

# IKT systemy - Windows

## Úvod virtualizácie

Hypervisor = softer code which is used for bare metal virtualization

vHost = virtualization host, physical computer with installed hypervisor

VM = virtual machine, is logical system with own guest OS running on vHost

Uplink = physical network adapter attached to vHost

Datastore = storage device used to store VMs, ISOs,...

vCPU = virtual CPU

vRAM = virtual RAM device of VM

vDisk = virtual HDD device of VM

vNIC = virtual NIC device of VM

vSwitch = virtual switch used by vNIC (left side) and Uplinks (right side)

Appliance = closed image (VM) with pre-installed guest OS and application

Virtualisation is technology, which allows to run multiple logical instances with

own OS and Applications installed (VMs) on single or clustered physical.

### Pros:

System consolidation

Hardware independent software

High scalability and availability

Better usage of hardware resources

Lower costs of hosting, cooling, power supply

Software based datacenter with central management

Snaphshots (backup)

### Cons:

Higher investment

Not all physical components can be connected to VM (special hardware

no)

Not all application can run on virtual platform

Virtualisation types - Bare metal (Type1) -> VM a hypervisor - Guest OS based

(Type 2) -> on ma virtualization SW a application az potom OP

Softer define datacenter - softverove riesenie

## Virtualisation - ESXi

System Requirements (min)

64 bit CPU dual core

Intel or AMD Virtualisation tech. Enabled

Data Execution Prevention (DEP), NX/XD bits enabled in BIOS

4 GB of MemoryNIC (1GB, 10GB, 40GB are supported) -> sietova karta  
SLA -> pre zakaznika  
OLA -> pre nas interne -> 1. Dostupnost, 2. Resolution time, 3. Reaction time

2 types: **STANDARD**

Needs to be configured per vHost

Not required VCS server for configuration

**DISTRIBUTED**

Required VCS server for configuration

Shared configuration across vHosts

STORAGE VMware ESXi

-> ESXi Hosts

-> Datastore Types ( VMFS, NFS -> File systems )

-> Storage Technologies ( Direct attached, Fibre Channel -> optika, FCoE -> nieco medzi, iSCSI -> data posiekane po sieti , NAS-> storage box )

VM Files VMware ESXi

Configuration file .vmx / pri virtualke .vcm

Disk files .vmdk + -flat.vmdk .vhdx

Bios file .nvram

Swap file .vswp

Snapshot files .vmsd (data) + .vmsn (state) + -delta.vmdk

Log file .log

## Installing and configuring: Hyper-V

Hyper-Vserver

Standalone product

is available for free

Licensing Windows server

Standard 2 OSEs

Datacenter unlimited OSEs

**Requirements vHost**

Hardware (min)

64bit CPU with SLAT and support virtualisation tech

DEP enabled (XD or XN tech)

4 GB RAM

100 GB HDD

SoftwareInstalled Windows server 2016 w Hyper-V feature or

Hyper-V Server 2026

**Major/Core feature**

Production checkpoint

Default option

Point in time image

Standard Checkpoint

Chose capturing SAVE state of VM

Usable for test, development, resistant APP

### Supported TECH

1. iSCSI
2. FC
3. SMB 3.0 shares
4. Shared VHDX

### Supported partition format

1. NTFS
2. REFS

CSV musime vytvarat

Software based layer 2 ethernet network switch

Traffic connectivity

### EXTERNAL

All communication outside

### INTERNAL

Allow communication with VMs connection

### PRIVATE

Same switch

### Limitations

Needs to have at least one physical adapter

You cannot attach pNIC to multiple Switches

You can use VLAN taking

AVHDX

different

VMCX1.

2.

- 
- 
- 

**Naming convention** - pomenovanie podľa toho na čo slúži

WS rc CPU - 2 -> Virtual WS CPU - 4

**OVERPROVISIONING** - 1GB:2 predavam niečo čo nemám \$ ->

kapacitný

monitoring

**Disk provisioning** - Thin provision -> postupne naplna storage,

keď vymazeme

vráti sa nám miesto

Thick provision -> rovno zaberie celý hard disk prázdny

miestom a keď vymazeme miesto sa nevráti

Aké typy workloadov môže byť na hyperv?

**Konfiguracné files** ďalší disk, zálohovanie, rýchlosť

Enhanced session policy policy -

Replication configuration - asynchrónna

### Generations

32-bit pre staré systémy

64-bit najnovšie generácie

**Dynamic memory** - vyuziva RAM naplno, prideluje sa mu RAM ako potrebuje a  
zvysok prideli inej AP = mozeme pridelit viacej Vm 8G ako mame  
RAM 4G