Part Number: 42W9673

ThinkPad® Regulatory Notice

Read first — regulatory information

Please read this document before you use the ThinkPad 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.

If your ThinkPad computer contains a Wireless WAN adapter, be sure to also read *ThinkPad Regulatory Notice for Wireless WAN adapter*, included with your computer.

Note: You cannot use the Wireless WAN Adapter and the Wireless LAN adapter (Models: AR5BXB6, AR5BXB63-L, AR5BXB72, WM3945ABG, 4965AG, or 4965AGN) simultaneously. If one of the adapters has established the connection to the network, the other will be disconnected automatically. To confirm the status of the network connection, check the power status indicators of your computer. For more information about the power status indicators, see the "Power status indicators" section in Access Help.

Veuillez lire ce document avant d'utiliser l'ordinateur ThinkPad. L'ordinateur ThinkPad est conforme aux normes de sécurité et de radiofréquence du pays ou de la région où son utilisation sans fil est agréée. Vous devez installer et utiliser votre ordinateur en respectant scrupuleusement les instructions décrites ci-après.

Si votre ordinateur ThinkPad contient une carte de réseau étendu (WAN) sans fil, veillez à lire également la consigne réglementaire *ThinkPad Regulatory Notice for Wireless WAN adapter*, fournie avec votre ordinateur.

Remarque: Vous ne pouvez pas utiliser simultanément la carte de réseau étendu sans fil et la carte de réseau local sans fil (Modéles: AR5BXB6, AR5BXB63-L, AR5BXB72, WM3945ABG, 4965AG, ou 4965AGN). Si l'une de ces cartes a établi la connexion avec le réseau, l'autre carte sera automatiquement déconnectée. Pour confirmer l'état de la connexion réseau, contrôlez les voyants

© Copyright Lenovo 2007

d'état d'alimentation. Pour plus d'informations, reportez-vous à la section "Voyants d'état de l'alimentation" dans l'aide Access.

USA — Federal Communications Commission (FCC)

I. The FCC RF safety requirement

The radiated output power of the Wireless LAN Mini PCI Express Card authorized to use for the 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 LAN 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.

Note: The transmission diversity function is implemented for this product. For WLAN cards (Models: AR5BXB6, AR5BXB63-L, WM3945ABG, 4965AG, and 4965AGN) using Main and Auxiliary antennas for transmission in the IEEE 802.11 a/b/g transmission mode, radio frequency energy is not emitted simultaneously from both Main and Auxiliary antennas. One of the antennas is selected automatically or manually (by users) to have good quality of radiocommunication (transmission diversity function).
For the WLAN card (Model: 4965AGN) using MIMO (Multiple In Multiple Out), multiple antennas (Main and Auxiliary) can transmit radio frequency energy simultaneously.
For the WLAN card (Model: AR5BXB72) using either MIMO or IEEE 802.11 a/b/g transmission mode, multiple antennas (Main and Auxiliary) can transmit radio frequency energy simultaneously.
Third antenna is also used with the Models: 4965AGN and AR5BXB72 on some models, and functions as Receive Only. It does not emit any radio frequency energy.

II. User installable Wireless LAN module

Mini PCI Express Cards:

- FCC ID: PPD-AR5BXB6 (Model: AR5BXB6)
- FCC ID: PPD-AR5BXB63-L (Model: AR5BXB63-L)
- FCC ID: PPD-AR5BXB72-L (Model: AR5BXB72)

- FCC ID: PD9LEN3945ABG (Model: WM3945ABG)
- FCC ID: PD9LEN4965AG (Model: 4965AG)
- FCC ID: PD9LEN4965AGN (Model: 4965AGN)

Wireless LAN Mini PCI Express Cards marketed in the USA and Canada do not support nor function in the extended channels (12ch, 13ch).

i) FCC ID of wireless module: There is no FCC ID for Mini PCI Express 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 ThinkPad 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 slots" section in Access Help.

ii) Installation of approved wireless module: If no integrated wireless LAN 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 LAN connection" section in Access Help.

Attention: The ThinkPad computers contain an authentication mechanism. If you install an unauthorized wireless LAN 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) Radio Frequency interference requirements:
- The devices have been tested and found to comply with the limits for a Class B digital device pursuant to FCC Part 15 Subpart B. The models AR5BXB6, AR5BXB63-L, and AR5BXB72 were subject to DoC. Refer to "Electronic emission notices" on page 8.
  The models WM3945ABG, 4965AG, and 4965AGN underwent the certification process, thus FCC ID PD9LEN3945ABG for model WM3945ABG, FCC ID PD9LEN4965AG for model 4965AG , and FCC ID PD9LEN4965AGN for model 4965AGN include all compliances of Part 15 Subpart B, C, and E.
- Each device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires these products to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems.
- High power radar are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device.

III. Preinstalled integrated *Bluetooth* module

- FCC ID: MCLJ07H081 (Model: J07H081)

i) FCC ID and installation of the module: If you find the FCC ID "MCLJ07H081" on the label at the bottom side of your computer, your computer integrates the *Bluetooth* transmitter module (Model: J07H081). The *Bluetooth* module is preinstalled by Lenovo, and is not removable by users. If your card requires replacement via the proper steps shown in "Getting help and service" of the *Service and Troubleshooting Guide*, shipped with your computer, Lenovo will request you to send your computer with the card to Lenovo so that Lenovo will repair it.

ii) The FCC RF safety requirement: The radiated output power of the *Bluetooth* module is far below the FCC radio frequency exposure limits. Therefore, a 20 cm of separation between the *Bluetooth* antenna and human body is not required.

For the location of the *Bluetooth* module "J07H081" and its built-in antenna, see the "About your computer" section in Access Help.

iii) Radio Frequency interference requirements: The device has been tested and found to comply with the limits for both a Class B digital device regarding FCC Part 15 Subpart B and an intentional radiator regarding FCC Part 15 Subpart C; then it underwent the certification processes for both rules. Thus the FCC ID MCLJ07H081 of this device includes both certifications of Part 15 Subpart B and C.

IV. Simultaneous use of RF transmitters

Your ThinkPad computer is approved for simultaneous use of the transmitters listed below:

- Wireless LAN adapter (FCC ID: PPD-AR5BXB6, PPD-AR5BXB63-L, PPD-AR5BXB72-L, PD9LEN3945ABG, PD9LEN4965AG, or PD9LEN4965AGN)
- *Bluetooth* module (FCC ID: MCLJ07H081)

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.

Canada — Industry Canada (IC)

IC Certification number

I) User installable Wireless LAN modules:
- IC: 4104A-AR5BXB6 (Model: AR5BXB6)
- IC: 4104A-ARBXB63L (Model: AR5BXB63-L)
- IC: 4104A-ARBXB72L (Model: AR5BXB72)
- IC: 1000M-LEN3945 (Model: WM3945ABG)
- IC: 1000M-L4965AG (Model: 4965AG)
- IC: 1000M-L4965AGN (Model: 4965AGN)

Wireless LAN Mini PCI Express Cards marketed in the USA and Canada do not support nor function in the extended channels (12ch, 13ch).

There is no certification number of Industry Canada for Mini PCI Express Card shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the IC Certification number on the bottom side of your ThinkPad computer. For the location of the IC Certification number indicator, see the “Location of the FCC ID and IC Certification number label” section in Access Help. The IC certification number 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 slots” section in Access Help.

Attention: The ThinkPad computer contains an authentication mechanism You can install or remove each wireless feature by yourself. If you install an unauthorized wireless adapter that is not approved for use in the ThinkPad computer, the computer will not start, but only displays an error message and emits beeps.

II) Preinstalled integrated *Bluetooth* **module:**
- IC: 2878D-J07H081 (Model: J07H081)

If you find an indication “Contains Transmitter Module: Canada IC: 2878D-J07H081” on the label at the bottom side of your computer, your computer integrates the *Bluetooth* transmitter module. The *Bluetooth* module is preinstalled by Lenovo, and is not removable by users. If your card requires replacement via the proper steps shown in "Getting help and service" of the *Service and Troubleshooting Guide*, Lenovo will request you to send your computer with the card to Lenovo so that Lenovo will repair it.

Low power license-exempt radiocommunication devices (RSS-210):
Operation is subject to the following two conditions:
1. This device may not cause interference, and

2. this device must accept any interference, including interference that may cause undesired operation of the device.

The transmitter devices have been designed to operate with the antennas integrated in ThinkPad computer, and having a maximum gain of within 3 dBi.

The maximum antenna gain permitted for devices in the 5250-5350 MHz and 5725-5825 MHz bands complies with the e.i.r.p. limit in section A9.2 of RSS-210.

When you use the model AR5BXB6, AR5BXB63-L, AR5BXB72, WM3945ABG, 4965AG, or 4965AGN:
- The devices for the band 5150–5250 MHz are only for indoor usage to reduce potential for harmful interference to co-channel Mobile Satellite systems.
- High power radars are allocated as primary users (meaning they have priority) of 5250–5350 MHz and 5650–5850 MHz and these radars could cause interference and/or damage to LELAN (Licence-Exempt Local Area Network) devices.

Exposure of humans to RF fields (RSS-102): ThinkPad computers employ low gain integral antennas that do not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's Web site at www.hc-sc.gc.ca/rpb

Numéro d'homologation IC

I) Module sans fil installable par l'utilisateur: Les cartes Express mini-PCI de réseau local sans fil:
- IC: 4104A-AR5BXB6 (Model: AR5BXB6)
- IC: 4104A-ARBXB63L (Model: AR5BXB63-L)
- IC: 4104A-ARBXB72L (Model: AR5BXB72)
- IC: 1000M-LEN3945 (Model: WM3945ABG)
- IC: 1000M-L4965AG (Model: 4965AG)
- IC: 1000M-L4965AGN (Model: 4965AGN)

Les cartes de réseau local sans fil Express mini-PCI commercialisées aux Etats-Unis et au Canada ne prennent pas en charge les canaux étendus (12ch, 13ch) et ne fonctionnent donc pas sur de tels canaux.

Le boîtier de votre ordinateur ThinkPad ne comporte pas de numéro d'homologation IC (Industry Canada) pour la carte mini-PCI Express ; mais sous votre Thinkpad, vous trouverez un indicateur pointant vers l'emplacement du numéro d'homologation IC. Pour connaître l'emplacement du numéro d'homologation IC, consultez la section correspondante dans l'aide

Access. Le numéro d'homologation IC est apposé sur le module installé dans le logement pour carte mini-PCI Express. Pour connaître l'emplacement de ce logement, consultez la section correspondante dans l'aide Access.

Attention: L'ordinateur ThinkPad contient un mécanisme d'authentification. Vous pouvez installer ou désinstaller tout dispositif sans fil. Si vous installez une carte sans fil qui n'est pas homologuée pour l'ordinateur ThinkPad, l'ordinateur ne démarrera pas; un message d'erreur sera affiché et des bips sonores seront émis.

II) Module *Bluetooth* intégré préinstallé:
- IC : 2878D-J07H081 (Modèle : J07H081)

Si la mention "Contains Transmitter Module: Canada IC: 2878D-J07H081" figure sur l'étiquette située au bas de votre ordinateur, cela signifie que ce dernier intègre le module de transmission *Bluetooth*. Le module *Bluetooth* est préinstallé par Lenovo et ne peut pas être retiré par les utilisateurs. Si votre carte doit être remplacée conformément aux étapes du Chapitre relatif à l'aide et la maintenance dans le manuel *Guide de maintenance et d'identification des incidents*, Lenovo vous demandera de lui envoyer votre ordinateur accompagné de la carte pour réparation.

Remarque relative aux appareils de communication radio de faible puissance sans licence (CNR-210): Le fonctionnement de ce type d'appareil est soumis aux deux conditions suivantes:
1. Cet appareil ne doit pas perturber les communications radio, et
2. cet appareil doit supporter toute perturbation, y compris les perturbations qui pourraient provoquer son dysfonctionnement.

Les périphériques d'émission sont conçus pour fonctionner avec des antennes intégrées aux ThinkPad et ayant un gain maximal de moins de 3 dBi.

Le gain d'antenne maximal pour les périphériques dans les bandes de fréquence 5250-5350 MHz et 5725-5825 MHz est conforme à la limite p.i.r.e énoncée dans la section A9.2 de la CNR-210.

Lorsque vous utilisez le modèle AR5BXB6, AR5BXB63-L, AR5BXB72, WM3945ABG, 4965AG, ou 4965AGN :
- Tout appareil destiné à la bande 5150-5250 MHz devra être exclusivement utilisé en intérieur afin de réduire les risques de perturbations électromagnétiques gênantes sur les systèmes de satellite mobile dans un même canal.
- Les radars à forte puissance sont désignés comme les utilisateurs principaux (c'est-à-dire qu'ils sont prioritaires) des bandes 5250-5350 MHz et 5650-5850 MHz. Ils peuvent provoquer des perturbations

électromagnétiques sur les appareils de type LELAN (réseau de communication local sans licence) ou les endommager.

Exposition des êtres humains aux champs radioélectriques (RF) (CNR-102): L'ordinateur ThinkPad utilise des antennes intégrales à faible gain qui n'émettent pas un champ électromagnétique supérieur aux normes imposées par le Ministére de la santé canadien pour la population. Consultez le Safety Code 6 sur le site Web du Ministére de la santé canadien à l'adresse "www.hc-sc.gc.ca/rpb".

Electronic emission notices

Federal Communications Commission (FCC) Statement

- Model: AR5BXB6
- Model: AR5BXB63-L
- Model: AR5BXB72

Note: The compliances of the FCC Part 15 Subpart B for models WM3945ABG, 4965AG, 4965AGN, and J07H081 were proceeded by certification under each respective FCC ID: PD9LEN3945ABG, PD9LEN4965AG, PD9LEN4965AGN, and MCLJ07H081.

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

FOR HOME OR OFFICE USE

Industry Canada Class B Emission Compliance Statement
This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Telecommunication notices

Federal Communications Commission (FCC) and Telephone Company Requirements (Part 68 of the FCC Rules)

1. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

   In order to program this information into your computer, you should be sure to follow the installation instructions for your fax software package.
2. This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.
3. The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. The REN for this product is part of the product identifier that has the format

US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3).

4. If the built-in modem causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But, if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
5. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.
6. No customer repairs are possible to the modem. If you experience trouble with this built-in modem, contact your Lenovo Authorized Seller, or the Customer Support Center. For the most current phone numbers, go to http://www.lenovo.com/think/support and click Support phone list. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected, or until you are sure the equipment is not malfunctioning.
7. The modem may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.
8. When ordering network interface (NI) service from the Local Exchange Carrier, specify service arrangement USOC RJ11C.
9. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.
10. If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this Data/Fax Modem does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

Industry Canada requirements

Notice

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of communication. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs of alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution
Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Ringer Equivalence Number (REN) for the terminal equipment RD02-D110 is 0.1. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Avis
Le présent matériel est conforme aux spécifications techniques d'Industrie Canada applicables au matériel terminal. Cette conformité est confirmée par le numéro d'enregistrement. Le sigle IC, placé devant le numéro d'enregistrement, signifie que l'enregistrement s'est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d'Industrie Canada ont été respectées. Il n'implique pas qu'Industrie Canada a approuvé le matériel.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'entreprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un

dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empechent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus par les tarifs paticuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement
L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à électricien, selon le cas.

L'indice d'équivalence de la sonnerie (IES) du présent matériel RD02-D110 est de 0.1. L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

Trademarks

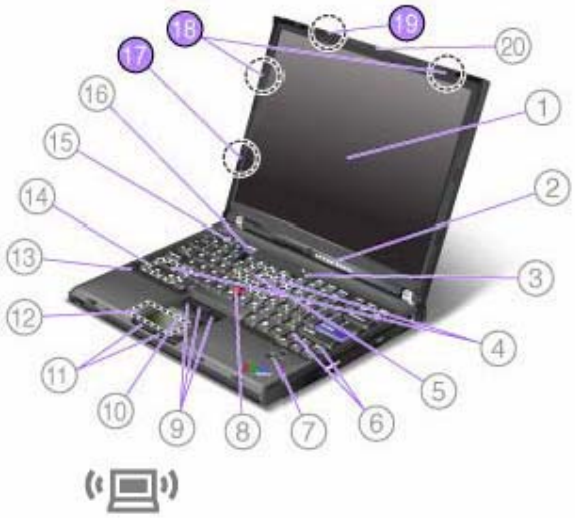
The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo
ThinkPad

Other company, product, and service names may be trademarks or service marks of others.

WLAN and WWAN antenna locations

ThinkPad® T61 14.1-inch



17. UltraConnect™ wireless WAN antenna

If your computer has the wireless WAN feature, the antenna is on the left side of the computer display.

18. UltraConnect™ wireless LAN antennas: main and auxiliary

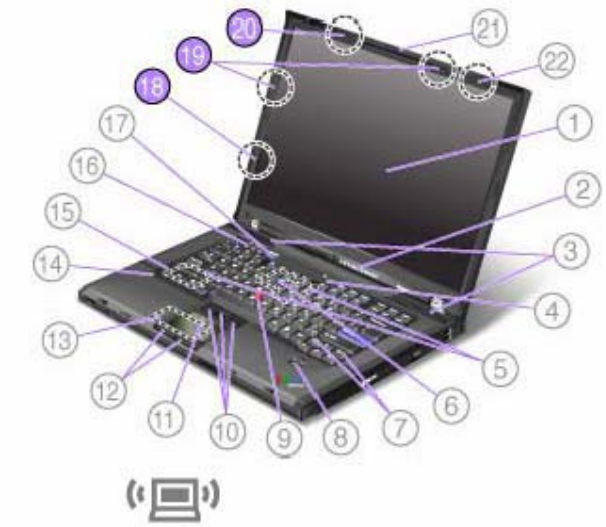
ThinkPad models feature an integrated diversity antenna system built into the display for optimal reception, enabling wireless communication wherever you are.

19. UltraConnect™ wireless LAN antenna: third

If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is on the top side of the computer display.

For details, refer to the instructions in Access Connections™.

ThinkPad® T61 15.4-inch widescreen



18. UltraConnect™ wireless WAN antenna

If your computer has the wireless WAN feature, the antenna is on the left side of the computer display.

19. UltraConnect™ wireless LAN antennas: main and auxiliary

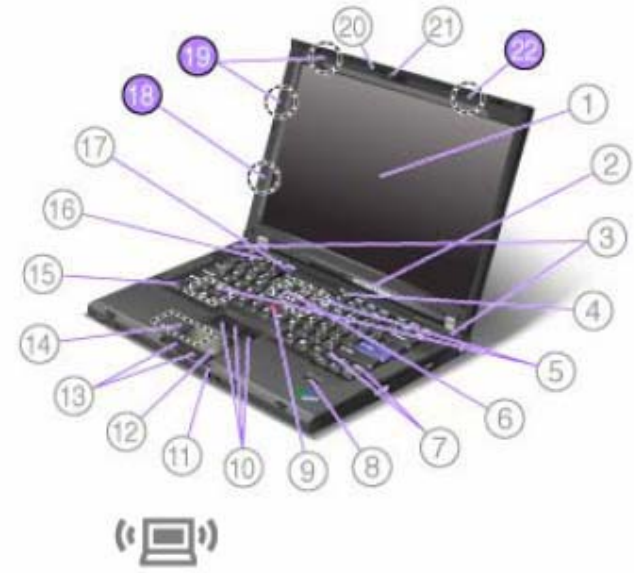
ThinkPad models feature an integrated diversity antenna system built into the display for optimal reception, enabling wireless communication wherever you are.

20. UltraConnect™ wireless LAN antenna: third

If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is on the top side of the computer display.

For details, refer to the instructions in Access Connections™.

ThinkPad® T61 14.1-inch widescreen and ThinkPad R61 14.1-inch widescreen



18. UltraConnect™ wireless WAN antenna

If your computer has the wireless WAN feature, the antenna is on the left side of the computer display.

19. UltraConnect™ wireless LAN antennas: main and auxiliary

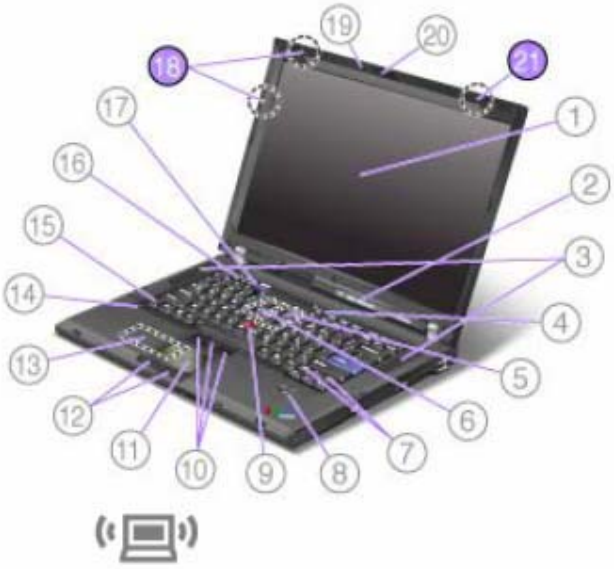
ThinkPad models feature an integrated diversity antenna system built into the display for optimal reception, enabling wireless communication wherever you are.

22. UltraConnect™ wireless LAN antenna: third

If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is on the top side of the computer display.

For details, refer to the instructions in Access Connections™.

ThinkPad® R61 15.4-inch widescreen



18. UltraConnect™ wireless LAN antennas: main and auxiliary

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

21. UltraConnect™ wireless LAN antenna: third

If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is on the top side of the computer display.

14. UltraConnect™ wireless antennas

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

16. UltraConnect™ wireless antennas

If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is here, on the top of the computer display.

17. UltraConnect™ wireless antennas

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

If your computer has the wireless WAN feature, the antenna is here, on the right side of the computer display.

For details, refer to the instructions in Access Connections™.

Bluetooth Antenna location

ThinkPad® T61 14.1-inch

2. *Bluetooth* antenna

Some ThinkPad models have the Integrated *Bluetooth* features.

ThinkPad® T61 15.4-inch widescreen

2. *Bluetooth* antenna

Some ThinkPad models have the Integrated *Bluetooth* features.

ThinkPad® T61 14.1-inch widescreen and ThinkPad R61 14.1-inch widescreen

3. *Bluetooth* antenna

Some ThinkPad models have the Integrated *Bluetooth* features.

ThinkPad® R61 15.4-inch widescreen

3. *Bluetooth* antenna

Some ThinkPad models have the Integrated *Bluetooth* features.

ThihnkPad X61 Series (X61/X61s)

7. *Bluetooth* antenna

Some ThinkPad® models have Integrated *Bluetooth* features.

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.

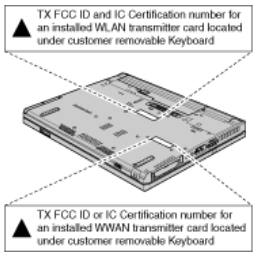
For ThinkPad T61 14.1-inch, click here.

For ThinkPad T61 15.4-inch widescreen, click here.

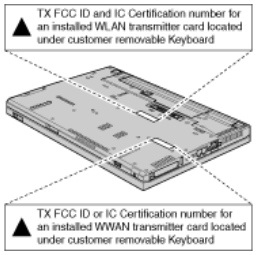
For ThinkPad T61 14.1-inch widescreen and ThinkPad R61 14.1-inch widescreen, click here.

For ThinkPad R61 15.4-inch widescreen, click here.

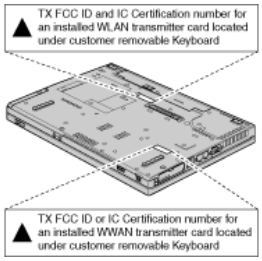
ThinkPad T61 14.1-inch



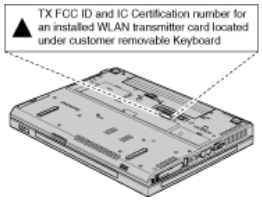
ThinkPad T61 15.4-inch widescreen



ThinkPad T61 & R61 14.1-inch widescreen



ThinkPad R61 15.4-inch widescreen



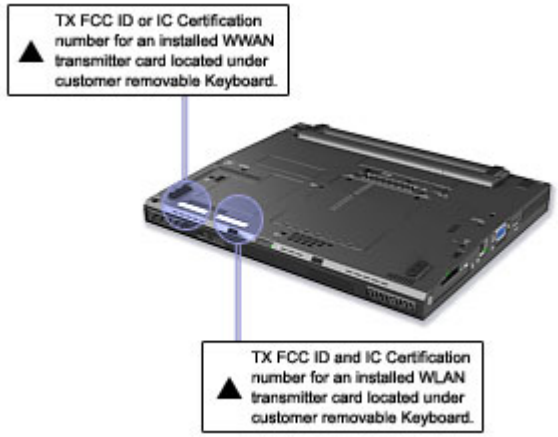
If no integrated wireless PCI Express Mini Card has been preinstalled in your ThinkPad computer, you can install one. To do this, follow the procedure in Installing and replacing the PCI Express Mini Card for wireless LAN connection or Replacing the PCI Express Mini Card for wireless WAN connection.

Location of the 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.

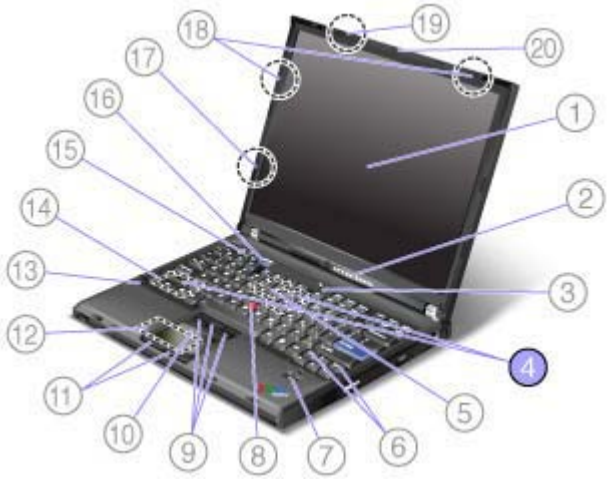
ThinkPad X61 Series (X61/X61s)



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 WLAN and WWAN mini-PCIe card slots

ThinkPad® T61 14.1-inch



The card slot for wireless WAN

The card slot for wireless LAN

4. PCI Express Mini Card slots

Your computer might include PCI Express Mini Cards in the PCI Express Mini Card slots which enable wireless LAN and WAN communications.

ThinkPad® T61 15.4-inch widescreen

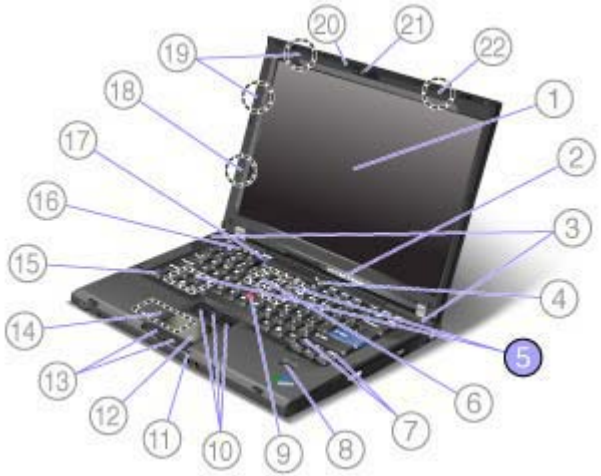
The card slot for wireless WAN

The card slot for wireless LAN

5. PCI Express Mini Card slots

Your computer might include PCI Express Mini Cards in the PCI Express Mini Card slots which enable wireless LAN and WAN communications.

ThinkPad® T61 14.1-inch widescreen and ThinkPad R61 14.1-inch widescreen



The card slot for wireless WAN

The card slot for wireless LAN

5. PCI Express Mini Card slots

Your computer might include PCI Express Mini Cards in the PCI Express Mini Card slots which enable wireless LAN and WAN communications.

Note: Some models of ThinkPad R61 14.1-inch widescreen computers come with a PCI Express Mini Card slot for wireless LAN only.

ThinkPad® R61 15.4-inch widescreen

The card slot for wireless LAN

5. PCI Express Mini Card slot

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

ThinkPad X61 Series (X61/X61s)

6. PCI Express Mini Card slots

Your computer might include PCI Express Mini Cards in the PCI Express Mini Card slots which enable wireless LAN and WAN communications.

Installing and replacing the PCI Express Mini Card for wireless LAN connection

Before you start, print these instructions.

Your computer has a PCI Express Mini Card slot for connection to a wireless LAN. To replace the PCI Express Mini Card with a new one, follow the procedure below.

To find the position of the PCI Express Mini Card for wireless LAN connection in your computer, click here.

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

Attention: Before you start installing a PCI Express Mini Card, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

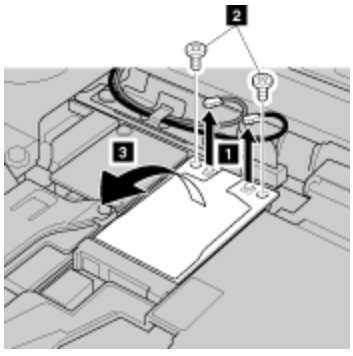
Some PCI Express Mini Cards have two connectors; others have three.

- To replace a PCI Express Mini Card that has two connectors, click here.
- To replace a PCI Express Mini Card that has three connectors, click here.

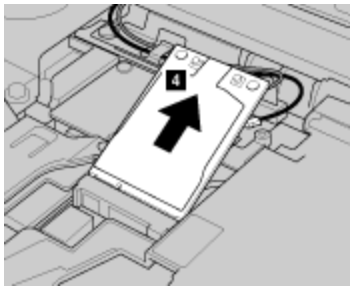
To replace a PCI Express Mini Card that has two connectors, do as follows:

Note: The drawings shown here are for the ThinkPad T61 15.4-inch widescreen. The procedure is the same for the ThinkPad T61 14.1-inch, ThinkPad T61 14.1-inch widescreen, ThinkPad R61 14.1-inch widescreen, and the ThinkPad R61 15.4-inch widescreen models.

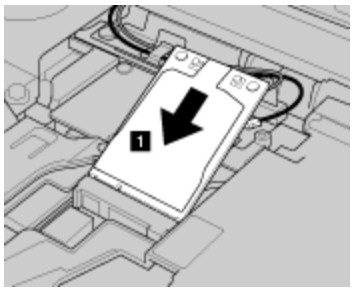
1. Turn off the computer; then disconnect the ac adapter and all cables from the computer. Wait for a few minutes, till the inside of the computer cools, before you start the following procedures.
2. Close the computer display, and turn the computer over.
3. Remove the battery.
4. Remove the keyboard.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



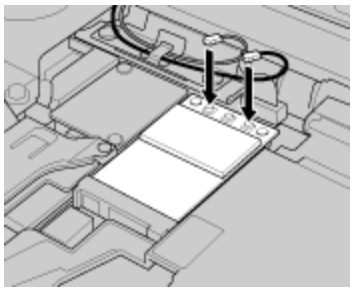
6. Remove the card **(4)**.



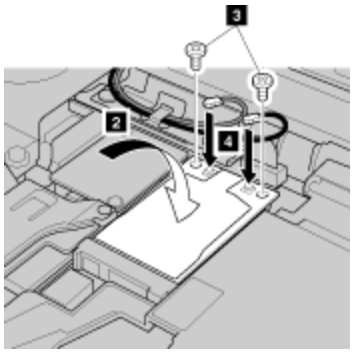
7. Align the contact edge of the new PCI Express Mini Card with the corresponding socket contact of the computer **(1)**.



Note: If the new PCI Express Mini Card has three connectors, as in the next drawing, be sure to attach the gray cable to the left connector, and the black cable to the right connector. If you attach either cable to the center connector, the connection speed will be lower.



8. Pivot the card until you can snap it into place by pressing the upper side of the connectors **(2)**, and secure the card with the two screws **(3)**. Connect the cables to the new PCI Express Mini Card **(4)**.

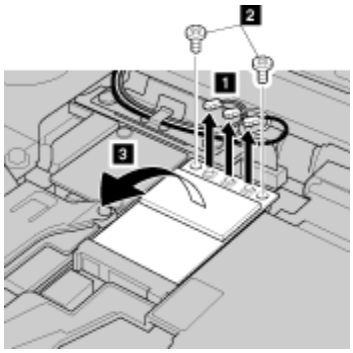


9. Reinstall the keyboard.
10. Reinstall the battery.
11. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

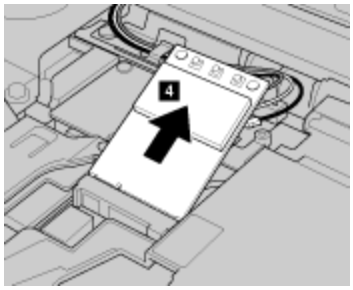
If your computer has a Multiple Input Multiple Output (MIMO) feature, a PCI Express Mini Card that has three connectors comes with the computer. To replace the card for the MIMO feature, do as follows:

Note: The drawings shown here are for the ThinkPad T61 15.4-inch widescreen. The procedure is the same for the ThinkPad T61 14.1-inch, T61 14.1-inch widescreen, R61 14.1-inch widescreen, and the R61 15.4-inch widescreen models.

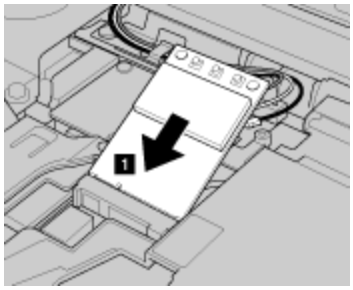
1. Turn off the computer; then disconnect the ac adapter and all cables from the computer. Wait for a few minutes, till the inside of the computer cools, before you start the following procedures.
2. Close the computer display, and turn the computer over.
3. Remove the battery.
4. Remove the keyboard.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



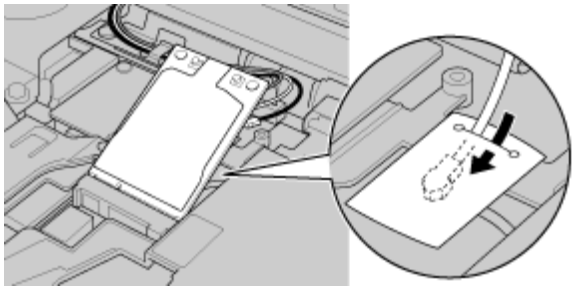
6. Remove the card **(4)**.



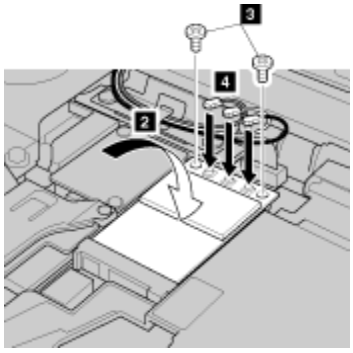
7. Align the contact edge of the new card with the corresponding socket contact of the computer **(1)**. .



Note: If the new PCI Express Mini Card has two connectors, as in the next drawing, be sure to attach the gray cable to the left connector, and black cable to the right connector. Put the white cable in the cable bag in the card slot.

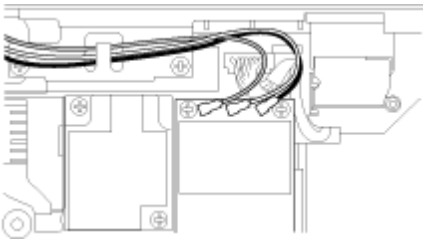


8. Pivot the card until you can snap it into place by pressing the upper side of the connectors **(2)**, and secure the card with the two screws **(3)**. Attach the gray cable to the left connector , the white cable to the center connector, and the black cable to the right connector **(4)**.

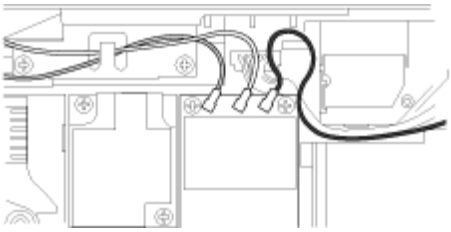


Note: Make sure that the cables are secured as shown in the drawings.

ThinkPad T61 14.1-inch, ThinkPad T61 15.4-inch widescreen, ThinkPad T61 14.1-inch widescreen, ThinkPad R61 14.1-inch widescreen models



ThinkPad R61 15.4-inch widescreen model



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.

Replacing the PCI Express Mini Card for wireless LAN connection

Before you start, print these instructions.

Your computer has a PCI Express Mini Card for wireless LAN. To replace the PCI Express Mini Card with a new one, follow the procedure below.

To find the position of the PCI Express Mini Card for wireless LAN connection in your computer, click here.

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

Attention: Before you start installing a module, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the PCI Express Mini Card.

Note: Use the PCI Express Mini Card provided by Lenovo.

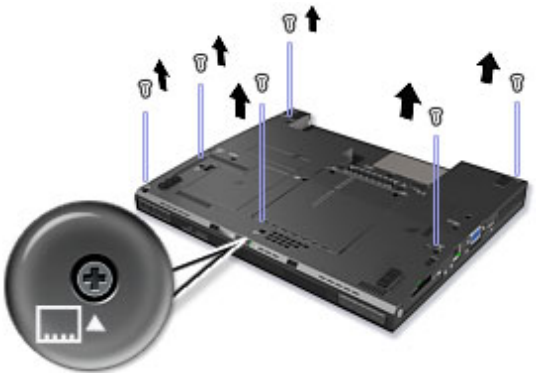
Note: If your computer is a wireless upgradeable model, you can install a wireless PCI Express Mini Card, available as an option.

To replace the PCI Express Mini Card with two connectors, click here.

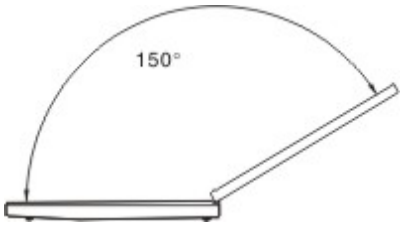
To replace the PCI Express Mini Card with three connectors, click here.

To replace the PCI Express Mini Card with two connectors, do as follows:

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. Close the computer display, and turn the computer over.
6. Remove the screws that secure the upper case.

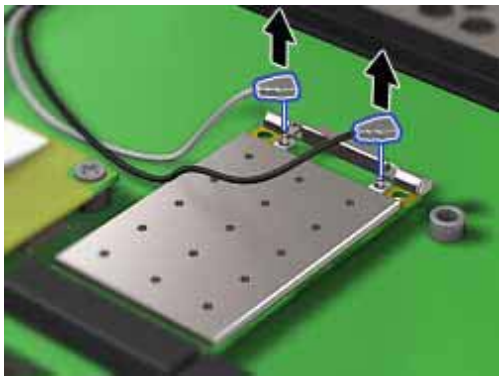


7. Turn the computer over and open the display 150 degrees.

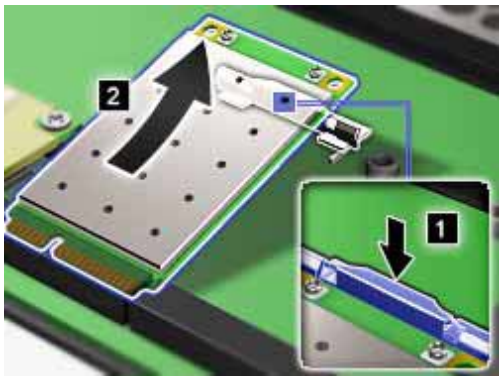


8. Push the upper edge of the palm rest downward slightly **(1)**, while lifting up the lower edge of the palm rest and pulling the upper case towards you **(2)** to remove it from the lower case.

9. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card. If no such tool is included, disconnect the cables from the card by picking up the connectors with your fingers and gently unplugging them.



10. Press on the release latch **(1)** to release the card **(2)**. Then remove the card.



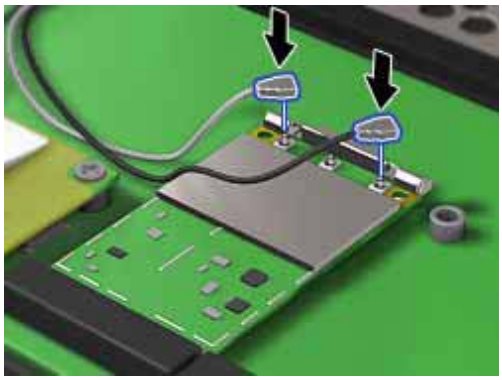
11. Align the contact edge of the PCI Express Mini Card with the corresponding socket contact of the computer.
12. Pivot the card until you can snap it into place by pressing the upper side of the connectors; then press the latch to hold it in place.

    Make sure that the card is firmly fixed in the slot and does not move easily.

13. Connect the cables to the new PCI Express Mini Card.

    Note: If the new PCI Express Mini Card has three connectors, as in the next drawing, you must

attach the cables to the right and left connectors. If you attach either cable to the center connector, the connection speed will be lower.

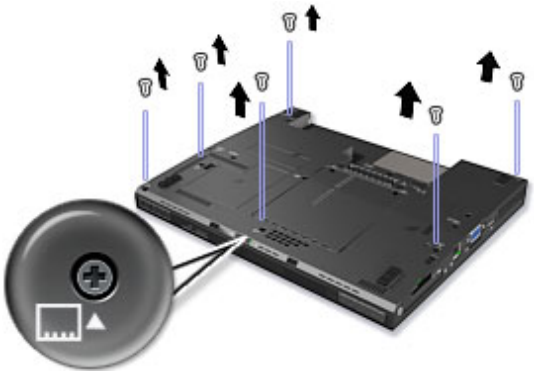


14. Replace the upper case and push the middle top part of the upper case into place until you hear it click; then turn the machine over and tighten the screws you have removed in step 6.

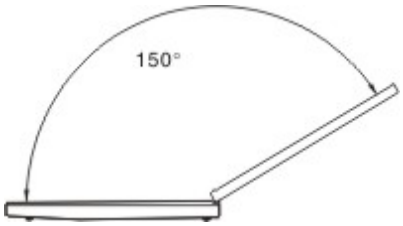
15. Reinstall the keyboard.
16. Reinstall the battery.
17. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

If your computer has a Multiple Input Multiple Output (MIMO) feature, the PCI Express Mini Card with three connectors comes with the computer. To replace the card for the MIMO feature, do as follows:

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. Close the computer display, and turn the computer over.
6. Remove the screws that secure the upper case.

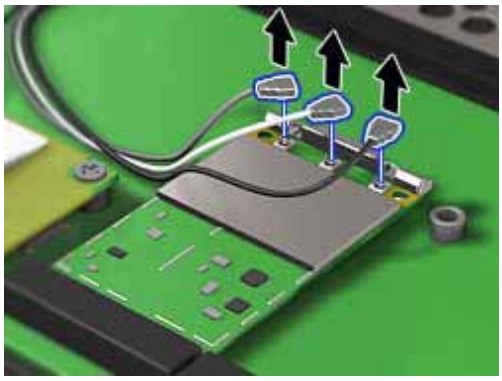


7. Turn the computer over and open the display 150 degrees.

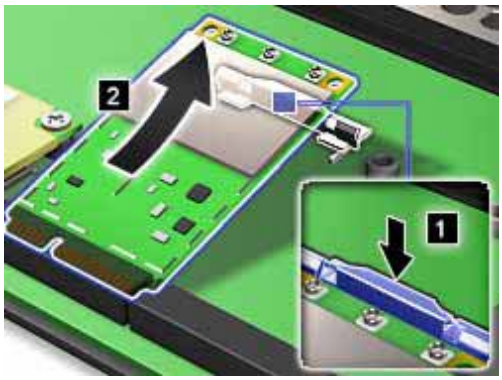


8. Push the upper edge of the palm rest downward slightly **(1)**, while lifting up the lower edge of the palm rest and pulling the upper case towards you **(2)** to remove it from the lower case.

9. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card. If no such tool is included, disconnect the cables from the card by picking up the connectors with your fingers and gently unplugging them.



10. Press on the release latch **(1)** to release the card **(2)**. Then remove the card.



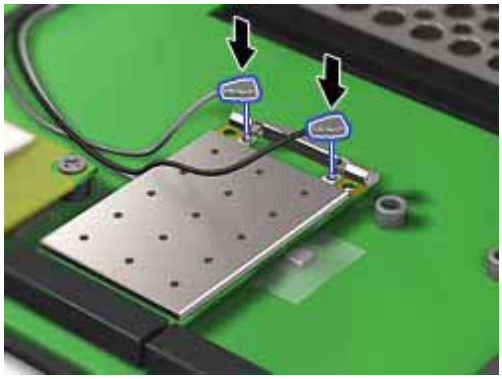
11. If the new PCI Express Mini Card has three connectors, skip this step. If the new PCI Express Mini Card has two connectors, first insert the connector end of the white cable in the plastic cable bag and affix the cable to the mainboard with tape.

12. Align the contact edge of the new card with the corresponding socket contact of the computer.
13. Pivot the card until you can snap it into place by pressing the upper side of the connectors; then press the latch to hold it in place.

    Make sure that the card is firmly fixed in the slot and does not move easily.

14. Connect the black cable (AUX) to the TR2 connector, the white cable (MIMO third) to the R0 connector and the gary cable to the TR1 connector on the new card.

    Note: If the new PCI Express Mini Card has two connectors, as in the next drawing, you must attach the gray cable to the left connector and the black cable to the right connector.



15. Replace the upper case and push the middle top part of the upper case into place until you hear it click; then turn the machine over and tighten the screws you have removed in step 6.

16. Reinstall the keyboard.
17. Reinstall the battery.
18. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

Replacing the PCI Express Mini Card for wireless WAN connection

Before you start, print these instructions.

Some ThinkPad 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.

To find the position of the PCI Express Mini Card for wireless WAN connection in your computer, click here.

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.

Attention: Before you start installing a PCI Express Mini Card, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

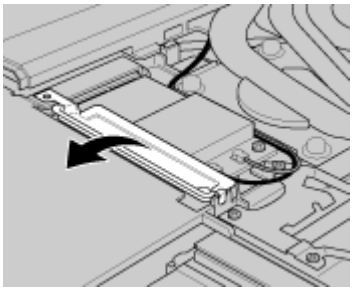
- To replace the PCI Express Mini Card in a ThinkPad T61 14.1-inch model, a ThinkPad T61 14.1-inch widescreen model, and a ThinkPad R61 14.1-inch widescreen model, click here.
- To replace the PCI Express Mini Card in a ThinkPad T61 15.4-inch widescreen model, click here.

For the ThinkPad T61 14.1-inch, ThinkPad T61 14.1-inch widescreen, and ThinkPad R61 14.1-inch widescreen models

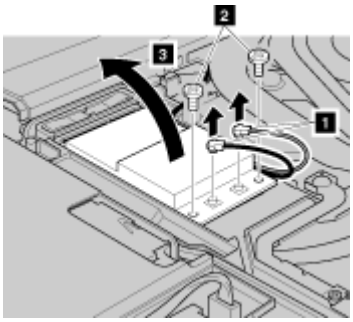
To replace the PCI Express Mini Card, do as follows:

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.

   Note: If your computer is either a ThinkPad T61 14.1-inch widescreen model or a ThinkPad R61 14.1-inch widescreen model, you must lift up the bracket first, as shown in the drawing.

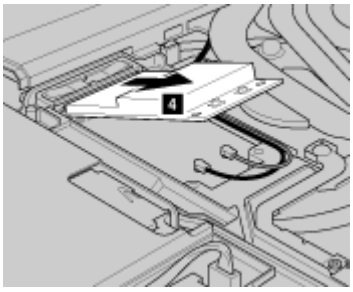
   

5. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card **(1)**. If no such tool is included, disconnect the cables **(1)** by picking up the connectors with your fingers and gently unplugging them. Remove the screws **(2)**. The card pops up **(3)**.

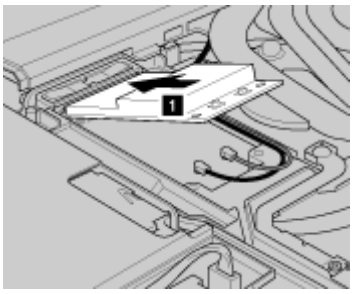


Note: Depending on the system configuration of your computer, the card may have only one connector.

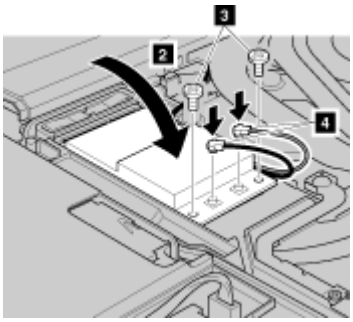
6. Remove the card **(4)**.



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

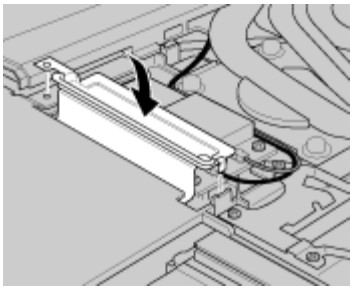


8. Pivot the card until you can snap it into place by pressing the upper side of each connector **(2)**. Secure the card with the two screws **(3)**. Connect the cables to the new PCI Express Mini Card **(4)**.



Note: Depending on the system configuration of your computer, the card may have only one connector.

Note: If your computer is either a ThinkPad T61 14.1-inch widescreen model or a ThinkPad R61 14.1-inch widescreen model, be sure to put the bracket back in place, as shown in the drawing.

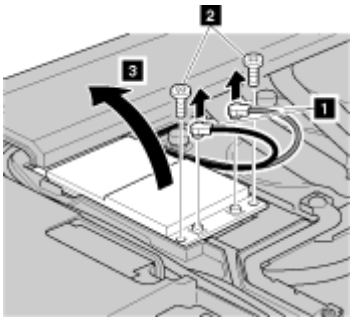


9. Reinstall the keyboard.
10. Reinstall the battery.
11. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

For the ThinkPad ThinkPad T61 15.4-inch widescreen model

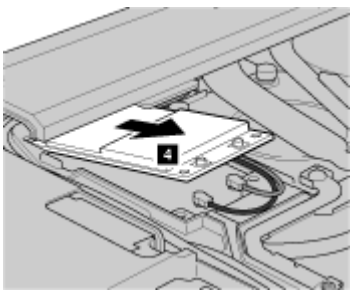
To replace the PCI Express Mini Card, do as follows:

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 cables from the card **(1)**. If no such tool is included, disconnect the cables **(1)** by picking up the connectors with your fingers and gently unplugging them. Remove the screws **(2)**. The card pops up **(3)**.

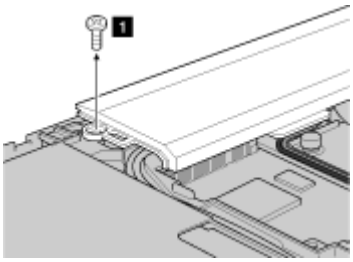


Note: Depending on the system configuration of your computer, the card may have only one connector.

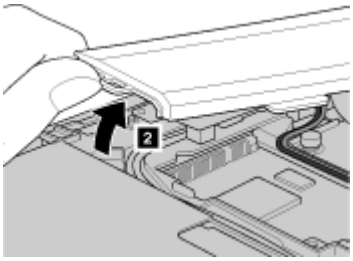
6. Remove the card **(4)**.



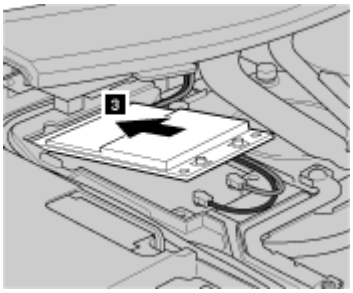
7. Remove the screw **(1)** from the keyboard bezel.



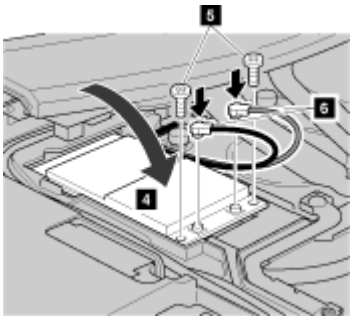
8. Lift up the front of the keyboard bezel, as shown in the drawing **(2)**, to reveal the socket contact of the computer.



9. Align the contact edge of the new PCI Express Mini Card with the corresponding socket **(3)**.

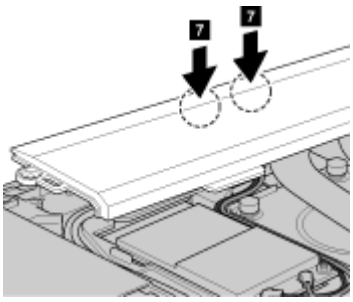


10. Pivot the card until you can snap it into place by pressing the upper side of each connector **(4)**. Secure the card with the two screws **(5)** Connect the cables to the new PCI Express Mini Card **(6)**.



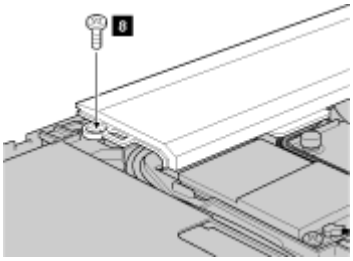
Note: Depending on the system configuration of your computer, the card may have only one connector.

11. Press the keyboard bezel in the area marked in the drawing **(7)** until it clicks into place.



Note: Make sure that the cables are secured properly as shown in the drawing, to prevent them from being pinched by the bezel.

12. Secure the keyboard bezel with the screw **(8)**.



13. Reinstall the keyboard.
14. Reinstall the battery.
15. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

Replacing the PCI Express Mini Card for wireless WAN connection

Before you start, print these instructions.

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

To find the position of the PCI Express Mini Card for wireless WAN connection in your computer, click here .

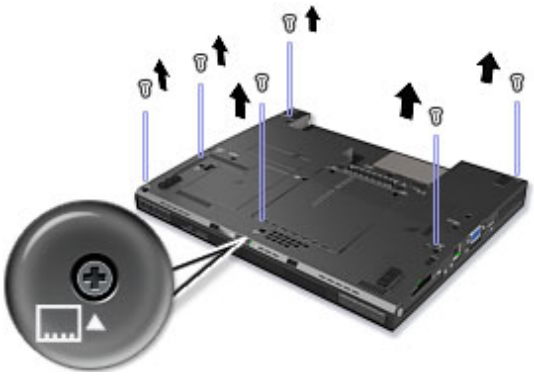
Danger: During electrical storms, do not connect the cable to or disconnect it from the telephone outlet on the wall.

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.

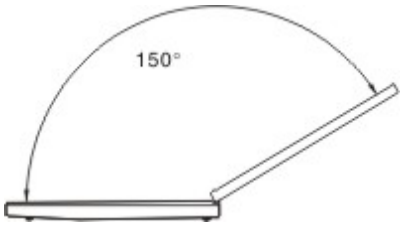
Attention: Before you start installing a PCI Express Mini Card, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

To replace the PCI Express Mini Card, do as follows:

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. Close the computer display, and turn the computer over.
6. Remove the screws that secure the upper case.



7. Turn the computer over and open the display 150 degrees.

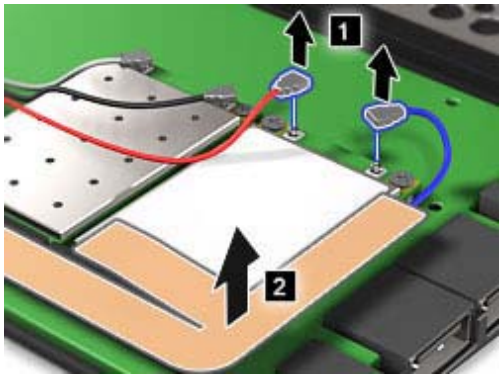


8. If your computer has a fingerprint reader, unplug the fingerprint reader cable.

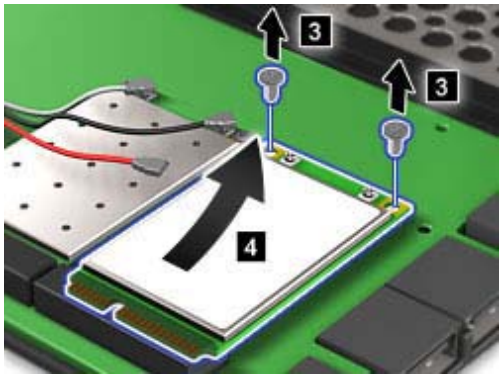
9. Push the upper edge of the palm rest downward slightly **(1)**, while lifting up the lower edge of the palm rest and pulling the upper case towards you **(2)** to remove it from the lower case.

10. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card **(1)**. If no such tool is included, disconnect the cables from the card **(1)** by picking up the connectors with your fingers and gently unplugging them. Then peel off the antenna **(2)**.

Note: Depending on the system configuration of your computer, the card may have only one connector.



11. Remove the screws **(3)**. The card pops up **(4)**. Remove the card.



12. Align the contact edge of the new Wireless WAN Card with the corresponding socket contact of the computer.
13. Pivot the card until you can snap it into place by pressing the upper side of the connectors; then secure the card with the two screws. Reattach the antenna, and connect the cables to the new card.

    Note: Depending on the system configuration of your computer, the card may have only one connector.

14. Replace the upper case and push the middle top part of the upper case into place until you hear it click; then turn the machine over and tighten the screws you have removed in step 6.

15. If your computer has a fingerprint reader, reattach the fingerprint reader cable.
16. Reinstall the keyboard.
17. Reinstall the battery.
18. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

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 and Windows 2000) 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 status

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

5. *Bluetooth* status or **_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.

Wireless connections

You can connect to the Internet without connecting a wire to your computer by setting up a wireless access point or residential gateway. A wireless access point does not connect you to the Internet directly. Instead, it connects to a wired connection such as a cable modem, a DSL modem, or a phone line.

Certain types of wireless connections, such as wireless LAN (the IEEE 802.11 standard), are being used to connect to an access point.

To connect to an access point, you will need several pieces of information. You will need to know the network name (obtain this from your administrator), and your MAC address (which should have come with your computer or wireless networking card). You may also need to set up encryption. Contact your administrator for your network name and encryption settings. You may need to register your MAC address with your network administrator before connecting to your company network. A residential gateway is the consumer version of an access point. Consult your residential gateway instructions for setup.

Be careful to disable the wireless function when you are not using it because it uses power even when you are not connected to the network. Some models have an integrated Wireless LAN antenna and hardware. If your computer did not come with integrated wireless, you can purchase a PC Card as an option. Wireless LAN gives you a high-speed connection to an access point.

If your computer comes with the built-in wireless LAN or wireless WAN card, refer to Making wireless LAN connections and Using wireless WAN connections for more information. If your computer has the Integrated *Bluetooth* features and/or is equipped with the Certified Wireless USB, refer to Using *Bluetooth* and Using Certified Wireless USB for more information.

Making wireless LAN connections

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. Some ThinkPad® models come with a built-in wireless networking card and a configuration utility to help you make wireless connections and monitor the status of your 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.

Wireless networking setup
Wireless security features
Checking wireless connection status
Enabling or disabling the wireless feature
Wireless upgradeable ThinkPad models

Note: Some models come with a wireless networking card and a wireless LAN configuration utility built in. If your computer does not come with these features, you can purchase the wireless networking card as an option. For more information, refer to Finding ThinkPad options.

Note: If you use 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. Also for the best connection of the wireless LAN feature, open your computer display to an angle of slightly more than 90 degrees.

Wireless networking setup

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

To start the Access Connections wizard, click **Start** --> **All Programs** (in Windows® 2000, **Programs**) --> **ThinkVantage** --> **Access Connections**, and follow the instructions on the screen.

Note: Before you start setting up wireless networking connections by using Access Connections, obtain a Network Name (SSID) and your encryption information from your network administrator.

Access Connections, a connectivity assistant program, 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.

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 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.

Security and Privacy Services for wireless risk assessment and wireless solution design can help you assess the risks based on your business needs, identify your information risk position, and integrate security strategies, policies, and architectures to help you achieve your wireless e-business objectives. To effectively manage risk on an ongoing basis, organizations must have a sound security strategy. By understanding threats and vulnerabilities at an early stage, we can help define the necessary scope and features of your wireless e-business security infrastructure.

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 as follows:

No link or a very poor one

Usable but weak link

Strong link

Wireless radio is disabled

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

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.

For ThihnkPad X61 Series (X61/X61s)

Power-status indicators

The computer has status indicators that show the mode (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. Standby status

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

2. AC power status

- **Green:** The ac adapter is connected and the computer is operating on ac power. If a battery is installed in 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 it is in standby mode or hibernation mode.

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

4. Wireless WAN status

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

5. *Bluetooth* status

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

6. Wireless LAN status

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

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 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 HSPDA. 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.

Some models of ThinkPad X61 come with a retractable wireless WAN antenna. Before you establish a wireless WAN connection, pull out the antenna as shown in the drawing **(1)**.

Note: When the computer is being carried or is not in use, make sure that the antenna is stored in its original position.

To use a wireless WAN connection with built-in wireless WAN features, start Access Connections™.

To start the Access Connections wizard, click **Start** -> **All Programs** (in Windows® 2000, **Programs**) -> **ThinkVantage** -> **Access Connections**, and follow the instructions on the screen.

Wireless connections

You can connect to the Internet without connecting a wire to your computer by setting up a wireless access point or residential gateway. A wireless access point does not connect you to the Internet directly. Instead, it connects to a wired connection such as a cable modem, a DSL modem, or a phone line.

Certain types of wireless connections, such as wireless LAN (the IEEE 802.11 standard), are being used to connect to an access point.

To connect to an access point, you will need several pieces of information. You will need to know the network name (obtain this from your administrator), and your MAC address (which should have come with your computer or wireless networking card). You may also need to set up encryption. Contact your administrator for your network name and encryption settings. You may need to register your MAC address with your network administrator before connecting to your company network. A residential gateway is the consumer version of an access point. Consult your residential gateway instructions for setup.

Be careful to disable the wireless function when you are not using it because it uses power even when you are not connected to the network. Some models have an integrated Wireless LAN antenna and hardware. If your computer did not come with integrated wireless, you can purchase a PC Card as an option. Wireless LAN gives you a high-speed connection to an access point.

If your computer comes with the built-in wireless LAN or wireless WAN card, refer to Making wireless LAN connections and Using wireless WAN connections for more information. If your computer has the Integrated *Bluetooth* features and/or is equipped with the Certified Wireless USB, refer to Using *Bluetooth* and Using Certified Wireless USB for more information.

Making wireless LAN connections

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. Some ThinkPad® models come with a built-in wireless networking card and a configuration utility to help you make wireless connections and monitor the status of your 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.

Wireless networking setup
Wireless security features
Checking wireless connection status
Enabling or disabling the wireless feature
Wireless upgradeable ThinkPad models

Note: Some models come with a wireless networking card and a wireless LAN configuration utility built in. If your computer does not come with these features, you can purchase the wireless networking card as an option. For more information, refer to Finding ThinkPad options.

Note: If you use 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. Also for the best connection of the wireless LAN feature, open your computer display to an angle of slightly more than 90 degrees.

Wireless networking setup

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

To start the Access Connections wizard, click **Start** --> **All Programs** (in Windows® 2000, **Programs**) --> **ThinkVantage** --> **Access Connections**, and follow the instructions on the screen.

Note: Before you start setting up wireless networking connections by using Access Connections, obtain a Network Name (SSID) and your encryption information from your network administrator.

Access Connections, a connectivity assistant program, 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.

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 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.

Security and Privacy Services for wireless risk assessment and wireless solution design can help you assess the risks based on your business needs, identify your information risk position, and integrate security strategies, policies, and architectures to help you achieve your wireless e-business objectives. To effectively manage risk on an ongoing basis, organizations must have a sound security strategy. By understanding threats and vulnerabilities at an early stage, we can help define the necessary scope and features of your wireless e-business security infrastructure.

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 as follows:

No link or a very poor one

Usable but weak link

Strong link

Wireless radio is disabled

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

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.