Virtualization – quick introduction

Virtualization is the creation of physically non-existent guest PC devices that can run on a single guest hardware system (guest) at the same time. On a server system having e.g. With 32 cores, 64GB RAM we can run several servers simultaneously, which in the past would form separate units (Active Directory, SMB, e-mail, DNS, authentication radius server,…).

Your question: Why should we go into this in our organization? As a rule, lower total costs for hardware, better spatial organization in the server room, after training the staff, everything for administration is available from one place. Virtual server disks are stored in the hypervisor as easily transferable files (as well as practically backupable).

Virtualization brings a number of benefits, but it also brings minor pitfalls that need to be kept in mind when designing a network topology that accommodates virtualization solutions:

\+ positives are:

- concentration of virtualized applications in one place
- possibility of reallocation of system resources as needed between virtual PCs (reconfiguration of allocated RAM, number of cores, access to network interfaces)
- flexible disk storage allocation (ability to access disks shared via iSCSI, eg via FreeNAS)

- single centralized administration
- easy backup of centralized virtual PC data with the possibility of their migration

– negatives are:

- a bottleneck is created in terms of the failure of the guest HW virtual server (if in a non-updated environment the failure of one server allowed the running of other services, here the failure of the hardware will cause complete unavailability of services). The solution is to consider redundancy of at least some DNS / ActiveDirectory services
- in commercial software, the virtual unit is equivalent to a physical one and has its own SID identifier

Running guest OS can take place:

1. ***In a virtual machine application environment*** (VMware Workstation or free alternative VirtualBox) – a solution suitable for training or consolidating older applications with newer ones. Scenario suitable if I want to ensure the running of the original CAD application in the new OS, where it would not otherwise work, I need to run an A3 scanner, which still works, but the manufacturer states the ruler only for windows XP, and so on. Note: this solution causes a large drop in performance – hw – host OS – application – hosted OS – application.
2. ***On the so-called level 1 (low-level) hypervisor*** – this is the most commonly modified Unix kernel providing a scheduler function that allows you to isolate a hosted OS in a virtual container environment (VMware ESXi

server + Vcenter management center or XenServer maintained by Citrix and Citrix XenCenter – one of the application versions). The second mentioned solution is also available as a free alternative.
The hypervisor has lower running system requirements and is involved in performance-critical enterprise virtualization solutions.

In addition to the VMware ESXi commercial solution, we also have a freely available solution for building a centralized virtual server in a small company environment, the most compatible form of which is also offered by Citrix – XenServer in the version without support and fees.

The hypervisor is available on the Citrix website from (free version which is the only one available without registration): https://www.citrix.com/downloads/citrix-hypervisor/