What is virtualization? Why should you use this technology?

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What is virtualization?

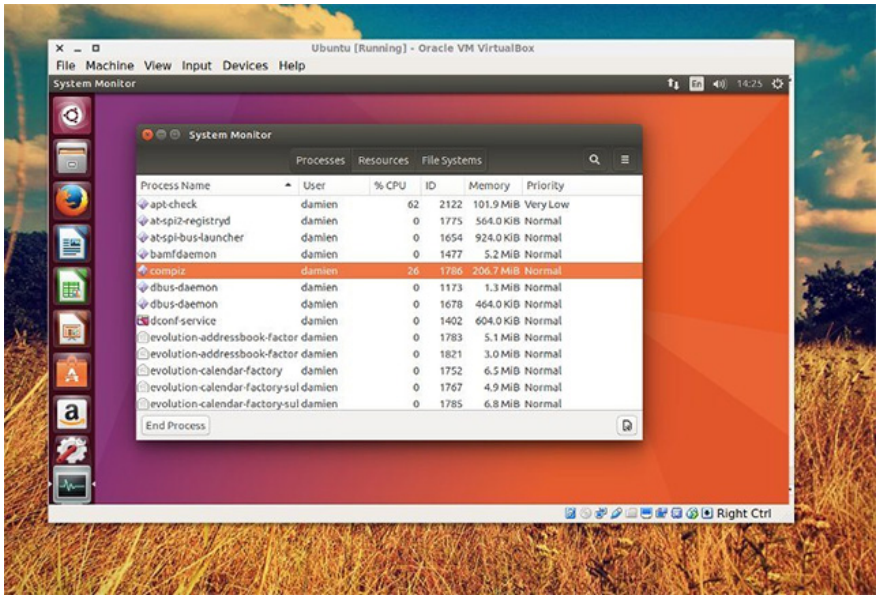
In the broadest sense, virtualization is the process of creating a virtual copy of an entity.Virtual in this case means that something is very similar to the original, so similar that you can hardly distinguish it from the original, as in the phrase "almost identical."

By definition in information technology, privatization is a technology designed to create an intermediate layer between computer hardware and software running on it.The idea of ??server virtualization technology is from a single physical machine that can form many independent virtual machines.Each virtual machine has a separate system source setup, separate operating system, and individual applications.Virtualization is derived from disk division, which divides a real server into multiple logical servers.Once the real server is divided, each logical server can run an independent operating system and applications.

What is a virtual machine?A virtual machine (VM - Virtual Machine) is a standalone operating environment - software that works with but independent of the server operating system.In other words, it is the installation of platform-independent software of a CPU running compiled code.For example, a virtual machine using Java will run any program written in any Java programming language.Virtual machines should be written separately for the operating system on which they run.Virtualization technology is sometimes called dynamic virtual machine software.

There are many different types of virtualization, but within the scope of this article we will only discuss the most common types of virtualization today.

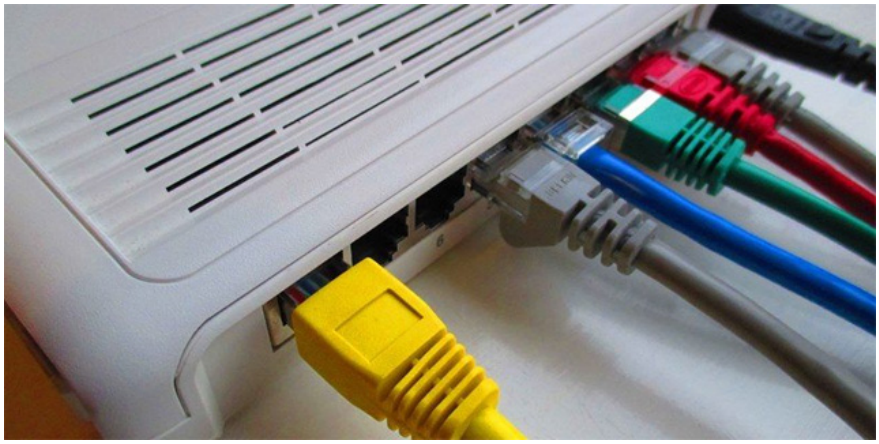
Desktop virtualization (desktop)



Desktop virtualization helps separate the desktop environment from the physical hardware that users are interacting with.Instead of being used to store the operating system, desktop environment, user file types, applications . on the device's hard drive, desktop computers are virtualized to serve users separately. .This means that this model allows the virtual computer to be placed on a remote server in the data center, instead of on a client's on-premises storage device.The entire system will actually be managed by a server.This allows the system administrator to have full control of the user's desktop environment from a remote access point.When the administrator releases updates on the server, these updates will be immediately applied to the user without using tunneling techniques, physical access, or dedicated user profiles. for device.By separating the desktop environment from the hardware it runs, users can freely access their 'computer' from any other desktop computer.

Desktop virtualization technology has broken the traditional link between operating systems, applications, data and user settings.Desktop virtualization allows users to deploy settings (Profile, Desktop, Documents .), users' applications and personal computers separately or collectively.This is also an effective solution to reduce the cost of IT investment while ensuring the flexibility and continuous responsiveness of the system to improve operational productivity, utilize IT resources and stay Anywhere employees are allowed to access resources in the system.

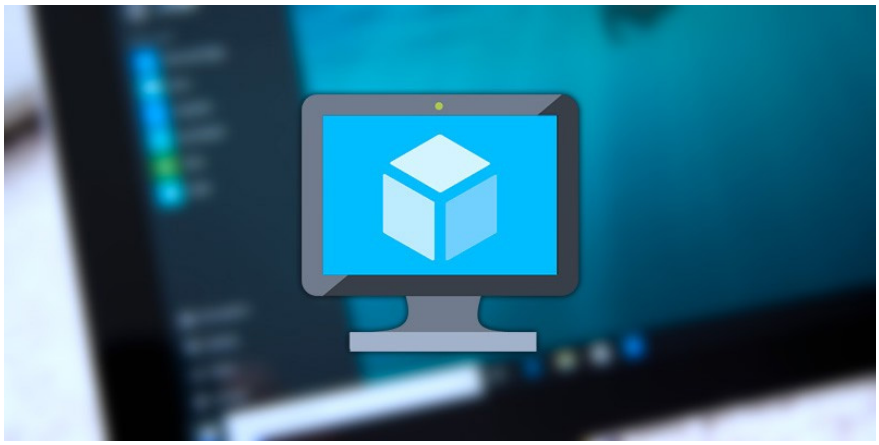
Network virtualization



Network virtualization is a process of consolidating resources and devices that both network hardware and software into a virtual network system.After that, these resources will be split into channels and attached to a server or device.In other words, instead of running a physical network control infrastructure, a hypervisor re-creates that function in a software environment.Network virtualization can be combined with hardware virtualization, creating a software network of communicable hypervisors.Network virtualization can be used to test and implement high-level network functions such as load balancing and firewalls as well as other roles such as routing and switching.

There are many methods to implement network virtualization.These methods depend on the device support, ie the manufacturer of the device, but also depends on the available network infrastructure, as well as the network service provider (ISP).

Hardware virtualization



This is the most familiar type of virtualization for most users.For example, running a virtual machine in VirtualBox means that you are running hardware virtualization.The video game system emulator also works on the same principle, using the super monitor to create video game console parameters.

In hardware virtualization, the hypervisor creates a client, mimicking hardware devices such as monitors, hard drives, and processors.In some cases, the hypervisor simply simulates the configuration of the server.In other cases, a completely separate and independent system is called virtualization, depending on the needs of the environment used.In summary, hardware virtualization is divided into two categories:

Full hardware virtualization is all the real hardware components of the machine will be virtualized, creating a set of virtual hardware for other operating systems on the real machine.Full hardware virtualization is used when there is a need to share a computer for multiple users, creating security when multiple people work together on a computer.

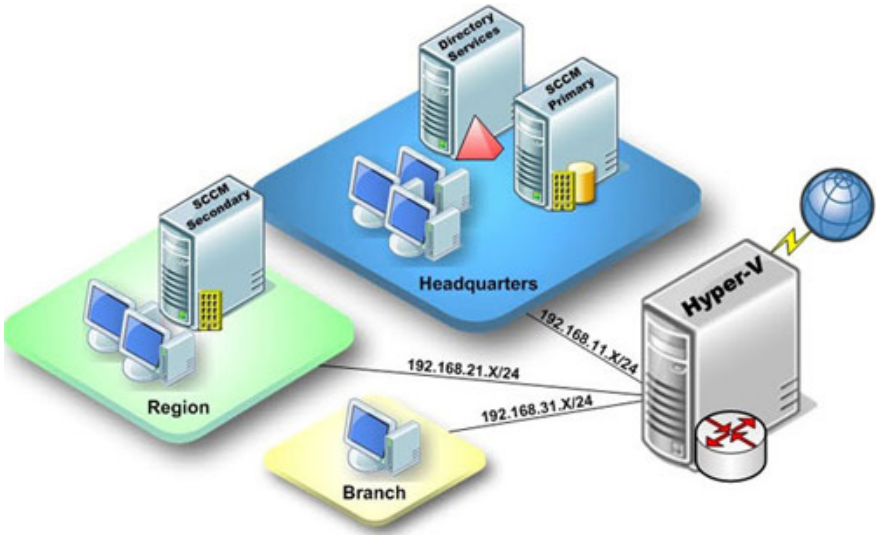
Partial hardware virtualization only virtualizes one, several hardware components on the real machine.Hardware virtualization partly does not provide enough resources for a new operating system to run on a real machine.Hardware virtualization helps the server run some important software without having to use a virtual machine to avoid wasting resources.

Unlike merely simulating hardware, the virtualization process is complex and has a much higher level.In hardware simulation, the software is used to help a piece of hardware to simulate the other piece of hardware.For example, hardware emulators can be used to run x86 software on ARM chips.Windows 10 is widely used by Microsoft with this strategy of building an operating system that can be accessed anytime, anywhere, while Apple used this technology in Rosetta when switching from its PowerPC processor. Motorola to Intel processors.

Usually, there are some restrictions that require us to use virtualization.For example, the fact that a hypervisor often cannot exceed the specifications of its host device.You cannot run a hypervisor with 10 TB of hard drive storage on a disk of only 2 TB.You can try to provide that error through the hypervisor, but the system will quickly crash when used.

It must also be noted that hardware virtualization is also slower than the real hardware environment.However, hardware virtualization comes with advantages such as cost savings, faster and more flexible deployment.

Why should virtualization technology be used?



Saving costs and optimizing IT infrastructure is something that businesses are interested in, especially businesses with many branches in the country or globally.Virtualization helps businesses improve data security capacity, enhances the ability to recover post-disaster operations, increases flexibility and cuts down on IT investment costs such as constantly updating software, New features . on many physical computers.

In addition to saving initial investment costs, virtualization technology is directing users to the mobile work environment as the handsets become more and more diverse, such as smart phones or computers. table.Computer virtualization technology helps people work from "terminals" - their remote desktops.All programs, applications, processing and use operations are run centrally in the data center.For example, if the terminal sends a document to the printer, that request actually takes place inside the data center where the virtual computer and print server are located.Printing data goes to the network printer and goes out of the computer's display protocol.

In addition to reducing server setup time, testing software before putting it into operation is also one of the main purposes when server virtualization.This new technology will create new things in the minds of information technology managers about computer resources.When managing individual machines becomes easier, the focus of IT can shift from technology to service.

Currently, in addition to 'godfather' in the virtual world of VMWare, other 'giants' in the technology world such as Microsoft, Oracle, Sun . have also joined the lucrative piece called virtualization.Therefore, there are many products on the market for businesses to choose and use

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