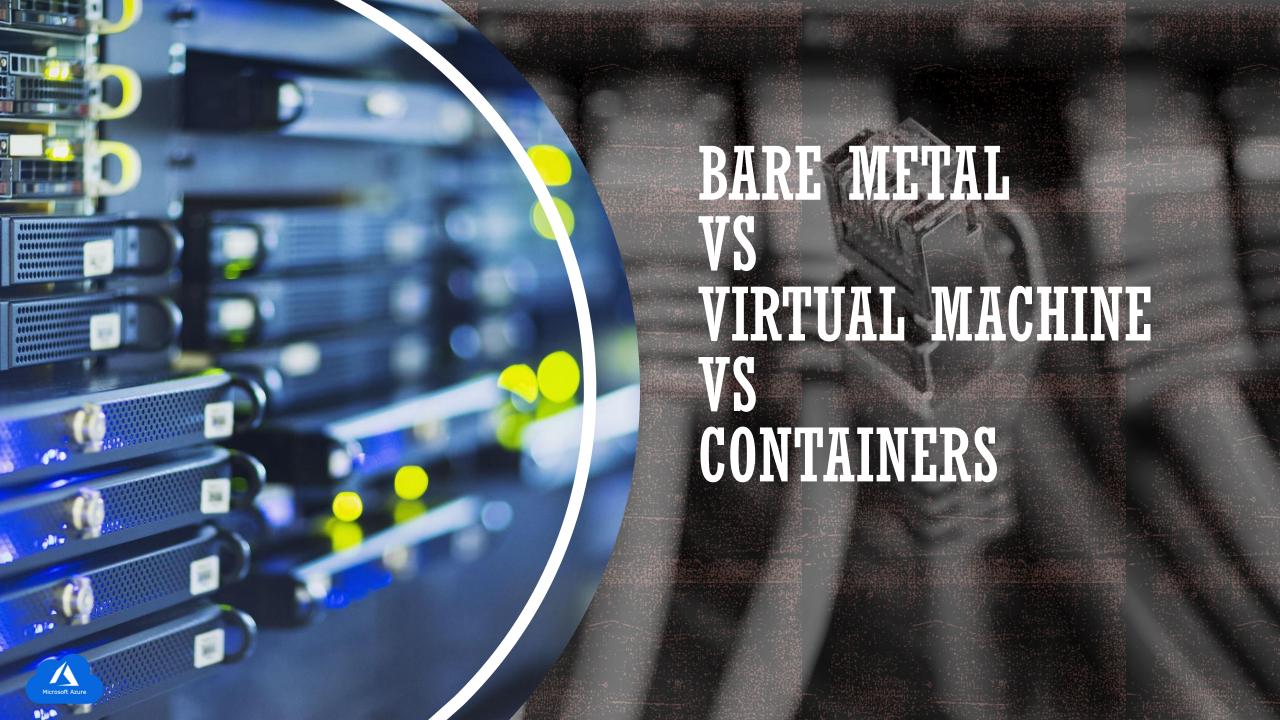
COMPUTE FUNDAMENTALS

Manoj Bhargavan

Images licensed under Creative Commons

__ood = modifier_ob mirror object to mirror mirror_mod.mirror_object peration == "MIRROR_X": elrror_mod.use_x = True lrror_mod.use_y = False irror_mod.use_z = False Operation == "MIRROR_Y" irror_mod.use_x = False lrror_mod.use_y = True lrror_mod.use_z = False _operation == "MIRROR_Z": rror_mod.use_x = False lrror_mod.use_y = False rror_mod.use_z = True selection at the end -add ob.select= 1 er ob.select=1 ntext.scene.objects.action "Selected" + str(modifier irror ob.select = 0 bpy.context.selected_obj Mata.objects[one.name].sel int("please select exaction -- OPERATOR CLASSES ----X mirror to the selected ect.mirror_mirror_x" ontext):
ext.active_object is not





TRADITIONAL COMPUTER

Applications & Utilities

Operating System Flavor/Shell

Drivers

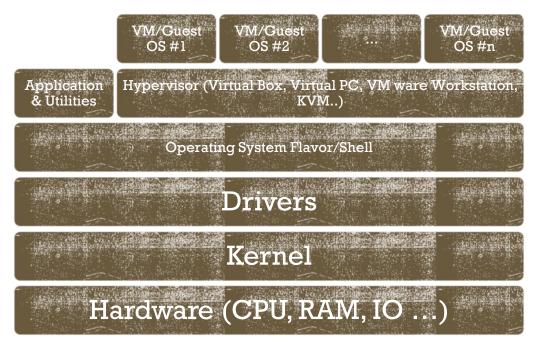
Kernel

Hardware (CPU, RAM, IO ...)





VIRTUAL MACHINE / HOSTED HYPERVISOR







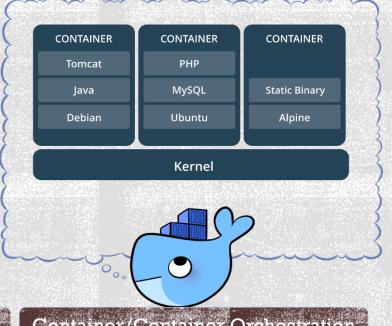
VIRTUAL MACHINE / BARE-METAL OR NATIVE HYPERVISOR

VM/Guest OS #1 VM/Guest OS #2 VM/Guest OS #n

Hypervisor (Hyper-V, Xen, VMware ESX)

Hardware (CPU, RAM, IO ...)

CONTAINERS



Application & Utilities

Container/Container Orchestration
Software

Operating System Flavor/Shell

Drivers

Kernel

Hardware (CPU, RAM, IO ...)





VIRTUAL MACHINES

CONTAINERS

App #1

App #2

Bins/Libs

Bins/Libs

Guest OS

Guest OS

WHATS the

DIFF?

Hypervisor

Host Operating System

Infrastructure

App #1

App #2

Bins/Libs

Bins/Libs

Container Daemon

Host Operating System

Infrastructure



Cloud Service Provider Companies









Red Hat

AWS

Microsoft Azure

Google Cloud







rackspace

space

ORACLE

Rac

CITACH











THE CLOUD

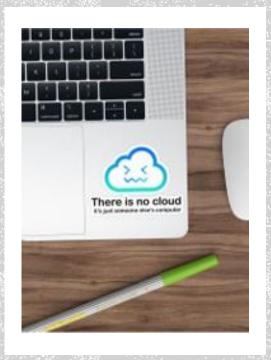












WHAT IS CLOUD





BENEFITS OF CLOUD SERVICES

Availability - what percentage of time does a system respond properly to requests, expressed as a percentage over time *I.e.* 99.99% availability implies up to 4 minutes per month of acceptable downtime

High Availability - a system specifically designed to be resilient when some component of the system fails

Scalability - the ability of a system to grow its capacity "easily" when a system reaches its maximum capacity

Elasticity - the ability of a system to automatically grow when maximum capacity is reached, and automatically shrink to minimize waste

Agility - the ability to respond to change "rapidly" based on changes to market or Environment

Fault Tolerance - the ability to tolerate hardware failures in your system, required to achieve high availability

Disaster Recovery - the ability to recover from a big failure within an acceptable period, with an acceptable amount of data lost

Economies of Scale - the more you buy something, the cheaper it is per unit to buy; and the cheaper it is to maintain. Microsoft (and Google and AWS) can buy and run a server cheaper that you could ever possibly do yourself.

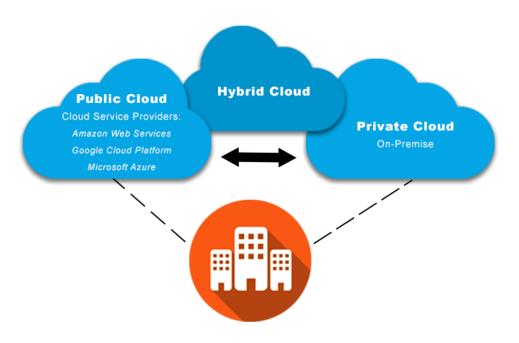
Capital Expenditure (CapEx) - a (usually large) amount of money invested in an asset (building, computers, equipment) spent up front, and it returns profits slowly over time; major cash drain or loan required; cannot be deducted from your taxes in one year, depreciated over several years

Operating Expenditure (OpEx) - an amount of money spent "every month" as an operating expense; hopefully you earn more money in revenue from it than you spend; can be deducted from your taxes immediately; many accountants prefer OpEx over CapEx for the tax and cash flow benefits

Consumption-Based Model - paying for something based on how much you used, as opposed to paying for something no matter if you use it or not.





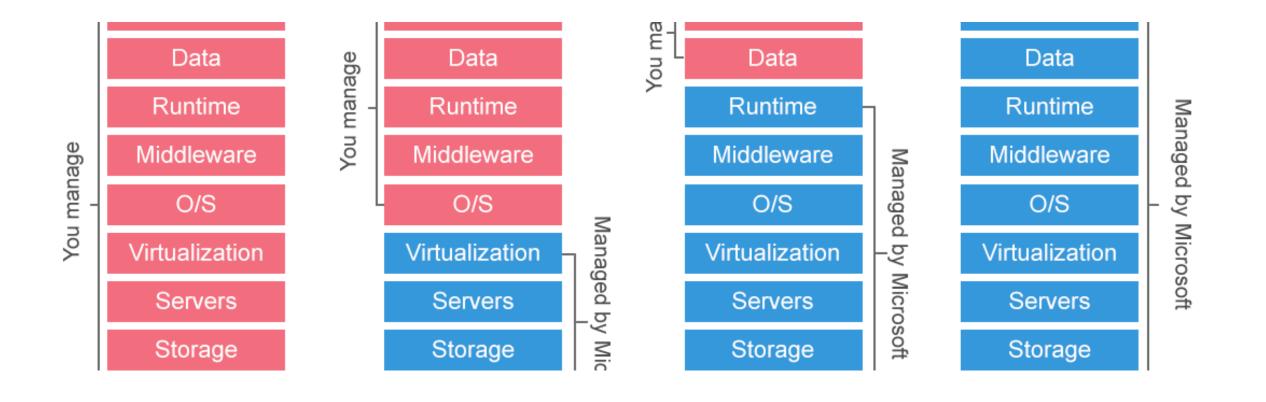


PUBLIC, PRIVATE AND HYBRID CLOUD

- Public Cloud Cloud services provided over the public Internet to anyone who wants to sign up for them.
- Private Cloud Cloud services offered only to select users. This is sometimes called an "internal cloud". Looks and acts like a cloud computing but uses resources and servers available only to your company/organization.
- Hybrid Cloud A mixture between your own private networks and servers and using the public cloud for some things. Typically used to take advantage of the unlimited, inexpensive growth benefits of the public cloud.







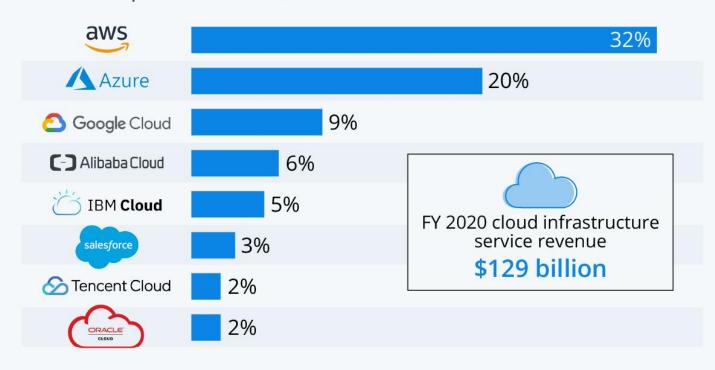
CLOUD MODELS





Amazon Leads \$130-Billion Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q4 2020*



* includes platform as a service (PaaS) and infrastructure as a service (laaS) as well as hosted private cloud services

Source: Synergy Research Group







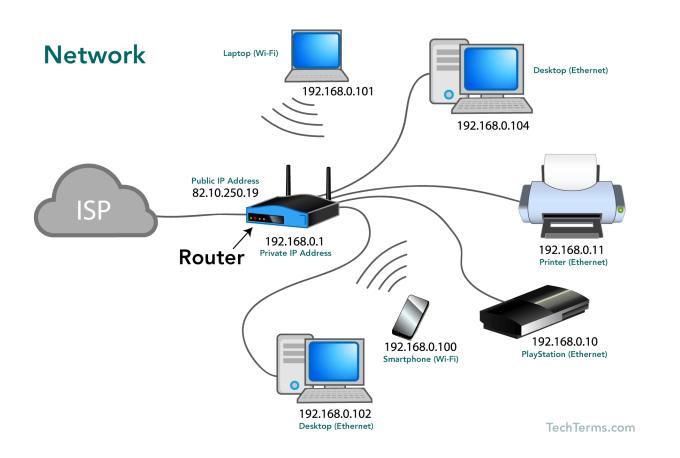
TOP VENDORS





SOMETHING ABOUT NETWORKS & IP ADDRESS





YOUR HOME NETWORK





WALL & SUBNET

https://en.wikipedia.org/wiki/Classful network

https://www.tutorialspoint.com/ipv4/ipv4 subnetting.htm

https://en.wikipedia.org/wiki/List of assigned /8 IPv4 address blocks







Azure services





















Create a resource

All resources

es

Virtual machines

App Services

Storage accounts

SQL databases

Azure Database for PostgreSQL Azure Cosmos DB

Kubernetes services More services

Recent resources

Name		Туре	Last Viewed
಄	arm	API Connection	Just now
3	BuildApp	App Service	Just now
•	Al-Downtown-bc93	Application Insights	3 min ago
.	adventure-vm-3-ip	Public IP address	3 min ago
17	adventure-vin	Virtual machine	6 min ago

Navigate



Resource groups



All resources



Dashboard

Tools



Microsoft Learn ☐

Learn Azure with free online training from Microsoft



Azure Monitor

Monitor your apps and infrastructure



Security Center

Secure your apps and infrastructure



Cost Management

Analyze and optimize your cloud spend for free