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1

Introducing Windows

This chapter explains what Windows is and what's new in this latest version. It will help you identify the edition of Windows 7 that will suit you best, determine if your existing computer will handle Windows 7 and identify any actions needed. It also covers setup for the system and network, and using the mouse (or Windows touch facilities).

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What is Windows?

Windows is an operating system for PCs (personal computers). The operating system is the software that organizes and controls all the components (hardware and software) in your computer so that they integrate and work efficiently together.

The first operating system from Microsoft was known as MS-DOS (Microsoft Disk Operating System). This was a non-graphical, line-oriented, command-driven operating system, able to run only one application at a time.



The original Windows system was an interface manager that ran on top of the MS-DOS system, providing a graphical user interface and using clever processor and memory management to allow it to run more than one application or function at a time.

Don't forget



There have also been versions of Windows aimed specifically at businesses, including Windows NT, Windows 2000, Windows 2003 and Windows 2008.



Windows®

The basic element of Windows was its “windowing” capability. A window (with a lower-case w) is a rectangular area used to display information or to run a program. Several windows can be opened at the same time so that you can work with multiple applications. This provided a dramatic increase in productivity when using PCs, in comparison with the original MS-DOS.

Microsoft released four versions of this interface management Windows, with numerous intermediate versions, including:

- 1985 – Windows 1.0
- 1987 – Windows 2.0, 2.1 and 2.11
- 1990 – Windows 3.0, 3.1, 3.11 (Windows for Workgroups)
- 1995 – Windows 95, 98, 98 SE and Me (Millennium Edition)

The next version Windows XP was a full operating system in its own right. This was eventually followed by Windows Vista:

- 2001 – Windows XP (eXPerience) Home and Professional
- 2007 – Windows Vista Home, Home Premium, Ultimate etc

Hot tip



Windows XP and later versions no longer incorporate MS-DOS, though they do still feature a Command Prompt that permits DOS-like command line functions.

Windows 7

The latest version of Windows was released in 2009.

- 2009 – Windows 7 Starter, Home Premium, Ultimate etc

It is known as Windows 7, being the seventh major version (as Microsoft views the Windows product release cycle). It is based on the Windows Vista nucleus and displays the internal version number Windows 6.1. This sub-version numbering is intended to increase compatibility with existing applications that may be checking for Windows version 6.

Windows 7 is provided in several editions, aimed at different sections of the retail, business and emerging markets. Each edition includes all of the capabilities and features of the edition below it.



We'll start with the Windows 7 Retail editions:

Windows 7 Home Premium

This edition contains features aimed at the home market segment, such as Windows Media Center, Windows Aero and touch-screen controls. It provides an easy to manage environment for desktop, laptop and netbook computers.

Windows 7 Professional

This is targeted toward enthusiasts and small business users. It includes all the features of Windows 7 Home Premium, and adds the ability to participate in a Windows Server domain. It can also operate as a Remote Desktop server, and it supports features such as location aware printing, Encrypting File System and Presentation Mode.

Windows 7 Ultimate

This contains all the features of the Professional edition plus the business related features included in the Enterprise edition (see following page). Home Premium and Professional users can upgrade to the Ultimate edition for a fee using the Windows Anytime Upgrade (see page 14). Windows 7 Ultimate edition does not include the Ultimate Extras and other exclusive features that were incorporated into the Windows Vista Ultimate edition.

Hot tip



In this book we use the Ultimate edition of Windows 7, which caters for both business and consumer requirements.

Don't forget

Enterprise edition is not available as a packaged retail product or pre-installed on new PCs, but is provided only through volume licensing.

Beware

The competition law issues in Europe mean that proposals are subject to review and change, so you should check the latest position before making a European purchase of Windows 7.

Other Windows 7 Editions

Windows 7 Starter

This is for beginner PC users who will make relatively limited use of their PCs. There are some particular exclusions: the Aero Glass transparency feature and related functions, the ability to personalize the system with your own theme or background, fast user switching allowing change of user without logging off, multimonitor support and DVD playback. All these are unavailable in the Starter edition. It does not offer a 64-bit variant. Early plans would have limited the system to running three applications simultaneously. However, this constraint has now been removed.

The Starter edition is available pre-installed on computers through system integrators or computer manufacturers (OEM system).

Windows 7 Home Basic

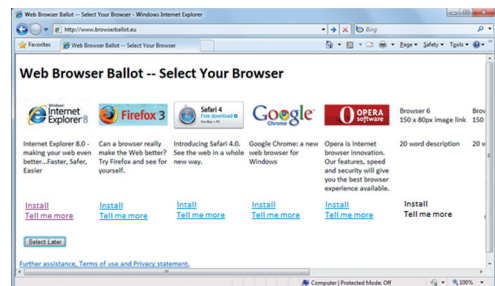
This is available in emerging markets including Brazil, People's Republic of China, India, Indonesia, Mexico, Pakistan, the Philippines and Thailand. It is not available in countries such as Australia, Canada, France, Germany, The Netherlands, Israel, New Zealand, the United States and the United Kingdom. Compared to the Premium edition, some Aero Glass options are excluded, and there are no games, no Windows Media Center and no support for Windows Multitouch. Like Starter, it is 32-bit only.

Windows 7 Enterprise

This is for the corporate or enterprise section. It has all the features of the Professional edition, plus support for Multilingual User Interface (MUI) packages, BitLocker Drive Encryption and UNIX applications. It includes a license to run multiple virtual machines and offers special activation facilities for volume users.

Windows 7 in Europe

Users in Europe can choose any edition of Windows 7 (except Home Basic) but will be given a browser ballot screen to select from a set of browsers (Internet Explorer 8 included).



Windows 7 Features

The editions of Windows 7 available to you may be constrained by the region in which you live, or by the way you obtain your copy of the product. However, you'll normally have a choice of edition, so it is useful to review the features that are available by edition:

Edition	S	HB	HP	Pro	Ent	Ult
Maximum memory (GB) ¹	4	4	16	192	192	192
HomeGroup	✓ ²	✓ ²	✓	✓	✓	✓
Desktop Window Manager	x	✓	✓	✓	✓	✓
Windows Mobility Center	x	✓	✓	✓	✓	✓
Windows Aero	x	✓ ³	✓	✓	✓	✓
64-bit	x	x	✓	✓	✓	✓
MultiTouch	x	x	✓	✓	✓	✓
Premium Games	x	x	✓	✓	✓	✓
Windows Media Center	x	x	✓	✓	✓	✓
Encrypting File System	x	x	x	✓	✓	✓
Location Aware Printing	x	x	x	✓	✓	✓
Remote Desktop Host	x	x	x	✓	✓	✓
Presentation Mode	x	x	x	✓	✓	✓
Windows Server domain	x	x	x	✓	✓	✓
Windows XP Mode	x	x	x	✓	✓	✓
AppLocker	x	x	x	x	✓	✓
BitLocker Drive Encryption	x	x	x	x	✓	✓
BranchCache Distributed Cache	x	x	x	x	✓	✓
DirectAccess	x	x	x	x	✓	✓
Subsystem for Unix Applications	x	x	x	x	✓	✓
Multilingual User Interface Pack	x	x	x	x	✓	✓
Virtual Hard Disk Booting	x	x	x	x	✓	✓

Note 1: 64-bit mode required for greater than 4 GB memory

Note 2: Join HomeGroup only, not create HomeGroup

Note 3: Partial support only for Windows Aero

As this table indicates, the Windows 7 editions are super sets of one another. Enterprise and Ultimate contain all the features of Professional, plus some exclusive features. Similarly, Professional includes all the features of Home Premium, plus extra features.

Hot tip



In this list, the editions are as follows:

S Starter
HB Home Basic
HP Home Premium
Pro Professional
Ent Enterprise
Ult Ultimate

Note that the Enterprise and Ultimate editions contain the same features.

Don't forget

These are the supported specifications. However, the Windows 7 Basic and Classic interfaces will work with virtually any graphics hardware that supports Windows XP or later.

Hot tip

Additional hardware includes a pointing device such as a mouse, a sound card and speakers. Note that BitLocker Drive Encryption requires a TPM 1.2 chip or a USB 2.0 flash drive.

PC Requirements

The recommended specifications for PCs running Windows 7 are based on the processor mode used. On most current processors, you have the choice of 32-bit or 64-bit mode.

Windows 7 for 32-bit Processor Mode

The PC should have these minimum hardware requirements:

- Processor 1 GHz
- System Memory 1 GB
- Graphics SVGA (800x600)
- Graphics adapter DirectX9 class with WDDM 1.0 driver
- Graphics memory 128 MB (for Aero support)
- Hard Disk 16 GB available space
- Other DVD-RW optical drive

Windows 7 for 64-bit Processor Mode

The PC should have these minimum hardware requirements:

- Processor 1 GHz
- System Memory 2 GB
- Graphics SVGA (800x600)
- Graphics adapter DirectX9 class with WDDM 1.0 driver
- Graphics memory 128 MB (for Aero support)
- Hard Disk 20 GB
- Other DVD-RW optical drive

If you are planning to run Windows XP Mode on your Windows 7 system, the PC should have a minimum of 2 GB of memory and 15 GB of additional disk space. In addition, Windows Virtual PC requires a PC with Intel-VT or AMD-V enabled in the CPU, since the software relies on hardware virtualization features.

If you want to upgrade your existing PC to run Windows 7, you can run the Windows 7 Upgrade Advisor (see page 15) to identify any potential problems or short-comings.

32-Bit versus 64-Bit

As well as choosing your Windows 7 edition, you also need to decide between the 32-bit and the 64-bit versions of the operating system. This choice is available for all editions of Windows 7, except for Starter and Home Basic, with the retail packs including installation DVDs for each of these modes.

The 32-bit or 64-bit nomenclature refers to the memory address length which the processor can reference. This dictates the maximum amount of memory, which is 4 GB for 32-bit mode (or more exactly 3.4 GB, since some memory needs to be allocated to other purposes). For 64-bit mode, the maximum may be much higher, though the Windows 7 editions do not make full use of the potential. As well as more memory, 64-bit mode will also be faster, typically about 10%.

However, you need applications that are specifically optimized for 64-bit processing to take advantage of the speed improvements and memory increase. Many games for example include the necessary enhancements.

Remember that choosing a 64-bit system means that you can no longer run 16-bit applications. This is only a problem if you use very old software (from the Windows 3.1 days).

More seriously, existing 32-bit drivers for your devices will not operate in 64-bit mode, so you will have to locate 64-bit versions of the drivers. You may have problems with some devices, particularly the older ones.

You may also find that running 32-bit applications in a 64-bit operating system might actually be slower, due to the additional overheads imposed by conversion between the address systems.

In summary, if you have a 64-bit capable computer but use older hardware or 32-bit applications, you might do better to stay with the 32-bit version of Windows 7. With the latest hardware and drivers, and applications that are 64-bit optimized, especially demanding applications such as video editing or image packages, the switch to 64-bit and higher memory would offer significant improvements.

It won't be long before 64-bit computing becomes the standard, and 32-bit operation becomes an optional extra, but for the present there are still large numbers of 32-bit applications.

Beware



If your computer is more than a few years old, it is quite possible that you can only run the 32-bit version of Windows 7.

Don't forget



Applications such as Microsoft Office 2007 are still limited to 32-bit, although the follow-on version does include 64-bit support.

Installation Options

You can have Windows 7 installed onto your computer in several different ways:

- **Upgrade** – Replace an older version of Windows, retaining the installed applications and settings
- **Dual Boot** – Install Windows 7 while retaining the existing version of Windows, using a second disk partition. You'll need to install required applications to the new system
- **Clean Install** – Add Windows 7 to a newly formatted disk, then install all required applications
- **Pre-install** – Buy a new PC with Windows 7 already installed, then install the required applications

When you have an existing version of Windows on your PC, you can purchase an Upgrade version of Windows 7, which will be at a reduced price. However, you'll need to use the Dual Boot or Clean Install methods if the existing version of Windows is Windows XP, Windows 2000 or any version prior to these.

To illustrate the relative costs of the Upgrade and Full versions for the various editions of Windows 7, these are the prices in the United States:

Windows 7 Edition	Upgrade Price	Full Price
Home Premium	\$119.99	\$199.99
Professional	\$199.99	\$299.99
Ultimate	\$219.99	\$319.99

Microsoft also announced a Windows 7 Family pack. This contains three upgrade licenses for the Home Premium edition. It is being provided at a promotional price of \$149.99.

If you already have Windows 7 on your computer, you can take advantage of the Windows Anytime Upgrade facility, to upgrade to a higher level edition. You can purchase the required product key from a store or online. You won't need a DVD or any downloads, since all the files required will already be included in your system. The upgrade will take only 10 or 15 minutes. Your current programs, files, and settings will be preserved.

Don't forget

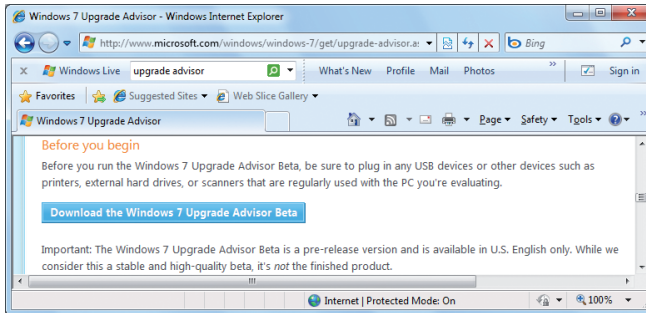


To qualify for the Upgrade version of Windows 7 you must already have a version of Windows on your computer.

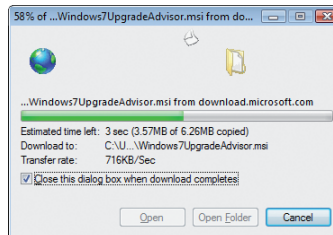
Windows 7 Upgrade Advisor

This checks your PC to see how well it could run Windows 7. It identifies known system or device compatibility issues, and suggests ways to resolve them.

- 1 Go to the web page www.microsoft.com/windows/windows-7/get/upgrade-advisor.aspx and click the button Download Windows 7 Upgrade Advisor



- 2 Follow the prompts to download and install the Upgrade Advisor
- 3 Run the Upgrade Advisor from the Start menu or desktop icon



- 4 Click Start Check to begin the analysis of your computer's hardware and software

Don't forget

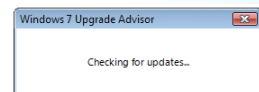


Rather than type the whole address, you can go to the main www.microsoft.com website and search for Windows 7 Upgrade Advisor.

Hot tip



Each time you run the Upgrade Advisor, it will automatically update itself, so you get the latest changes.



Beware



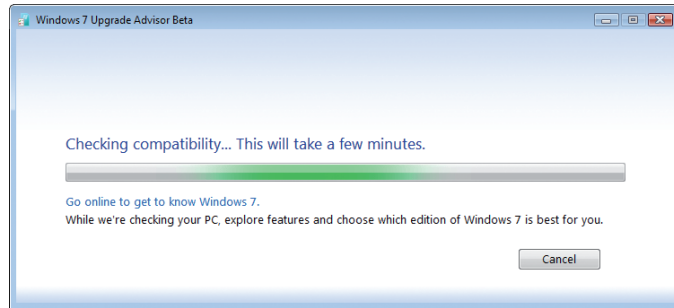
Before you check your system, plug in any USB or other attachable peripheral that may be used on your PC.

Hot tip

The Upgrade Advisor will run on systems using Windows 7, Windows Vista and Windows XP with Service Pack 2 or 3.

Upgrade Reports

While the check takes place, you can visit the Windows 7 website to review features and compare the editions.

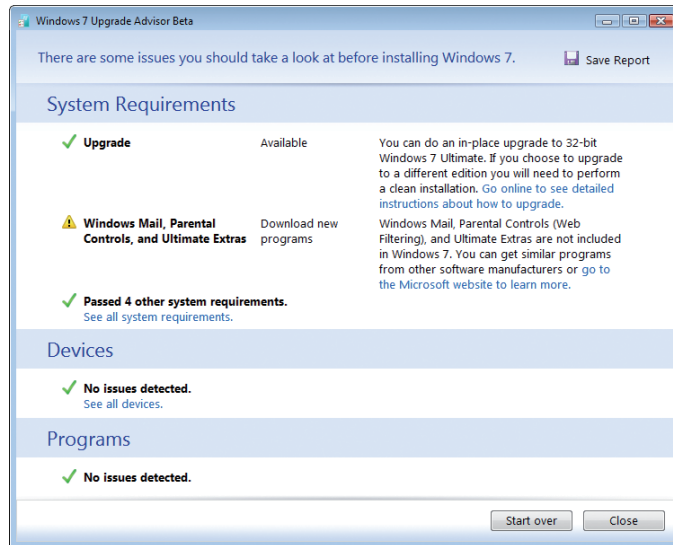


1

When Upgrade Advisor completes, it will advise you of the installation options available and any issues detected

Hot tip

The system requirements for processor speed, memory, hard drive space and graphics adapter are all satisfied, as you'd expect for a system currently running Windows Vista.

**Don't forget**

For other editions of Windows 7, a clean installation would be required.

2

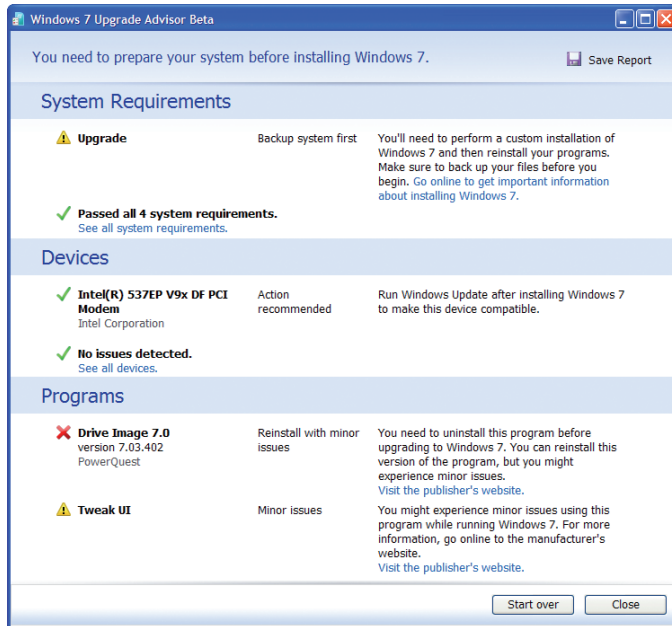
Upgrade Advisor indicates that upgrade from Windows Vista Ultimate to Windows 7 Ultimate is allowed

3

Windows Mail, Parental Controls and Ultimate Extras are not included in Windows 7. There are no other issues with devices or programs detected on this computer

...cont'd

- 1 Run the Upgrade Advisor on a system with Windows XP, and you'll find that a full installation will be needed



- 2 In this example, the system resources on the Windows XP computer are sufficient to support Windows 7
- 3 The Upgrade Advisor warns you to run Windows Update (see page 231) after installing Windows 7, to make the Intel modem device compatible

The Upgrade Advisor identifies potential issues with the installed software even though you'll not be upgrading from Windows XP

- 1 Some software, for example Drive Image 7.0, must be uninstalled before Windows 7 upgrade, then re-installed
- 2 There may be minor issues using software designed for previous versions of Windows, though it will run under Windows 7.

Don't forget



Even when the computer fully meets the memory, processor and graphics card specifications, there may be additional needs, such as a TV tuner for media center operation.

Starting Windows 7

Whichever method of installing Windows 7 you have selected, you'll be asked to provide some appropriate details the first time you start up your system. For example:

Don't forget



If you have Windows 7 pre-installed, some of this information may have been pre-defined by your supplier.

- 1 If requested, select the language and the country or region



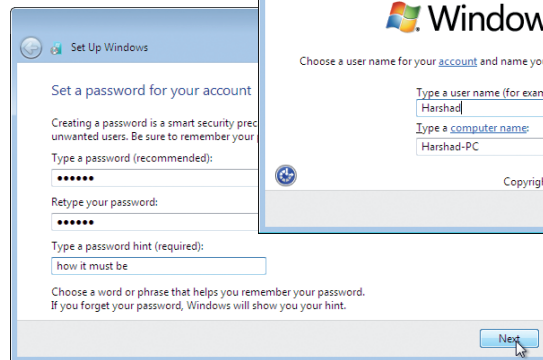
- 2 When prompted, enter your username, amend the suggested computer name if desired, then click Next



Don't forget



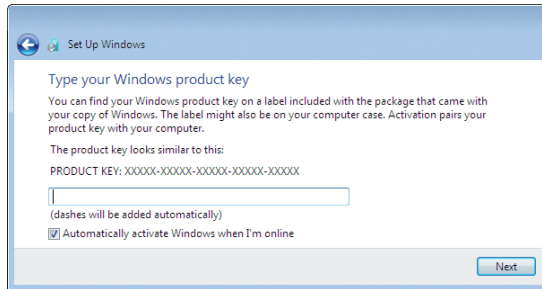
You are strongly advised to provide a password for your user account. Choose a cryptic hint, so that your password can't be easily guessed.



- 3 Type a suitable password, re-enter it to confirm and then provide a hint to remind you of it, if you should forget

...cont'd

- 4 Enter the Product Key for your copy of Windows 7 – a combination of 5 sets of 5 letters and numbers



Hot tip



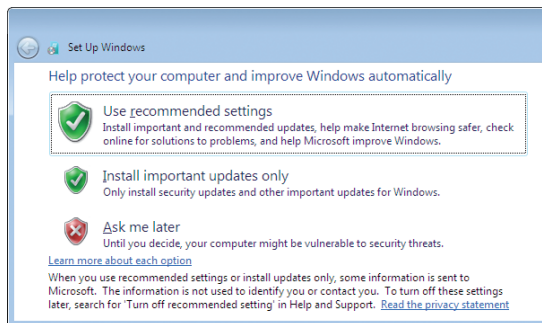
Case doesn't matter, and there's no need to type the dashes that separate the sets of characters.

Don't forget

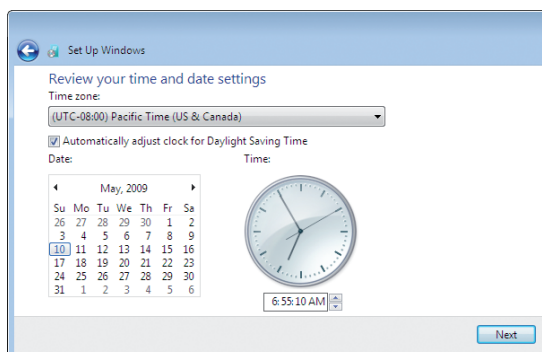


Leave the box ticked, to allow Windows to automatically activate your copy online (three days after installation).

- 5 Use Recommended Settings, to allow Windows Update to maintain your system on a regular basis.



- 6 Check the date and time settings and adjust the Time Zone specified, if required



Beware



Having the wrong time zone selected could affect the default currency symbol and the formats used for date and time displays.

Don't forget

If you have a wireless adapter in the PC, you'll be asked to join an available wireless network. You won't see this prompt if you have no wireless hardware.

Hot tip

If you have an Ethernet adapter card, this will be detected and you'll be prompted for that network's location. If there's an active Internet connection, this will be detected as well.

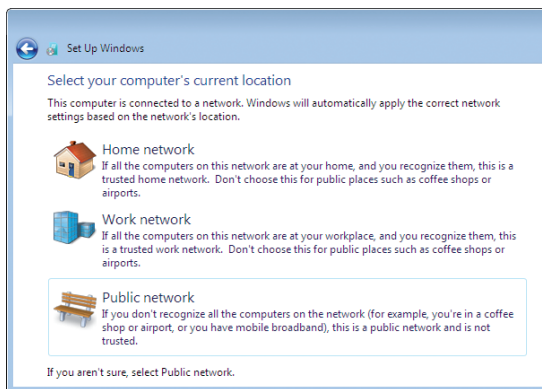
Beware

You'll need to specify what libraries or devices you want to share, and Windows will assign a password so other computers on the Home network can join the HomeGroup.

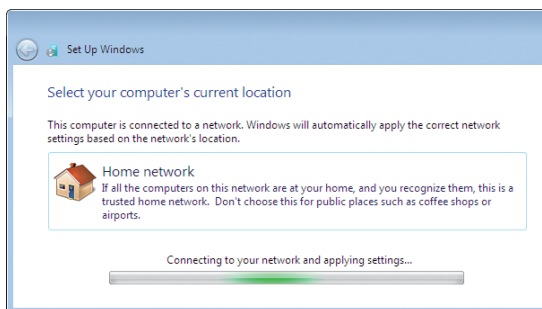
Network Location

If your computer is connected to a network, Ethernet or wireless for example, Windows 7 detects this and asks you to specify the type of network location involved.

- 1 If prompted, choose an available wireless network from the list provided, and enter the appropriate security key



- 2 Choose Home, Office or Public depending on the location of your network



- 3 Windows will connect to your network and apply the necessary settings for the selected network location

If you select Home network, Windows will initiate the process for creating or joining a HomeGroup – a simple way to link computers on your home network together so that they can share pictures, music, videos, documents, and printers (see page 174).