

Computer Desktop Encyclopedia

Ninth Edition

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client (1) A workstation or personal computer in a client/server environment. See *client/server* and *fat client*.

(2) One end of the spectrum in a request/supply relationship between programs. See *X Window* and *OLE*.

client application An application running in a workstation or personal computer on a network. See also *OLE*.

client based Refers to hardware or software that runs in the user's machine (client). Contrast with *server based*.

client machine A user's workstation that is attached to a network. The term can also refer to a portable computer that is plugged into the network. See *client* and *client/server*.

client program Software that runs in the user's PC or workstation. Contrast with *server program*, which resides in a server in the network.

client/server An architecture in which the user's PC (the client) is the requesting machine and the server is the supplying machine, both of which are connected via a local area network (LAN) or wide area network (WAN). Throughout the late 1980s and early 1990s, client/server was the hot buzzword as applications were migrated from centralized minicomputers and mainframes to networks of personal computers.

In client/server, the client processes the user interface (Windows, Mac, etc.) and can perform some or all of the application processing. Servers range in capacity from high-end PCs to mainframes. A database server maintains the databases and processes requests from the client to extract data from or to update the database. An application server provides additional business processing for the clients. See *client/server development system*.

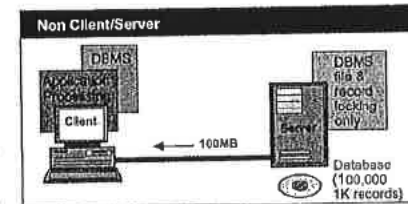
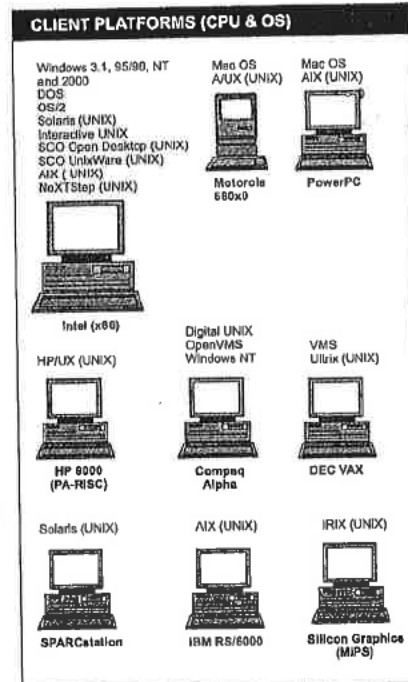
Client/server Versus the Web Because of the Internet, terms such as "Web based" and "Web enabled" have replaced the client/server buzzword, yet the client/server architecture is conceptually the same. Users' PCs are still clients, and there are tens of thousands of Web servers throughout the Internet delivering Web pages. Nevertheless, client/server is mostly used to refer to "legacy," non-Web based systems.

On the Web, the client runs the browser and just like legacy client/server can perform little or a lot of processing: simple displaying of HTML pages, more processing with embedded scripts or considerable processing with Java applets. A myriad of browser plug-ins provide all sorts of client processing.

The server side of the Web is a multi-tier server architecture with interlinked Web servers, application servers, database servers and caching servers. See *application server*.

client/server analyst A person responsible for performing analysis and design of a client/server system. A knowledge of two-tier and three-tier client/server architectures is required. See *systems analyst* and *client/server*.

client/server architecture An environment in which the application processing is divided between client workstations and servers. It implies the use of desktop computers interacting with servers in a network, in contrast to processing everything in a large centralized mainframe. See *client/server*.



Non-Client/Server
Although there are clients and servers in this scenario, this is not "true" client/server, because the server is nothing more than a remote disk drive, and the client does all the processing. Lengthy searches can bog down the network, because each client has to read the entire database. At 1,000 bytes per record, a database with 100,000 records sends 100MB over the LAN.

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626 Modula-3

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VAR Fahr:REAL;
BEGIN
WriteString("Enter Fahrenheit ");
ReadReal(Fahr);
WriteLn;
WriteString("Celsius is ");
WriteReal((Fahr - 32) * 5 / 9);
END FahrToCent

```

Modula-3 (MODular LAnguage-3) The successor to the Modula-2 language. Developed by Digital and Olivetti, it adds object-oriented extensions, automatic garbage collection and improved exception handling. It is considered an excellent teaching language.

modular chassis A hardware device that is designed for expansion and accepts a variety of plug-in modules of different types. Network switches and routers are typically built with a modular chassis. See *line card*.

modular hub A network hub that is configured by adding different modules, each supporting a topology, such as Ethernet, Token Ring, FDDI, etc. See *hub*.

modularity The characteristic of a system that has been divided into smaller subsystems which interact with each other.

modular programming Breaking down the design of a program into individual components (modules) that can be programmed and tested independently. It is a requirement for effective development and maintenance of large programs and projects.

Modular programming has evolved into object-oriented programming, which provides formal rules for developing self-contained software modules. See *object-oriented programming*.

modulate To vary a carrier wave. Modulation blends a data signal (text, voice, etc.) into a carrier for transmission over a network. The most common methods are (1) amplitude modulation (AM), which modulates the height of the carrier wave, (2) frequency modulation (FM), which modulates the frequency of the wave, and (3) phase modulation (PM), which modulates the polarity of the wave. Contrast with *demodulate*. See *carrier*.

module A self-contained hardware or software component that interacts with a larger system. Hardware modules are often made to plug into a main system. Program modules are designed to handle a specific task within a larger program. See *memory module*, *ROM card*, *MCM* and *modular programming*.

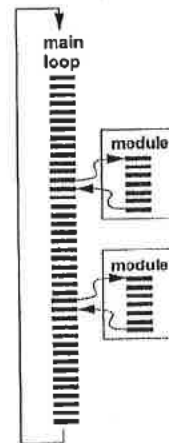
modulo A mathematical operation (modulus arithmetic) in which the result is the remainder of the division. For example, 20 MOD 3 results in 2 (20/3 = 6 with a remainder of 2).

MOF (1) (Managed Object Format) An ASCII file that contains the formal definition of a CIM schema. See *CIM*.

(2) (Meta Object Facility) An object model from the Object Management Group (OMG) for defining metadata in a distributed CORBA environment. Its four levels define the meta-meta model, meta model, model and instance data. See *CORBA* and *OMG*.

moiré Pronounced "mor-ray" and spelled "moiré." In computer graphics, a visible distortion. It results from a variety of conditions; for example, when scanning halftones at a resolution not consistent with the printed resolution or when superimposing curved patterns on one another. Internal monitor misalignment can also be a cause.

MOLAP See *OLAP*.



Modular Programming
Building a program in modules, or independent routines, is common practice. The module performs a function and then returns control back to the program or instruction that called it. Modular programming has evolved into object-oriented programming, which provides stricter rules for developing self-contained routines.

Perl (Practical Extraction Report Language) A programming language written by Larry Wall that combines syntax from several UNIX utilities and languages. Introduced in 1987, Perl is designed to handle a variety of system administrator functions and provides comprehensive string handling functions. It is widely used to write Web server programs for such tasks as automatically updating user accounts and newsgroup postings, processing removal requests, synchronizing databases and generating reports. Perl has also been adapted to non-UNIX platforms. See also *PURL*.

permanent font (1) A soft font that is kept in the printer's memory until the printer is turned off.
(2) Same as *internal font*.

permanent memory Same as *non-volatile memory*.

permutation One possible combination of items out of a larger set of items. For example, with the set of numbers 1, 2 and 3, there are six possible permutations: 12, 21, 13, 31, 23 and 32.

perpendicular recording See *vertical recording*.

per seat By workstation. See *per seat licensing*.

per seat licensing Software licensing based on a per user basis. For example, a 100-user license means that up to 100 specifically-named users have access to the program. Per seat licensing is administered by providing user-level security to the directory containing the program. Contrast with *concurrent licensing*.

persistence (1) In a CRT, the time a phosphor dot remains illuminated after being energized. Long-persistence phosphors reduce flicker, but generate ghost-like images that linger on screen for a fraction of a second.
(2) In object technology, the storage of an object on a disk or other permanent storage device.

persistent data Data that exists from session to session. Persistent data is stored in a database on disk or tape. Contrast with *transient data*.

persistent link See *hot link*.

persistent object An object that continues to exist after the program that created it has been unloaded. An object's class and current state must be saved for use in subsequent sessions. In object technology, persistence means storing the object for later use.

personal agent See *agent*.

personal communicator See *PDA*.

personal computer Synonymous with "microcomputer," "desktop computer," and "laptop computer," it is a computer that serves one user in the office or home. A complete personal computer system with printer can cost as little as \$1,000 or as much as \$8,000 or more. Size is based on memory and disk capacity. Speed is based on the CPU that runs it, and output quality is based on the type and resolution of its monitor and printer.

Major Suppliers of Personal Computers The personal computer world is dominated by Windows-based PCs. There are thousands of vendors that make them, from mom and pop shops to huge companies such as Compaq, HP and IBM. The alternate personal computer standard is Apple's Macintosh, which is only made by Apple. Atari and Commodore once carved out their respective niches, but Atari returned to its gaming roots and Commodore has since closed its doors.

The History of Personal Computers The industry began in 1977, when Apple, Radio Shack and Commodore introduced the first off-the-shelf computers as consumer products. The first machines used an 8-bit microprocessor with a maximum of 64K of memory and floppy disks for storage. The Apple II, Atari 500, and Commodore 64 became popular home computers, and Apple was successful in companies after the VisiCalc spreadsheet was introduced. However, the business world was soon dominated by the Z80 processor and CP/M operating system, used by

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