Virtualization and **Cloud Computing**

Traditional **Virtualization** **Cloud**

Traditional

Traditional computing refers to the use of **physical servers** and **datacenters** to deliver computing and other IT services

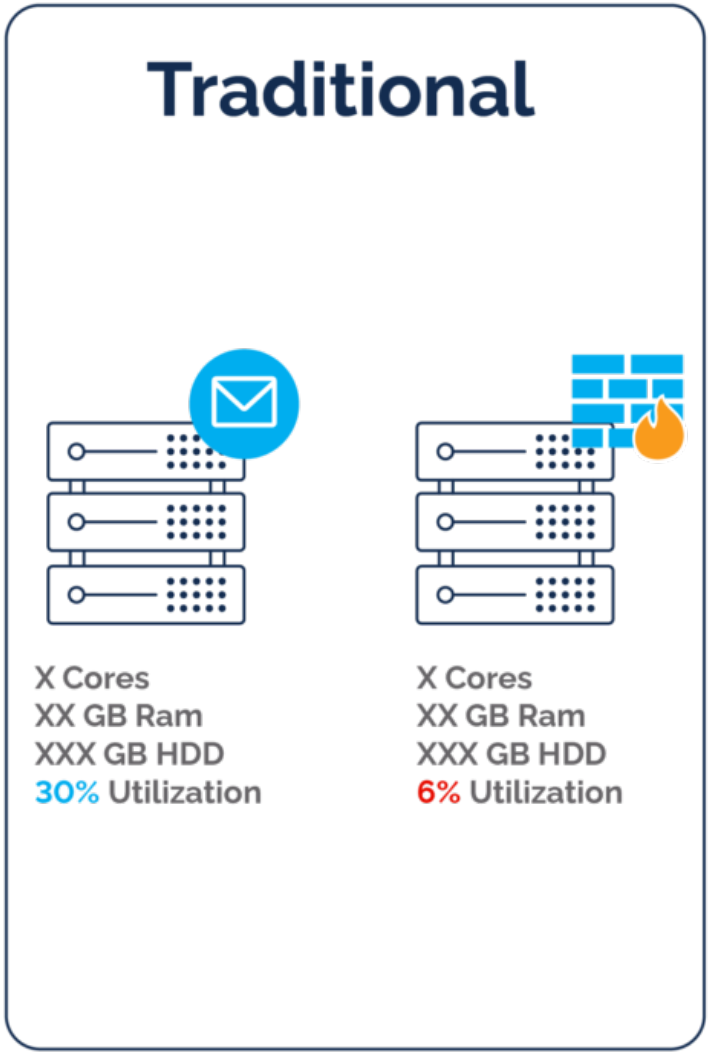
This used to be the **practice during the early days** of using computers in companies and organization, where dedicated servers are the commonly used

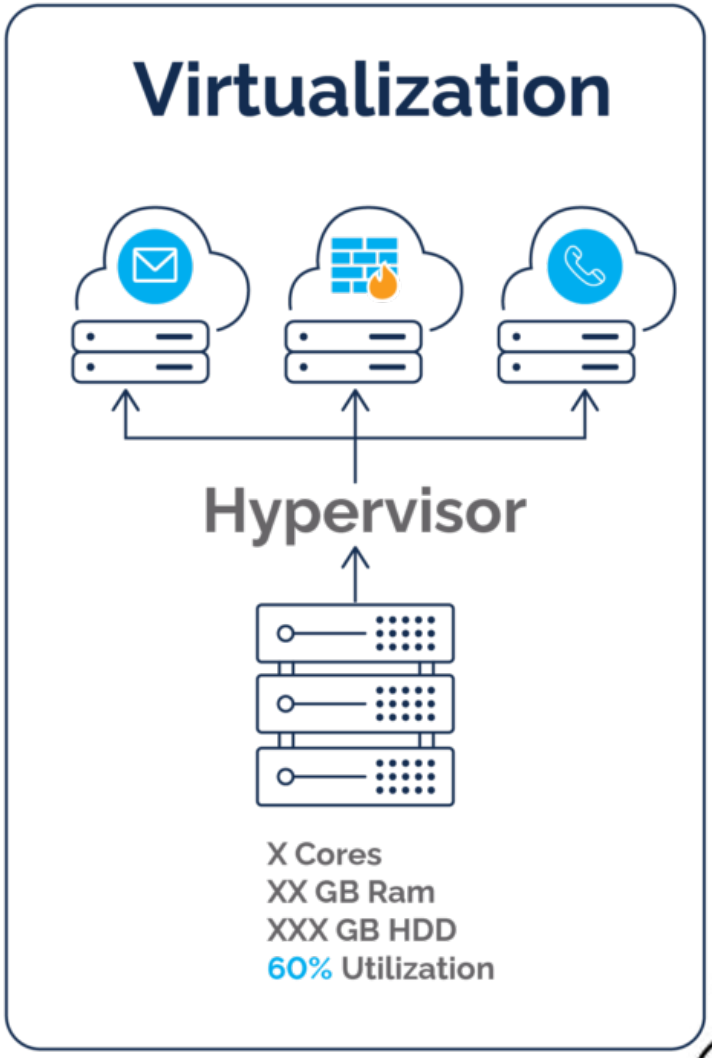
The host computer would typically be installed with a **single OS directly on the hardware**, where tools, dependencies, and applications would run from it

Would typically run one or a few applications per machine, resulting in possible issues in **resource allocation** as well as **difficulty in scaling**

https://www.geeksforgeeks.org/difference-between-cloud-computing-and-traditional-computing/; https://www.linkedin.com/pulse/traditional-deployment-vs-virtualization-container-shazly-abozeid

Traditional vs Virtualization





https://www.parkplacetechnologies.com/blog/traditional-data-center-vs-virtualization-differences/

Virtualization

Virtualization is the technology that you can use to **create virtual representations** of **servers**, **storage**, **networks**, and other physical machines and resources

Virtual software **mimics the functions of physical hardware** to run multiple virtual machines simultaneously on a single physical machine

A virtual computer system is known as a virtual machine or VM is a **self-contained**, completely **independent**, and **isolated software container** with an **operating system** and **application** inside.

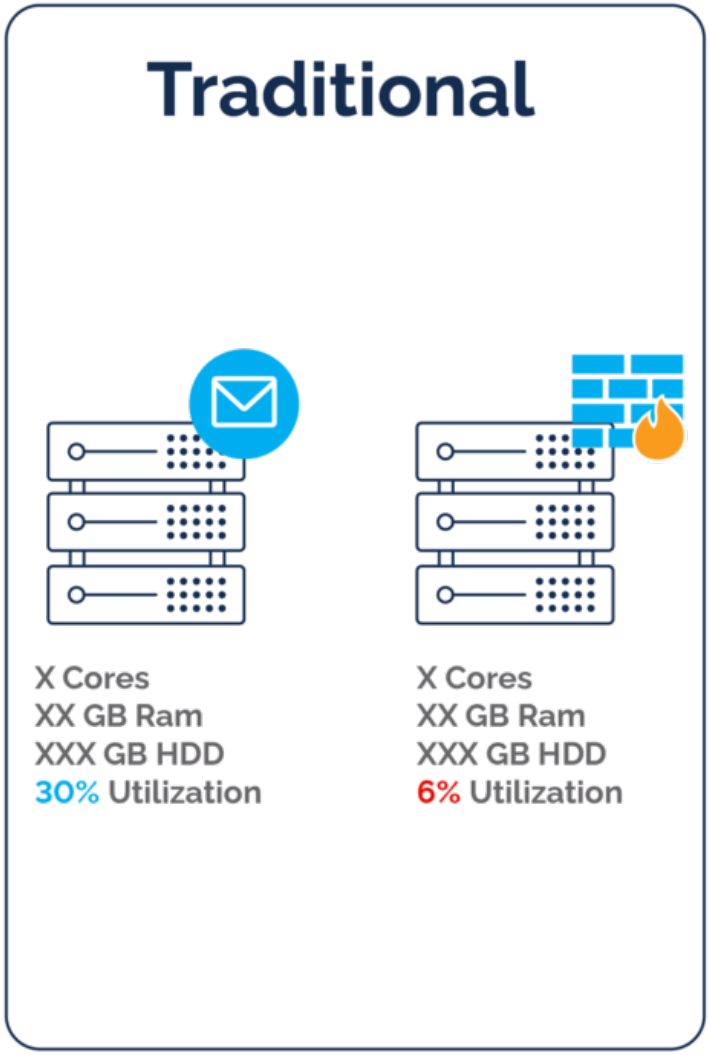
Multiple VMs on a single computer results in several OS and applications to run on one physical server, or host

https://aws.amazon.com/what-is/virtualization/; https://www.vmware.com/solutions/cloud-infrastructure/virtualization

Without Virtualization

Due to the **limitations of x86 servers**, many IT organizations must **deploy multiple servers**, each **operating at a fraction of their capacity**, to keep pace with today's high storage and processing demands

Result = **huge inefficiencies** and **excessive operating costs**



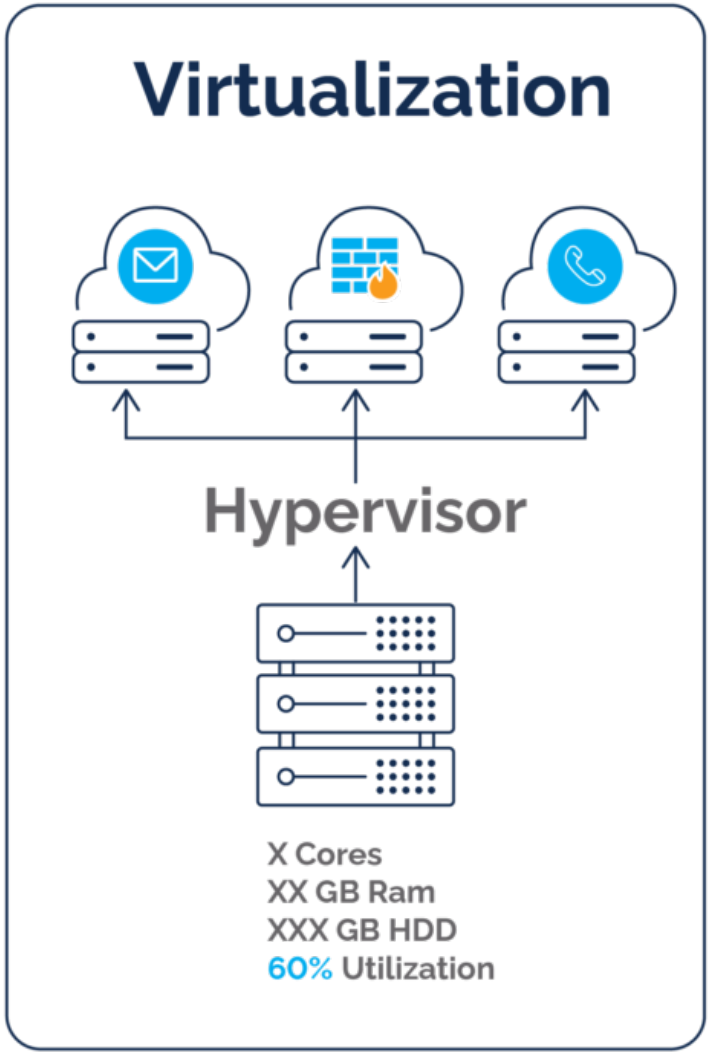
https://www.vmware.com/solutions/cloud-infrastructure/virtualization; https://www.parkplacetechnologies.com/blog/traditional-data-center-vs-virtualization-differences/

With Virtualization

Virtualization **relies on software to simulate hardware** functionality and create a virtual computer system

Enables IT organizations to **run more than one virtual system** [multiple operating systems and applications] **on a single server**

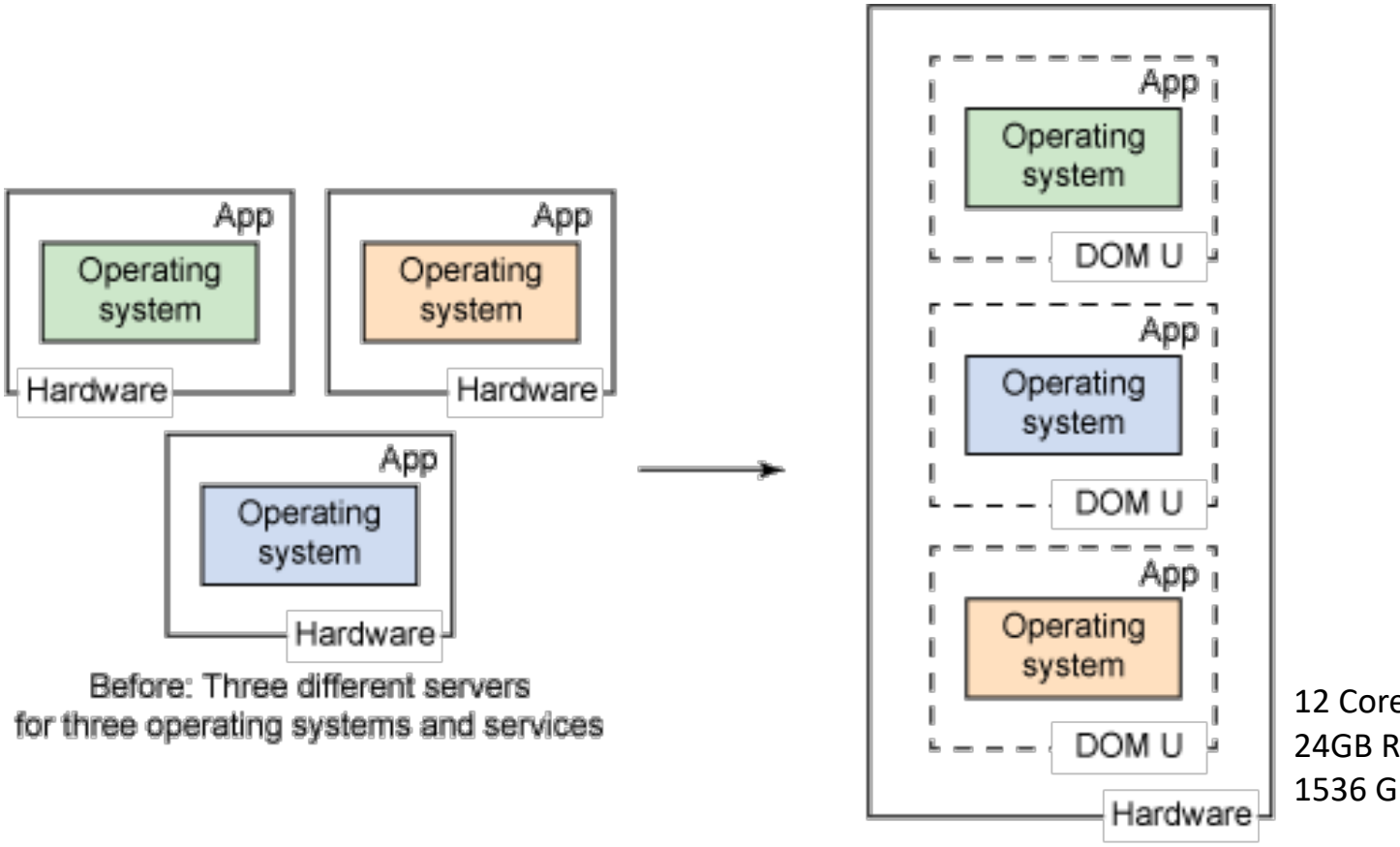
Result = **economies of scale** and **greater efficiency**



https://www.vmware.com/solutions/cloud-infrastructure/virtualization; https://www.parkplacetechnologies.com/blog/traditional-data-center-vs-virtualization-differences/

Deployment using Traditional vs Virtualization

4 Cores
8GB RAM
512GB HDD



12 Cores
24GB RAM
1536 GB HDD

https://www.ibm.com/developerworks/cloud/library/cl-hypervisorcompare/

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