
FFFF (640K to 1024K).

Glossary

Other glossary resources

- The Glossary in the *Windows User's Guide* for terms related to Microsoft Windows.
- The Glossary in Windows online help for definitions of terms related to the screen elements in Microsoft Windows.
- The *Computer Dictionary*, Microsoft Press, 1991, for definitions of general computing terms.

API An abbreviation for application programming interface, which is a set of routines that an application program uses to request and carry out lower-level services performed by the computer's operating system. For Windows, the API also helps applications manage windows, ~~menus, icons, and other GUI elements. For~~ a local area network, an API provides applications with routines for requesting services from lower levels of the network.

16-bit An adjective that describes systems and software that handle information in words that are 2 bytes (16 bits) wide.

32-bit An adjective that describes hardware or software that manages data, program code, and program address information in 32-bit-wide words.

386MAX.SYS A 386 expanded memory manager from Qualitas Corporation.

A

adapter segment A name sometimes used for the upper memory area, at hexadecimal addresses A000 through

application Software such as a word processor or spreadsheet that you use to perform a specific type of work.

attribute A characteristic or property; for example, the color of a line, the length of a data field, or a typeface characteristic such as size.

B

backfilling To designate memory on an expanded memory card and make it available for use as conventional memory.

bank switching A technique for sequentially reading page frames in expanded memory. The 64K page frames are brought into the upper memory block from an expanded memory card, then read and swapped back to the card so that the next 64K page frame can be brought in.

Bezier curve A mathematical construct for describing a curve, used in CAD and illustration software to draw complex graphic shapes.

BIOS An acronym for basic input/output system, which is software (usually contained in ROM) that supports the transfer of information between system elements such as memory, disks, and the monitor.

bitmap A sequential collection of bits that represents, in memory, an image to be displayed on the screen.

bridge For a LAN, a device that links a network to another of the same type.

buffering The process of using buffers

to hold data being moved to or from I/O devices such as serial ports and disk drives.

buffers A reserved part of memory where data is held temporarily until the data is transferred from storage to another location in memory. Some printers have their own buffers.

C

CEMM.EXE A 386 expanded memory manager provided with all Compaq 386 computers.

character-based interface The traditional user interface common to non-Windows applications, where all screen images are made up of text characters.

client A stand-alone workstation that uses the services of any type of server on a network.

client application Any Windows application that can accept, display, and store Object Linking and Embedding (OLE) objects.

client/server computing A mode of distributed network computing in which an application is executed cooperatively by two computers. The client component of the application (the front end) executes on one node, while the server component (the back end) runs on a second node. For PCs, communications between the nodes is implemented most frequently using the named pipes interprocess communication (IPC) protocol. Client/server computing allows more effective use of computing resources, higher performance, greater flexibility, simpler upgrades, and (for some applications) greater reliability and data integrity.

clock speed The rate in which the computer clock oscillates, usually given in MHz (one million cycles per second). The computer's clock rate is a prime determinant of overall processing speed. Typical clock speeds for AT-compatibles are 6, 8, 10, 12, 16, and 20 MHz; for 80386

machines, typical speeds are 16, 20, 25, and 33 MHz.

CMOS RAM A RAM chip that uses the complementary metal-oxide semiconductor process, which provides high speed and extremely low power consumption, making the chip useful for hardware such as the microcomputer clock.

code page For MS-DOS version 3.3 and later, a table that relates the keys on the keyboard to the characters displayed on the screen, thereby providing support for the character sets and keyboard layouts used in different countries. Code page 437 is the code page for the United States.

command interface A user interface that requires the user to enter commands at the command prompt. Also called command-line interface.

command prompt A screen symbol such as C:> that requests user input. Also called the MS-DOS prompt.

compound document A document file that contains embedded and linked data that was created in other kinds of applications.

context switching The kind of multitasking that is done in standard mode Windows, where the CPU switches from one task to another, rather than allocating time to each task in turn, as in *timeslicing*.

conventional memory The physical memory in a PC from 0K to 640K.

CPU An abbreviation for the computer's central processing unit.

cut-and-paste A method of moving

data into another document or file, which could be for a different but compatible application.

D

database server Software such as Microsoft SQL Server that provides high-performance database access by splitting the DBMS function into a front-end component (where data is manipulated by users or applications) and a database-intelligent, back-end component (where data is stored, retrieved, and managed). In PC networks, the front-end component often resides on a personal computer controlled by a single user, while the back-end component resides on a high-performance PC that services requests for data submitted over the network by users.

DBMS An abbreviation for database management system.

DDE See *dynamic data exchange*.

demand paging The common implementation of virtual memory, where pages of data are read into memory from storage in response to page faults. See also *paging* and *virtual memory*.

device driver The software that the system uses to communicate with a device such as a display, printer, mouse, or communications adapter.

discardable code segment A Windows application code segment in memory, which can be discarded, overwritten, or reloaded from disk when necessary.

disk cache A part of RAM that is set aside to temporarily hold data read from disk. A disk cache doesn't have to hold an

entire file, as a RAM disk does, but can hold parts of running application software or parts of a data file. Disk-caching software such as SMARTDrive manages the process of swapping data to and from the disk cache.

DLL See *dynamic-link library*.

DMA An abbreviation for Direct Memory Access, which is memory access that doesn't use the microprocessor, often used to transfer data directly between memory and a peripheral device such as a hard disk drive.

DOS An acronym for *disk operating system*, which is the operating system software that is loaded from a disk when you boot your computer. See also *MS-DOS*.

DOS Extender See *extended memory manager*.

double buffering The use of two buffers rather than one to temporarily hold data being moved to and from an I/O device. Double buffering increases data transfer speed because one buffer can be filled while the other is being emptied.

downloadable fonts Fonts that reside on your hard disk and that are sent to the printer as needed.

DPMI An abbreviation for DOS Protected Mode Interface, an industry standard that allows MS-DOS applications to execute code in the protected operating mode of the 80286 or 80386 processor. The DPMI specification is available from Intel Corporation.

dynamic data exchange (DDE) The form of interprocess communications (IPC)

used by Microsoft Windows to support exchange of commands and data between two applications running simultaneously. In Windows 3.1, this capability is enhanced with *Object Linking and Embedding*.

dynamic-link library (DLL) An executable code module for Microsoft Windows that can be loaded on demand and linked at run time, and then unloaded when the code is no longer needed.

E

EISA Acronym for Extended Industry Standard Architecture, a bus standard introduced in 1988 by a consortium made up of AST Research, Compaq, Epson, Hewlett-Packard, NEC, Olivetti, Tandy, Wyse, and Zenith.

EMM See *expanded memory manager*.

EMM386.EXE The Microsoft 386 expanded memory manager.

EMS See *Expanded Memory Specification*.

encapsulation In object-oriented programming, the grouping of data and the code that manipulates it into a single object. If a change is made to an object class, all instances of that class (that is, all objects) are changed. Encapsulation is one of the benefits of object-oriented programming.

expanded memory Memory provided by a physical add-in memory card or through a 386 expanded memory manager. Expanded memory is made available to application software as 16K pages, mapped into a 64K page frame.

expanded memory manager

(EMM) A driver that provides a software interface to expanded memory. An expanded memory manager is specific to a particular physical expanded memory board or uses the 80386 processor to emulate expanded memory in extended memory.

Expanded Memory Specification (EMS)

A description of a technique for adding memory to PCs to bypass the 640K limit on addressable memory. The EMS supports additional memory through a hardware expansion board and an expanded memory manager. To use expanded memory, an application must be specifically designed to interact with an expanded memory manager. There are two expanded memory specifications: LIM 3.2 provides for a maximum of four contiguous 16K bankable pages; LIM 4.0 provides for a maximum of sixty-four 16K bankable pages, which do not have to be contiguous.

extended memory The memory at physical addresses from 1024K that can be accessed by a 80x86 CPU running in protected mode. Windows version 3.0 and later take full advantage of extended memory, including all memory above 640K, when running in standard mode or 386 enhanced mode.

extended memory manager (XMM) A driver such as HIMEM.SYS that is necessary to access extended memory. Applications do not have to be customized to interact with an extended memory manager to use extended memory under Windows 3.x. In some applications, the extended memory manager is referred to as an MS-DOS Extender.

Extended Memory Specification

(XMS) A Microsoft standard that provides a way for real mode applications to access extended memory. Non-Windows applications running under Windows 3.x can use the XMS to access extended memory. The XMS document and sample source code is available from the Microsoft Information Center.

F

fault tolerance The ability of a system to recover from an error, a failure, or a change in environmental conditions (such as loss of power). True fault tolerance provides for fully automatic recovery without disruption of user tasks or files, in contrast to manual means of recovery such as restoring data loss with tape backup files.

file server A network node that usually consists of fixed-disk storage and a CPU, for storing programs and data shared by users on a network. File servers offer operating system-type file and print capabilities, while database servers provide database intelligence such as transaction processing, indexing, logging, security, and so on.

font In Windows, a complete set of characters for one style of a specific typeface, including all the letters, numbers, and punctuation marks. For example, Courier New is a font.

font family In Windows, a group of typefaces with similar characteristics. The families that Windows recognizes for font installation are Roman, Swiss, Modern, Script, and Decorative. For example, Arial, Arial Bold, Arial Bold Italic, Arial Italic, Small Fonts, and MS Sans Serif are all part of the sans serif Swiss font family.

G

grabber Software that supports exchange of data in video memory between non-Windows applications and Windows 3.x.

graphical user interface (GUI) An interface that allows users to choose commands and other options by pointing to a graphical icon and then activating the choice with either the keyboard or a mouse.

group In Windows, a collection of applications in the Program Manager window.

GUI See *graphical user interface*

H

high memory area (HMA) The first 64K of extended memory, into which MS-DOS 5.0, drivers and utilities can be loaded to save conventional memory.

I

independent software vendor (ISV) A

participant in the computing industry marketplace whose primary focus is development of software.

interface 1) The user interface, where people communicate with the software through commands and other devices. 2) The connections in software that allow an application to work with the operating system, or that allow the operating system to work with the hardware. 3) The hardware cards, plugs, and other devices used to move data from place to place.

interrupts A request-for-attention signal sent by either hardware or software to the CPU that causes the CPU to suspend some operations and transfer control to an interrupt handler (designated, for example, as Int 13).

I/O An abbreviation for input/output.

IRQ Abbreviation for “interrupt request lines,” which are hardware lines over which I/O devices, keyboards, and disk drives can send interrupts to the CPU. The IRQs are built into the hardware, with preassigned priority levels.

ISA Abbreviation for Industry Standard Architecture, an unofficial designation for the bus design of the IBM PC/XT.

ISO Abbreviation for International Standards Organization, an international association of standard-setting organizations.

ISO/OSI model The International Standards Organization Open Systems Interconnection model, which standardizes levels of services and types of interaction for exchanging data through a communications network. The model

separates computer-to-computer communications into seven layers: the application layer, data-link layer, network layer, physical layer, presentation layer, session layer, and transport layer.

K

kernel 1) The part of an operating system that performs basic functions such as allocating hardware resources. 2) The central part of other system software. 3) One of the core dynamic-link libraries that make up Windows.

keyword A predefined word in a computer or command language.

L

LAN See *local area network*.

LAN Manager The Microsoft networking environment.

LIM (Lotus/Intel/Microsoft) 3.2 and 4.0
See *Expanded Memory Specification*.

local area network (LAN) Two or more computing units connected for local resource sharing, or a network in which communications are limited to an area such as a single office building and do not extend across public rights-of-way. A LAN allows PCs to have access to common data and peripherals, and it typically consists of PCs with adapter cards, file servers, printers, gateways to departmental or corporate computers, and network software to integrate these components. More sophisticated LANs permit sharing of computing resources, along with sharing printers and file storage facilities. For example, networks equipped with MS LAN Manager support *client/server computing*.

local heap A memory storage area limited to 64K in size.

logging on The procedure that links a user to a network.

M

MCI An abbreviation for Media Control Interface, a standard control interface for multimedia devices and files.

memory-mapped files An operating system feature that maps a file into a program's address space, allowing an application to read and modify a file's content as if the file were an in-memory data structure. Memory-mapped files use demand paging to allow applications to access and manipulate files regardless of how big the files are. Without memory-mapped files, every application that works

with large files must include code to handle the movement of data between the disk and the main memory.

memory protection Strict management of system memory to prevent the corruption of any application's program code or data by interference from another application. Memory protection ensures that concurrent applications are compatible and prevents them from interfering with system processes.

Microsoft Consulting Services

(MCS) The Microsoft consulting service, founded in 1990 to help clients develop mission-critical business systems and to work with major systems integrators to provide specialized expertise in PC technologies in cooperative processing environments.

MIPS An acronym for millions of instructions per second, which is a measure of processing speed that refers to the average number of machine language instructions performed by the CPU in one second. A typical Intel 80386-based PC is a 3 to 5 MIPS machine, whereas an IBM System 370 mainframe typically delivers between 5 and 40 MIPS. MIPS measures raw CPU performance, but not overall system performance.

movable code segment A Windows application code segment that can be moved around in memory.

MS-DOS Microsoft Disk Operating System, the standard operating system for computers equipped with the Intel 8086 and 8088 microprocessors, and for 80286 and 80386 microprocessors running in 8086 mode.

MS-Net Microsoft Network, the MS-DOS networking systems software product shipped in 1985. Largely superseded by Microsoft LAN Manager.

multitasking The concurrent management of two or more distinct tasks by a computer. Although a computer with a single processing unit can only execute one application's code at a given moment, a multitasking operating system can load and manage the execution of multiple applications, allocating processing cycles to each in sequence. Because of the processing speed of computers, the apparent result is the simultaneous processing of multiple tasks. Standard mode Windows performs multitasking only in the form of context switching; 386 enhanced mode allows multitasking in the form of timeslicing.

N

NetBIOS An API used by application programs on a PC LAN that uses MS-DOS or some version of UNIX, providing application developers with a uniform set of commands for requesting lower-level network services.

NetWare A local area network operating system produced by Novell, Inc. Several families of NetWare products exist, including NetWare 386.

network A configuration of data processing devices and software connected for information interchange.

network application A network program, or combination of a program and data, that performs a task (typically involving two or more computers).

non-Windows application A term used in this document as a shorthand term to refer to an application that is designed to run with MS-DOS but not specifically with Windows and that may not be able to take full advantage of all Windows features (such as memory management).

O

object Encapsulated data in a compound document. For example, a single cell, a range of cells, or an entire spreadsheet could be embedded as an object in a word processing text file. Any data can be an object if it was created in a Windows application that uses OLE.

object handler A dynamic-link library for an OLE server application. This DLL acts as an intermediary between the client and server applications; for example, to improve performance when it's necessary to redraw an object in the window of the client application.

Object Linking and Embedding (OLE) An enhancement to DDE protocol that allows you to embed or link data created in one application in a document created in another application, and subsequently edit that data in the original application without leaving the compound document.

OEM An abbreviation for original equipment manufacturer.

Open Software Foundation (OSF) A consortium of computing industry vendors organized to develop an open, UNIX-based operating system standard. OSF's first operating system release, called OSF/1, is built on the IBM UNIX-based AIX kernel and

the Motif graphical user interface.

Open Systems Interconnect (OSI) An ISO publication that defines seven independent layers of communication protocols. Each layer enhances the communication services of the layer just below it and shields the layer above it from the implementation details of the lower layer. In theory, this allows communication systems to be built from independently developed layers.

operating system The software that governs the operation of a computer, providing services such as resource allocation, scheduling, input/output control, and data management. Popular operating systems include MS-DOS and UNIX.

OSI See *Open Systems Interconnect*.

P

package In a compound document, an embedded icon that contains an object, a file or part of a file, or a command.

page fault An interrupt that results when software requests a memory location that is being saved for auxiliary storage.

page frame A physical address in the upper memory area where a page of expanded memory can be mapped. The page frame itself can be a maximum of four 16K pages.

paging A technique for implementing virtual memory, where the virtual address space is divided into fixed-sized blocks called pages, each of which can be mapped onto any physical addresses available on the system.

palette management A mechanism to choose which colors to display when the display device supports a limited number of colors for simultaneous display. For example, a VGA monitor can display 16 colors out of an overall palette of 256, so a DIB bitmap with more than 16 colors would have to be palettized.

paste A function that copies the contents of the Clipboard and inserts it at the current cursor position.

path 1) In MS-DOS, the route the operating system follows to locate files on a disk or disks. 2) On a network, the route between any two nodes.

PC-NET The IBM PC LAN program, an MS-DOS-based networking systems software product developed by Microsoft and IBM, which has been shipping since 1985.

PIF An abbreviation for program information file, which contains information about a non-Windows application, such as how much memory it needs. Windows uses this information to run the application in the most efficient way.

pipe 1) A portion of memory used to pass data from one process to another, symbolized in MS-DOS by the | character. For example **dir | sort** sends the output of the directory listing to the **sort** command. 2) In a sample statement for a Windows initialization file or in an MS-DOS command, the symbol used to show that only one of the possible values can be used in the statement.

pitch Denotes the horizontal size of a fixed-width font in characters per inch.

point size The vertical size of a font. A point is about 1/72 inch.

POSIX A set of software standards being developed by the IEEE POSIX Working Group, to allow applications to be written to a single target environment in which they can run unchanged on a variety

of systems. The POSIX specifications define characteristics for operating systems, DBMS, data interchange, network services, user interface, and programming interfaces. Several vendors plan to make their operating systems POSIX-compliant.

print server A network node, usually consisting of fixed-disk storage and a CPU, that controls one or more printers that can be shared by users.

printable screen fonts Windows screen fonts that can be translated for output on the printer.

program group A set of several programs whose icons can be acted on as a single entity in Windows Program Manager. For example, if icons are associated with a single group icon, clicking the program group icon causes the icons for each of the programs in the group to be displayed.

protected mode An operating mode for the Intel 80286 and higher processors that supports multitasking, data security, and virtual memory.

provider interface An API for the provision of centralized administrative support of the client workstation over the network. Providers of network services will use this Microsoft Windows API, which will be fully open to the development community.

Q

QEMM386 A 386 expanded memory manager from Quarterdeck Corporation.

query 1) A specific request for data or instructions. 2) A request for information

from a database using specific conditions; for example, a request for a list of all customers with balances greater than \$1,000.

Query-By-Example (QBE) A program product developed by IBM to work in conjunction with DB2, a mainframe relational DBMS. QBE is used to write queries graphically.

R

raster fonts A set of characters for screen display or printing that are stored as bitmaps in specific character sizes.

registration database The REG.DAT file, which provides the information used by File Manager and Print Manager to support drag-and-drop and other actions, and which is used by OLE applications to find file types and OLE capabilities for embedded objects.

relational database 1) A database organized and accessed according to relationships between data items. 2) A data structure perceived by its users as a collection of tables. A relational database consists of tables, rows, and columns. Typical examples are dBase IV from Borland and R:Base 5000 from Microrim. Relational databases differ from nonrelational databases in that there are no system dependencies stored within the data. Hierarchical databases are not relational, because they contain pointers to other data.

resource 1) Any facility of a computing system or operating system required by a job or task, including memory, input/output devices, processing unit, data

files, and control or processing programs.

2) A network component such as a file, printer, or serial device that is shared by other components of the network. 3) In Microsoft Windows, the definition of elements such as fonts, templates, accelerators, and error messages are all stored in resource files.

ring A network configuration where a series of attached devices are connected by unidirectional transmission links to form a closed path.

routine A program, or a sequence of instructions called by a program, that has some general or frequent use.

S

scalability The ability of a computing element such as a process, processor, or structure to grow seamlessly.

SDK The Windows Software Development Kit.

server On a local area network, the computer that runs the administrative software to control access to the network. The server makes network resources available to the workstations. See also *file server* and *print server*.

server application 1) On a network, a process or program that runs on a server, typically as a network resource; for example, a communications program that organizes and allocates network communications resources. More sophisticated server programs, known as client/server applications, run interactively with an application resident on network nodes. See also *client/server computing*.

2) In a compound document, any Windows application that allows you to edit an object when Windows informs it that you selected the object in an OLE client application.

shadow ROM A process used in many 386 machines to map ROM BIOS activities into faster 32-bit RAM memory. Shadow memory must be loaded with BIOS routines each time the computer boots.

shared resource A printer, file, or serial computer communications device made available through the LAN to multiple computers not physically attached to the resource.

source code A set of programming language instructions that must be translated to machine instructions before the program can run.

spooler A program that intercepts the data going to a device driver and writes it to the disk. The data is later printed or plotted when the required device is available. A spooler prevents the intermixing of output from different sources.

Structured Query Language (SQL) A database query and programming sublanguage. SQL (commonly pronounced “sequel” and originally developed for IBM mainframe computers) is an established set of statements used to add, delete, or update information in a table, or request information from one or more tables in the form of a report. There is now an ANSI-standard SQL definition for all computer systems.

system administrator The person

responsible for planning computer or network installation and for ensuring the successful installation and use of the system by other users.

T

TCP/IP See *Transport Control Protocol/Internet Protocol*.

timeslicing A method of multitasking that allocates CPU attention to tasks in fractions of a second, making it appear to users that the multitasking operations are happening simultaneously. Tasks are either assigned priority levels or processed in sequence to maintain order.

Transport Control Protocol/Internet Protocol (TCP/IP) A set of network protocols that has become an industry standard in engineering, government, and educational local area network environments. The TCP/IP protocol family includes transport, file transfer, terminal emulator, messaging, and network management definitions.

transparent application

integration The ability to manipulate information with a variety of applications within a single document, without moving from one application to another to produce the desired results. This is implemented as *Object Linking and Embedding* in Windows 3.1.

TSR Terminate-and-stay-resident software program.

U

upper memory area The part of physical memory that starts at 640K and

ends at 1024K (hexadecimal addresses A000 through FFFF). Also called the *adapter segment*, because that portion of memory is often used by hardware adapters such as display adapters.

upper memory blocks (UMB) The unused parts of the upper memory area. For an 80386 or higher computer, information can be mapped (or copied) from another type of memory to upper memory blocks, freeing more conventional memory.

user context A user session created by an operating system in response to a logon request, and typically characterized by privilege sets that strictly define the user's authority to access system resources and information. Contexts restrict unauthorized access to facilities and data and protect the system itself from user and applications interference, accidental or otherwise. Contexts are a feature of most multiuser operating systems, usually integrated with the security system.

V

VAR Value-added reseller. This term often refers to a reseller of computer products who also provides both integration and software customization services to business clients.

VCPI An abbreviation for Virtual Control Program Interface. An 80386 memory management standard created by Phar Lap Software in conjunction with other software developers to provide an interface between applications using MS-DOS Extenders on an 80386 machine and applications using 386 expanded memory managers. For example, the 386 expanded memory managers QEMM, 386MAX, and CEMM support the VCPI specification.

vector fonts A set of lines that connect points to form characters.

virtual device A device that software can refer to but that doesn't physically exist.

virtual hard drive memory factor The available space on a hard drive partition that Windows can address as physical memory.

virtual machine (VM) Software that mimics the performance of a hardware device. For Intel 80386 and higher processors, a virtual machine is protected memory space that is created through the processor's hardware capabilities.

virtual memory A technique of simulating additional memory for an application to use. Applications access the memory through virtual addresses, which are mapped onto physical addresses on the disk. Two common ways to implement

virtual memory are *paging* and *segmentation* (which was used by 80286 and earlier Intel processors to address memory).

Virtual Memory Manager

(VMM) The facility in Windows 386 enhanced mode that manages the task of swapping data in and out of virtual memory for multiple non-Windows applications running virtual machines. The Windows VMM can manage paging in up to 48 MB of virtual memory.

visual programming The use of graphical development tools and visual metaphors to create software.

VMM An abbreviation for Virtual Memory Manager.

W

wide area network (WAN) A network that provides data communication capability in areas larger than those serviced by a local area network. A WAN typically relies on serial line protocols to interconnect subnetworks.

Windows application A term used in this document as a shorthand term to refer to an application that is designed to run with Windows and does not run without Windows. All Windows applications follow similar conventions for arrangement of menus, style of dialog boxes, and keyboard and mouse use.

workstation A terminal or personal computer, usually connected to a mainframe or to a network, on which a user can run applications. A workstation generally cannot share its resources with

other network nodes or a host computer. However, on a LAN Manager network, an OS/2 workstation can share resources by invoking the peer server option. See also *server*.

X

X.25 A standard network communications protocol for implementing the internetwork communications function specified by the third network layer of the ISO/OSI model. X.25 is a packet-switched protocol often used in wide-area network configurations. MS LAN Manager is supported by X.25 communications packages provided by various third-party vendors.

XMM See *extended memory manager*.

XMS See *Extended Memory Specification*.