TNGS Learning Solutions
AWS Solutions Architect
Online Course
UNDERSTANDING VIRTUALIZATION

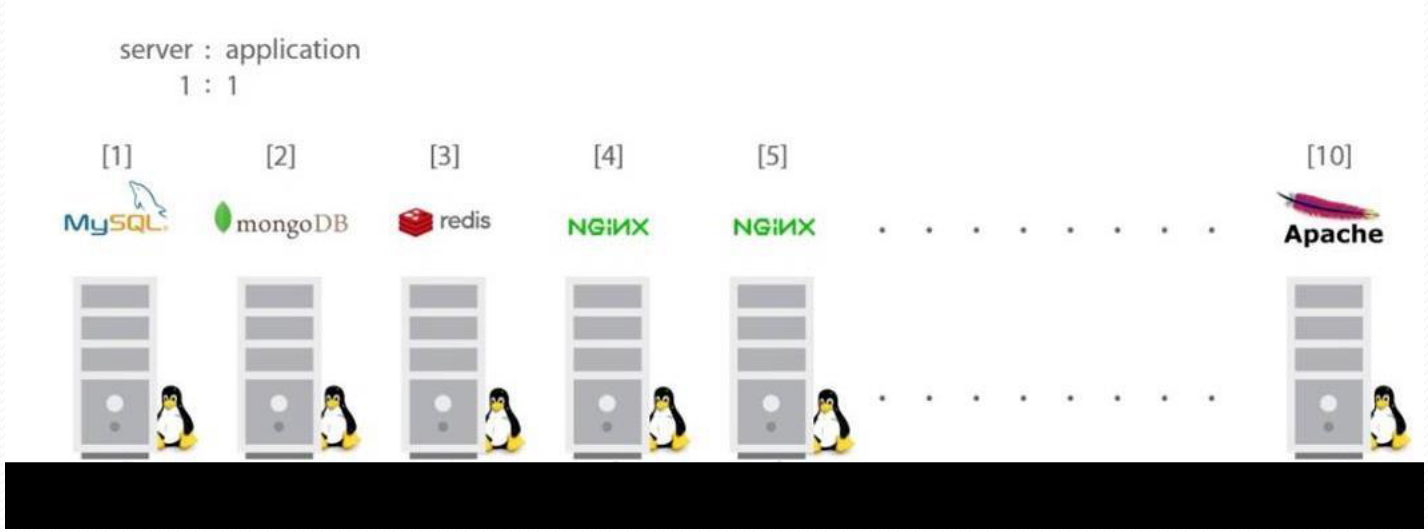
What IS Hypervisor?

- Hypervisor is a software layer that sits between Hardware and OS which will interact with hardware and resources and provide an interface to share the available resources to virtual containers.

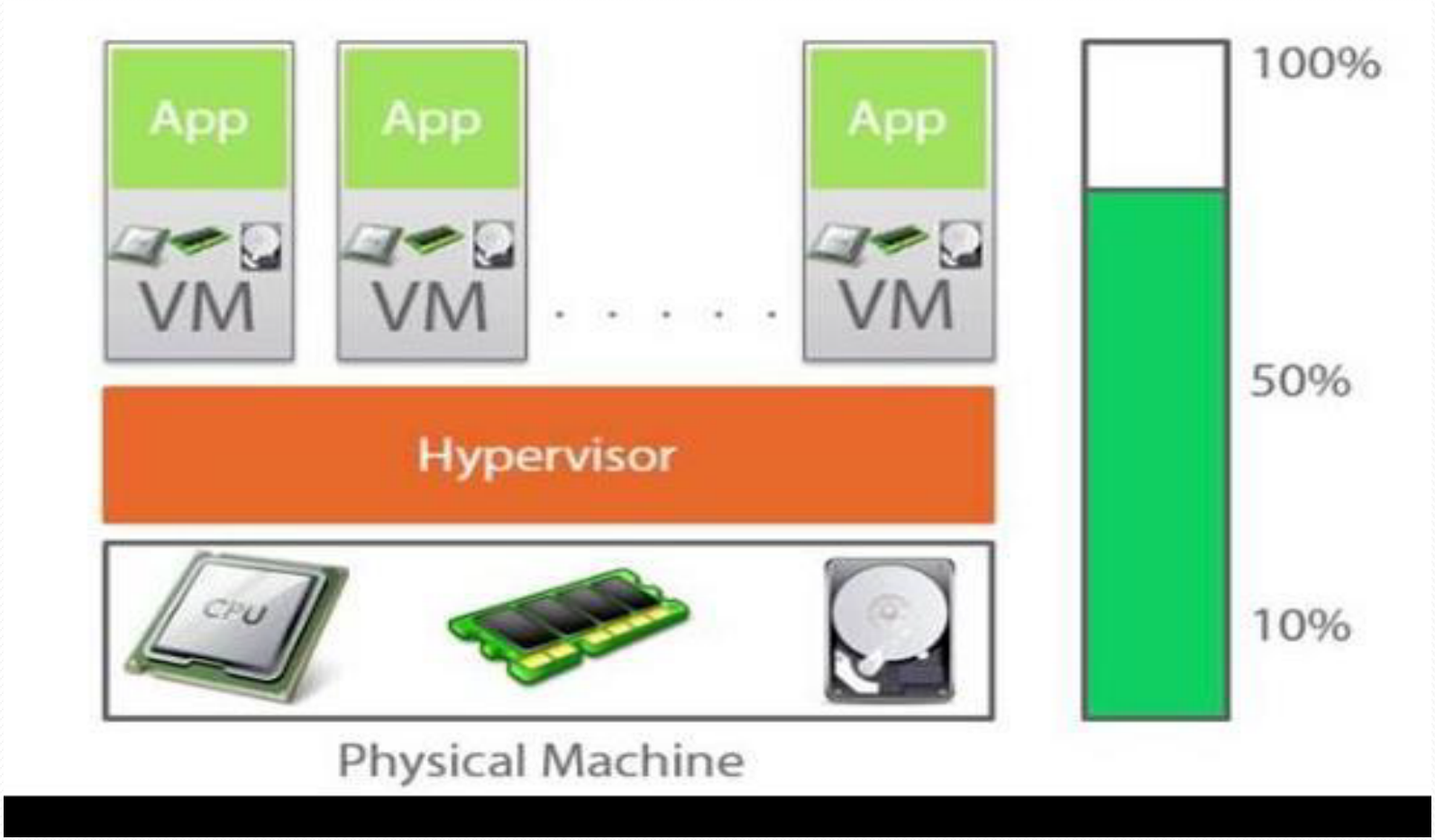
VIRTUALIZATION

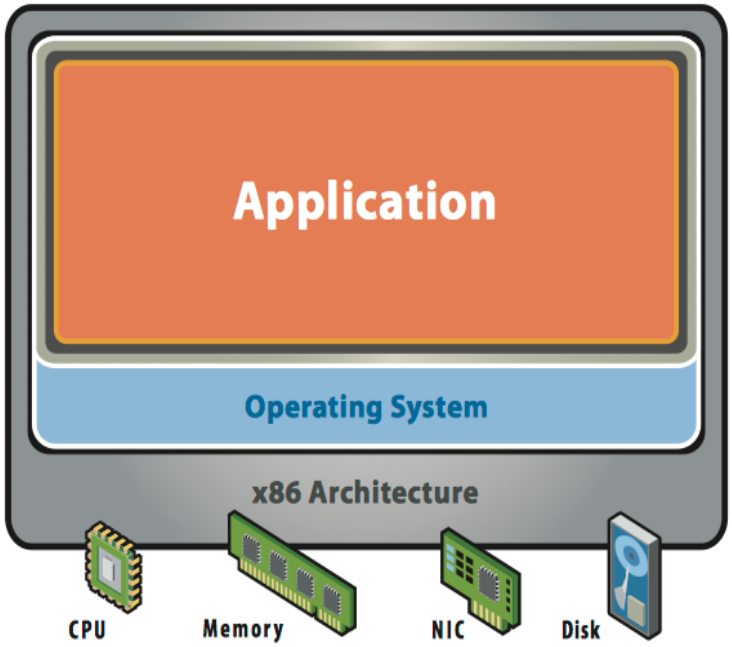
Problem:

Installing multiple software on same machine can result to complications.



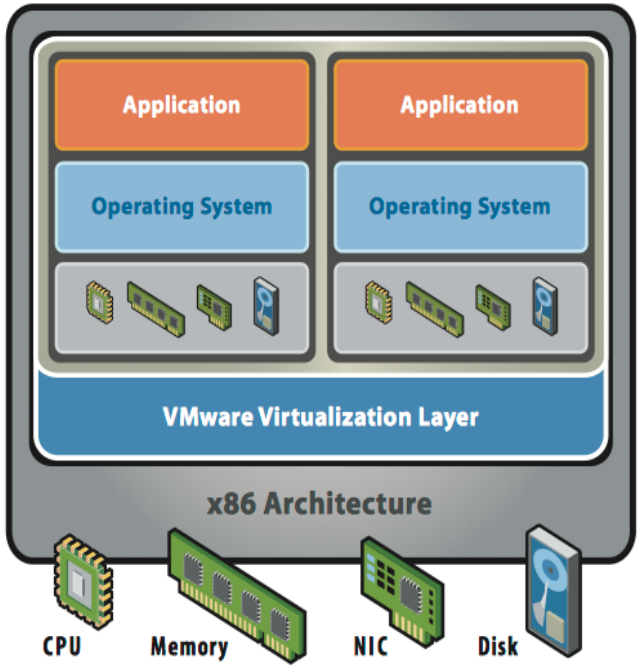
SOLUTION – VIRTUALIZATION





Before Virtualization:

- Single OS image per machine
- Software and hardware tightly coupled
- Running multiple applications on same machine often creates conflict
- Underutilized resources
- 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

Virtualization Vs Cloud Computing

- Virtualization is a technology where Cloud Computing is a service.
- Without virtualization, there is no Cloud Computing.

- Cloud Computing is built on top of Virtualization.

Benefits of Virtualization

- **Resource Utilization:** Virtualization optimizes the utilization of physical hardware resources, such as CPU, memory, and storage, by running multiple virtual instances on a single server. This reduces hardware underutilization and saves costs.

Benefits of Virtualization

- **Isolation:** Virtualization provides strong isolation between virtual instances. A failure or issue in one virtual machine does not affect others, enhancing system stability and security.

Benefits of Virtualization

- **Flexibility and Scalability:** Virtualized environments are highly flexible and scalable. Virtual machines can be provisioned or de-provisioned quickly to adapt to changing workloads.

Benefits of Virtualization

- **Cost Savings:** By consolidating multiple virtual instances onto fewer physical servers, organizations can reduce hardware acquisition and maintenance costs, as well as energy consumption.

Benefits of Virtualization

- **Disaster Recovery:** Virtualization simplifies disaster recovery planning and implementation. Virtual machines can be easily replicated, backed up, and restored in the event of a hardware failure or disaster.

Benefits of Virtualization

- **Resource Management:** Virtualization allows for granular resource allocation and management. Resources can be allocated dynamically based on demand, ensuring efficient use of computing power.

Benefits of Virtualization

- **Development and Testing:** Virtualization is valuable for software development and testing, as developers can create and test applications in isolated virtual environments without affecting production systems.

Benefits of Virtualization

- **Legacy System Integration:** Virtualization enables the hosting of legacy applications on modern hardware, extending the lifespan of legacy systems.

Vendors

Conclusion

- Virtualization is an essential and foundational technology for cloud computing, enabling cloud providers to create and manage virtualized infrastructure for their customers.
- These platforms facilitate the creation, management, and migration of virtual machines in data centers and cloud environments.