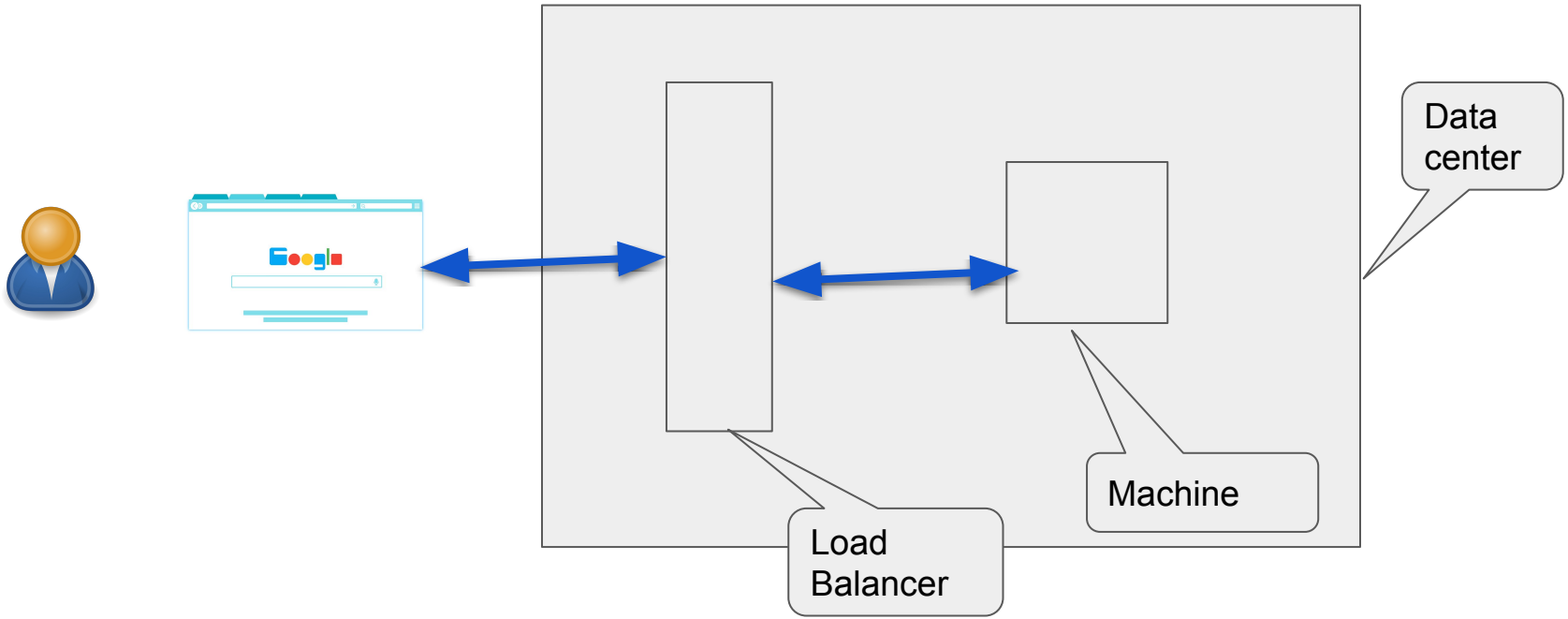
Application Deployments

Web App Deployment

A machine with required compute (memory and cpus)
LB setup by LB team



App deployments

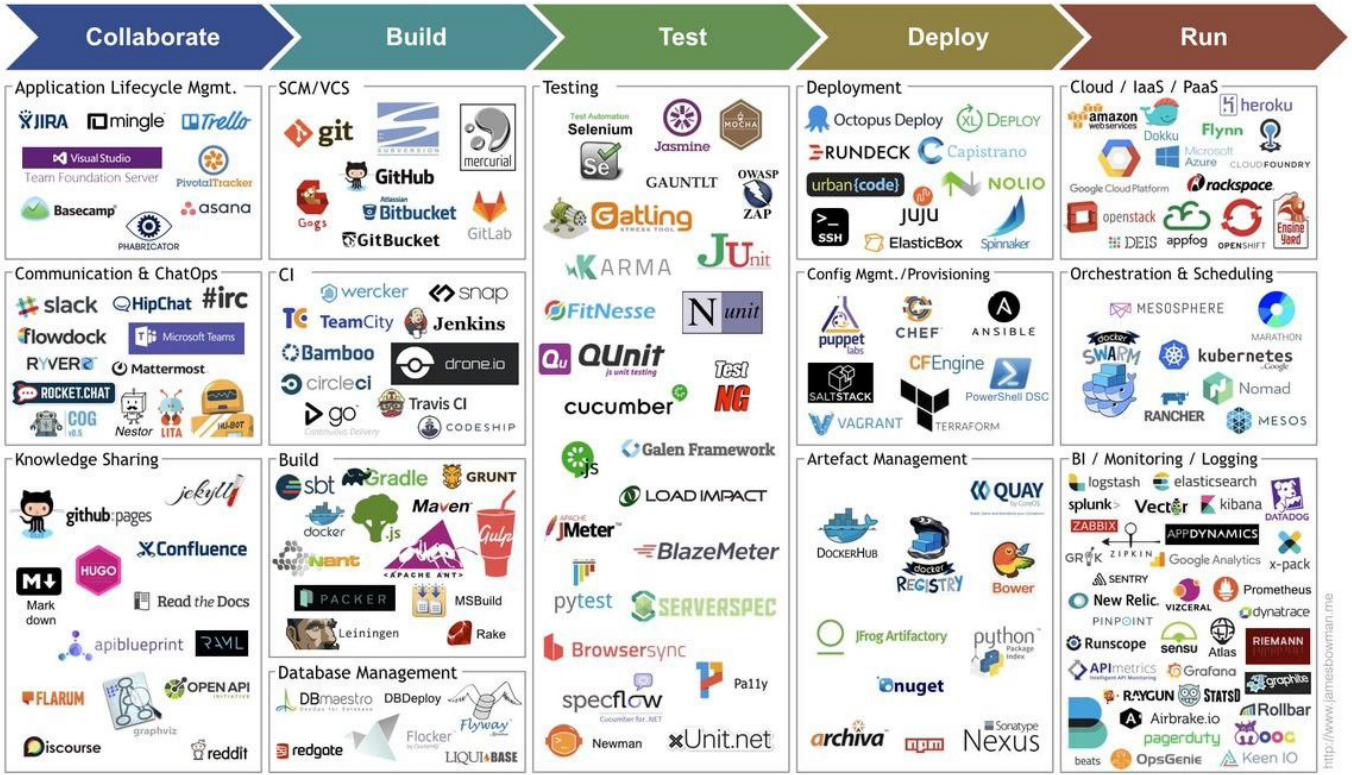
Build

Package - Tar or Zip

Copy to Machine

Extract - untar or unzip

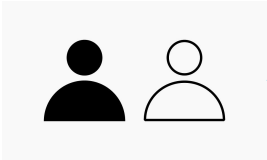
Run



On prem to cloud

Infrastructure as service

Machine 2GB and 1vCPU

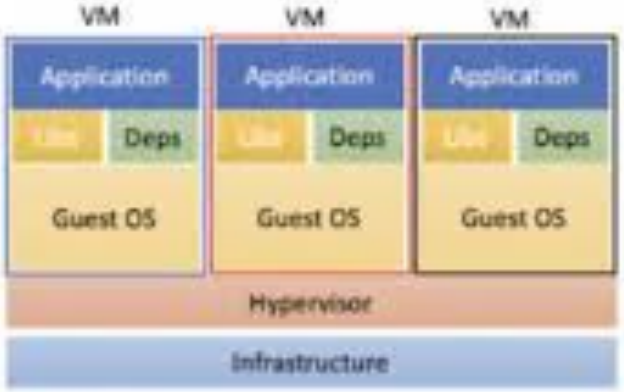


SAAS
PAAS
IAAS

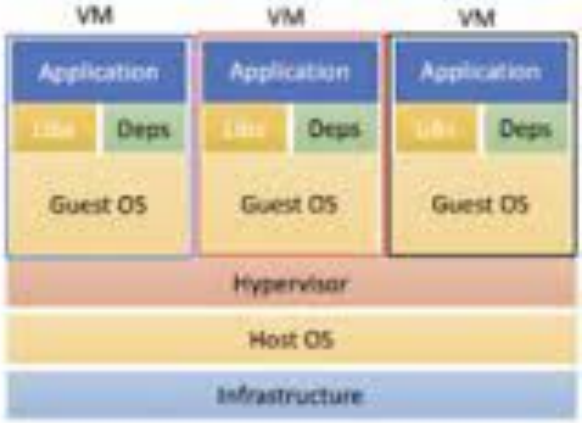
Cloud infrastructure services, known as Infrastructure as a Service (IaaS), are made of highly scalable and automated compute resources. IaaS is fully self-service for accessing and monitoring computers, networking, storage, and other services. IaaS allows businesses to purchase resources on-demand and as-needed instead of having to buy hardware outright.

Datacenter

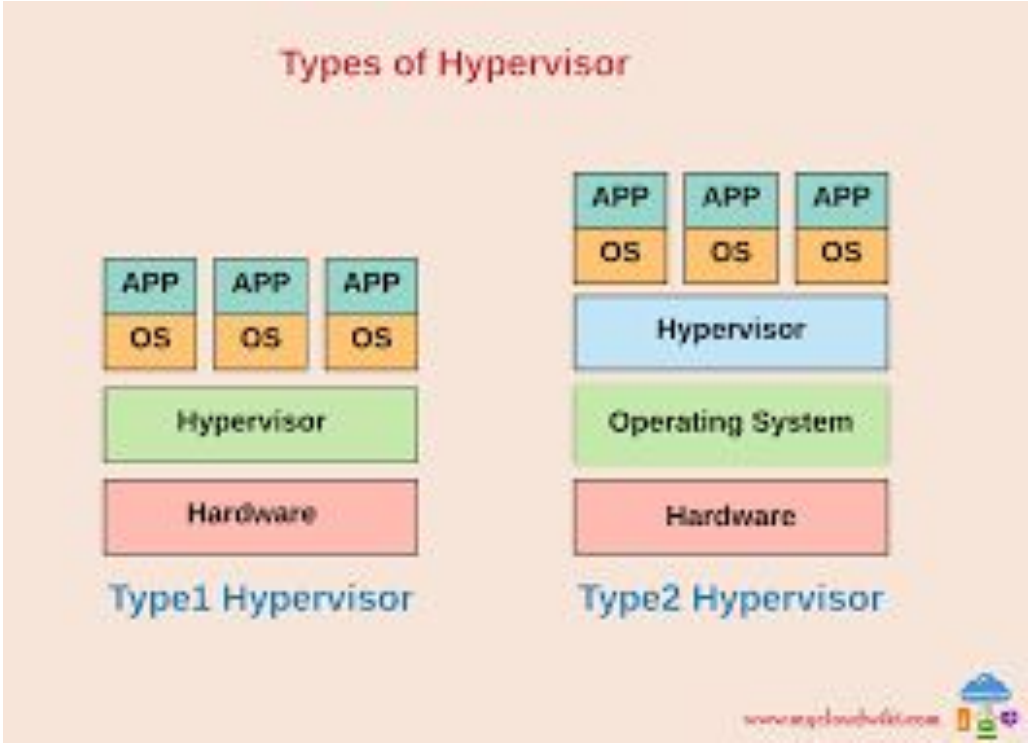
Hypervisor



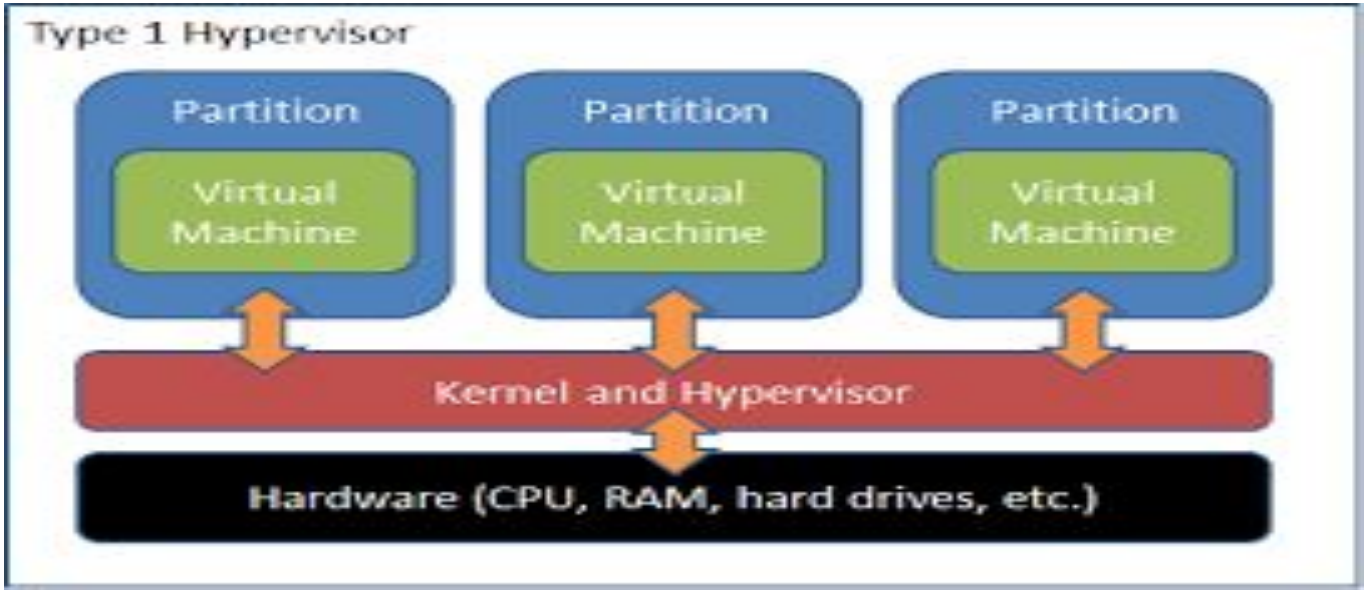
Type-1



Type-2


Types of Hypervisor
APP
APP
APP
OS
OS
OS
Hypervisor
Hardware
Type1 Hypervisor
APP
APP
APP
OS
OS
OS
Hypervisor
Operating System
Hardware
Type2 Hypervisor

Type 1



Type 1 hypervisors are Citrix/Xen Server, VMware ESXi and Microsoft Hyper-V.

CPU Virtualization is a hardware feature found in all current AMD & Intel CPUs that allows a single processor to act as if it was multiple individual CPUs. This allows an operating system to more effectively & efficiently utilize the CPU power in the computer so that it runs faster. This feature is also a requirement for many virtual machine software and is required to be enabled in order for them to run properly or even at all.

CPU Virtualization goes by different names depending on the CPU manufacturer. For Intel CPUs, this feature is called Intel Virtualization Technology, or Intel VT, and with AMD CPUs it is called AMD-V. Regardless of what it is called, each virtualization technology provides generally the same features and benefits to the operating system.

IAAS - API

AWS Command Line Interface - API

AWS Console

GCP - Google Cloud Platform

Download gcloud

gcloud init

Cli

```
gcloud beta compute --project=gke-learn-318300 instances create instance-1 --zone=us-east1-b --machine-type=e2-micro
--subnet=default --network-tier=PREMIUM --maintenance-policy=TERMINATE
--service-account=630518010151-compute@developer.gserviceaccount.com
--scopes=https://www.googleapis.com/auth/devstorage.read only,https://www.googleapis.com/auth/logging.write,https://www.googleapis.c
om/auth/monitoring.write,https://www.googleapis.com/auth/servicecontrol,https://www.googleapis.com/auth/service.management.readonly,
https://www.googleapis.com/auth/trace.append --tags=https-server --image=ubuntu-1804-bionic-v20210720
--image-project=ubuntu-os-cloud --boot-disk-size=30GB --boot-disk-type=pd-standard --boot-disk-device-name=instance-1
--no-shielded-secure-boot --shielded-vtpm --shielded-integrity-monitoring --labels=env=dev,syscode=abc,cmdbapp=xyz
--reservation-affinity=any

gcloud compute --project=gke-learn-318300 firewall-rules create default-allow-https --direction=INGRESS --priority=1000
--network=default --action=ALLOW --rules=tcp:443 --source-ranges=0.0.0.0/0 --target-tags=https-server



gcloud beta compute ssh --zone "us-east1-b" "instance-1" --project "gke-learn-318300"

gcloud compute instances describe instance-1 --zone us-east1-b --verbosity debug

gcloud compute instances delete instance-1 --zone us-east1-b
```

IAAS to IaC (infrastructure as code)

Gcloud compute

What is wrong using these REST API or console to provision infrastructure.

Infrastructure changes with time and updates happen.

Keeping track and using REST API (cli) or console is tedious.

Enter IaC

Infrastructure as Code (IaC) is the management of infrastructure (networks, virtual machines, load balancers, and connection topology) in a descriptive model, using the same versioning as DevOps team uses for source code. Like the principle that the same source code generates the same binary, an IaC model generates the same environment every time it is applied. IaC is a key DevOps practice and is used in conjunction with continuous delivery.

IaC

Chef - Master and Agent

Puppet - Master and Agent

Ansible - Agent

Terraform - None

AWS Cloud Formation - closed source setup

AWS CDK - generates cloud formation

https://blog.gruntwork.io/why-we-use-terraform-and-not-chef-puppet-ansible-saltstack-or-cloudformation-7989dad2865c