Difference Between Virtual Machine and Server

Key Difference - Virtual Machine vs Server

A computer is a device that can perform tasks according to the given instructions. A computer contains multiple hardware resources. The instructions to function the hardware is provided by software. An operating system is also software. A virtual machine is a software or an application environment, which is an emulation of a computer system with an operating system. It provides a functionality similar to a physical computer. It is capable of performing tasks as a separate computer. A server is a device or a set of programs that fulfill the requests from client computers. There are various types of servers. They can be categorized according to the functionalities. They are file servers, web servers, database servers and many more. The **key difference** between virtual machine and server is that **a virtual machine is a software similar to a physical computer that can run an operating system and related applications while a server is a device or software that can provide services requested by the other computers or clients in the network**.

What is a Virtual Machine?

A computer is an electronic device to perform various tasks. The physical components of a computer are known as hardware. The processor, hard drive, optical drive, the floppy disk is some example of hardware components. In order for the hardware components to work properly, it is necessary to have the software. The software can be defined as a set of instructions and configuration files that are used to achieve tasks. Software makes the functionality of a computer easier and sophisticated. Some examples of software are Linux, Mac, Windows. As they have a unique ability to operate the hardware components of a computer, they are referred as operating systems.

A virtual machine is a software similar to a physical computer. It can run an operating system and related applications. A virtual machine monitor is a software that creates and runs virtual machines. It allows running an operating system on an existing operating system. Some popular virtual machine monitors are Virtual Box and VMware. If the computer is installed with Windows and the user also want to work with Linux, then he can install a virtual machine monitor and create a virtual machine. Then he can install Linux on the virtual machine. It is possible to use the Windows operating system, and when the Linux OS is required, he can power on the virtual machine and use the Linux OS. While working with Linux, windows will be running in the background. When the task is complete, he can save the status of the virtual machine and return back to the Windows OS.

Figure 01: VMware workstation

It is also possible to create multiple operating systems using the virtual machine monitor. For example, if the computer contains the Mac operating system, then the user can install virtual box and create two virtual machines. Each virtual machine can run separate operating systems such as Windows XP and Windows 8. The user can use these two operating system as two separate computers. Creating more number of virtual machines can slow down the performance of the computer. Overall, virtual machines are useful to run older applications and to use multiple operating systems using the same computer.

What is a Server?

A server is a computer that provides services to another computer. The user can set up a server for different purposes. There can be a server to control the access to the network, to host websites and to send and receive emails. Each server performs a specific task. Some of them are file servers, print servers, network servers and database servers. As the servers are providing different services all time, they are not switched off. Server failure can cause many problems including networking accessing errors.

Figure 02: A Server

There are various types of servers. A web server is a server that provides relevant web pages requested by the client. A web browser is a client which requests web pages from a web server. A file server provides required files for the users in the network. A server which holds emails for clients is known as a mail server. The print server is responsible for managing the printing task of the network. It is important to store data in all organization. The database server is used to store, retrieve and manage data in the database. Overall, servers are useful to share resources and to provide various services for the other devices in the network.

What is the Similarity Between Virtual Machine and Server?

- Both are related to computer hardware and software.

What is the Difference Between Virtual Machine and Server?

Virtual Machine vs Server	
A virtual machine is a software similar to a physical computer that can run an operating system and related applications.	A server is a device or a software that can provide services requested by the other computers or clients in the network.
Usage	
A virtual machine provides the functionality similar to a physical computer.	A server provides different services to other computers or clients.
Power	
A virtual machine can be powered off.	Generally, a server is not powered off.
Categorization	
There is no categorization of virtual machines.	The servers can be categorized according to their functionalities such as file server, web server, mail server etc..

Summary - Virtual Machine vs Server

A virtual machine provides the same functionalities similar to physical hardware. It also provides additional benefits such as portability, manageability and security. There are various types of servers according to their functionality. The difference between virtual machine and server is that a virtual machine is a software similar to a physical computer that can run an operating system and related applications while a server is a device or a software that can provide services requested by the other computers or clients in the network.

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