corresponding socket **(1)**.



8. Pivot the card until you can snap it into place by pressing the upper side of each connector **(2)**. Align the ring connector of the ground cable with the screw hole **(3)**, and then secure the card with the two screws **(4)**. Connect the antenna cables to the new PCI Express Mini Card **(5)**.

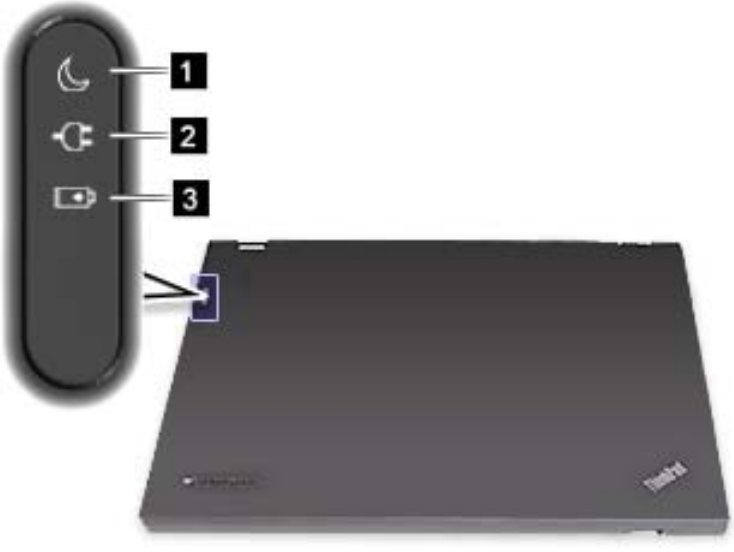


9. Reinstall the keyboard.
10. Reinstall the battery.
11. Turn the computer over again. Connect the AC adapter and cables to the computer; then turn it on.

Back to top

Power-status indicators

The computer has status indicators that show the mode (sleep/standby, hibernation, or normal), AC power status, and the status of the battery. The following shows the location and the meaning of the indicators:



1. Sleep (standby in Windows® XP) status

- **Green:** The computer is in sleep (standby) mode.
- **Blinking green:** The computer is entering sleep (standby) or hibernation mode, or is resuming normal operation.

2. Status of AC power

- **Green:** The AC adapter is connected and the computer is operating on AC power. If a battery is installed on the computer, it is charged when this indicator is green.
- **Off:** The computer is operating on battery power.

3. Battery status 

- **Green:** The battery has more than 20% charge.
- **Orange:** The battery has between 5% and 20% charge
- **Fast blinking orange:** The battery has less than 5% charge.

  Note: The battery may be charging.
- **Slow blinking orange:** The battery is being charged. When it reaches 20%, the blinking color changes to green.
- **Slow blinking green:** The battery has between 20% and 80% charge, and charging is continuing. When the battery reaches 80% charge, blinking stops, but the charging may continue until the battery is 100% charged.

  Note: If the computer is operating on battery power, the Battery status indicator does not work while the computer is turned off or is in sleep (standby) mode or hibernation mode.

If your computer is shipped with a wireless WAN feature, a *Bluetooth* feature, a Wireless USB, and a wireless LAN feature, you can use the following indicators:

4. Wireless WAN/WiMAX status 

- **Green:** The wireless WAN feature or WiMAX feature is on, and the radio link is ready for use.
- **Blinking green:** Data is being transmitted.

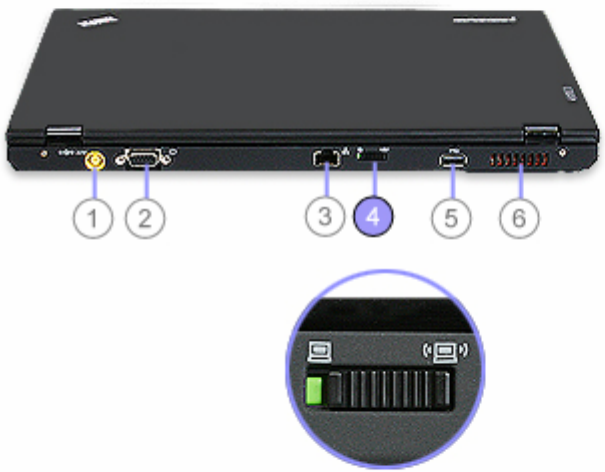
5. *Bluetooth*/Wireless USB status 

- **Green:** The feature is on, and the radio link is ready for use.
- **Blinking green:** Data is being transmitted.

6. Wireless LAN status 

- **Green:** The wireless LAN feature (the IEEE 802.11 standard) is on, and the radio link is ready for use.
- **Blinking green:** Data is being transmitted.

Rear view



4. Wireless radio switch

You can use this switch to disable the wireless radio of all the wireless devices on your computer.

Wireless connections

Wireless connection is the transfer of data without the use of cables by means of radio waves only.

Depending on the frequency used for data transmission, the area covered, or the type of the device used for data transfer, the following categories of wireless networks may be available to you:

Wireless LAN
A wireless local area network covers a relatively small geographic area, such as an office building or a house. Devices based on the IEEE 802.11 standards can connect to this network.

Wireless WAN
A wireless wide area network covers a broader geographic area. Cellular networks are used for data transmission, and access is provided by a wireless service carrier.

Bluetooth
One of a number of technologies used to create a wireless personal area network. *Bluetooth* can connect devices a short distance from one another, and is commonly used for connecting peripheral devices to a computer, transferring data between hand-held devices and PC, or remotely controlling and communicating with devices such as mobile phones.

Wireless USB
This wireless analog of the USB standard can create a wireless personal area network by implementing short-range large-bandwidth radio transmissions. It is used primarily for connecting a PC to peripherals that are no more than a short distance from the host.

WiMAX (Worldwide Interoperability for Microwave Access)
This long-range wireless data transmission technology based on the IEEE 802.16 standard, is expected to provide the user a "last mile" broadband connectivity similar to that provided by cable or ADSL, but without the need to physically connect a cable to the PC.

Using wireless LAN connections
Using wireless WAN connections
Using *Bluetooth*
Using Wireless USB
Using WiMAX
Checking wireless connection status
Enabling or disabling the wireless feature

Using wireless LAN connections

Your computer comes with a built-in wireless networking card and a configuration utility to help you make wireless connections and monitor the status of your connection, so that you can stay connected to your network while you are in the office, in a meeting room, or at home, with no need for a wired connection.

Attention: If you carry your ThinkPad computer with the wireless LAN feature into an airplane, you need to disable it before boarding. To disable it, refer to the instructions in Enabling or disabling the wireless feature.

Note: You can purchase a wireless networking card as an option. For more information, refer to Finding ThinkPad options.

Tips for using the wireless LAN feature

- Place your computer so that there are as few obstacles as possible between the wireless LAN access point and the computer.
- For the best connection of the wireless LAN feature, open your computer display to an angle of slightly more than 90 degrees.
- If you use the wireless feature (the IEEE 802.11 standard) of your computer simultaneously with a *Bluetooth* option, data transmission speed can be delayed and the performance of the wireless feature can be degraded.

Wireless networking setup
Wireless security features

Using WiMAX

Some ThinkPad® computers come with a built-in wireless LAN card integrating WiMAX technology.

WiMAX -- a long-range wireless data transmission technology based on the IEEE 802.16 standard -- provides you with a "last mile" broadband connectivity similar to that offered by cable or ADSL, but without the need to physically connect a cable to the PC.

To use the WiMAX feature, start Access Connections™.

To start the Access Connections wizard, click **Start** --> **All Programs** --> **ThinkVantage** --> **Access Connections**, and follow the instructions on the screen.

Using wireless WAN connections

Wireless Wide Area Network (wireless WAN) enables you to establish wireless connections over remote public or private networks. These connections can be maintained over a large geographical area, such as a city or an entire country, by use of multiple antenna sites or satellite systems maintained by wireless service providers.

Some ThinkPad® computers come with a built-in wireless WAN card integrating some wireless WAN technologies, such as 1xEV-DO or HSDPA. You can connect to the Internet or your company network with the built-in wireless WAN card and the configuration utility to make a wireless WAN connection and monitor its status.

Note: Wireless WAN service is provided by authorized service providers in some countries.

To use the wireless WAN feature, start Access Connections™.

To start the Access Connections wizard, click **Start** --> **All Programs** --> **ThinkVantage** --> **Access Connections**, and follow the instructions on the screen.

Using Wireless USB

If your computer is equipped with Wireless USB features, you can enable or disable those features by pressing Fn+F5. If you press Fn+F5, a list of wireless features is displayed. You can enable or disable the Wireless USB radio with a single click.

Note: Only a Certified Wireless USB device can be connected to your ThinkPad® computer.

Using a Wireless USB device with your computer for the first time

When a Wireless USB device is used for the first time, you must associate it with your computer, by doing the following:

1. Open the Wireless USB Connection Manager by double-clicking its icon in the task tray.
2. Connect the Wireless USB device to your computer, using a USB cable.
3. Wait until the Wireless USB device is listed in the Wireless USB Connection Manager and the balloon message "Wireless USB device associated" appears.
4. Remove the USB cable.
5. Wait until the status of the Wireless USB device in the Wireless USB Connection Manager changes to "Connected."

Once the device is associated, it will automatically connect without a USB cable as long as it is within a range of availability. For more details, refer to the manual provided with the device.

Wireless networking setup

Before you start setting up wireless networking connections obtain the following from your network administrator:

- a Network Name (SSID)
- your encryption information

To use the built-in wireless networking card (the IEEE 802.11 standard) to communicate, start Access Connections™.

Access Connections is a connectivity assistant program that can easily enable one network adapter and disable the other adapters on demand. After setting up your wireless networking connection, you can use the program to quickly switch the network settings.

To start the Access Connections wizard, click **Start** --> **All Programs** --> **ThinkVantage** --> **Access Connections**, and follow the instructions on the screen.

Wireless security features

Advances in wireless technology require that we manage your security more reliably than ever. Therefore, Lenovo has extended its Embedded Security Subsystem called the Trusted Platform Module (TPM) to encompass virtually all of our ThinkPad® and desktop computer lines. This security subsystem helps protect data, hardware, network access and communications - both wired and wireless - on select ThinkPad and desktop PCs.

The Embedded Security Subsystem provides hardware-based protection of critical security information, including passwords, encryption keys, and electronic credentials. It also helps identify computer users involved in transactions, and helps establish that data transmissions are authentic, confidential and intact.

Client Security Solution provides enhanced security for both wired and wireless networks. For both types of network, the Client Security Solution and TPM ensure data confidentiality and availability by providing a hardware- and software-based architecture for better protection of the sensitive keys, identity information, and confidential data. Also, for wireless networks the TPM hardware provides enhanced authentication and session confidentiality by concealing authentication credentials for industry-standard 802.1x protocols and Cisco LEAP.

For more information on wireless security offerings, click the following link:

http://www.pc.ibm.com/us/think/thinkvantagetech/security.html

Checking wireless connection status

You can check the signal strength and status of your wireless connection either by opening Access Connections™, or by double-clicking the **Access Connections wireless status** icon in the system tray.

The Access Connections wireless status icon displays the signal strength and status of your wireless connection.

Wireless status icon states: wireless LAN

 Power to the wireless radio is on. The signal strength of the wireless connection is poor. To improve signal strength, move your system closer to the wireless access point.

 Power to the wireless radio is on. The signal strength of the wireless connection is marginal.

 Power to the wireless radio is on. The signal strength of the wireless connection is excellent.

 Power to the wireless radio is off.

 **Note:** If you have trouble in making a connection, try moving your computer closer to your wireless access point.

Wireless status icon states: wireless WAN/WiMAX

 Power to the WAN radio is off.

 No association

 No signal

 Signal level 1

 Signal level 2

 Signal level 3

Enabling or disabling the wireless feature

To enable or disable the wireless feature, press Fn+F5. A list of wireless features is displayed. You can turn the feature on and off with a single click.

You can also enable or disable the feature by the following procedures.

To enable the wireless feature, do as follows:

1. Click the Access Connections™ wireless icon in the system tray.
2. Click **Power On Wireless Radio**.

To disable the wireless feature, do as follows:

1. Click the Access Connections wireless icon in the system tray.
2. Click **Power Off Wireless Radio**.

Note: To enable the wireless radio, do as follows:

1. Select **Enabled** for the Internal Wireless Device in the BIOS Setup Utility.
2. Select the On position of the wireless radio switch on the computer.
3. Click the Access Connections wireless icon in the system tray and select **Turn Wireless Radio On**. Or press Fn+F5, and then turn the feature on.

Note: You can use the wireless radio switch to disable the wireless radio of all the wireless devices on your computer.

8 Wireless upgradeable ThinkPad models

Depending on the model, your ThinkPad® computer might be wireless upgradeable. This means that your computer has an antenna that can support wireless LAN access when wireless LAN access points are available. Wireless devices are available from Lenovo: Finding ThinkPad options.