



Performance of Free Software and Freeware in Telecommunication System

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Abstract

This article discusses the Performance of Free Software and Freeware in Telecommunication System. Software or software is a special term for data that is digitally formatted and stored, including computer programs, their documentation, and various information that can be read and written by a computer. In other words, part of a computer system that is intangible. This term emphasizes the difference from computer hardware. Making the software itself requires a "programming language" written by the programmer which is then compiled with the compiler application so that it becomes code that can be recognized by the hardware machine.

Introduction

Another name for software is also called software. Like the other names, namely software, its nature is different from hardware or hardware, if hardware is a real component that can be seen and touched by humans, then the software or software cannot be touched and seen physically, the software is not visible. physically and intangible objects but we can operate it, through this software or software a computer can run a command (Obaidat & Boudriga, 2010)

PSTN stands for Public Switched Telephone Network or what is commonly called a fixed telephone network (with cable). PSTN is generally regulated by the same technical standards as ITU-T, and utilizes E.163 / E.164 addressing, commonly known as a telephone number. PSTN is a public network that has a circuit switch characteristic and was originally prepared for telephony facilities. PSTN is the first and largest telecommunications network in the world. Nearly 700 million subscribers use the network for telephone activities. ISDN (Integrated Services Digital Network) is a telecommunications system in which services between data, voice and images are integrated into a network, which provides end-to-end digital connectivity to support a wide scope of services. ISDN users are given the advantage of flexibility and cost savings, because the costs for this integrated system will be much cheaper when using a separate system.

According to Amtrup & Thompson (2016) software is a special term for data that is formatted and stored digitally, which includes computer programs, documentation, and various information that can be read and written by a computer. Software can also be said to be an intangible part of a computer system. This term is used to highlight the difference with computer hardware. Because it is called software, it is also different from hardware, if hardware is a real device that can be seen clearly by the eye and held directly, then the software cannot be held and seen in its physical form. Software does not appear physically / intangible, but software can be operated and run.

The software itself is made using a "programming language" created by the programmer and then compiled with a compiler application so that it becomes code that can be recognized / read by a hardware machine. The function of software (software) is to process data or instructions / commands to get results or execute a certain command. Software also functions as a means of interaction that bridges or connects computer users (users) with hardware (hardware).

Types of Software

Defined by Chapin et.al (2001). Software can be broadly divided into 3 parts. The following is a discussion of the types of software :

OS (Operating System)

OS is the first software that must be installed on the computer. Meanwhile, the function of the OS is managing the hardware and software on the computer. This OS will also function as an intermediary between applications and hardware. So when we give a command from an application to the hardware, the command will be delivered to the OS first, and then the OS will be sent to the hardware. For example, suppose we give the print command from the Microsoft Word application. The command will be sent to the OS first, then the OS will be sent to the printer.

Examples of OS include; DOS, Windows, Macintosh, Linux etc. Each OS has its own advantages and disadvantages, but currently Windows OS is still the most widely used by the public because of its ease of operation and maintenance.

Application or Program

This software is made for a specific purpose. Another purpose of creating this software is to make human work easier. Now there are many applications that help human work. Applications can be divided into several types based on their function, are. (1) Word Processor. This application is used to create documents such as letters, envelopes, labels, papers and so on. Examples of this application include; Microsoft Word, Open Office Org. Writer etc. (2) Number Processing. This application is used to process numbers in tables and graphs. Examples of this application include; Microsoft Excel, Open Office Org. Calc, Lotus etc. (3) Presentation Processor. This application is used to make presentations. Examples of this application include; Microsoft Power Point, Open Office Org. Impress, Macromedia Flash MX etc. (4) Image Processing. This application is used to process images and photos. Examples of this application include; Corel Draw, Adobe Photoshop etc. Please also note that an application is usually only intended for a certain OS or only supports a certain OS. Example; Microsoft Office which can only be installed on Windows OS. But there are also applications that can be installed on several OSs such as the Mozilla Firefox application which can be installed on Windows or Linux.

Programming Language

This software is used to create applications. Users of this application are commonly referred to as programmers. The types of programming languages include; Assembly Language, Fortran Language and Fourth Generation Language. This type of language is easier to understand, because it uses human language such as English. Examples of this software, al; Visual Basic, Visual Foxpro, Java etc.

Paid and Free Software

Computer software or software based on its distribution can be divided into several types, namely paid software, free software or free software (Freeware, free software, shareware, adware). Here's the explanation. Paid software is software that is distributed for commercial purposes, every user who wants to use or obtain the software by buying or paying for the party who distributes it. users who use paid software are generally not allowed to distribute the

software freely without the permission of the publisher. examples of paid software, for example, are the Microsoft Windows system, Microsoft Office, Adobe Photo Shop, and others.

Freeware or free software is copyrighted computer software that is free to use indefinitely, distinct from shareware which requires users to pay (for example, after a certain trial period or for additional functionality). Free software developers often create freeware freeware "to donate to the community", but also want to retain their rights as developers and have control over future development. A prime example is the browser suite and mail client and Mozilla News, also distributed under the GPL (Free Software).

Free Software refers more to free use but not necessarily free. In fact, its name is because it is free to try open source software and therein lies the heart of freedom: programs under the GPL, once acquired, can be freely used, copied, modified and distributed. So free software does not lead to free purchase but use and distribution.

Conflict appears in the meaning of the word free in English, which means both free and free. Therefore, and as previously mentioned, Free Software need not be free, just as Freeware does not have to be free. Shareware is also free but more restricted to a certain time. Shareware is a limited program distributed either as a demonstration or evaluation version with limited features or functionality or by using a set time limit (eg 30 days). Thus, it gives users the opportunity to test the product before buying and then purchase the full version of the program. A very clear example of this type is antivirus software (Oskooi et.al, 2010)

We can also find completely free software, but included in advertising programs, this type of distribution is called Adware. An obvious example is the Messenger program from Microsoft which allows the use of free software in exchange for entering by means of banner or pop-up advertisements.

Public Switched Telephone Network (PSTN)

The main characteristics of the PSTN

The main characteristics of the PSTN consist of: (1) Analog channels with a frequency of 300-3400 Hz (2) It is circuit-switched (3) Has a bandwidth of 64 kbps (4) Has a fixed nature so that its mobility is so limited (5) Can be integrated with other networks, such as ISDN, PLMN, PDN (Mirashrafi et.al, 2000)

PSTN Main Network

(1) Backbone Networks the core network / core network that establishes PSTN, which is a network that connects between central. (2) Access Network. Is a network that functions to link the central to the customer. The Access Network can be divided into four, namely: Copper Access Local Network (Jarlokat), Radio Access Local Network (Jarlokar), Fiber Optic Access Local Network (Jarlokaf), Hybrid Fiber Coaxial (HFC) (3) Private Branch eXchange (PBX) Interconnection Network. Usually a large company has many rooms and employees who almost certainly need a telephone to make it easier to exchange information with other employees in a certain room. Every time you call the company, it will be charged with the telecommunication service provider the same as the local telephone. After conducting the research, it was discovered that the intensity of internal office calls was so high that it could not be prevented because it was integrated. Public Network [Jendry J. Weken] 6 corporate operations. From this evidence, we get the idea of expanding a private central that allows internal company communications to be carried out free of charge. Then came a device called PBX (Private Branch eXchange), which is a private central with features similar to a public center that is used by an institution / company to serve the company's internal communications (Zhang, 2002).

PSTN Network Components

(1) User Terminal: a user interface device with a network consisting of TE and CE (2) Local network: liaison between the user terminal and the exchange system (3) Exchange System: the system that manages the network

Integrated Services Digital Network (ISDN)

Benefits of ISDN: (1) ISDN's early model. At this time, each network was a subnetwork of ISDN equipped with a set of channels and protocols for access to the network. Users are registered as subscribers of a network while still requesting different services to different systems, but have used the same access, only the system is still different. (2) Flexible. The single interface for the terminal varies. (3) Cost effective. It only takes one single terminal for audio and vide (Kahveci, 2005).

ISDN Finger Model: (1) Conventional Model. At this time, each network system is separate, so that users will access each network for different service needs.(2) Full ISDN network model. Users can access to a network via the same access point. Because the ISDN system provides and has been able to serve all kinds of different services (3) ISDN's early model. At this time, each network was a subnetwork of ISDN equipped with a set of channels and protocols for Public Networks [Jendry J. Weken] 8 accessing the network. Users are registered as subscribers of a network while still requesting different services to different systems, but have used the same access, only the system is still different.

ISDN components

The ISDN system consists of five main terminal components that are responsible for carrying out the service process, namely: (1) Terminal Equipment (2) Terminal Adapter, Network Termination, Line Termination, and Local Exchange.

ISDN services

(1) Bearer Service is an initial and basic service intended for users who are just joining the ISDN network. New users will receive these basic services once they register as ISDN subscribers. Bearer Service provides transfer mode, transfer rate and transfer capability services. This service shows and explains the characteristics of the transmission network offered by the network provider operator between the user terminal and the network. (2) TeleService is a service that basically has been provided from the beginning by the ISDN network, but to use it must be supported from the equipment or user terminal. If the user is still using standard equipment, then this TeleService service cannot be used. (3) Supplementary Service is an additional service provided by the ISDN network to users, but in accessing it, users are charged an additional fee for activating this service. Supplementary Service is shared with basic ISDN network services.

ISDN Services

(1) Call Diversion. Customers who cannot receive calls can divert their calls to another number or to an answering service. (2) Do Not Disturb. Customers who intentionally don't want to receive calls for a certain period of time can divert their calls to another number. (3) PBX Line Hunting Service. Automatic selection of a channel bundle serving subscribers to the general directory number of these subscribers. (4) Three Party Service. Customers who are currently having a telephone conversation can put their conversations on hold and make calls with third parties. (5) Freephone. A special number can be allocated to the subscriber and the cost of any calls made to this number is borne by the customer, not to the calling party. (6) Speed Dialing. Customers can make calls only by dialing a short code for a specific number that has been set and do not need to dial the entire number. (7) Call Waiting. Customers who are in conversation are given a sign that there is another incoming call. (8) Centrex Service. This service is

generally only available at PABX using specially equipped PSTN / IDN telephone exchanges.
(9) Malicious Call Identification. Customers can request identification of the calls it receives.

Conclusion

The software itself is made using a "programming language" created by the programmer and then compiled with a compiler application so that it becomes code that can be recognized / read by a hardware machine. The function of software is to process data or instructions / commands to get results or execute a certain command. Software also functions as a means of interaction that bridges or connects computer users with hardware.

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