VIRTUALIZATION

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INTRODUCTION OF VIRTUALIZATION

- Virtualization is a technique, which allows to share single physical instance of an application or resource among multiple organizations (customers).

- Virtualization is a proved technology that makes it possible to run multiple operating system and applications on the same server at same time.

- Virtualization is the process of creating a logical(virtual) version of a server operating system, a storage device, or network services. The technology that work behind virtualization is known as a virtual machine monitor(VM), or virtual manager which separates compute environments from the actual physical infrastructure.

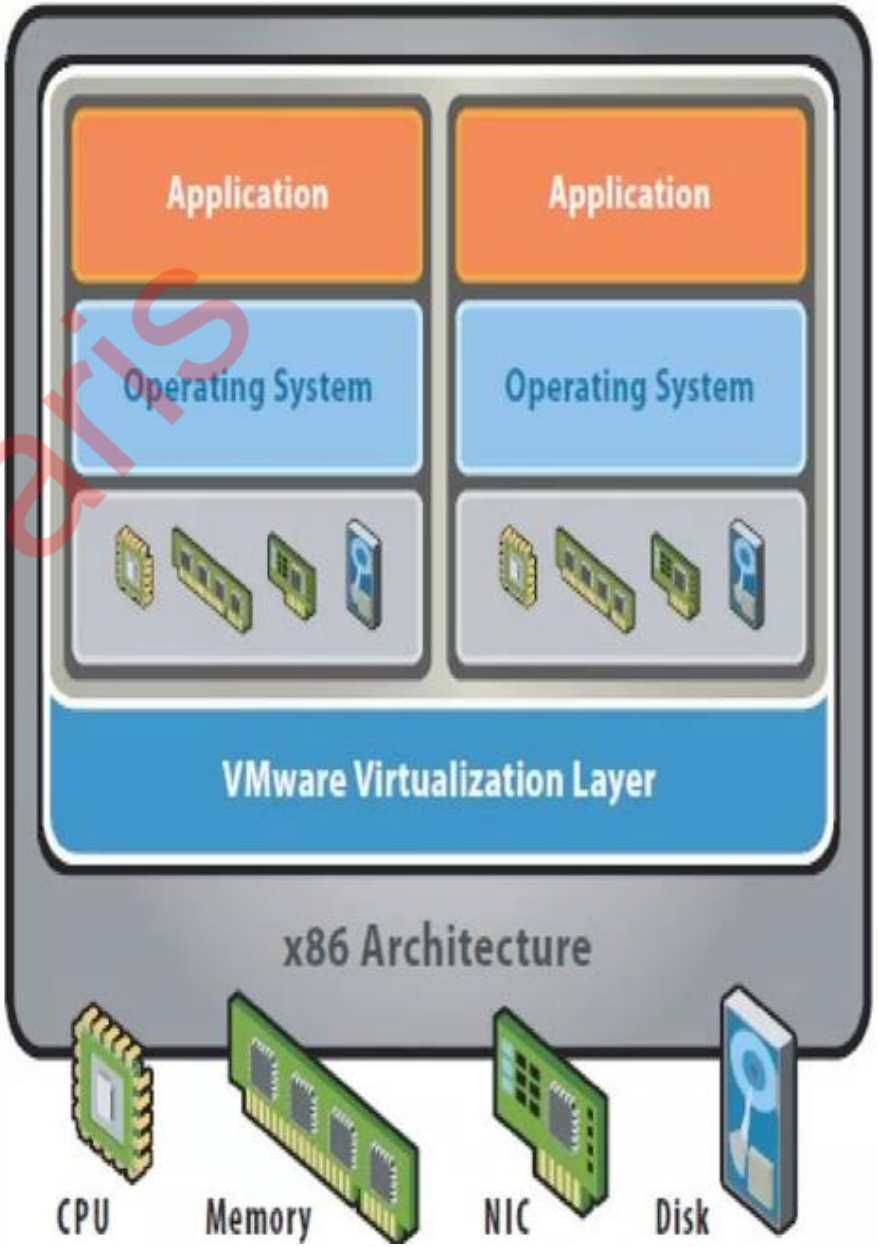
What is the concept behind the Virtualization

Before Virtualization

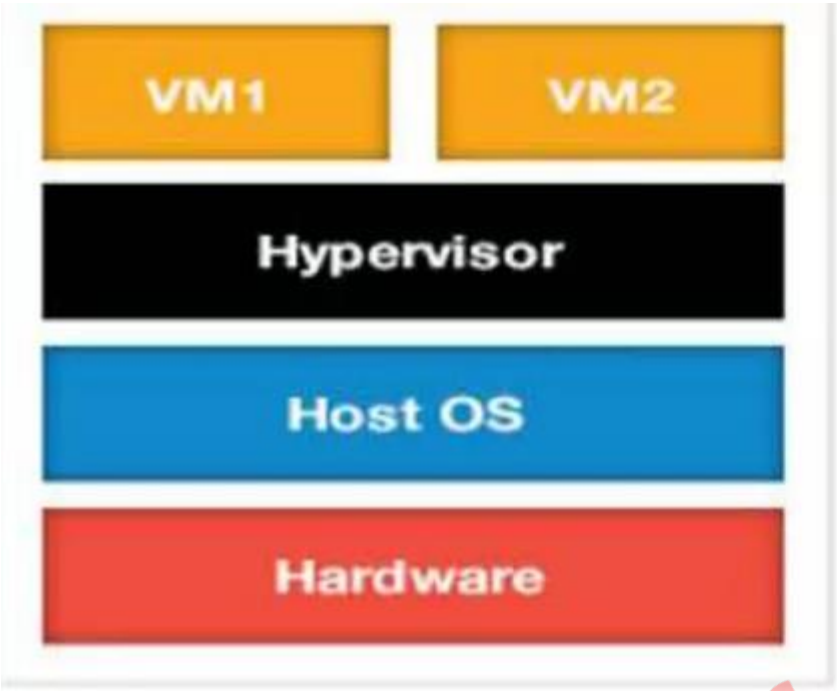
- Single OS image per machine
- Software and hardware tightly coupled
- Running multiple applications on same machine often creates conflict
- Inflexible and costly infrastructure

After Virtualization

- Hardware-independence of operating system and applications
- Virtual machines can be provisioned to any system
- Can manage OS and application as a single unit by encapsulating them into virtual Machines

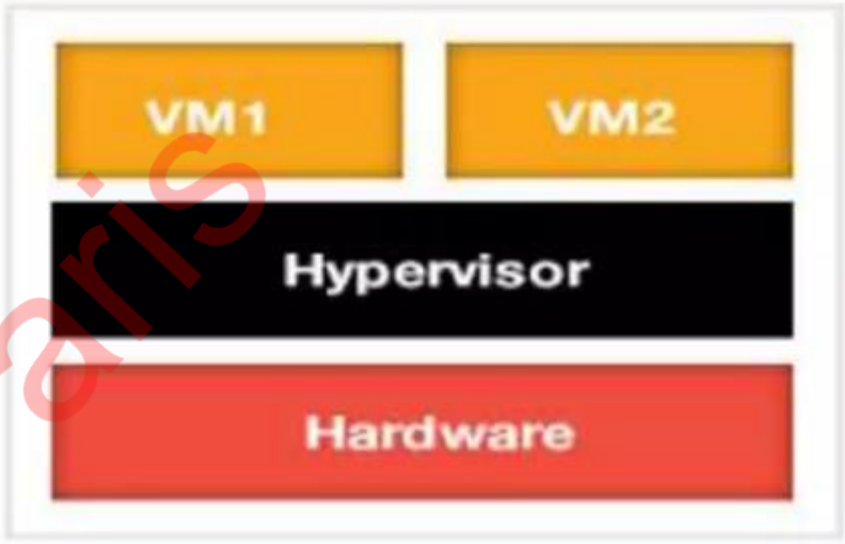


Architecture of virtualization



Hosted Hypervisor

Examples:
RTS Vm
Oracle Vm
Vmware
VirtualLogic VLX



Hypervisor

Examples:
KVM
Vmware Fusion
Virtual Server 2005R2
Windows Virtual PC
Vmware workstation 6.0

Types of virtualization

1. Hardware Virtualization.
2. Operating system Virtualization.
3. Server Virtualization.
4. Storage Virtualization.

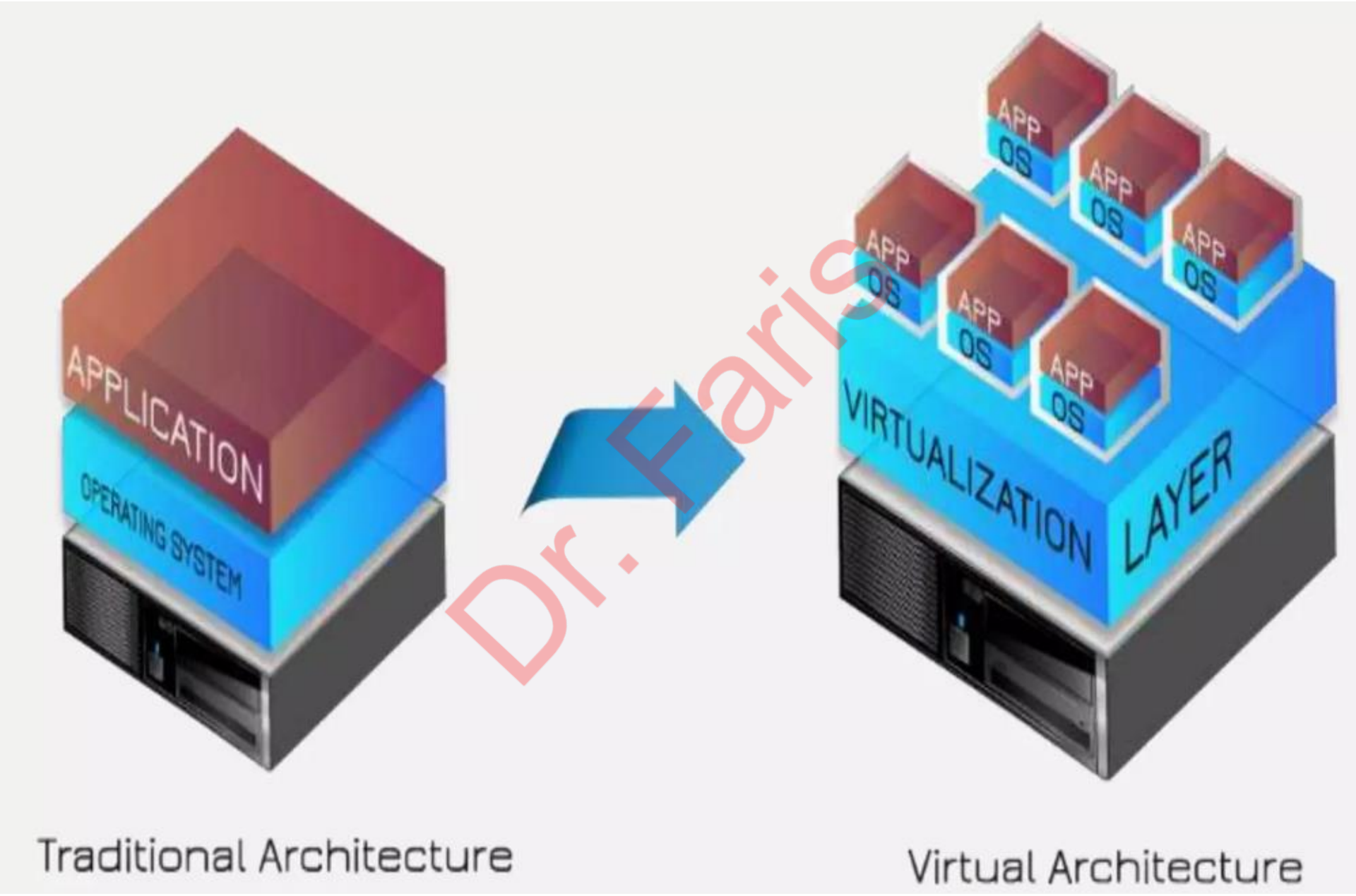
Hardware Virtualization

- When the virtual machine software or virtual machine manager (VMM) is directly installed on the hardware system is known as hardware virtualization.

- The main job of hypervisor is to control and monitoring the processor, memory and other hardware resources,

Usage:

- Hardware virtualization is mainly done for the server platforms, because controlling virtual machines is much easier than controlling a physical server.


APPLICATION
OPERATING SYSTEM
APP
OS
APP
OS
APP
OS
APP
OS
APP
OS
VIRTUALIZATION LAYER
Traditional Architecture
Virtual Architecture

Operating System Virtualization

• When the virtual machine software or virtual machine manager (VMM) is installed on the Host operating system instead of directly on the hardware system is known as operating system virtualization.

Usage:

• Operating System Virtualization is mainly used for testing the applications on different platforms of OS.

Traditional Operating system Architecture

Virtual Operating system Architecture

Server Virtualization

- When the virtual machine software or virtual machine manager (VMM) is directly installed on the Server system is known as server virtualization.

Usage:

- Server virtualization is done because a single physical server can be divided into multiple servers on the demand basis and for balancing the load.

Clasic Server Installation

Virtualized server Intallation

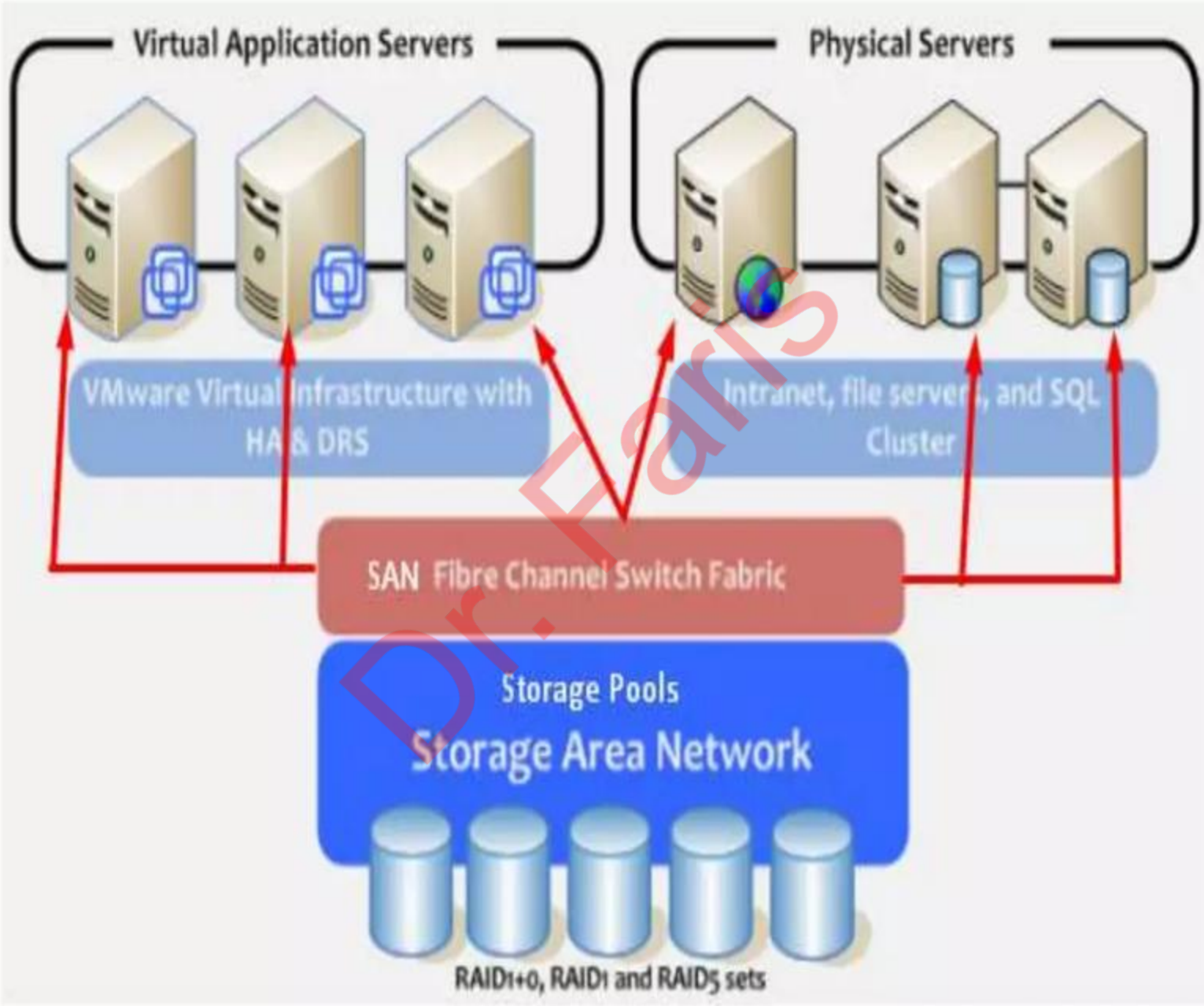
Storage Virtualization

• Storage virtualization is the process of grouping the physical storage from multiple network storage devices so that it looks like a single storage device.

• Storage virtualization is also implemented by using software applications.

Usage:

• Storage virtualization is mainly done for back-up and recovery purposes.


Virtual Application Servers
Physical Servers
VMware Virtual Infrastructure with HA & DRS
Intranet, file servers, and SQL Cluster
SAN Fibre Channel Switch Fabric
Storage Pools
Storage Area Network
RAID1+0, RAID1 and RAID5 sets

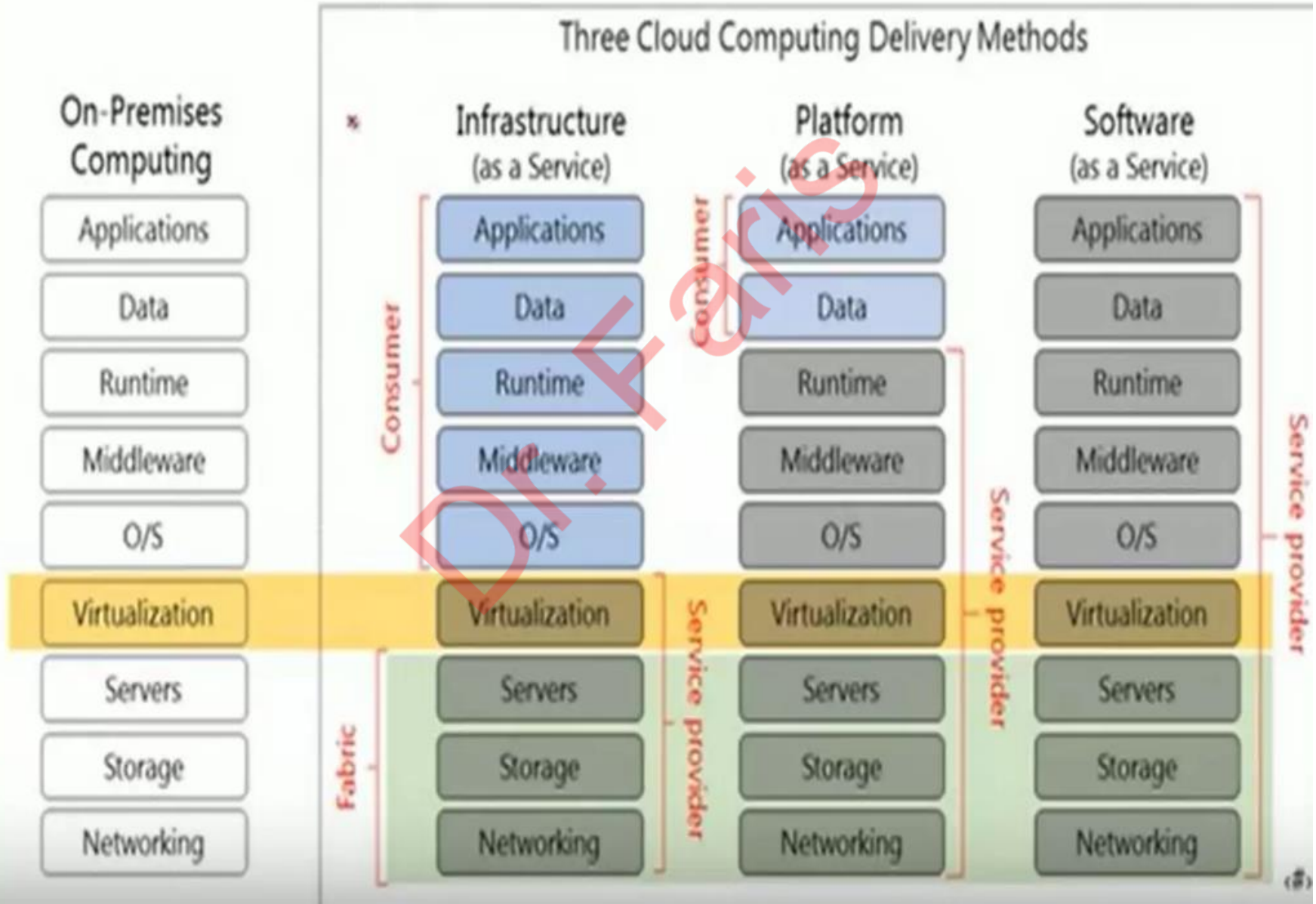
Cloud VS Virtualization

- Cloud computer is internet-based computing where virtual shared provide Software, Infrastructure, platform.

- Virtualized
- API
- Pay-as-per-use
- Scalability

Virtualization can exist without the cloud but cloud computing cannot exist without virtualization.

Cloud Computing Service Models



Advantages of Virtualization

l . Reduced Costs.
2. Efficient hardware Utilization.
3. Virtualization leads to better resource Utilization and increase performance
4. Testing for software development.
5. Increase Availability
6. Save energy
7. Shifting all your Local Infrastructure to Cloud in a day
8. Possibility to Divide Services
9. Running application not supported by the host.

Disadvantages of Virtualization

l. Extra Costs.

2. Software Licensing.