



Computer Jargon Reference

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Introduction

Since founding Jen/Mar Systems in 1995, we have worked with many clients, some of whom were not knowledgeable in terms of computers and the technical jargon surrounding this field. In an effort to educate and enlighten our clientèle (and potential customers as well), we have endeavored to demystify common computer-related terms and concepts in this manual. The various topics appear in alphabetical order, and the document is intended to be used as a reference manual, rather than to be read cover to cover. In fact, reading from front to back is more likely to cure insomnia than ignorance. But I digress...

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Concepts and Terms

Access Point

This is a hardware device that allows wireless devices to access a network, and ultimately other computers. They often include a firewall capability.

Application service provider

A vendor utilizing a software distribution business model where software is made available to customers over a network for a fee, instead of a customer purchasing, installing, running and managing the software system for themselves. Also known as Software as a Service (SaaS) or On-demand Software.

Asynchronous communications

One-way communications that occur between computers in a network where a message is sent but no reply is expected. The alternative is Synchronous communications (see Synchronous communications).

Browser

(see Web Browser)

Client-Server

Software systems that are designed to use an application program (Client) on a computer to access an application server (Server) over a network. Also known as thick-client. Another server-based alternative is web-based (see Web-based) or thin-client systems, which are generally considered to be potentially less secure as they rely upon free (i.e. no cost), widely-available web browsers, some with well-known, well-publicized security issues.

Copyrights

Copyrights are the rights granted by laws and treaties to owners of intellectual property to make and distribute copies of their intellectual property. This intellectual property can take many forms. Some of

these forms include music, software, art, literature, audiovisual works, photographs, drawings, maps and so on. A copyright notice used for visually perceptible copies of property and/or on media containing the property typically takes the following form:

© 2002 John Doe

Violating copyright laws and treaties exposes copyright infringers to both civil and criminal prosecution.

Database

A software system that is used to manage all aspects of data's life cycle including creation, modification, access, deletion and backup. The most common model used today is the relational model where data is stored in tables by columns (fields) and rows (records), that often *relate* to records in other tables. Programmers create these relationships among tables to eliminate data duplication and improve database performance, size and manageability. The process of structuring the data to achieve these results is called Normalization. And the most common means of accessing this data is by using the English-like language called Structured Query Language (SQL). Some examples of commonly used relational databases are PostgreSQL, MySQL, Sybase and Oracle.

Enterprise software

Client-Server software systems for commercial use that are designed to address enterprise issues, as opposed to departmental issues. They often include advanced security features, are tuned for high performance and exhibit a high degree of scalability.

Firewall

A networking security concept where message traffic is selectively allowed or disallowed based upon user-definable criteria. Usually firewalls are implemented in a hardware device attached to a network at a gateway point, but software-only firewalls also exist to protect a single computer. Either way, the point is to protect computers from unwanted network traffic (e.g. network intrusion), but still allow desirable traffic. Proper firewall configuration requires a knowledge of the services that must be available to hosts on both sides of the firewall. For instance, if a website is hosted behind the firewall, unsolicited network traffic on TCP port 80 must be allowed. On the other hand, if no servers exist behind the firewall, only solicited network traffic on specific ports should be allowed. It is important to note that you can permit solicited traffic on a given port but also deny unsolicited traffic on the same port. Some firewall administrators have gotten so paranoid about potential threats that they prevented *all* traffic from crossing the firewall *at all times*. At this point it makes sense to unplug the network at the gateway and sell the firewall.

Hosted subscription

The use of software over the Internet where a fee is paid monthly based upon criteria such as accessing devices, users and databases. The customer uses either thick-client or browser software to access the remote system.

Internet

A worldwide, publicly-accessible network of networks that uses the TCP/IP protocol. Some people erroneously refer to the Internet as the World Wide Web (WWW), or Web, since using web browsers to access websites is a common way they experience the Internet. However the Web is only a subset of the Internet, which also provides service for e-mail, instant messaging (IM), voice, file transfer, conferencing, and so forth.

IP address

This is an address within the Internet Protocol that is assigned to a computer (host) in order to uniquely identify it within a particular network. That network may be the entire Internet or a small local area network (LAN). Permanent Internet IP address assignments are managed by the Internet Assigned Numbers Authority (IANA) who assign blocks of numbers to Internet Service Providers (ISPs) and other Enterprises. IP address assignments on a network can also be temporary as is the case when a dynamic host configuration protocol (DHCP) server assigns an address to a computer within a LAN, or an ISP dynamically assigns an IP address to a dial-up customer.

Java

Java was developed and released by Sun Microsystems in the mid-1990s. Java is an object-oriented computer language (similar to C++ but much more intuitive) designed to run on different types of CPUs, with various libraries that support common functions like communications, file management, sorting, cryptography, etc. Programmers write software that works with these libraries, instead of directly accessing operating system functions (which are never compatible with competing operating systems). As such, Java programs require these libraries on the computer as well, making Java more than just a programming language, but also a runtime environment. Naturally then, there are separate runtime environments that are needed to translate function calls for each type of operating system (e.g. Windows, Linux, Mac, Solaris) and translate instructions for each CPU type (e.g. Intel, PowerPC, Sparc, etc.). These libraries and translators that are freely distributed to end users are called Java runtime environments (JRE). The libraries that include additional tools for programmers are called Java Software Development Kits (JDK). When you start a Java program, Java creates a virtual machine (JVM) on the computer and the program runs within that JVM.

The bottom line is this: If a Java program was written correctly, the same Java program will run just as well on a computer with a Solaris operating system (OS) and a Sparc CPU as a computer with a Windows OS and an Intel CPU. Meaning, you are no longer tied to any particular platform, giving rise

to Sun's slogan for Java: *Write once, run anywhere*. Investing in platform-agnostic software is an important criteria for any customer wanting to avoid vendor lock-in.

Java JRE / JDK

(see Java)

Java VM

(see Java)

JBoss

Widely-used, free, J2EE-compliant Application Server software. This open source project is sponsored by Red Hat.

Jen/Mar Suite

Jen/Mar Suite is a high-quality, low-cost, Enterprise-grade, J2EE-compliant software system designed for business, government and non-profit organizations, and offered through either hosted subscriptions or perpetual licenses . The system includes programs for application servers, desktops and mobile devices, and is available exclusively from Jen/Mar Systems Corporation (<http://www.jenmarsystems.com>).

J2EE

Java 2 Enterprise Edition is a widely-used Java-based programming standard for Enterprises developed by Sun Microsystems. The standard includes specifications for database connectivity, remote method calls, messaging, security, web services and so forth. Application server software that adhere to the standard are referred to as J2EE Application Servers. Some examples of J2EE Application Servers are JBoss, GlassFish and Sun Java System Application Server.

Maintenance subscription

A software subscription that entitles you to specific software updates released for specific software product(s) for a specific period of time. Careful, some vendors include fixes but not major software releases. May or may not include software support (e.g. troubleshooting help desk). Make sure you know what the subscription includes.

MySQL

A widely-used, open source, free relational database sponsored by Swedish company MySQL AB. As of this writing, Sun Microsystems agreed to buy MySQL AB.

Network

Two or more computing devices that are connected together to achieve some useful result. The devices can be computers, printers, peripherals, etc. The network can be wired or wireless. Devices can be connected directly to each other or through hubs, access points, switches, etc. The useful result can be to share data files, printers, software programs, security and/or communication functions, etc.

Object-oriented programming

A programming methodology intended to produce higher-quality, more manageable software due to its inherent design. This methodology emphasizes the processing of discrete chunks of interacting 'objects' in memory that consist of data and logic, as opposed to the more traditional procedural approach where data and logic tend to be treated separately. Note however, that the object-oriented programming methodology is not incompatible with the time-honored concept of storing data separately from logic, which is necessary to aid in upgrading the logic and data storage formats. That is, the methodology is geared toward *processing*, not *storage*. The methodology utilizes various powerful techniques such as encapsulation (combining logic and the data that it manages into classes, which are essentially blueprints for objects) and inheritance (extending or combining previously-defined classes) to achieve its end. Organization and modularity is a natural result. Java is an example of an object-oriented programming language.

Open source

A software-related concept where the source code that is used to create executable programs is available to the end-user. Examples of open source software include OpenOffice.org, JBoss Application Server, Linux operating system, PostgreSQL database and SuperWaba for mobile devices.

OpenOffice.org

A widely-used, free office productivity suite that includes word processing, spreadsheet, presentation, database, drawing and other programs. This open source project is sponsored by Sun Microsystems, who also sell a variant called StarOffice.

Perpetual license

Software that is obtained from a software vendor where the license to use the software is paid-up and does not expire except under circumstances such as copyright infringement, etc. These licenses may include optional subscriptions for maintenance and support.

Platform

This is a combination of an operating system (OS) and a computer central processing unit (CPU) type. For example, Windows and Intel (sometimes referred to as Wintel), Solaris and Sparc, or Mac OS X and PowerPC. Historically, the platform has been quite relevant because programmers write software using development tools and generally these tools create programs for only one specific platform. The tools then dictate the platform part of the system requirements that the end user must observe in order to run the software, thereby locking-in end users to specific vendor products. With the advent of Java, programmers can neutralize the whole platform issue, enhancing the end user's software investment.

Port

A value that appears in the message header of the network communications protocols: Transmission Control Protocol (TCP) and User Datagram Protocol (UDP). The port identifies the process that will handle that data in a particular host. For example, a well-known TCP port is 80, used by web servers to handle requests from web browsers. Other well-known TCP ports are: Kerberos (88), POP3 (110), SNMP (161) and Doom (666). A loose analogy that might help is the plain old telephone system. If an IP address is like a phone number, the port is like an extension number. Note that firewalls must be configured properly in order to allow or disallow traffic based upon port numbers and other criteria.

PostgreSQL

An easy-to-use, high performance, open source, free relational database having its root at UC Berkeley.

Relational database

(see Database)

Server computer

Server computers are designed to be accessed across a network by other computers that require various types of services from them. These services may include application programs, file access, printing,

communications, security and so forth. The hardware configurations depend upon the server's function. File servers usually use multiple (sometimes hot-swappable) hard drives and various redundancy techniques that allow them to improve performance and survive disk drive head crashes without losing data. Known as RAID (Redundant Arrays of Independent Disks, or Redundant Arrays of Inexpensive Drives), they use various techniques that balance performance, reliability and price. Servers may include multiple (sometimes hot-swappable) power supplies as well as additional cooling fans and multiple network cards. Server formats vary widely from mainframe computers and grids of cheap servers, to tower servers, rack-mountable servers and blades.

Server-based software

A distributed-computing design (see Client-Server and Web-based) that includes the use of shared computer(s) (see Server computer). The point of the design is to share programs, data and/or hardware among multiple users. The alternative is a non-distributed-computing design (see Stand-alone software).

Software license agreement

Software companies typically distribute their software with a contract known as a software license that governs the end-user's use of the software, identifying their rights, the conditions of use, warranties that may exist, and so on. End-users are well advised to read and understand the contracts that they enter into when they install and use software. Knowing your rights and responsibilities is important in order to avoid infringing on the copyrights of others.

Solicited network traffic

This type of communication is a response to data that was previously sent by a computer. For instance, a computer that is running a web browser can send a message to a server that is hosting a website, expecting a reply from that server. The transmission reply is considered solicited, since it was requested by the original computer. Network firewalls should allow solicited responses for a period of time after the initial request for data. When that period of time expires, tardy responses may be deemed unsolicited and ultimately blocked.

SQL

Structured Query Language is an English-like language commonly used to access and manipulate data in relational databases.

Stand-alone software

A non-distributed-computing design that utilizes a single computer for a program and its data. The alternative is a distributed-computing design (see Server-based software).

SuperWaba

A software development platform for mobile devices utilizing a Java-like VM, architecture and libraries. This open source project is based in Brazil.

Support subscription

A software subscription that entitles you to specific software support (e.g. troubleshooting help desk) for specific software product(s) for a specific period of time. May or may not include software fixes and/or new releases. This type of subscription is popular with open source projects, since they usually don't charge for the software itself. Make sure you know what the subscription includes.

Synchronous communications

Two-way communications that occur between computers in a network where both an inquiry is sent and a reply is expected (see Solicited network traffic and Unsolicited network traffic). The alternative is Asynchronous communications.

TCP port

(see Port)

TCP/IP

A commonly used network protocol stack named after two major communication protocols used within the stack: Transmission Control Protocol (TCP) and Internet Protocol (IP). The Internet and most commercial networks use this protocol suite.

Thick-client

(see Client-Server)

Thin-client

(see Web-based)

UDP port

(see Port)

Unsolicited network traffic

This is the type of communications that a server computer expects to see. Other computers on a network can send data to the server and they generally expect a reply. For instance the server may be hosting a website that other computers can access using a web browser. The server didn't *request* the data, making the transmission unsolicited. Network firewalls should allow unsolicited traffic to accommodate the purpose of the server and its remote users.

UPS

Uninterruptible power supplies are used in computer system configurations to allow computers to continue to run in spite of an interruption of the primary supply of power to the computers. Some form of UPS is mandatory in server systems, and a very good idea for desktop systems. Loss of data often results when computers suddenly stop running from a lack of power.

URL

A Uniform Resource Locator (or Universal Resource Locator) is a string of characters that identifies a resource on a network. Briefly, the URL syntax allows for numerous (mostly optional) parts: scheme (i.e. application protocol), host network address (domain name or IP address), port, path, filename, parameters, queries and fragments. For example, consider this website URL:

```
http://www.jenmarsystems.com:80/jenmar/default.asp
```

The application protocol is http (hypertext transfer protocol), the host domain name is www.jenmarsystems.com, the port is 80, the directory path is jenmar/, and the filename is default.asp. Here is an example of a JBoss application server datasource connection URL:

```
jdbc:postgresql://localhost:5432/JmsController
```

Vaporware

Software that doesn't exist, or features that either don't exist or are exaggerated. Some large companies with powerful marketing names, caught unprepared, have been known to announce they are working on a software project with an uncertain release date in the hope that potential customers will hold off

buying another vendor's existing product until their vaporware materializes. The vaporware scam is damaging to both the customers and the true innovators.

Web-based

Software systems that are designed to run within an Internet browser (see Web Browser) are referred to as web-based. These systems generally access web servers over a network which supply the content that is displayed in the browser window (however they can also access and display local data). They rely upon the communications and security infrastructure built into the web browser and web server. They are also known as thin-client applications, because most of the software and workload exists on the server side. Another server-based alternative is client/server (see Client-Server) or thick-client, where a separate application program replaces the browser, and accesses an application server over a network that replaces the web server. Therefore, note that just because a software system is not web-based does *NOT* mean it cannot access data over the Internet.

Web Browser

A computer program designed primarily to access web servers across a network, in order to display formatted text, pictures, tables, etc. in their main window. Examples of web browsers include Firefox, Safari, Opera and Internet Explorer.

Web Server

Server software designed to reply to inquiries from web browsers by sending back formatted text and graphics. For quite some time, Apache has been the most commonly used web server software.

WiFi

A wireless local area network based upon the IEEE 802.11 standards, utilizing access points and thin air to connect wireless devices.

Wireless network

(see WiFi)