

Cloud Computing with Microsoft Azure

www.drmukhan.com

Lesson Objectives

Skills Learned

- Describe products available for **Compute** such as
 - Virtual Machines,
 - Virtual Machine Scale Sets,
 - Container Instances (ACI),
 - Kubernetes Service (AKS),
 - App Services,
 - Functions
- Using CLI - Azure (Power Shell)

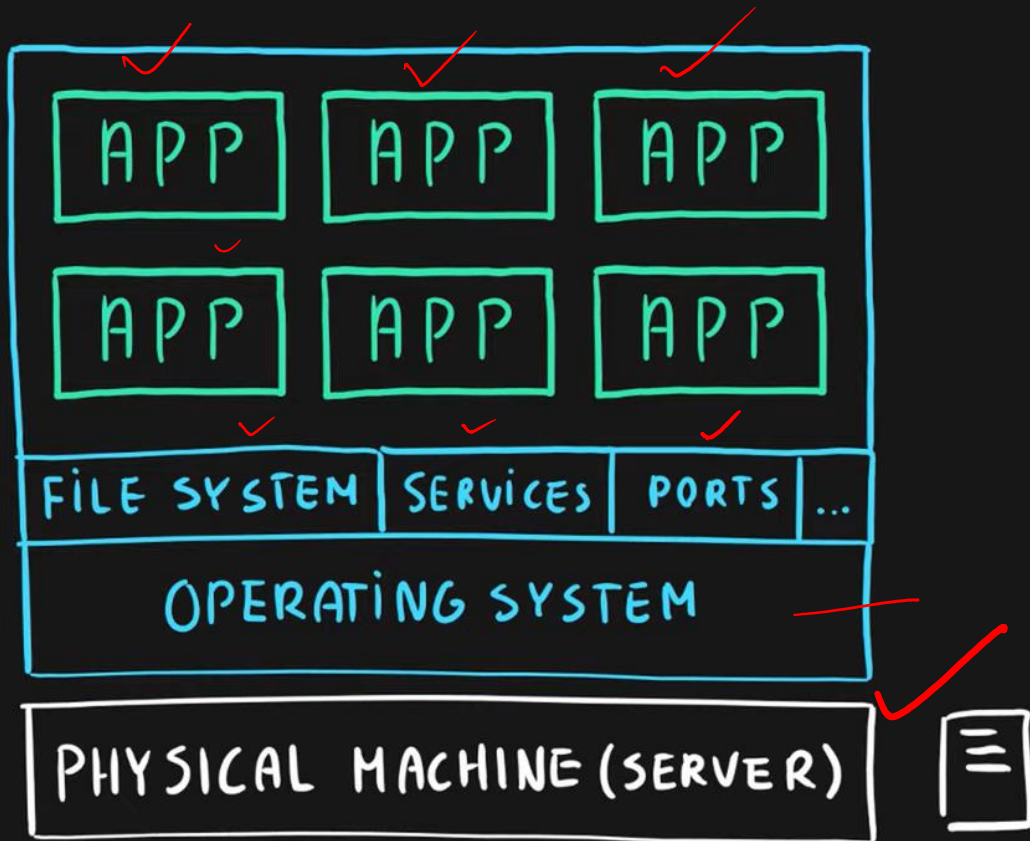
Azure Compute Services

Service Category

Category of on-demand services used to
run cloud-based applications.

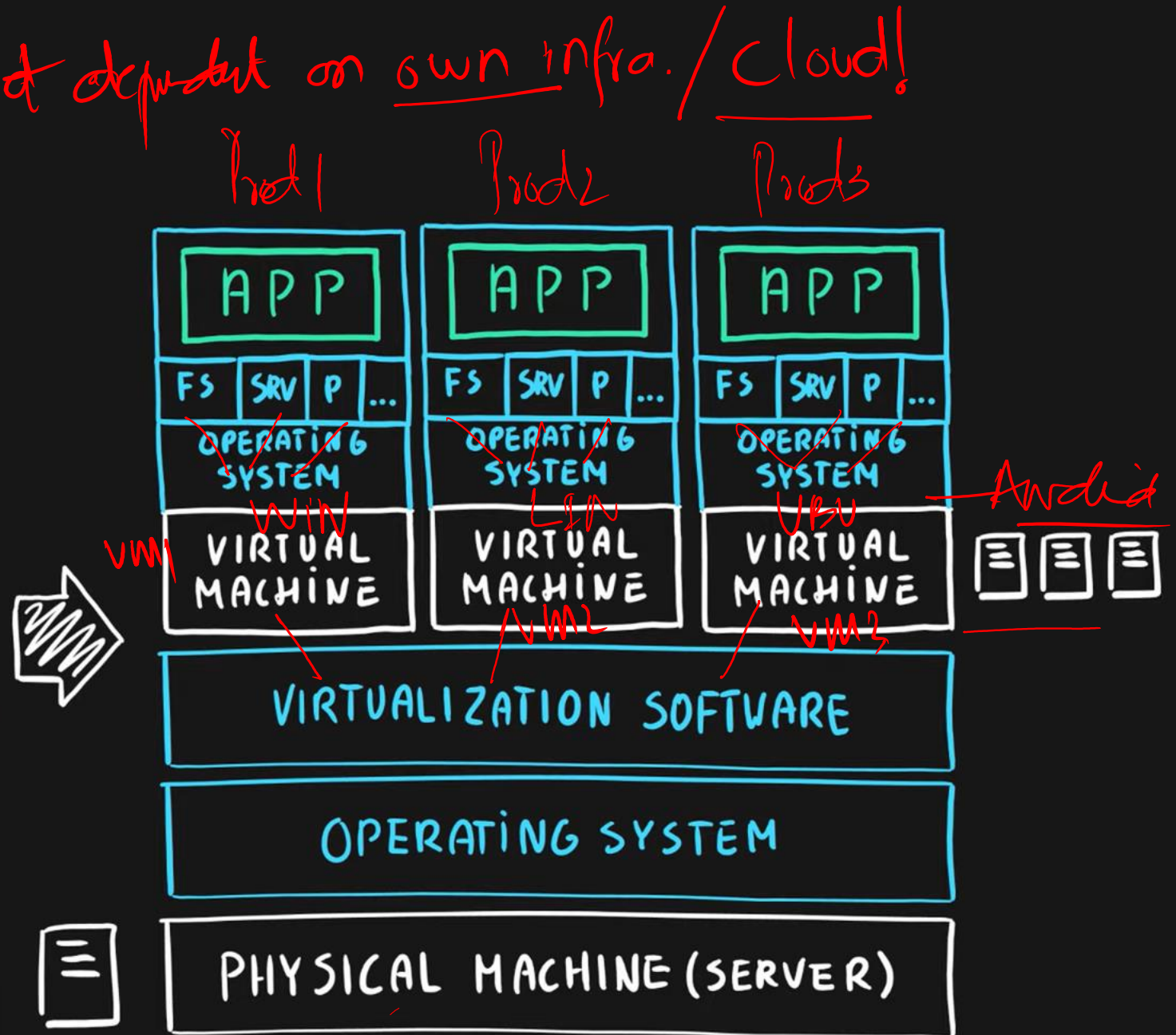
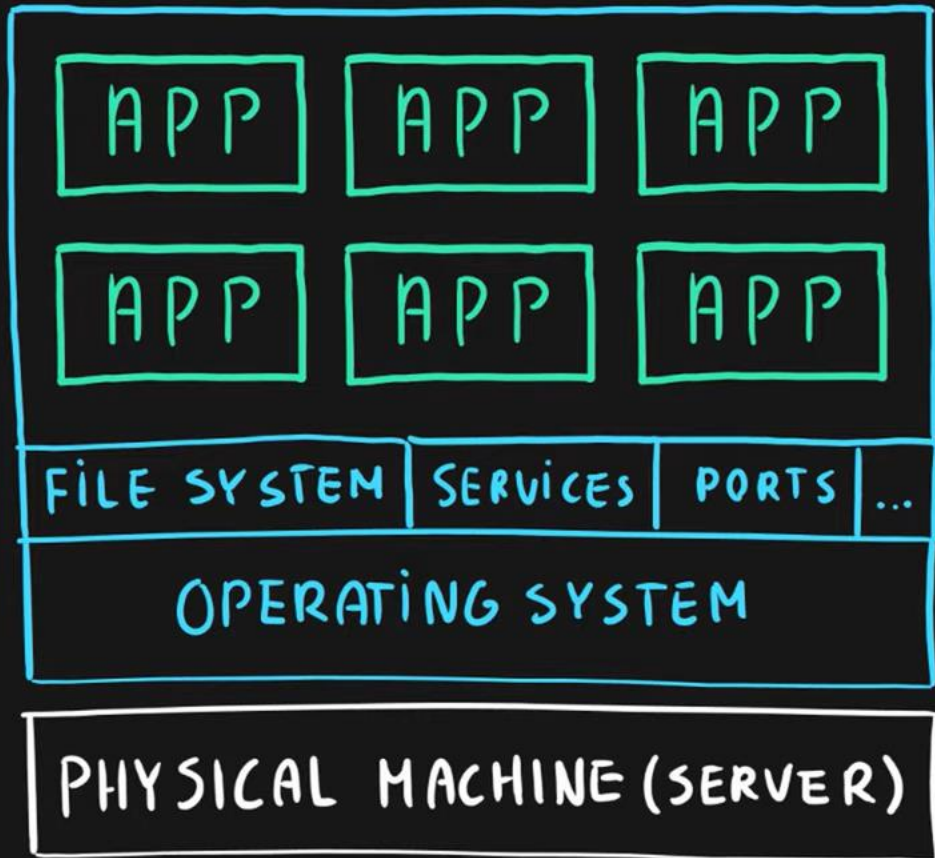
Virtualization

Overview



Virtualization → is not dependent on own infra. / cloud!

Overview

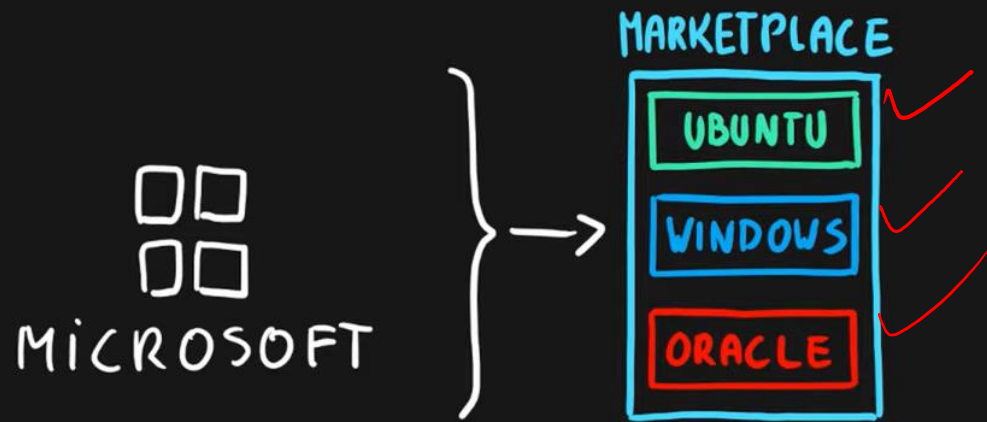


Virtualization

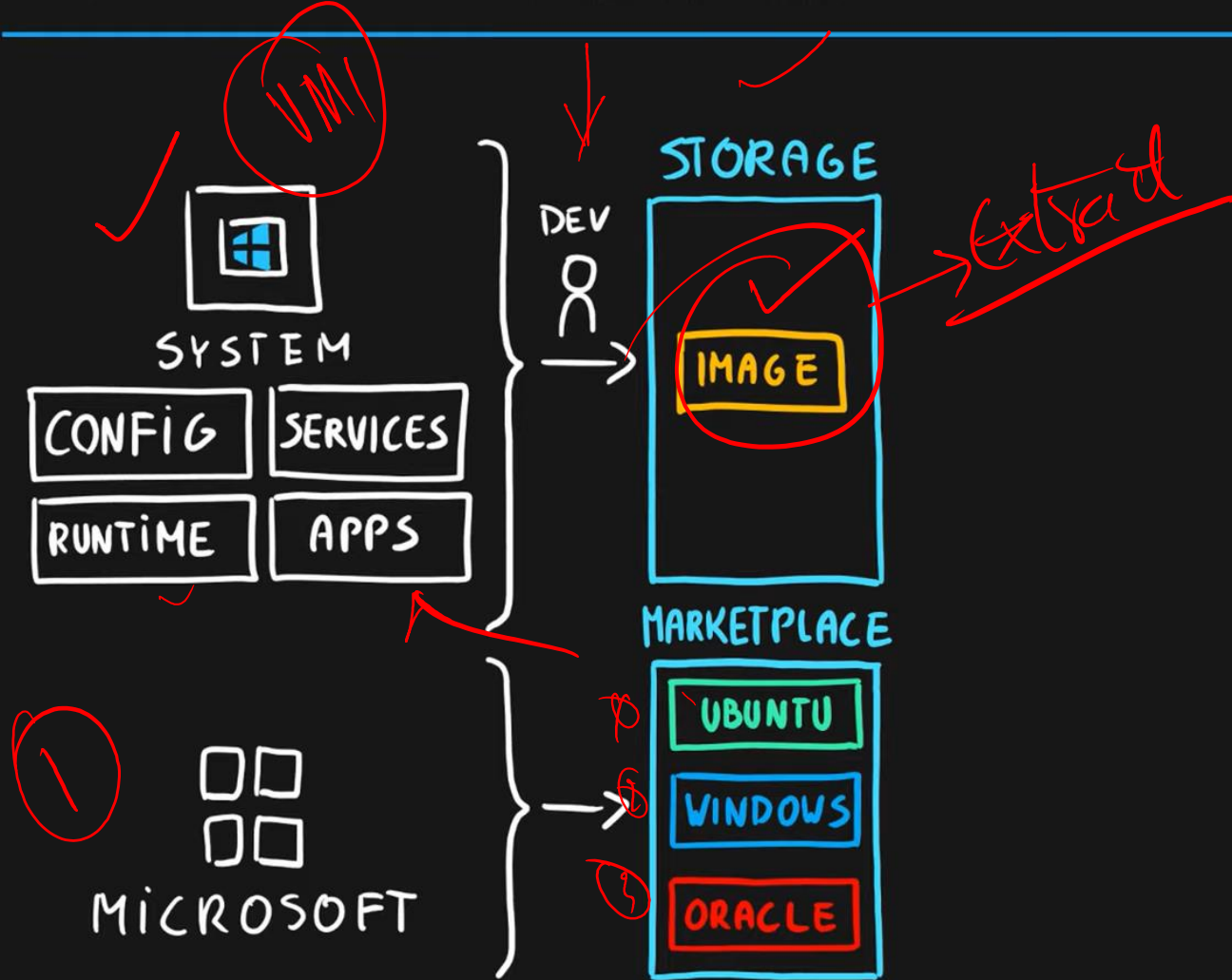
Key Characteristics

- Emulation of physical machines
- Different virtual hardware configuration per machine/app
- Different operating systems per machine/app
- Total separation of environments
 - file systems,
 - services,
 - ports,
 - middleware,
 - configuration

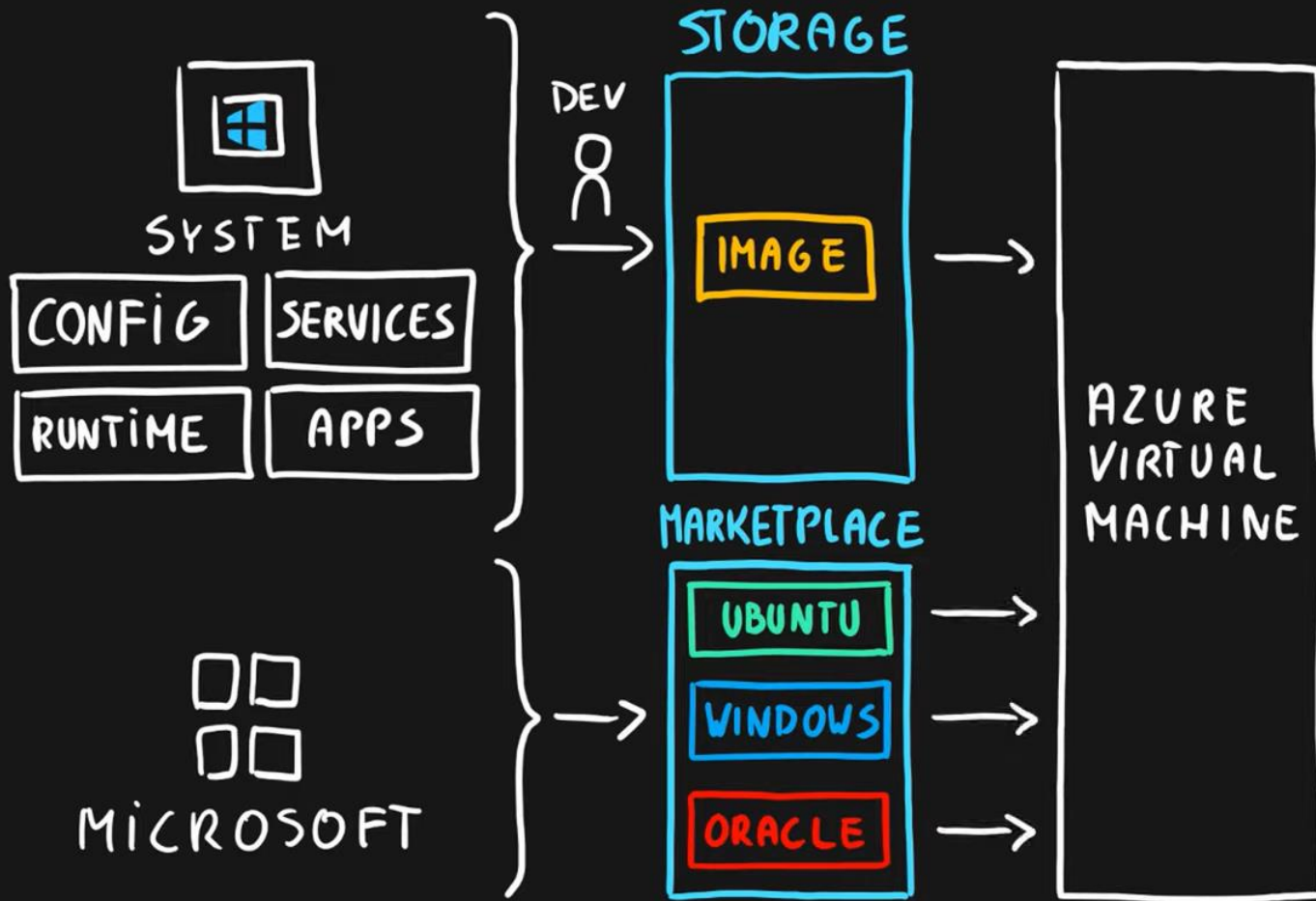
Azure Virtual Machines



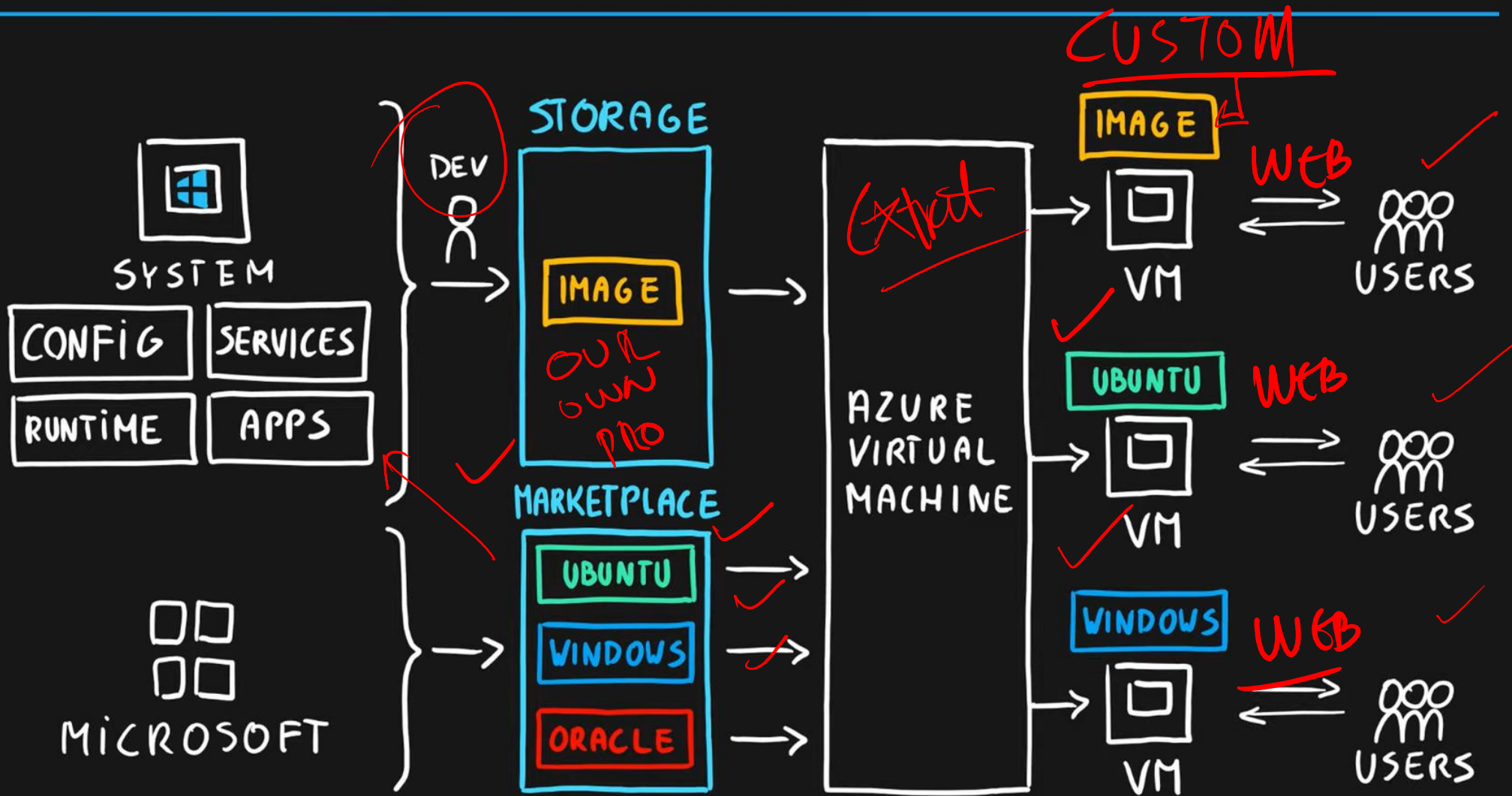
Azure Virtual Machines



Azure Virtual Machines



Azure Virtual Machines



Virtual Machines

Key Characteristics

- Infrastructure as a Service (IaaS)
- Total control over the operating system and the software
- Supports marketplace and custom images
- Best suited for
 - Custom software requiring custom system configuration
 - Lift-and-shift scenarios
- Can run any application/scenario
 - web apps & web services, ✓
 - databases, ✓ → Google → Firebase
 - desktop applications,
 - jumpboxes, ✓
 - gateways, etc. ✓

☰

Search resources, services, and docs (G+)

+ Create a resource

🏠 Home

📊 Dashboard

☰ All services

★ FAVORITES

📄 All resources

📁 Resource groups

🖥️ Virtual machines

📁 Storage accounts

↓ ✎ 🔔 ↗ 📄 🗑️ ↻ ❤️



[Dashboard](#) >

New

Search the Marketplace

Azure Marketplace [See all](#)

Featured [See all](#)

Get started

Recently created

AI + Machine Learning

Analytics

Blockchain

Compute

Containers

Databases



Virtual machine

[Learn more](#)



SQL Server 2017 Enterprise Windows Server 2016

[Learn more](#)



Reserved VM Instances

[Quickstarts + tutorials](#)



Kubernetes Service

[Quickstarts + tutorials](#)



Dashboard >

Virtual machines

Default Directory

+ Add Reservations Edit columns Refresh Assign tags Start Restart Stop De

Virtual machine

Start with a preset configuration resource groups All types All locations

0 items

Name ↑↓ Type ↑↓ Status Reso

Create a virtual machine

Basics Disks Networking Management Advanced Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * (i) Visual Studio Enterprise

Resource group * (i) (New) Resource group

[Create new](#)

Instance details

Virtual machine name * (i)

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ

Visual Studio Enterprise

Resource group * ⓘ

(New) Resource group

[Create new](#)

Instance details

Virtual machine name * ⓘ

Region * ⓘ

Availability options ⓘ

Review + create

< Previous

A resource group is a container that holds related resources for an Azure solution.

Name *

az-900-vm

OK

Cancel

Virtual machine name * ⓘ

amdemo-vm



Region * ⓘ

(Europe) West Europe



Availability options ⓘ

No infrastructure redundancy required



Image * ⓘ

Ubuntu Server 18.04 LTS - Gen1



[Browse all public and private images](#)

Azure Spot instance ⓘ

Yes No

Size * ⓘ

Standard_B2s - 2 vcpus, 4 GiB memory (€25.61/month)



[Select size](#)

Administrator account

Authentication type ⓘ

SSH public key Password

i Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Region * ⓘ

(Europe) West Europe

Availability options ⓘ

No infrastructure redundancy required

Image * ⓘ

Windows Server 2019 Datacenter - Gen1

[Browse all public and private images](#)

Azure Spot instance ⓘ

Yes No

Size * ⓘ

Standard_B2s - 2 vcpus, 4 GiB memory (€29.55/month)

[Select size](#)

Administrator account

Username * ⓘ

✘ The value must not be empty.

✘ The value must be between 1 and 20 characters long.

Password * ⓘ

✘ The value must not be empty.

Search by VM size...

Display cost : **Monthly**

vCPUs : **All**

RAM (GiB) : **All**

+ Add filter

Most used sizes by Azure users

Showing 12 of 380 VM sizes.

Subscription: Visual Studio Enterprise

Region: West Europe

Current size: Standard_B2s

Image: Windows Datacenter

VM Size ↑↓	Offering ↑↓	Family ↑↓	vCPUs ↑↓	RAM (GiB) ↑↓	Data disks
DS1_v2 ↗	Standard	General purpose	1	3.5	4
D2s_v3 ↗	Standard	General purpose	2	8	4
B2s ↗	Standard	General purpose	2	4	4
B1s ↗	Standard	General purpose	1	1	2
B2ms ↗	Standard	General purpose	2	8	4
B1ms ↗	Standard	General purpose	1	1	2

[See all sizes](#)

Display cost : **Monthly**

vCPUs : **All**

RAM (GiB) : **All**

+ Add filter

Subscription: Visual Studio Enterprise

Region: West Europe

Current size: Standard_B2s

Image: Windows Server 2019 Datacenter

[Learn more about VM sizes](#)

VM Size ↑↓	Data disks ↑↓	Max IOPS ↑↓	Temp storage (GiB) ↑↓	Premium disk ↑↓	Cost/month ↑↓
B2ms	4	3200	7	Supported	€41.86
D2ms	4	3200	16	Supported	€73.87
B2s	4	1280	8	Supported	€29.55
B1s	2	320	4	Supported	€7.39
B2ms	4	1920	16	Supported	€59.10
B1ms	2	640	4	Supported	€14.77

Availability options ⓘ

No infrastructure redundancy required

Image * ⓘ

Windows Server 2019 Datacenter - Gen1

[Browse all public and private images](#)

Azure Spot instance ⓘ

Yes No

Size * ⓘ

Standard_B2ms - 2 vcpus, 8 GiB memory (€59.10/month)

[Select size](#)

Administrator account

Username * ⓘ

adminaccount1

Password * ⓘ

.....

Confirm password * ⓘ

.....

Inbound port rules

[Review + create](#)

[< Previous](#)

[Next : Disks >](#)

Confirm password * ⓘ

.....

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ⓘ

None Allow selected ports

Select inbound ports *

- RDP (3389)
- HTTP (80)
- HTTPS (443)
- SSH (22)
- RDP (3389)

Licensing

Save up to 49% with a license you already own using Azure Hybrid Benefit. [Learn more](#)

Already have a Windows Server license? * Yes No

[Review + create](#)

[< Previous](#)

[Next : Disks >](#)

✓ Validation passed

PRODUCT DETAILS

Standard B2ms

by Microsoft

[Terms of use](#) | [Privacy policy](#)

Subscription credits apply ⓘ

0.0810 EUR/hr

[Pricing for other VM sizes](#)

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

Create

< Previous

Next >

[Download a template for automation](#)

Delete Cancel Redeploy Refresh

We'd love your feedback! →

Deployment is in progress



Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 8/13/2020, 9:30:53 PM
Subscription: Visual Studio Enterprise Correlation ID: 93cb5db1-49d0-4c1f-be48-6edb7cbcfb7c
Resource group: az-900-vm

Deployment details (Download)

Resource	Type	Status
amdemo-vm	Microsoft.Compute/virtual...	Created
amdemo-vm119	Microsoft.Network/networ...	Created
az900vmdiag358	Microsoft.Storage/storage...	OK
az-900-vm-vnet	Microsoft.Network/virtual...	OK
amdemo-vm-ip	Microsoft.Network/publicl...	OK

Delete Cancel Redeploy Refresh

We'd love your feedback! →

Your deployment is complete



Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 8/13/2020, 9:30:53 PM
Subscription: Visual Studio Enterprise Correlation ID: 93cb5db1-49d0-4c1f-be48-6edb7cbcfb7c
Resource group: az-900-vm

Deployment details (Download)

Next steps

[Setup auto-shutdown](#) Recommended

[Monitor VM health, performance and network dependencies](#) Recommended

[Run a script inside the virtual machine](#) Recommended

Go to resource

Create another VM

amdemo-vm

Virtual machine

Search (Ctrl+/) <<

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
- Disks
- Size
- Security
- Advisor recommendations
- Extensions

 Connect  Start  Restart  Stop  Capture  Delete  Refresh  Share to mobile

- RDP**
- SSH
- Bastion

LOCATION
West Europe

Subscription ([change](#))
[Visual Studio Enterprise](#)

Subscription ID
1a2cde19-3af3-4c1d-b5fc-37d7704b9033

Tags ([change](#))
[Click here to add tags](#)

Operating system
Windows

Size
Standard B2ms (2 vcpus, 8 GiB memory)

Public IP address
[104.214.239.119](#)

Virtual network/subnet
[az-900-vm-vnet/default](#)

DNS name
[Configure](#)



Properties Monitoring Capabilities Recommendations Tutorials

Virtual machine

Computer name (not available)

Networking

Public IP address 104.214.239.119



amdemo-vm | Connect

Virtual machine



- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect**
- Disks
- Size
- Security
- Advisor recommendations



To improve security, enable just-in-time access on this VM. →

RDP SSH BASTION

Connect with RDP

To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download RDP file.

IP address *

Port number *

[Download RDP File](#)

Can't connect?

- [Test your connection](#)
- [Troubleshoot RDP connectivity issues](#)

SSH BAS

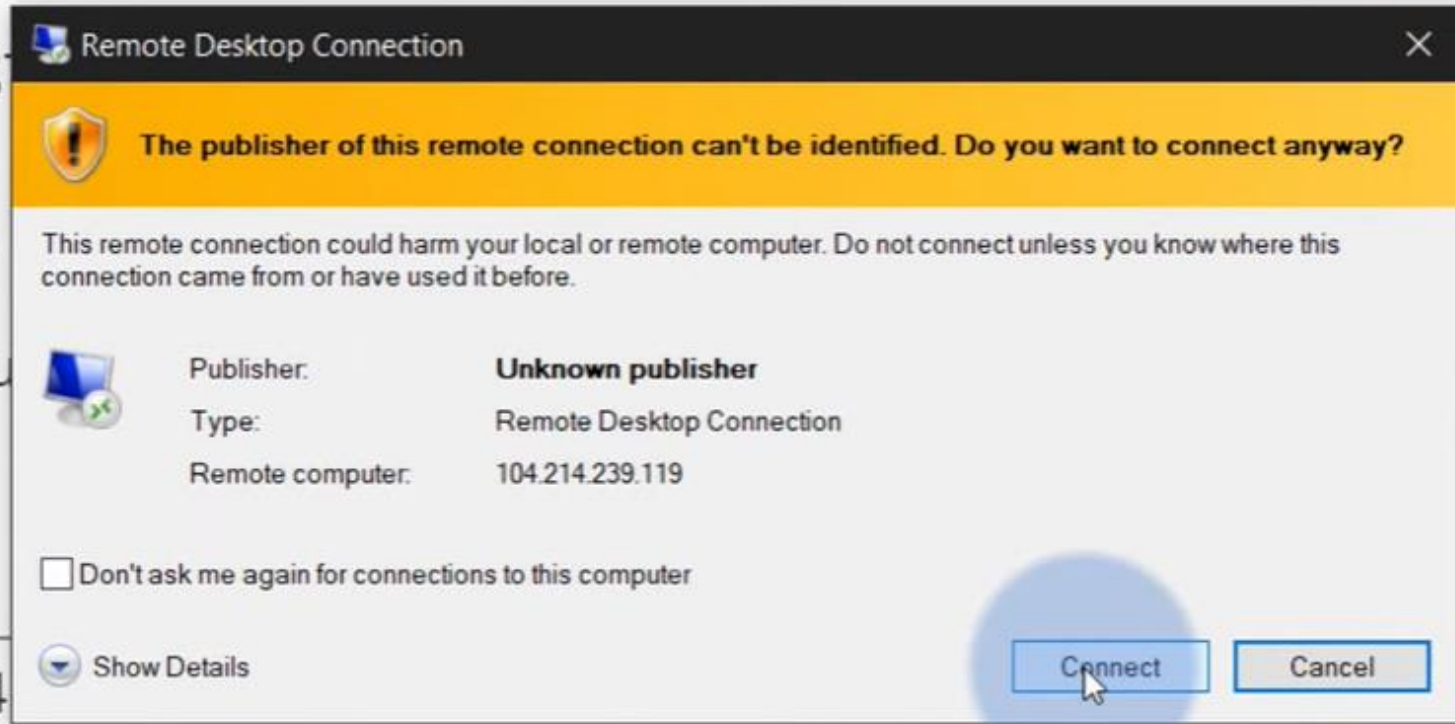
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ber *



e the port num

Server Manager Dashboard

Try managing servers with Windows Admin Center

Windows Admin Center brings together new and familiar features in one browser-based app. It runs on a server or a PC, and there's no additional cost beyond your Windows licenses.

[Get more info at aka.ms/WindowsAdminCenter](https://aka.ms/WindowsAdminCenter)

Don't show this message again

1. Add a server
2. Add a role
3. Add a server group
4. Create a server group
5. Connect this server to cloud services

LEARN MORE

Hide

ROLES AND SERVER GROUPS

Roles: 0 | Server groups: 1 | Servers total: 1

Local Server	All Servers
1	1
Manageability	Manageability
Events	Events
Services	Services
Performance	Performance
BPA results	BPA results

Azure Compute Services

Summary

Service	Configuration Control / Maintenance	Autoscaling	Min Nodes	Max Nodes	Scalability
Virtual Machines	☆☆☆☆☆	No	1	1	☆

