

**Mc
Graw
Hill**

“The Most Comprehensive A-Z
Computer Reference Available”

Computer Desktop Encyclopedia

9TH EDITION



**FREE CD-ROM
INCLUDES THOUSANDS
OF EXPANDED
DEFINITIONS AND
ILLUSTRATIONS!**

More than 10,000 terms clearly
and accurately defined

Hundreds of illustrations help
explain devices and clarify concepts

Covers emerging trends and topics
to keep you on top of the latest
developments in computing

More than 5,000 *additional*
definitions on CD!



Alan Freedman

President of The Computer Language Company

OSBORNE 

**DOCKET
ALARM**

Find authenticated court documents without watermarks at docketalarm.com.

Osborne/McGraw-Hill
2600 Tenth Street
Berkeley, California 94710
U.S.A.

To arrange bulk purchase discounts for sales promotions, premiums, or fund-raisers, please contact Osborne/McGraw-Hill at the above address. For information on translations or book distributors outside the U.S.A., please see the International Contact Information page at the end of this book.

Computer Desktop Encyclopedia, Ninth Edition

Copyright © 2001 by The McGraw-Hill Companies. All rights reserved. Printed in the United States of America. Except as permitted under the Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher, with the exception that the program listings may be entered, stored, and executed in a computer system, but they may not be reproduced for publication.

1234567890 DOC DOC 901987654321

Book p/n 0-07-219307-7 and CD p/n 0-07-219308-5
parts of
ISBN 0-07-219306-9

Publisher

Brandon A. Nordin

Vice President & Associate Publisher

Scott Rogers

Editorial Director

Roger Stewart

Senior Project Editor

Pamela Woolf

Proofreaders

Linda Medoff, Paul Medoff

Computer Designers

Lauren McCarthy, Tabitha Cagan

Illustrators

Lyssa Wald, Michael Mueller

Series Design

Peter F. Hancik

Cover Design

Greg Scott

Cover Illustration

John Bleck

This book was composed with Corel VENTURA™ Publisher.

Information has been obtained by Osborne/McGraw-Hill from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, Osborne/McGraw-Hill, or others, Osborne/McGraw-Hill does not guarantee the accuracy, adequacy, or completeness of any information and is not responsible for any errors or omissions or the results obtained from use of such information.

flash crowd An unexpected surge in visitors to a Web site, which is typically because of some newsworthy event that just took place. It may also be due to the announcement of a new service or free software download.

flash disk A solid state disk made of flash memory chips. Flash disks are housed in Type II PC Cards for laptops, but handhelds and digital cameras use smaller flash memory cards such as CompactFlash and SmartMedia. See *flash memory* and *solid state disk*.

flash fusing See *fusing*.

flash memory A memory chip that can be rewritten and hold its content without power. It is also called a "flash RAM" or "flash ROM" chip and is widely used for digital camera film and as storage for many consumer and industrial applications. Flash chips replaced earlier ROM BIOS chips in a PC so that the BIOS could be updated in place instead of being replaced. Flash chips generally have lifespans from 100K to 300K write cycles.

Unlike DRAM and SRAM memory chips, in which a single byte can be written, flash memory must be erased and written in fixed blocks, typically ranging from 512 bytes up to 256KB. Evolving out of the EEPROM chip technology, which can be erased in place, flash memory is less expensive and more dense. The term was coined by Toshiba for its ability to be erased "in a flash."

Flash memory chips are conveniently packaged as "flash cards" and come in several formats, including the full-size PC Card (ATA PC Card) and the smaller CompactFlash, SmartMedia and similar formats.

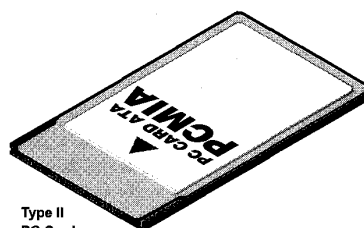
There are two types of flash interfaces. The first is the ATA interface, which has the same 512-byte block size as the standard hard disk sector. The second is the earlier linear flash, which is also used to execute a program directly from the chip (XIP). It requires Flash Translation Layer (FTL) or Flash File System (FFS) software to make it look like a disk drive. See *CompactFlash*, *SmartMedia* and *Memory Stick*. See also *Flash*.

FlashPix A bitmapped-graphics file format that maintains the image in several resolutions. It uses more storage space than a comparable TIFF file, but when viewed by a Web browser, only the resolution required for the current screen resolution is transmitted, saving download time. FlashPix files use the .FPX extension and conform to Microsoft's structured storage format which provides multiple "streams" within the file. Descriptive text may also be stored in an FPX file that identifies the image and how it was photographed or scanned.

flat address space A memory that is addressed starting with 0. Each subsequent byte is referenced by the next sequential number (0, 1, 2, 3, etc.) all the way to the end of memory. Except for PCs, which are based on the Intel CPU architecture, most computers use a flat address space.

A PC running in 16-bit mode (Real Mode) uses a segmented address space. Memory is broken up into 64KB segments, and a segment register always points to the base of the segment that is currently being addressed. The PC's 32-bit mode is considered a flat address space, but it too uses segments. Since one 32-bit segment addresses 4GB, one segment covers all of memory.

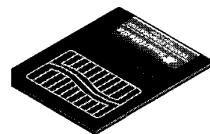
Flash Memory Cards



Type II
PC Card



CompactFlash



SmartMedia



Memory Stick



MultiMediaCard

Flash memory cards have become very popular storage devices.

Type II PC Cards provide auxiliary storage for laptops, but the CompactFlash, SmartMedia and Memory Stick cards are expected to become the digital film of the 21st century.

The MultiMediaCard is designed for the smallest handhelds such as cellular phones and pagers.



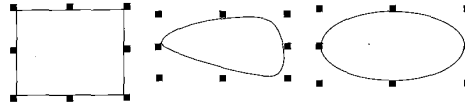
Digital Film

Flash memory cards make the perfect digital camera "film." This Canon Elph uses CompactFlash.

F

(2) A temporary name or number assigned to a file, font or other object. For example, an operating system may assign a sequential number to each file that it opens as a way of identifying it.

(3) A nickname used when conferencing like a "CB handle" used by a truck driver.



Graphics Handles

The handles are the tiny squares that are displayed when you select an object.

handler A software routine that performs a particular task. For example, upon detection of an error, an error handler is called to recover from the error condition.

handoff Switching a cellular phone transmission from one cell to another as a mobile user moves into a new cellular area. The switch takes place in about a quarter of a second so that the caller is generally unaware of it.

handset The part of the telephone that contains the speaker and the microphone. See *multihandset cordless*.

hands-free computer See *body-worn computer*.

handshaking Signals transmitted back and forth over a communications network that establish a valid connection between two stations.

hang To have the computer freeze or lock up. When a personal computer hangs, there is often no indication of what caused the problem. The computer could have crashed, or it could be something simple such as the printer running out of paper.

hanging paragraph Also called "hanging indent," it is a paragraph in which the first line is set to the left margin, but all subsequent lines are indented as is this paragraph.

haptic interface Communicating with the computer via some tactile method. Haptic devices sense some form of finger, hand, head or body movement.

hard boot Same as *cold boot*.

hard coded Software that is programmed to get the job done quickly, which means programmed to do a fixed number of tasks without regard to future flexibility. It is very easy to do this kind of "brute force programming," and it is the ideal kind of programming for one-time jobs. Such programs typically use a fixed set of values and may only work with certain types of devices. The problem is that one-time programs often become widely used, even in day-to-day operations, but they are difficult to change, because the routines have not been generalized to accept change. Such "elegant" programs require much more thought to write, and everybody is in such a hurry that hard-coded, in-elegant programs are written a thousand times a day. Hard-coded solutions may run faster, but programming speed is far more important than processing speed these days. See *data independence*.

hard copy Printed output. Contrast with *soft copy*.

hard disk The primary computer storage medium, which is made of one or more aluminum or glass platters, coated with a ferromagnetic material. Most hard disks are fixed disks, which are permanently sealed in the drive. Removable cartridge disks such as Iomega's Jaz disks enable the disk to be removed from the computer and used as backup or transferred to another machine with the same drive.

Most desktop hard disks are either IDE (also known as EIDE or ATAPI) or SCSI. The advantage of IDE is their lower cost. The advantage of SCSI is that up to seven or more devices can be attached to the same controller board. SCSI drives are typically used in high-end servers, because SCSI is available as a fault tolerant disk subsystem (RAID systems), while IDE drives are found in most desktop and laptop machines. Increasingly, IDE drives are available in RAID configurations (see *RAID*).

Hard disks provide fast retrieval because they rotate constantly at high speed, from 5,000 to 15,000 rpm. In laptops, they can be turned off when idle to preserve battery life.

Back in the 1950s, the very first hard disks held just a few hundred thousand bytes and used platters 12" in diameter. In the 1980s, the first personal computer hard disks started at 5MB (see *ST506*). Today's hard disks start around 20 gigabytes and generally use 3.5" platters for desktop computers and 2.5" platters for notebooks. Smaller disks are also used (see *Microdrive*).

Hard disks are usually low-level formatted from the factory, which records the original sector identification on them. See *floppy disk*, *magnetic disk* and *format program*.

TYPES OF HARD DISKS

Interface Type	Encoding Method*	Transfer Rate (Per sec)	Capacities
SCSI***	RLL	5 - 160MB	20MB - 75GB
EIDE**	RLL	3 - 100MB	500MB - 80GB
IPI	RLL	10 - 25MB	200MB - 3GB
ESDI	RLL	1 - 3MB	80MB - 2GB
SMD	RLL	1 - 4MB	200MB - 2GB
IDE	RLL	3 - 8MB	40MB - 1GB
ST506 RLL	RLL	937KB	30MB - 200MB
ST506	MPM	625KB	5MB - 100MB

* Most disks use RLL, but encoding methods are not prescribed by all interfaces.

** For details on EIDE (ATA) modes, see *IDE*.

*** For details on SCSI rates, see *SCSI*.

Hard Disk Measurements Capacity is measured in bytes, and speed is measured by transfer rate in bytes per second (see above) and access time in milliseconds (ms). Hard disk access times range from 3 ms to about 15 ms, whereas CDs and DVDs range from 80 ms to 120 ms.

hard disk recorder See *PVR*.

hard drive The mechanism that reads and writes a hard disk. The terms hard drive and hard disk are used interchangeably.

hard error (1) A permanent, unrecoverable error such as a disk read error. Contrast with *soft error*.

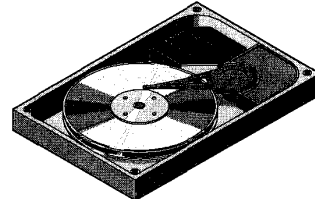
(2) A group of errors that requires user intervention and includes disk read errors, disk not ready (no disk in drive) and printer not ready (out of paper).

hard failure Same as *hardware failure*.

hard hyphen A hyphen that always prints. Contrast with *soft hyphen*.

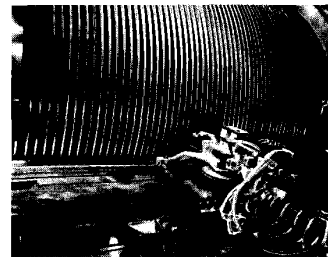
hard macro The design of a logic function that specifies how the required logic elements are interconnected and specifies the physical pathways and wiring patterns between the components. Also called a "macro cell." Contrast with *soft macro*.

hard return A code inserted into a text document by pressing the ENTER key. If the hard return does not display as a symbol on screen, it can usually



Internal Hard Disk

Hard disks use one or more metal or glass platters covered with a magnetic coating.



First Hard Disk

Part computer, part tabulator, in 1956, IBM's RAMAC was the first machine with a hard disk, which was extraordinary technology of the times. Each of its 24" diameter platters held a whopping 100,000 characters (they weren't bytes then) for a total of five million characters. (Images courtesy of International Business Machines Corporation. Unauthorized use not permitted.)

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.