

Virtualization in the Real World



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Overview



Virtualization use cases

Virtualization requirements

Virtualization in a home lab

Virtualization at the enterprise level



Virtualization Use Cases



Virtualization Can Be Used for Many Reasons



Virtualization can help you cut down on datacenter costs

- But that's not the only reason it's used!**



Virtualization Use Cases

**Development &
Testing**

Sandbox

**Legacy Software /
Operating Systems**



Development & Testing



Virtual machines can allow developers to test solutions on a “clean” machine!

- **No more “It works on my machine” excuse 😊**

Easy to test multiple configurations

- **Operating Systems**
- **Resources**



Sandbox

Virtual machines create a perfect sandbox environment

Isolated environment that does not affect the production environment

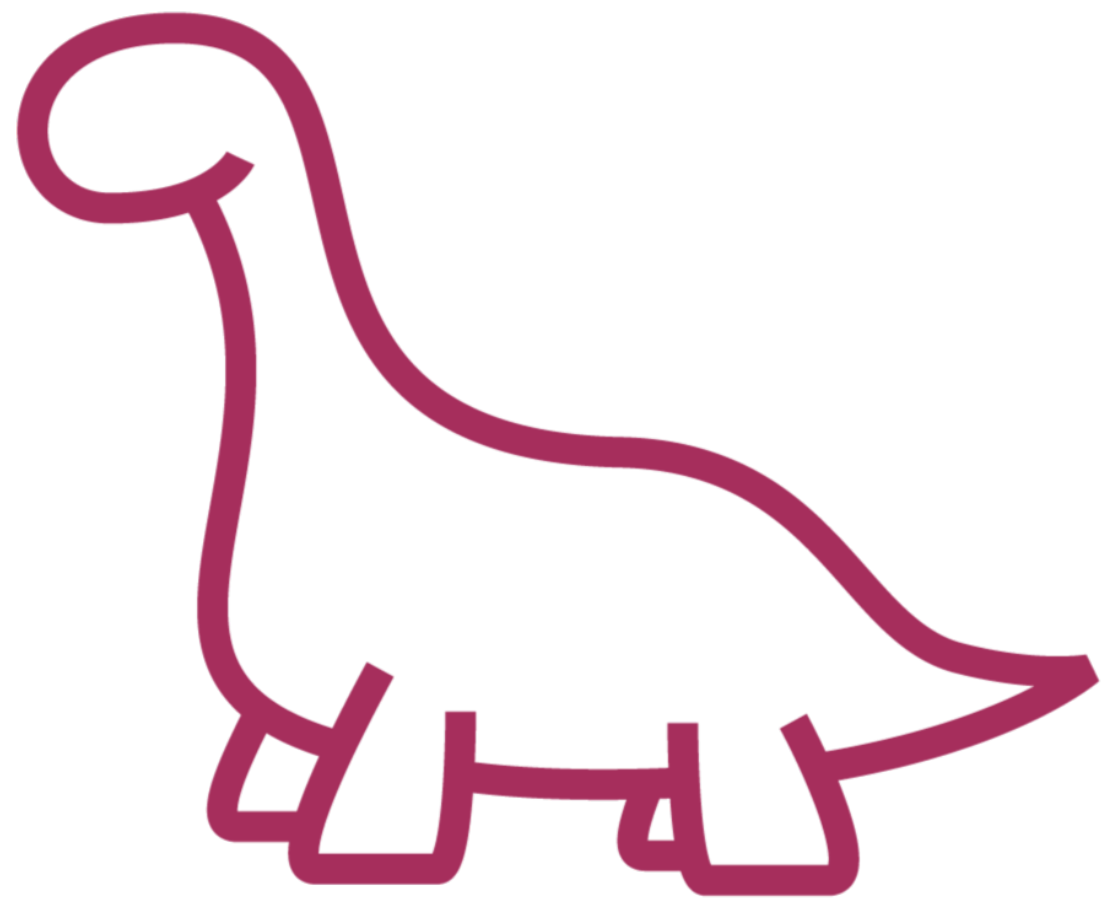
Example uses

Customer tests

Cybersecurity research



Legacy Software & Operating Systems



Most enterprises have legacy applications as part of their production environments

- **Applications that wouldn't run on today's hardware / operating systems**

Virtualization can help you get rid of old hardware

- **Run those operating systems / applications in a virtualized environment**
 - **On a modern server!**

Virtualization Requirements



Resource Requirements



Most CPUs today support virtualization

- Intel VT-x
- AMD-V

Enough CPU/RAM/Storage for the workloads you plan to run

- More virtual machines -> more resources needed

Storage can be either physical, or virtual from multiple storage hosts

Security Requirements

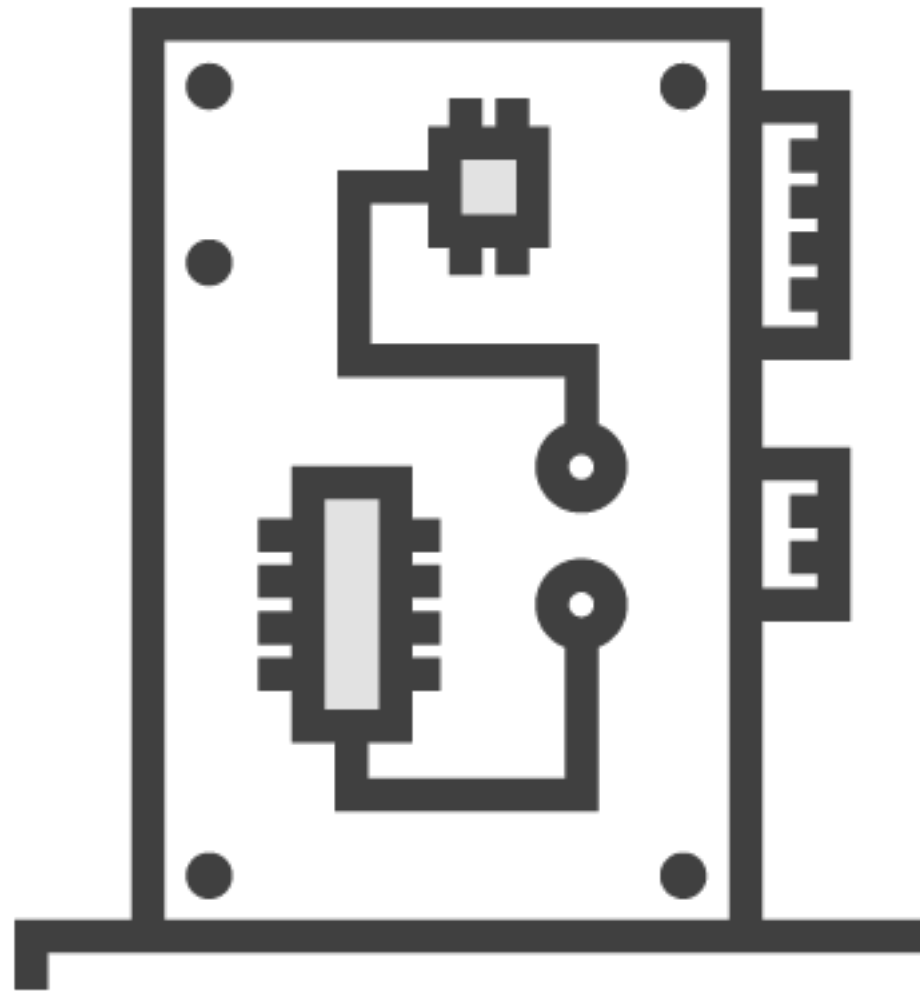
A virtual machine is subject to all the same security risks as a real computer

For each virtual machine, you need to keep track of usernames, passwords, and permissions

Anti-virus and firewalls are recommended on virtual environments, as they are on physical computers



Networking Requirements



The host must support the bandwidth for all the virtual machines running on it

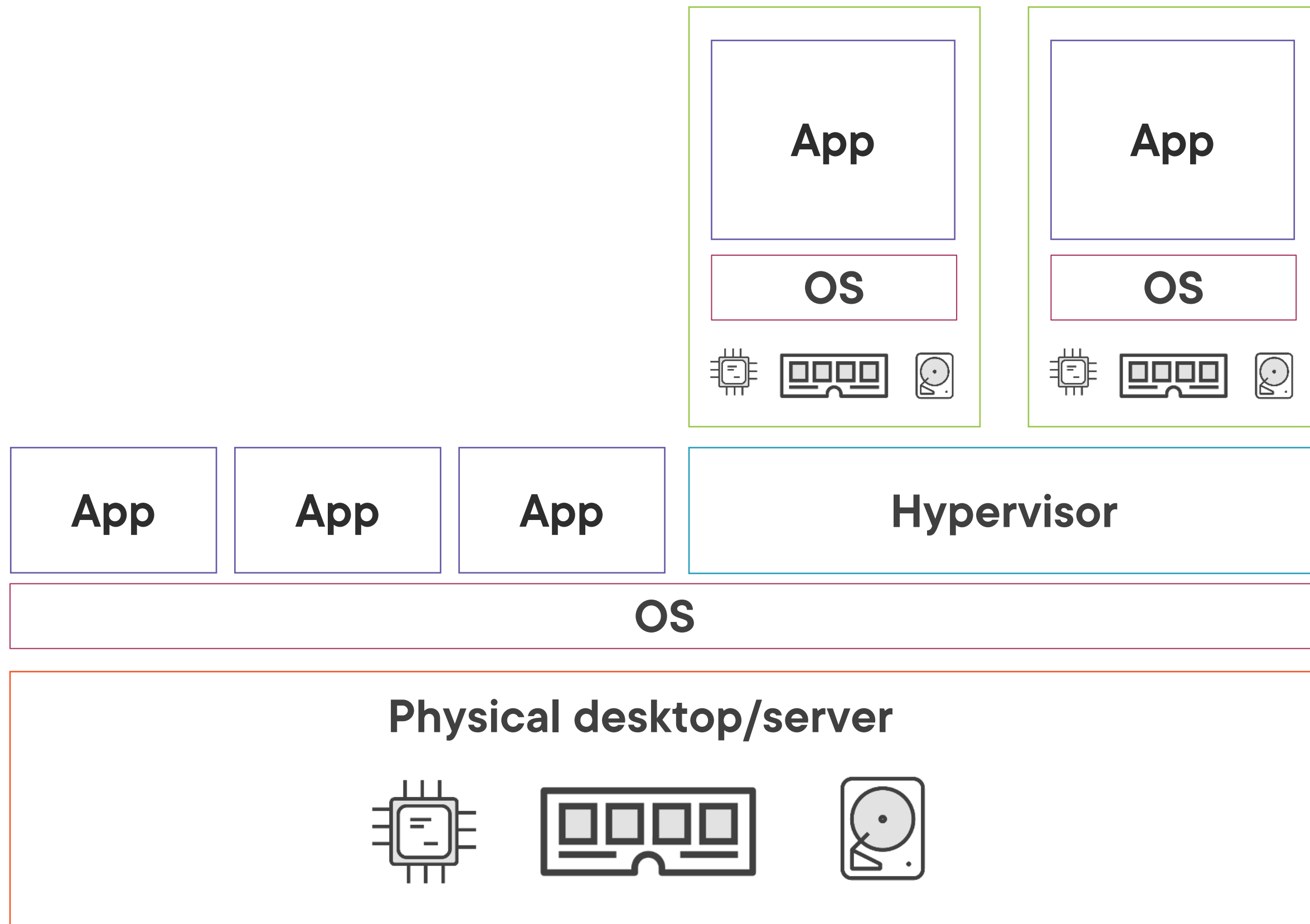
You need to plan what applications you will run on your host

- And plan the right number and bandwidth of network interface cards (NIC)**

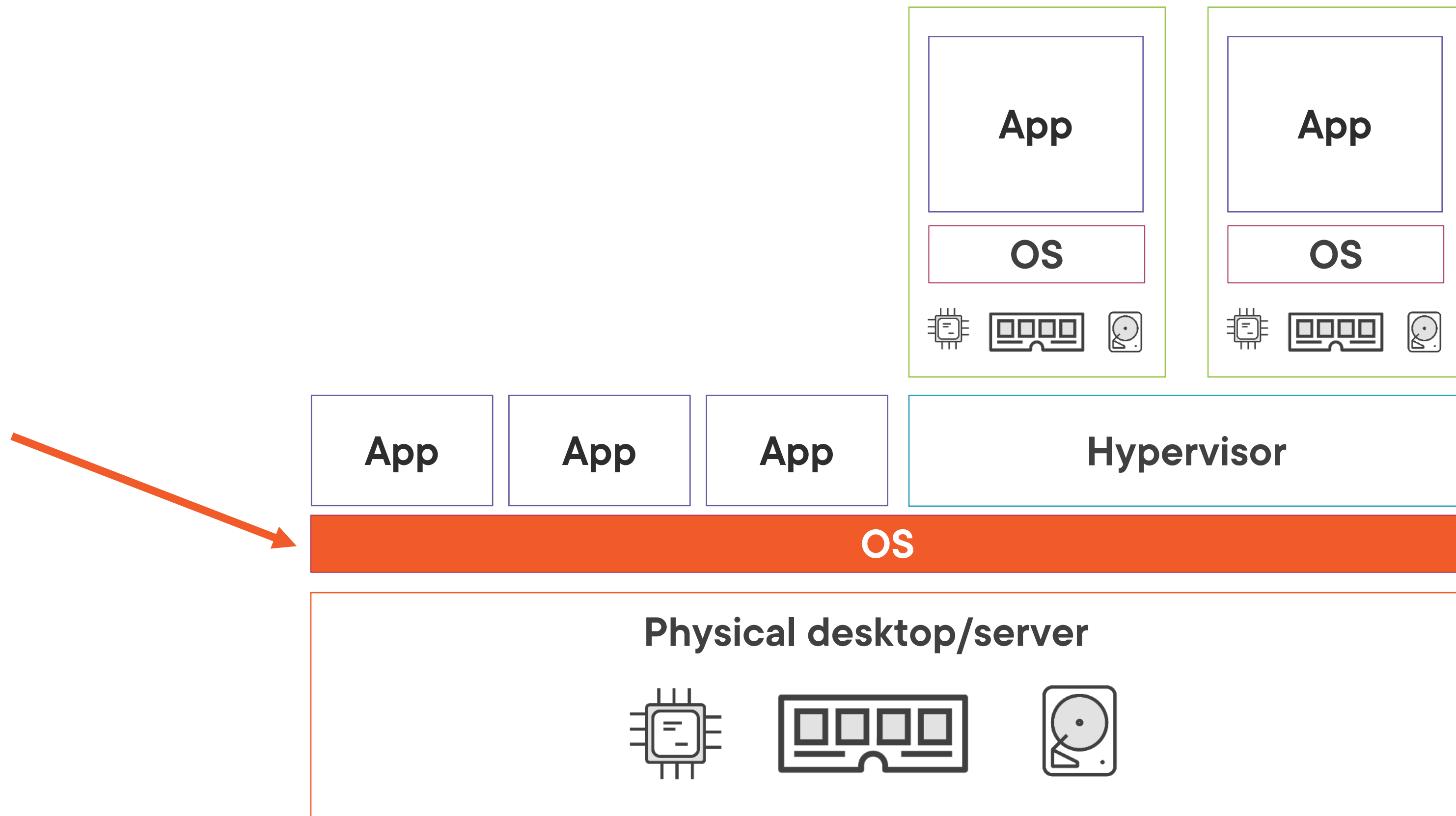
Virtualization in a Home Lab



High-level Overview



Type 2 Hypervisor



Home Lab Hypervisors

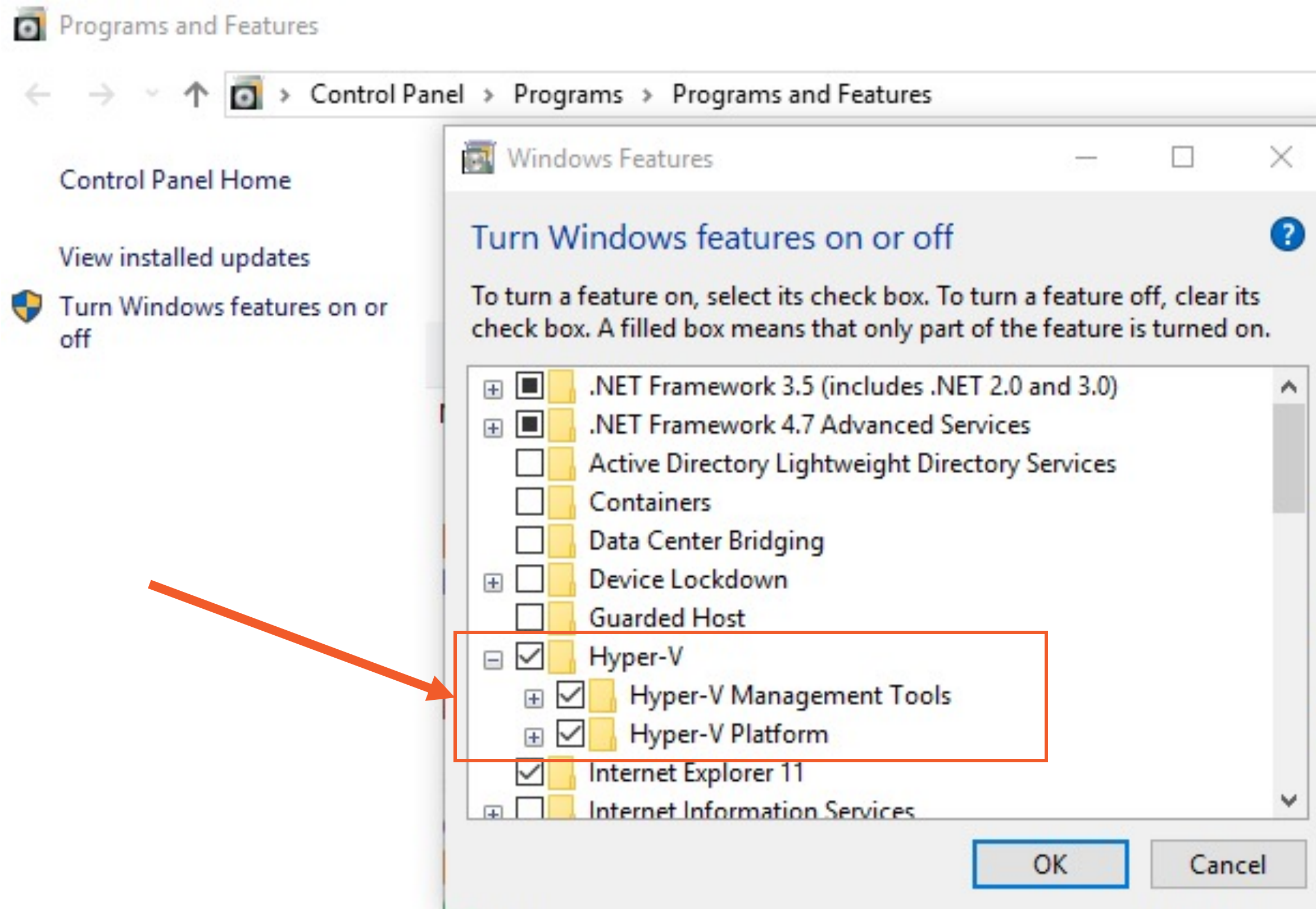
**Microsoft
Hyper-V**
(Free - Windows)

**Oracle
VirtualBox**
*(Free – Windows, Linux,
Macintosh, Solaris)*

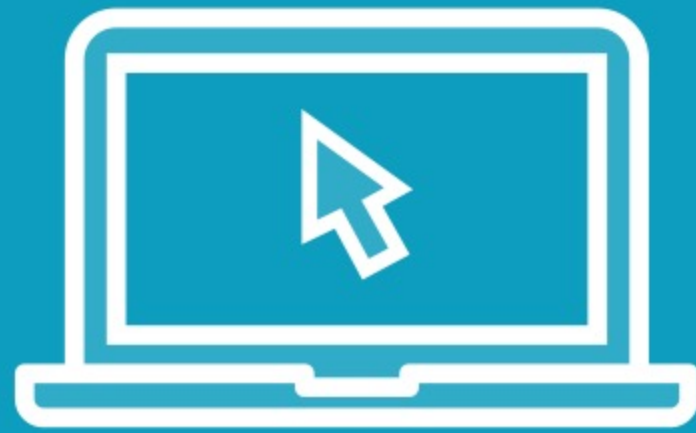
**VMware
Workstation**
*(Paid – Windows and
Linux)*



Turning on Hyper-V on Windows



Demo



Enabling Hyper-V on a Windows machine

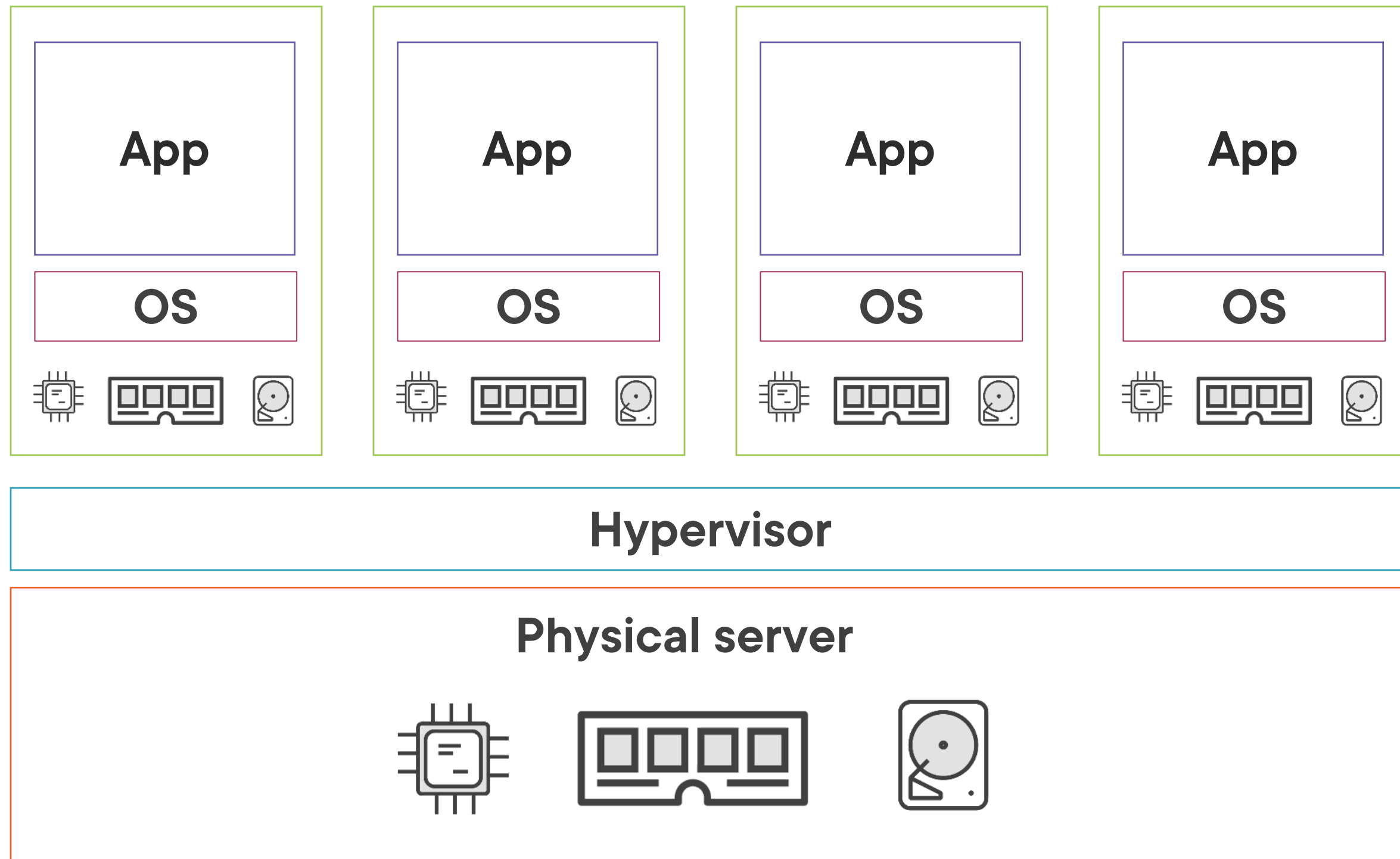
Creating a virtual machine



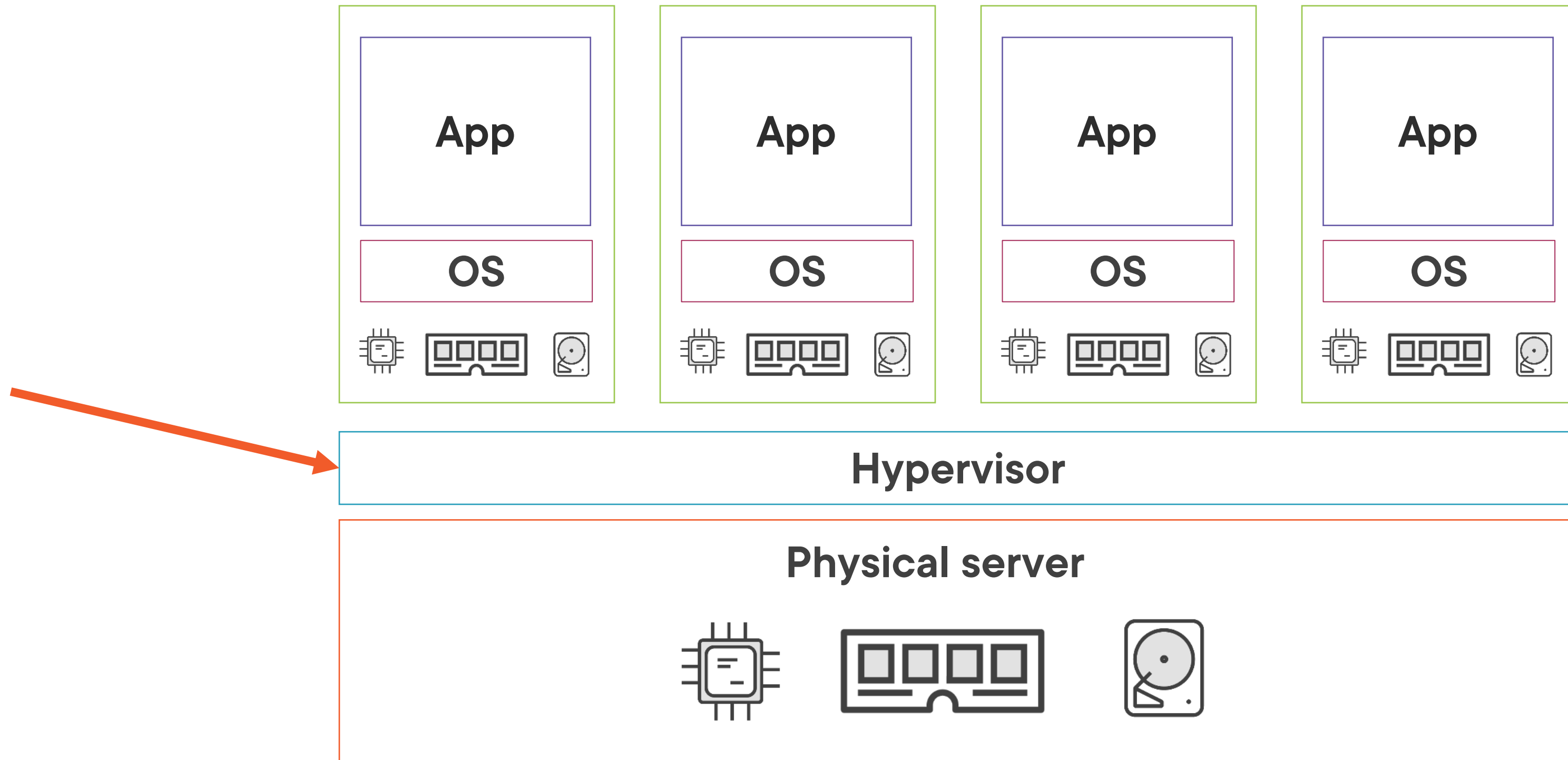
Virtualization at the Enterprise Level



High-level Overview



Type 1 Hypervisor (Bare Metal)





Less overhead

Better performance

Devotes 100% of the hardware resources to VMs



Conclusion



Virtualization use cases

- Development & Testing
- Sandbox
- Legacy software / Operating Systems

Virtualization requirements

Virtualization in a home lab

- Type 2 hypervisor
- Can get started for free

Virtualization at the enterprise level

- Type 1 hypervisor (Bare Metal)
- Performance benefits



Up Next:

Cloud Computing in the Real World

