

Types of Virtualization

Major Types of

Virtualization

Hardware	Network	Storage	Memory	Software	Data	Desktop
<ul style="list-style-type: none">• Full<ul style="list-style-type: none">• Bare-Metal• Hosted• Partial• Para	<ul style="list-style-type: none">• Internal Network Virtualization• External Network Virtualization	<ul style="list-style-type: none">• Block Virtualization• File Virtualization	<ul style="list-style-type: none">• Application Level Integration• OS Level Integration	<ul style="list-style-type: none">• OS Level• Application• Service	<ul style="list-style-type: none">• Database	<ul style="list-style-type: none">• Virtual desktop infrastructure• Hosted Virtual Desktop

Types of Hardware virtualization

Hardware virtualization is further subdivided into the following types:

- ✓ Full Virtualization – In it, the complete simulation of the actual hardware takes place to allow software to run an unmodified guest OS.
- ✓ Para Virtualization – In this type of virtualization, software unmodified runs in modified OS as a separate system.
- ✓ Partial Virtualization – In this type of hardware virtualization, the software may need modification to run.

Network Virtualization

Internal Network Virtualization: It refers to the management and monitoring of a computer network as a single managerial entity from a single software-based administrator's console. It is intended to allow network optimization of data transfer rates, scalability, reliability, flexibility, and security. It also automates many network administrative tasks. Network virtualization is specifically useful for networks experiencing a huge, rapid, and unpredictable increase of usage.

External Network Virtualization: Combine many networks, or parts of networks into a virtual unit. External Network Virtualization involves an actual physical device that caters to your network. This type of virtualization has been around for some time now, a typical example of this would be a CISCO networking switch that provides VLAN (virtual LAN) capabilities through its internal CISCO iOS software.

Storage Virtualization

In this type of virtualization, multiple network storage resources are present as a single storage device for easier and more efficient management of these resources. It provides various advantages as follows:

- Improved storage management in a heterogeneous IT environment
- Easy updates, better availability
- Reduced downtime
- Better storage utilization
- Automated management

In general, there are two types of storage virtualization:

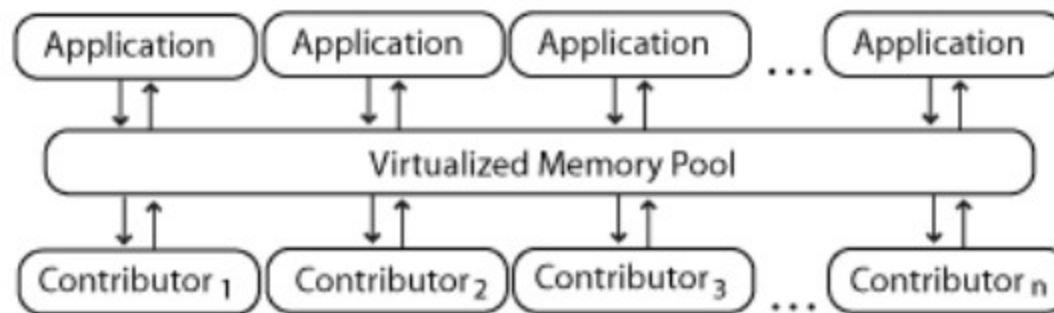
Block virtualization - It works before the file system exists. It replaces controllers and takes over at the disk level.

File virtualization - The server that uses the storage must have software installed on it in order to enable file-level usage.

Memory Virtualization

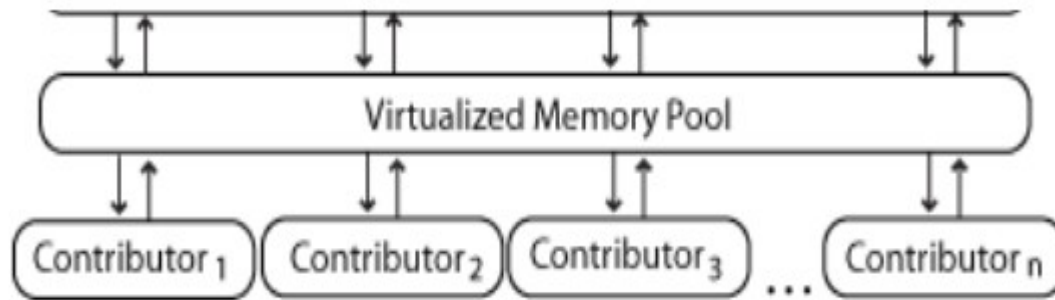
It introduces a way to decouple memory from the server to provide a shared, distributed or networked function. It enhances performance by providing greater memory capacity without any addition to the main memory. That's why a portion of the disk drive serves as an extension of the main memory.

Application level integration – Applications running on connected computers directly connect to the memory pool through an API or the file system.



Memory Virtualization...

- **Operating System Level Integration** – The operating system first connects to the memory pool, and makes that pooled memory available to applications.



Software Virtualization

It provides the ability to the main computer to run and create one or more virtual environments. It is used to enable a complete computer system in order to allow a guest OS to run. For instance letting Linux to run as a guest that is natively running a Microsoft Windows OS (or vice versa, running Windows as a guest on Linux)

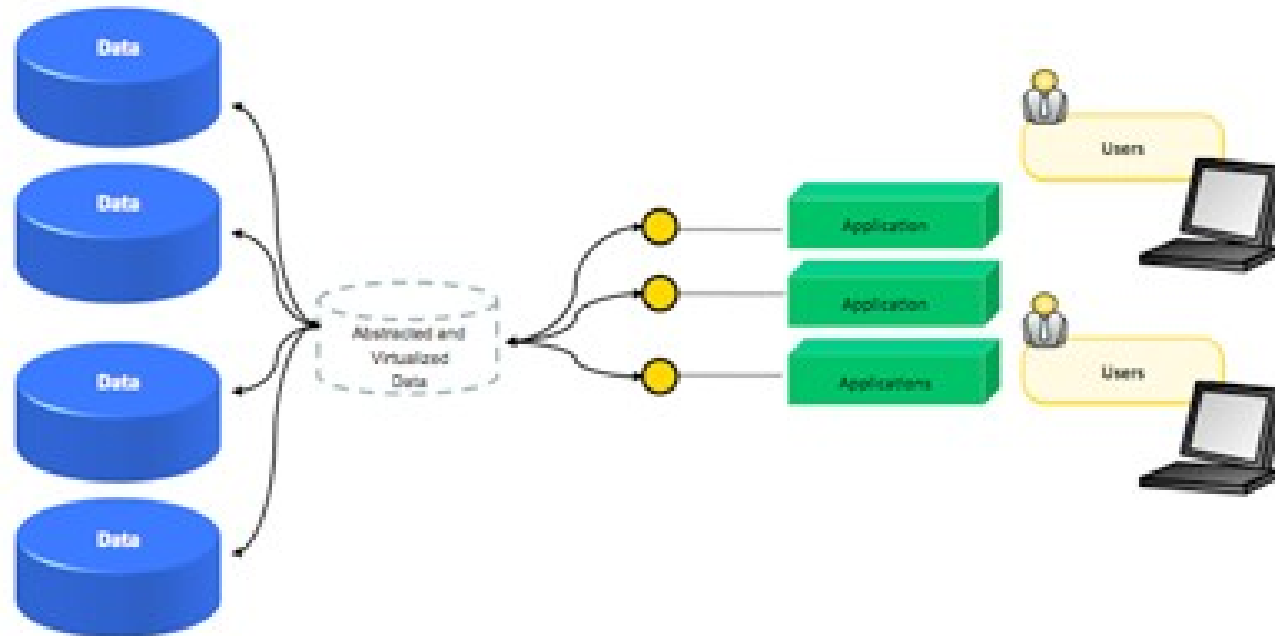
Types:

- Operating system
- Application virtualization
- Service virtualization

Data Virtualization

Without any technical details, you can easily manipulate data and know how it is formatted or where it is physically located. It decreases the data errors and workload.

What is Data Virtualization?



Desktop virtualization

It provides the work convenience and security. As one can access remotely, you are able to work from any location and on any PC. It provides a lot of flexibility for employees to work from home or on the go. It also protects confidential data from being lost or stolen by keeping it safe on central servers.

