

About the Design Guide

Welcome to the *PC 2001 System Design Guide*. This chapter tells you about the document and gives you background information to help you understand its contents.

IMPORTANT: The requirements in this guide provide guidelines for designing PC systems that will result in an optimal user experience with typical Windows-based applications running under either the Microsoft® Windows® Millennium Edition or Windows 2000 Professional or later operating systems. These design requirements are not the basic system requirements for running any version of Windows operating systems.

Purpose

This guide is for engineers who design and build personal computers, expansion cards, and peripheral devices to be used with the Microsoft Windows 2000 and Windows Millennium Edition (Windows Me) operating systems. Hardware design following the requirements in this document provides the user with an optimal experience when the hardware is used with the Windows family of operating systems.

PC 2001 requirements apply to all PC client systems, such as desktop, mobile, and workstation systems. In this edition of the design guide, the design requirements apply to the following:

- Specific types of systems that will run either Windows 2000 or Windows Me operating systems
- Systems adopting the goals of the Easy PC Initiative, including requirements for legacy-free PC systems
- Devices supported under Windows Me and Windows 2000, including graphics and video device capabilities, digital media, storage, networking and communications, and other devices

This guide does not address PC systems designed to act as servers in networked environments, nor does it address non-PC handheld computers running the Microsoft Windows CE operating system.

History

This guide is co-authored by Intel Corporation and Microsoft Corporation. The requirements in this guide indicate features that the hardware industry should consider in designing PCs and peripherals for various price levels and performance levels.

To promote industry participation in each design guide, Intel Corporation and Microsoft Corporation sponsor the PC Design Guide web site to provide information for engineers, managers, and others in the PC and hardware peripheral industry who are interested in the PC design guideline projects. This site presents up-to-date information about current design guide projects, including interim drafts and review events.

Changes from PC 99

The clarifications, changes, and additional requirements in this guide include extensions and modifications to the requirements defined in *PC 99 System Design Guide* (Microsoft Press®, 1998; ISBN 0-7356-0518-1).

Unlike PC 99, the *PC 2001 System Design Guide* contains no recommendations. Any recommended items from the previous guide have become requirements or they have been removed. Redundant requirements have been removed or consolidated in one part of the guide.

The *PC 2001 System Design Guide* introduces the Easy PC initiative and provides some of the requirements for legacy removal supporting the Easy PC vision. For example, Chapter 3, “PC System,” contains seven new requirements for legacy-free systems.

Guideline Tracking

When a technology matures or becomes obsolete, those guidelines are removed from the system design guide. For example, the PC System chapter contains a high-level requirement for PC Card and CardBus, the detailed requirements are not in the PC 2001 System Design Guide because that technology is well known and the information about it is available on <http://www.pcdesguide.org>.

To make guideline tracking easier, each requirement is assigned an alphanumeric identifier. These identifiers are unique and are retired with the requirement when that requirement becomes obsolete. Appendix C, “PC 2001 Master Checklist,” provides a list of current requirements with their PC 99 numbers and indicates those PC 99 requirements that have been retired in this guide.

How to Use This Guide

The PC 2001 requirements are defined by system architecture and for individual bus classes and device classes. Requirements are derived from initiatives that are shared between Intel and Microsoft. The goal of such initiatives is an improved user experience. The chapter in the initiative section sets the context for future requirements. The current requirements are in the platform and device class subsystem chapters.

Requirement numbering has evolved since the original design guide. In PC 2001, requirement identifiers are assigned according to an alphanumeric scheme. The numbers are not necessarily sequential. Each requirement has a permanent mnemonic and number combination as follows:

mnemonic—item number.subitem

The mnemonic is a shorter version of the name for a technology. A listing of the mnemonics is included in Appendix C.

PC 2001 Design Guide Organization

This design guide is divided into three parts.

- Part 1: Initiatives. Introduces the initiatives for PC 2001. Study this part first to understand the key design issues and initiatives addressed in the PC 2001 requirements.
- Part 2: Platform Requirements. Presents system-type definitions and requirements for each system type. Study this part for an understanding of the overall system requirements.
- Part 3: Device Class Subsystem Design Requirements. Presents requirements for each device class supported under Windows 2000. Study this part for a detailed understanding of how devices are implemented on PC 2001 systems.
- Appendixes. Includes the PC 2001 checklist, which summarizes all of the requirements defined in this guide, plus other technical and referential appendixes.

Chapter 1, “Executive Summary,” provides a quick overview of the key requirements in the PC 2001 guide.

Terms and Conventions Used

System designers must implement the basic requirements presented in *PC 2001 System Design Guide* on all systems.

Requirement statements that begin with the phrase “If implemented...” indicate a feature that is not required, but must comply with the stated requirements if the

manufacturer includes that feature. These features add capabilities that are supported by the Windows family of operating systems, and they take advantage of the native capabilities of the drivers included with the operating system.

IMPORTANT: The requirements in this guide are often provided in the form of references to industry specifications. These specifications might contain intellectual property of Intel, Microsoft, or other third parties. Each of these industry specifications might have different intellectual property licensing arrangements. It is the responsibility of the original equipment manufacturer (OEM) to consult these industry specifications or their issuance bodies for licensing specifics or details.

The following conventional terms are used throughout this guide. In addition, see the “Glossary” at the back of this guide.

Convention	Meaning
Add-on device	Refers to devices that are traditionally added to the basic PC system to increase functionality. Examples include audio, networking, graphics, small computer system interface (SCSI) controller, and so on. Add-on devices fall into two categories: devices built onto the system board and devices on expansion cards added to the system through a system-board connector, such as Peripheral Component Interconnect (PCI).
System device	Also <i>on-board device</i> . Refers to devices on the system board, such as interrupt controllers, keyboard controller, real-time clock, direct memory access (DMA) page registers, DMA controllers, memory controllers, floppy disk drive controller (FDC), hard disk controller (HDC), serial and parallel ports, PCI bridges, and so on. These devices are typically integrated with the supporting chip set in legacy PC designs.
Windows	For PC 2001, refers to both Microsoft Windows Me and Windows 2000 Professional operating systems.
Windows Me	For PC 2001, refers specifically to the Microsoft Windows Millennium Edition operating system, including any add-on capabilities of the operating system.
Windows 2000	For PC 2001, refers specifically to the Microsoft Windows 2000 Professional operating system, including any add-on capabilities and any later versions of the operating system.

Clarifications and Updates

Updates to PC 2001 and other PC design guides, technical clarifications, and answers to frequently asked questions are on the PC Design Guide Web site listed in “References” at the end of this chapter.

PC 2001 and the “Designed for Microsoft Windows” Logo Program

Microsoft will refer to the requirements in this guide when defining requirements for the “Designed for Microsoft Windows” Logo Program for hardware. The “Designed for Microsoft Windows” Logo Program was developed by Microsoft to help end users easily identify hardware and software products designed specifically for the Windows Me and Windows 2000 Professional operating systems. For information about current Windows logo programs, see the Microsoft Windows Logo Program for Hardware listed in “References” at the end of this chapter.

Licensing the “Designed for Microsoft Windows” Logo enables vendors to use the logo on web sites, product packaging, advertising, collateral, and other marketing materials. The “Designed for Microsoft Windows” Logo indicates to customers that the product is designed to meet a specific set of standards and to provide an optimal experience when run on either the Windows Me or Windows 2000 Professional operating system.

Logo Compliance Dates. In general, the “Designed for Microsoft Windows” Logo requirements related to PC 2001 guidelines go into effect with the release of Windows Whistler except when the effective date is otherwise stated, such as chip set requirements that have an effective date of July 1, 2001. Compliance testing for some requirements will begin later because of the time required for supporting parts to become widely available. For information about actual compliance testing dates for specific requirements, see the Windows Logo Program Requirements at <http://www.microsoft.com/hwdev/winlogo/>.

Logo Testing. Both hardware and software are tested before rights are granted for using the “Designed for Microsoft Windows” Logo. The testing organization for the Logo Program is the Windows Hardware Quality Laboratory (WHQL), which provides compatibility testing services for Windows hardware and drivers. WHQL produces test kit releases based upon the current Windows Logo requirements document.

This document does not explain how a guideline will be tested. Microsoft and Intel co-sponsor the System Test Implementers Forum, wherein industry sources collaborate on test criteria and development. For test information, see the references list in the following section.

References

The following table lists some of the information resources, services, and tools that are available from Intel and Microsoft to help build hardware that complies with the PC 2001 requirements. In addition, each chapter in this guide contains a reference section listing the supporting documents for that chapter. Appendix D, “Master Reference List,” provides a comprehensive list of all references for the guide.

Intel information for developers

<http://developer.intel.com>

Microsoft information for hardware manufacturers

<http://www.microsoft.com/hwdev/>

E-mail: ihv@microsoft.com

Microsoft Windows Hardware Quality Laboratory testing tools

<http://www.microsoft.com/hwtest/>

Microsoft Windows Logo Program for Hardware

<http://www.microsoft.com/hwdev/winlogo/>

PC Design Guides

<http://www.pcdesguide.org>

System Test Implementers Forum

<http://www.systemtest.org>

Windows Me and Windows 2000 Driver Development Kits (DDKs)

<http://www.microsoft.com/ddk/>

Also provided with Microsoft Developer Network (MSDN) Professional membership. To subscribe:

<http://www.microsoft.com/msdn/subscribe/>

Windows Logo Program Requirements

<http://www.microsoft.com/hwdev/winlogo/>