Information Technology in Education Project

Technical Update on Windows XP
(RM03/2002)

Information Technology Education Resource Centre
www.ited.ed.gov.hk

Education Department
The Government of the HKSAR

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Windows XP is the latest version of Microsoft’s Windows operating system (OS). The English and Chinese (Hong Kong SAR) versions of Windows XP were officially released on 25th October and 2nd November 2001 respectively.

Windows XP is the first joint business and consumer versions of Windows OS. Based on Windows 2000 kernel, it combines the prevailing features of business Windows NT Workstation / 2000 Professional (i.e. high reliability and security) and consumer Windows 9x / Me (i.e. broad hardware and multimedia support).

**Editions and Target Users**

Two editions of Windows XP are available for different types of users:

**Windows XP Home Edition**

Windows XP Home Edition targets home users who usually share a single PC among family members for general use.

**Windows XP Professional**

Windows XP Professional targets users who require working in network environment (e.g. school LAN). It includes all features of XP Home Edition plus additional network services, system administration and security functionality.

**64-bit Windows**

There is also Windows XP 64-bit Edition which targets users of technical workstations (running on Intel Itanium processor) for high performance design and engineering applications that are generally not applicable to school environment.

**Which Windows XP edition is right for schools? XP Home Edition or XP Professional?**

Windows XP Professional is more suitable. XP Professional provides some features that are not available in XP Home Edition but are useful and required in school LAN environment. For example:

- XP Professional allows users to log on the school’s existing Windows NT / 2000 network and use the shared network resources;
- School system administrators can centrally control XP Professional users’ environment like desktop appearance and system configuration (via Group Policy and roaming user profiles);
- More upgrade options: both XP Home Edition and XP Professional support the upgrade from Windows 98 / 98SE / Me, but only XP Professional supports the upgrade from Windows NT 4.0 Workstation / 2000 Professional or XP Home Edition; and

**More functionalities** like:
- File access control and encryption (permission settings & Encrypting File System)
- Better remote and mobile support (Remote Desktop & Offline Files and Folders)
- Web server (Internet Information Services)
- Switchable user interface (an optional add-on)

**System Requirements**

According to Microsoft, the followings are the system requirements for both Windows XP Home Edition and XP Professional:

- **CPU**: 300MHz or higher recommended (233MHz minimum supported), Intel Pentium/Celeron family, AMD K6/Athlon/Duron family, or compatible (XP Professional supports up to 2 CPUs)
- **RAM**: 128MB or higher recommended (64MB minimum supported; may limit performance and some features)
- **Disk**: 1.5GB or higher
- **Display**: Super VGA (800 x 600) or higher resolution

It is observed that all the computer systems under the standard provision of IT in Education (ITEd) project meet the minimum system requirements of Windows XP (i.e. CPU at minimum 233MHz and RAM at minimum 64MB). However, schools should note that actual requirements would vary, depending on
school workstations' system configuration, the applications, and the features the users choose to install.

In order to have satisfactory performance, additional system resources like faster CPU, more memory and hard disk space may be required for running schools' specific applications.

Key Features

The following is an overview of some key features of Windows XP that may be useful to schools. Complete feature description and comparison with previous versions of Windows can be found at:

- Windows XP Professional Comparison Guide

New User Interface: "Luna"

Windows XP has a new user interface, named "Luna" theme. This new user interface is supposed to make users easier to use Windows XP.

The new look is quite different from the classic Windows 95-like user interface. For example, the "Start Menu", taskbar and system tray are redesigned, while only "Recycle Bin" icon is left on the desktop screen.

In addition, the ways to navigate, use and configure the system are also changed. For example, many tools in "Control Panel" for system administration and change configuration are reorganized and relocated.

Users can choose either the new or the classic user interface. School system administrators, on the other hand, can decide what user interface or features are most appropriate for their environment by policy settings.

More about the New Face

The new appeal of Windows XP also provides the following two features:

- "Welcome Logon Screen" allows a user to simply click his/her user account name to logon, rather than the classic dialogue box which requires the user to type in his/her account name.
- "Fast User Switching" allows a user to turn the computer over to another person without closing all programs and logoff first. Users can switch quickly between all logged on accounts on the same computer.

Some XP users may be attracted by these two features. However, they are not applicable in school environment: XP Professional will automatically disable these services after the computer is joined to a Windows NT / 2000 network such as a school LAN.

Language Versions and Multilingual Support

Windows XP provides multilingual support that users can input, edit, display and print documents in 135 languages.

In addition to English, Windows XP is also available in 24 localized language versions. Localized versions provide respective native language user interface (e.g. dialogue boxes, menus, help files, etc.) for that specific language, along with other functionality customized for that local circumstance. For example, there are Chinese (Hong Kong SAR), Chinese (Traditional) and Chinese (Simplified) localized versions for Chinese computing in different circumstances.

Our school needs native Chinese user interface. Which language version of XP Professional is suitable for us?

Consider obtaining Chinese (Hong Kong SAR). It features some customized functions specifically for HK local environment. For example, it includes Hong Kong Supplementary Character Set (HKSCS) and Cantonese dialect (i.e. additional characters used commonly / only in HK; characters combinations for some words that are different from the combinations used in written Chinese elsewhere).

Switchable User Interface

The Windows XP Multilingual User Interface (MUI) pack is an add-on to the English version of XP Professional which is licensed separately. It allows users to switch the user interface from one language to another (totally 33 languages). However, the MUI pack is generally not available in the retailed shops.
Multilingual Support in Previous Windows

The built-in multilingual support and optional MUI pack were also similarly featured in Windows 2000. In Windows 9x / Me / NT, only limited multilingual support was provided and usually additional software installation and specific configurations are required.

Ease of Hardware Detection and Device Driver Installation

Windows XP comes with a tremendous number of latest device drivers for hundreds of system components, peripherals and prevalent multimedia devices. It supports popular technologies through:

- **Plug and Play**
  - e.g. DVD drives, display, sound and LAN cards
- **USB 1.x and IEEE 1394**
  - e.g. printers, scanners, digital cameras and video recorders
- **IrDA and IEEE 802.11x**
  - e.g. for infrared and wireless school LAN and PDA access

This out-of-box compatibility eases the use of many prevalent devices. For example, when a user attaches a digital camera to a Windows XP computer, Windows XP will automatically detect the type and model of the digital camera and will properly install the corresponding device driver. The digital camera will then be ready for use.

USB 2.0 and Bluetooth Support

The first release version of Windows XP does not support USB 2.0 and Bluetooth. Microsoft is planning to deliver the support through "Windows Update" feature (an on-line service from Microsoft that scans systems, suggests updates, and installs them on request).

Hardware Support in Previous Windows

In Windows 9x / Me / 2000, the number of built-in device drivers was limited and sometimes 3rd party device drivers were required to be manually downloaded and installed. Windows NT 4.0 did not provide support (or limited support through some proprietary products) on the above mentioned devices and technologies.

Ease of System Support and Maintenance

- **Remote Assistance**
  - New
  
  When Windows XP is deployed as client workstations in a school, the school's technical support staff can use any Windows XP computer to trouble-shoot other Windows XP users' computer with problem through the school LAN or the Internet. The support staff can view the user's screen, chat during the session, and even remotely take control of the user's computer.

- **System Restore**
  - also in Windows Me
  
  Windows XP will create "restore points" every day and also at the time of significant system change. In the event of a problem (e.g. failure of new hardware or software installation), school technical support staff can select a "restore point". Windows XP will then undo any system changes made since that "time".

- **Automated System Recovery (ASR)**
  - also in Windows 2000
  
  School technical support staff can use ASR for data and system backup and recovery. ASR replaces the Emergency Repair Disk (ERD) functionality from Windows NT. It stores crucial system files (e.g. registry settings and network information) and provides a way to restore an otherwise unbootable XP Professional system.

- **Internet Explorer (IE) 6.0**
  - also downloadable for Windows 98/SE/Me/2000
  
  The latest version of Microsoft Web browser is included in the package.

- **Windows Media Player (WMP) 8.0**
  - version 8 is for Windows XP only
  
  WMP supports playing local, downloaded and streaming audio and video contents. It also allows users to create audio CDs.

- **Windows Messenger**
  - New
  
  With the use of Microsoft .NET Passport (i.e. a hotmail.com e-mail account or msn.com user account) via the Internet or Microsoft Exchange 2000 Server in the school LAN, a Windows XP user can use this instant messaging program to conduct real-time audio and video conferencing as well as text chats with other persons over the network.

- **System Preparation (SysPrep) Tool**
  - also in Windows 2000
  
  Schools may want their Windows XP Professional computers to have standardized system configuration and application software installed. School technical support staff can use this tool to prepare a Windows XP "reference system", and later use disk cloning utility (e.g. Norton Ghost) to create an image of that "reference system" for mass client workstation deployment.

Miscellaneous Features

- **Drag & drop file copy to CD-R/W**
  - New
  
  Windows XP allows writing data files to CD-R/W discs from within "Windows Explorer".

- **Application Compatibility Mode**
  - New
  
  It emulates the operating environment of Windows 9x / Me / NT / 2000 that tries to provide...
better compatibility for old application programs which were designed for these platforms.

- **Windows Product Activation** New Microsoft introduces a new piracy-prevention measure called Windows Product Activation (WPA) in Windows XP to reduce casual copying. Retail (e.g. off-the-shelf software packages) and OEM (e.g. new PCs with Windows XP pre-installed) versions of Windows XP include WPA and require users to follow the activation procedure in order to make the system operable (Note: some OEM manufacturers might already pre-activate the Windows XP PCs in the factory).

WPA, however, is likely not a major concern for most schools because under Microsoft volume licensing programs (e.g. Microsoft Open License Program, MOLP), these schools will have access to a version of Windows XP that does not include nor require WPA.

- **Hibernate Mode** also in Windows 2000 Hibernate mode allows users to save all memory to disk and shut the power down. When power is restored, all the applications are re-opened as they were left. It is especially useful for teachers who use notebook computer and require shutting down and resuming their Windows XP system quickly in staff room and in classroom respectively.

- **Remote Desktop** New It allows a remote user to access his/her Windows XP Professional computer from any Windows 95 or above computer over a network (e.g. school LAN) or the Internet. The remote user can work as if he/she sits in front of the host XP Professional computer.

**Deployment Considerations**

Windows XP is hot and most likely schools are interested to deploy Windows XP to their school LAN. Though the Windows NT 4.0 Workstation and/or 2000 Professional computers under the standard provision of ITEd meet the minimum system requirements and are eligible for upgrade to Windows XP Professional, there are several issues to consider before deploying Windows XP in school environment:

**Hardware and Software Compatibility and Availability**

Though Windows XP comes with broader hardware support, it is observed that not all new and school’s existing computers and peripherals are fully supported by Windows XP.

Besides, the availability of application software tuned for Windows XP is still relatively low at this moment; and not all current versions of application software are fully compatible with Windows XP.

Schools should therefore check the compatibility of their school systems with Windows XP against the following grey box:

**Compatibility of some Popular Hardware and Software items in Schools with Windows XP**

<table>
<thead>
<tr>
<th><strong>Compatible:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
</tr>
<tr>
<td>- HP printers (all popular models)</td>
</tr>
<tr>
<td>- Lexmark printers (all popular models)</td>
</tr>
<tr>
<td>- UMAX Astra 610P scanner</td>
</tr>
<tr>
<td>Software</td>
</tr>
<tr>
<td>- Microsoft Office 97 / 2000 / XP</td>
</tr>
<tr>
<td>- Microsoft Visual Studio 6</td>
</tr>
<tr>
<td>- Adobe Photoshop 6</td>
</tr>
<tr>
<td>- Corel CorelDRAW 10</td>
</tr>
<tr>
<td>- Macromedia products</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Conditionally Compatible:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Latest device driver / software patch is required for making the following products compatible:</td>
</tr>
<tr>
<td>Hardware</td>
</tr>
<tr>
<td>- SoundBlaster Live! sound card</td>
</tr>
<tr>
<td>- HP ScanJet 5100C / 6200C scanner</td>
</tr>
<tr>
<td>- Gogo Pen Chinese handwriting input device</td>
</tr>
<tr>
<td>- Penpower Chinese handwriting input device</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Incompatible:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
</tr>
<tr>
<td>- UMAX Astra 1220S scanner</td>
</tr>
<tr>
<td>- SCSI controller replacement required</td>
</tr>
<tr>
<td>- Xerox printers (most models)</td>
</tr>
<tr>
<td>- No printer driver / software patch available yet</td>
</tr>
<tr>
<td>Software</td>
</tr>
<tr>
<td>- Norton Anti-Virus 2001</td>
</tr>
<tr>
<td>- New version (Norton Anti-Virus 2002) required</td>
</tr>
<tr>
<td>- Norton Utilities 2001</td>
</tr>
<tr>
<td>- New version (Norton Utilities 2002) required</td>
</tr>
<tr>
<td>- Norton Ghost 7.0</td>
</tr>
<tr>
<td>- New version (Norton Ghost 2002) required</td>
</tr>
</tbody>
</table>

**Relevant Web Sites:**

- Schools can install this tool on the client workstations intended for Windows XP installation or upgrade. It provides a report that details system compatibility and which hardware and software components (if any) that schools need to upgrade/update for Windows XP.

- This Web site lists out hardware and software items that are compatible with Windows XP.
System Manageability and Interoperability

Windows XP Professional "plays like" Windows 2000 Professional with regards to policy-based management. That is, the way to manage 2000 Professional computers in an NT 4.0 / 2000 network is also applicable to XP Professional.

Detailed information about manageability and interoperability of NT 4.0 Workstation and 2000 Professional (applicable to XP Professional) of a school LAN in NT 4.0 / 2000 network is discussed in a previously released ITEd technical document:

  http://resources.ed.gov.hk/iteducation/updatedoc/ITEd/w2ktechnicalguidelines.PDF

Schools are encouraged to use the document as a reference for the deployment of Windows 2000 and/or XP Professional in their school environment.

Policy-based Management

School system administrators can logically customize policy settings (i.e. System Policy and Group Policy) to centrally control students and even teachers’ XP Professional environment so that users can have a standard, consistent user interface while at the same time cannot perform any unauthorized software installation or system mis-configuration.

Besides, it is noted that some schools have deployed systems and networks other than the standard Windows NT / 2000 provision. For example, some schools might choose to add Linux and/or Macintosh systems to form a school intranet system and co-work with Windows NT / 2000 network. These schools should observe the interoperability (e.g. network communication and file exchange) of Windows XP with these systems.

Life Cycle of Client Windows OS

Schools should note that some issues would make older client Windows OS obsolete. For example, new applications will need newer versions of Windows. Besides, hardware vendors will gradually cease supporting older versions of Windows.

In fact, Microsoft has announced official dates for the withdrawal of support for some older Windows OS:

<table>
<thead>
<tr>
<th>Microsoft OS</th>
<th>Non-supported phase by Microsoft</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOS, Windows 3.xx /</td>
<td>31st December 2001</td>
</tr>
<tr>
<td>95 / NT 3.5x Workstation</td>
<td></td>
</tr>
<tr>
<td>Windows 98 / 98SE /</td>
<td>30th June 2003</td>
</tr>
<tr>
<td>NT 4.0 Workstation</td>
<td></td>
</tr>
<tr>
<td>Windows Me / 2000</td>
<td>Not officially announced yet</td>
</tr>
<tr>
<td>Professional / XP</td>
<td></td>
</tr>
</tbody>
</table>

With respect to the IT readiness and LAN environment, schools should decide and plan their strategy for the prolonged use of their existing systems.

Other Considerations

In order to have a smooth and successful deployment of Windows XP, schools should work closely with their contractors for a comprehensive implementation plan. The plan should allow ample time not only for system deployment but also for user training, data backup, acceptance test and even system recovery in case the deployment is not successful. To minimise the risk, schools may consider different implementation approaches like pilot run or phased roll-out instead of a full-scale cut-over.

In addition, though the new "Luna" user interface is supposed to be user-friendly for some experienced and inexperienced Windows users, the new look needs time or even training for users to get familiar with. System administrators and technical support staff should also prepare to administer systems and support users in mixed Windows 9x / NT / 2000 / XP network environment.

Our school would like to adopt XP Professional for new PCs. Any tips to maintain a unified user interface for our users?

- Choosing the Old Look
  Generally teachers and students would like to work on a user interface that they are already familiar with. In order to have a unified "look and feel" with existing Windows systems, school system administrators can optionally revert the new XP “Luna” look to the classic Windows 95-like user interface.

- Downgrading to Previous Windows version
  Besides, for schools acquiring XP Professional via Microsoft volume licensing programs, they are entitled to downgrade XP Professional to any prior versions that schools wish to use, including Windows 9x / Me / NT Workstation / 2000 Professional instead of Windows XP. However, such downgrade right is not applicable to retail versions and OEM PCs with Windows XP pre-installed. Under all circumstances, schools are...
advised to work together with contractors for appropriate licensing arrangement.

- **Grouping Workstations by Windows version**
  Alternatively, schools may consider (i) categorizing the client workstations according to their Windows version, and (ii) placing the groups of workstations in separate locations. For example, schools can deploy NT 4.0 computers in computer room while XP computers in library.

## Conclusion

Windows XP Professional is a **major upgrade from Windows 9x / Me / NT 4.0 Workstation** while it is a **minor upgrade for Windows 2000 Professional**.

Similar to the older Windows systems currently installed in schools, XP Professional meets all general requirements in school environment and provides appropriate services for teaching and learning. Therefore, for schools which find XP Professional is useful, they may consider the use of it for their desktop and/or notebook computers.

However, schools should note that the deployment of, the integration with, or the migration to XP Professional is a **challenging task**. Schools are advised to **work closely with contractors** to plan and develop their own strategy for smooth implementation, with regards to the following discussed issues and considerations:

- System requirements and performance;
- Hardware and software compatibility and availability;
- System manageability and interoperability;
- Life-cycle of the client Windows OS; and
- Software licensing, overall project planning, implementation and on-going support

### To Upgrade or Not to Upgrade?

Schools should take the followings into account when considering upgrading existing client workstations to XP Professional:

- **For schools having Windows 9x / Me / NT 4.0 Workstation installed**
  Schools may find some features of XP Professional like the new “Luna” user interface, bundled Internet and multimedia tools as well as multilingual and broader hardware support to be attractive.

  However, it is not advised to adopt or upgrade an OS just for the sake of cutting-edge technology. To keep or change an existing OS, schools should evaluate the advantage of XP Professional along with other client Windows to see which one is more appropriate and justifiable in their unique environment.

- **For schools having Windows 2000 Professional installed**
  Many key features of XP Professional have also been provided by 2000 Professional. Therefore, unless schools find the new features of XP Professional are imperative in their environment, it is found that the upgrade to XP Professional is **generally unnecessary.**

~ End of Document ~