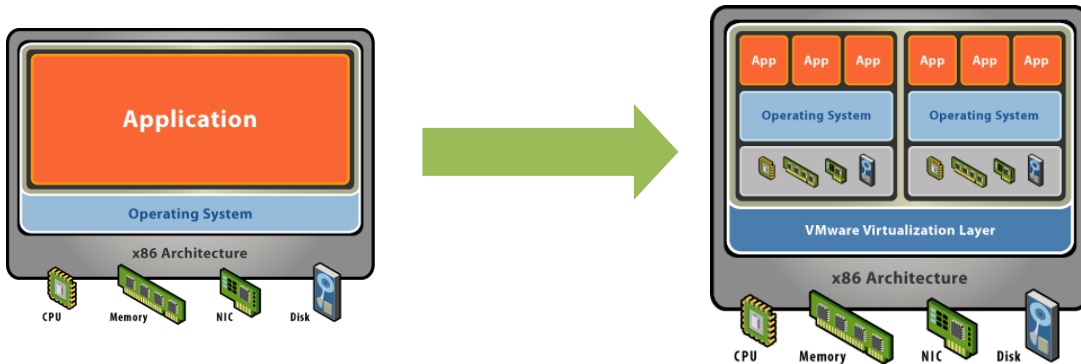


1. Virtualization: What is it and Why do I need it?

Virtualization is software for a server that partitions one server into multiple ‘virtual machines’ allowing you to get 10X the average utilization rate. This **saves both money and time** because you’ll need fewer physical servers to buy, store and pay the electricity for, plus you can manage them centrally.

Virtualization enables staff to be far more productive with instant provisioning, dynamic patching, and zero downtime maintenance. Additionally, it allows companies to protect critical data and applications to ensure the business is always up and running.

The **old** rule of thumb prescribed, ‘one application per server’, because if you had multiple applications on a server and one application crashed, it would take down all the other applications with it. Overtime, this practice has resulted in less than 8% CPU usage per server! With virtualization, the old rule no longer applies because even if one application crashes, it will not take down the other applications because they are running on independent ‘virtual’ machines even though they are on the same physical box. Additionally, if your server hardware itself goes down, virtualization has functionality that can get you up and running on another server fast.



Traditional x86 Architecture

Legacy rule: Run only one application per server because single application crashes result in OS or server failure

- **Wasting HW capacity** = 8% is typical utilization rate of CPU
- **Wasting power** and cooling costs. While you only use 8% of the CPU, you still have to pay 100% of the electric bill to power and cool it.
- **Backup and recovery** needs to be done for each server individually instead of centrally managed
- Need to monitor servers independently

VMware Virtualization:

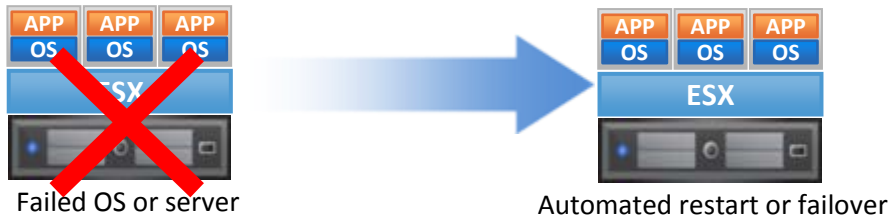
New rule: Run multiple applications per server because OS/applications are isolated from one another

- **Increase server utilization by 10X** – get full use of the hardware you purchase
- By using less servers, you **save ~\$600/server per year in energy costs** to power and cool
- **Save IT operating costs by spending less IT staff time** monitoring/maintaining servers and centrally manage them from one screen.
- **Secure your apps and data** better by using Data Recovery and High Availability features. Both features focus on getting your data back up and running fast when an app or server goes down.

2. How does Virtualization protect the data & assets if the server crashes?

VMware vSphere virtualization software includes a number of features that ensures your data is safe and available, even when a virtual machine (VM) or server crashes.

High Availability is a feature of virtualization software that allows companies to have nearly continuous access to their applications and data even when a virtual machine, operating system or server fails. **When a failure is detected, it automatically restarts a virtual machine** on either the same or an alternate server, depending on the failure detected. This is highly valuable to businesses because you reduce downtime significantly by not having to rebuild servers or recover and reload tapes of data. Plus, you keep the business running as usual in the meantime.



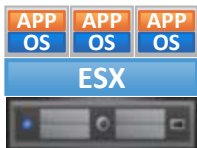
Data Recovery is backup and recovery software that's fully integrated with vSphere to **deliver quick data protection** for your virtual machines. It allows both VM and file level restore and enables centralized and efficient management of backup jobs. Plus, it reduces the disk storage space required for backups by performing data de-duplication on all backup jobs. Use Data Recovery by itself or in conjunction with your existing 3rd party backup software if you still require tape backup for archiving.

3. How much does Virtualization cost?

VMware vSphere packages **start at \$166 per CPU for the Essentials edition, and \$499 per CPU for the Essentials Plus edition which includes Data Recovery and High Availability.** When you take into account the cost savings of fewer servers to maintain plus increased staff and hardware productivity, it essentially pays for itself!

4. What are my storage options for virtualization?

1. **Local Storage:** Virtual machine data can be stored on local disks



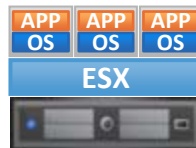
Benefits:

- Low cost, entry-level option for users without shared storage

Recommended VMware Product:

- Essentials

2. **Shared Storage (NAS, iSCSI, SAN):** Storage can be shared between multiple virtual machines



Benefits:

- Enables virtualization features such as high availability, vMotion and DRS
- Enhanced scalability, management and performance

Recommended VMware Product:

- Essentials Plus or Advanced Acceleration Kit