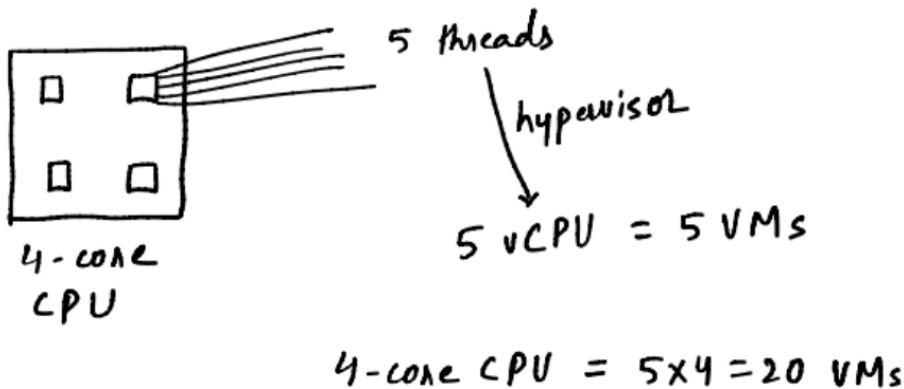# Virtualization

- Process of server running multiple instances of computer as VM

Hypervisor

- VMM (Virtual Machine Monitor)
- Computer that creates and runs multiple VMs
- Computer - Host machine
- VMs - Guest machine

vSwitch

- Don't run STP
- Assign VLAN to VM

Cisco Virtual appliance

- Cisco CSR (Cloud Service Router) 1000v
- ASAv
- FirePower threat defence virtual

Features

- Snapshots
  - To undo any changes made to VM

- ○ Checkpoint in MIcrosoft
- **H/W abstraction**
- **Clone**
  - ○ A copy of VM
- **Migration**
  - ○ Temporarily migrate VM during maintainance to avoid downtime

Types

- **Type 1 - Bare metal hypervisor**
  - ○ Entire server and OS is dedicated to virtualization
  - ○ Full h/w access
  - ○ Provide most features and best performance
  - ○ Ex :
    - ■ VMware ESXi
    - ■ Microsoft Hyper-V
    - ■ Citrix XenServer
    - ■ Redhat KVM

- **Type 2 - Desktop virtualization**
  - ○ Virtualization runs on top of OS
  - ○ Limited feature and not the best performance
  - ○ Useful for developers/testers
  - ○ Ex :
    - ■ VMware Workstation(windows) / Fusion(Mac)
      - ● Player(free) - run single VM
    - ■ Oracle VirtualBox