Fundamentals

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CONTENT

- Describe cloud concepts
- Describe azure architecture components
- Azure virtual networking (demo)
- Factors affect cost

DESCRIBE CLOUD CONCEPTS

- Cloud model
- Shared responsibility model
- Cloud service type

CLOUD MODELS

Image from internet
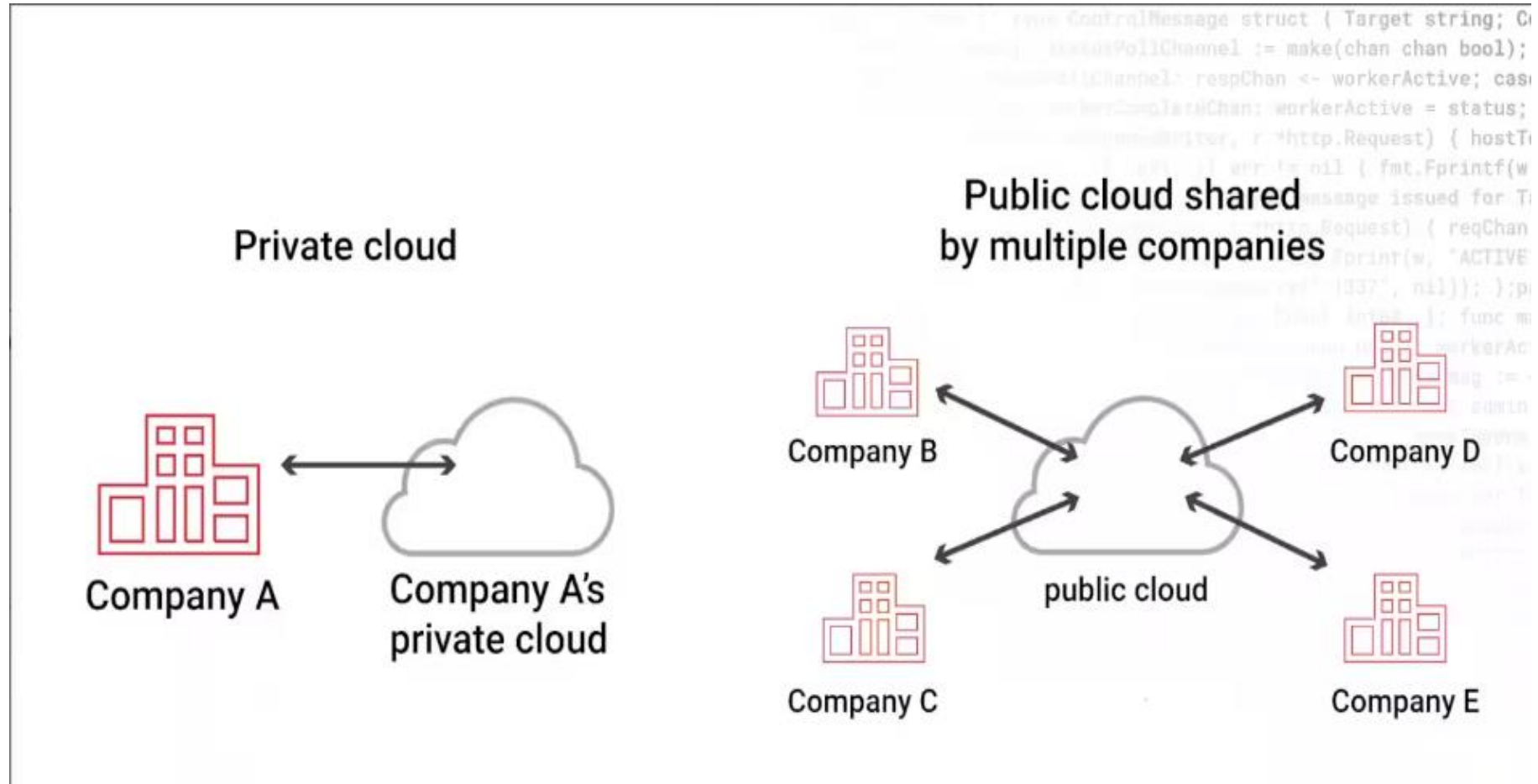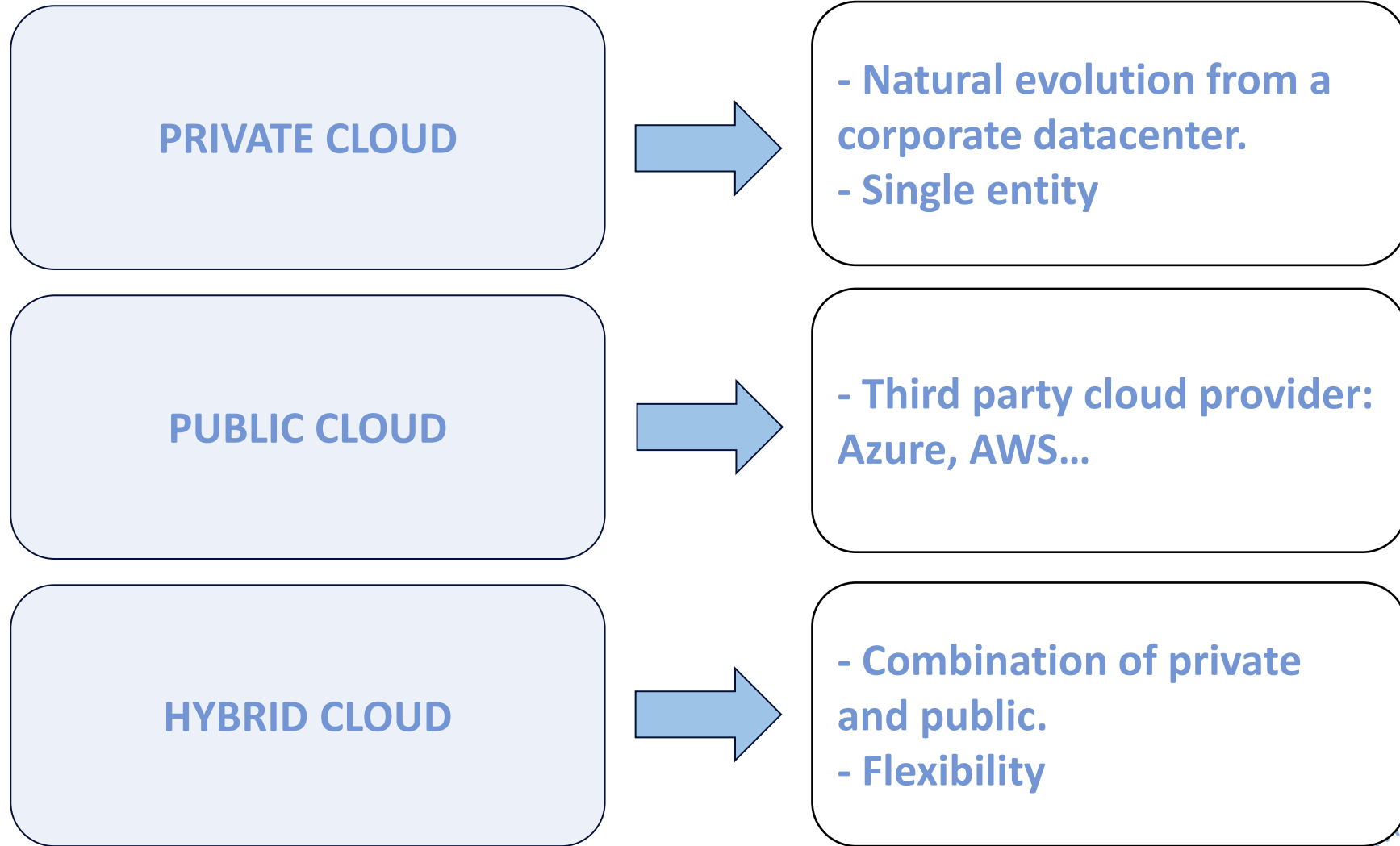
CLOUD MODELS

PRIVATE CLOUD	→	**- Natural evolution from a corporate datacenter.** **- Single entity**
PUBLIC CLOUD	→	**- Third party cloud provider: Azure, AWS…**
HYBRID CLOUD	→	**- Combination of private and public.** **- Flexibility**

SHARED RESPONSIBILITY

Responsibility		SaaS	PaaS	IaaS	On-prem
Responsibility always retained by the customer	Information and data	Customer	Customer	Customer	Customer
	Devices (Mobile and PCs)	Customer	Customer	Customer	Customer
	Accounts and identities	Customer	Customer	Customer	Customer
Responsibility varies by type	Identity and directory infrastructure	Shared	Shared	Customer	Customer
	Applications	Microsoft	Shared	Customer	Customer
	Network controls	Microsoft	Shared	Customer	Customer
	Operating system	Microsoft	Microsoft	Customer	Customer
Responsibility transfers to cloud provider	Physical hosts	Microsoft	Microsoft	Microsoft	Customer
	Physical network	Microsoft	Microsoft	Microsoft	Customer
	Physical datacenter	Microsoft	Microsoft	Microsoft	Customer

Legend: Microsoft — Customer — Shared

Image from internet

CLOUD SERVICE TYPES

IaaS	→	**Virtual machine…**
PaaS	→	**Azure app service…**
SaaS	→	**Office 365…**
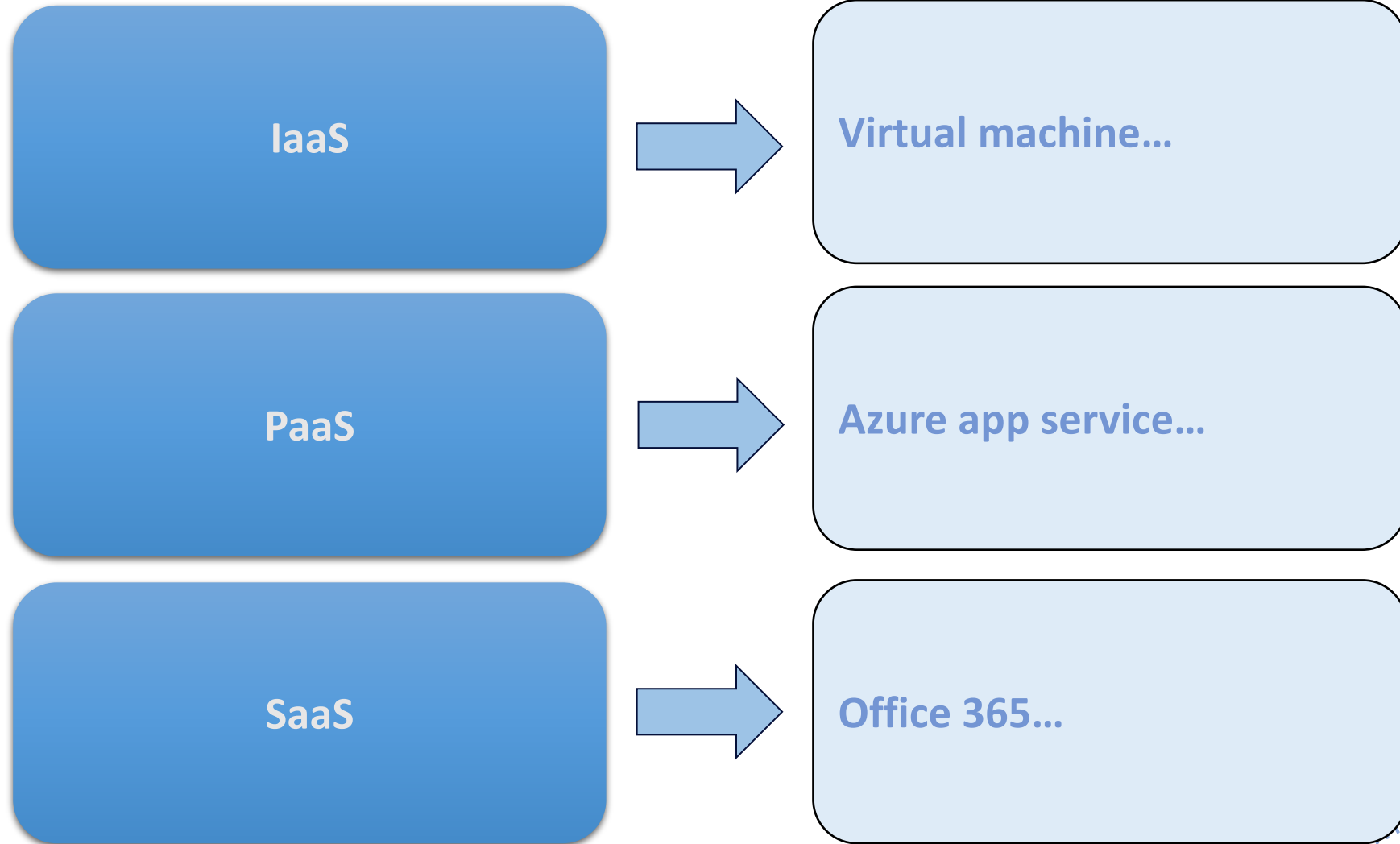
DESCRIBE AZURE ARCHITECTURE COMPONENT

- **Physical infrastructure**
- **Azure management infrastructure**
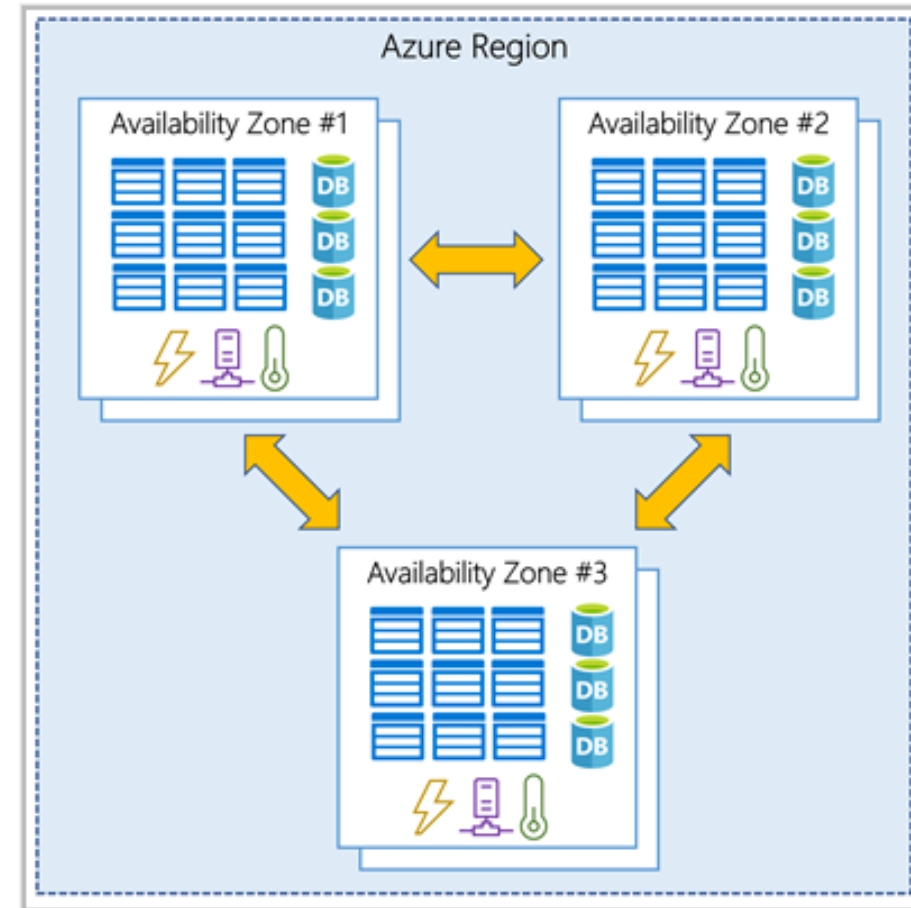
PHYSICAL INFRASTRUCTURE - REGIONS

https://datacenters.microsoft.com/globe/

PHYSICAL INFRASTRUCTURE – AVAILABILITY ZONES

Within a region

Separate datacenters

Made our app high-availability

https://datacenters.microsoft.com/globe/explore?info=region_southeastasia

Image from internet

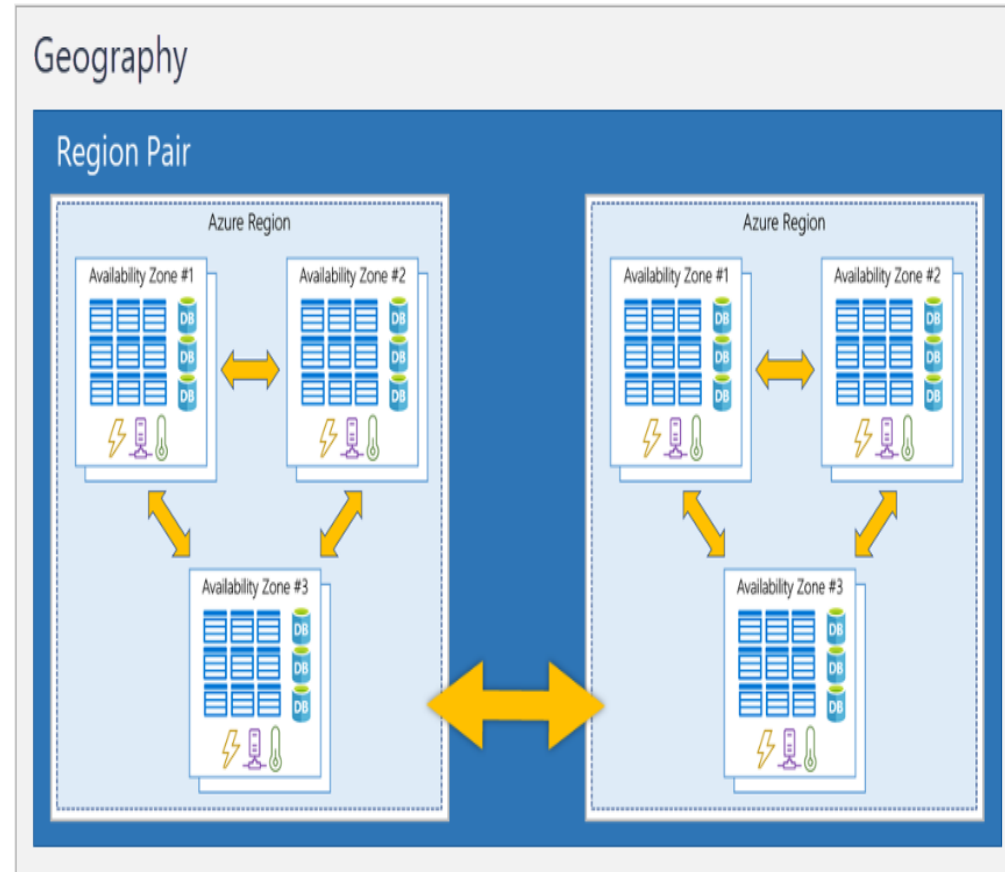Mai Hoang Giang

PHYSICAL INFRASTRUCTURE – REGION PAIR

Paired with another region

300 miles away

Protect resources against natural disasters…
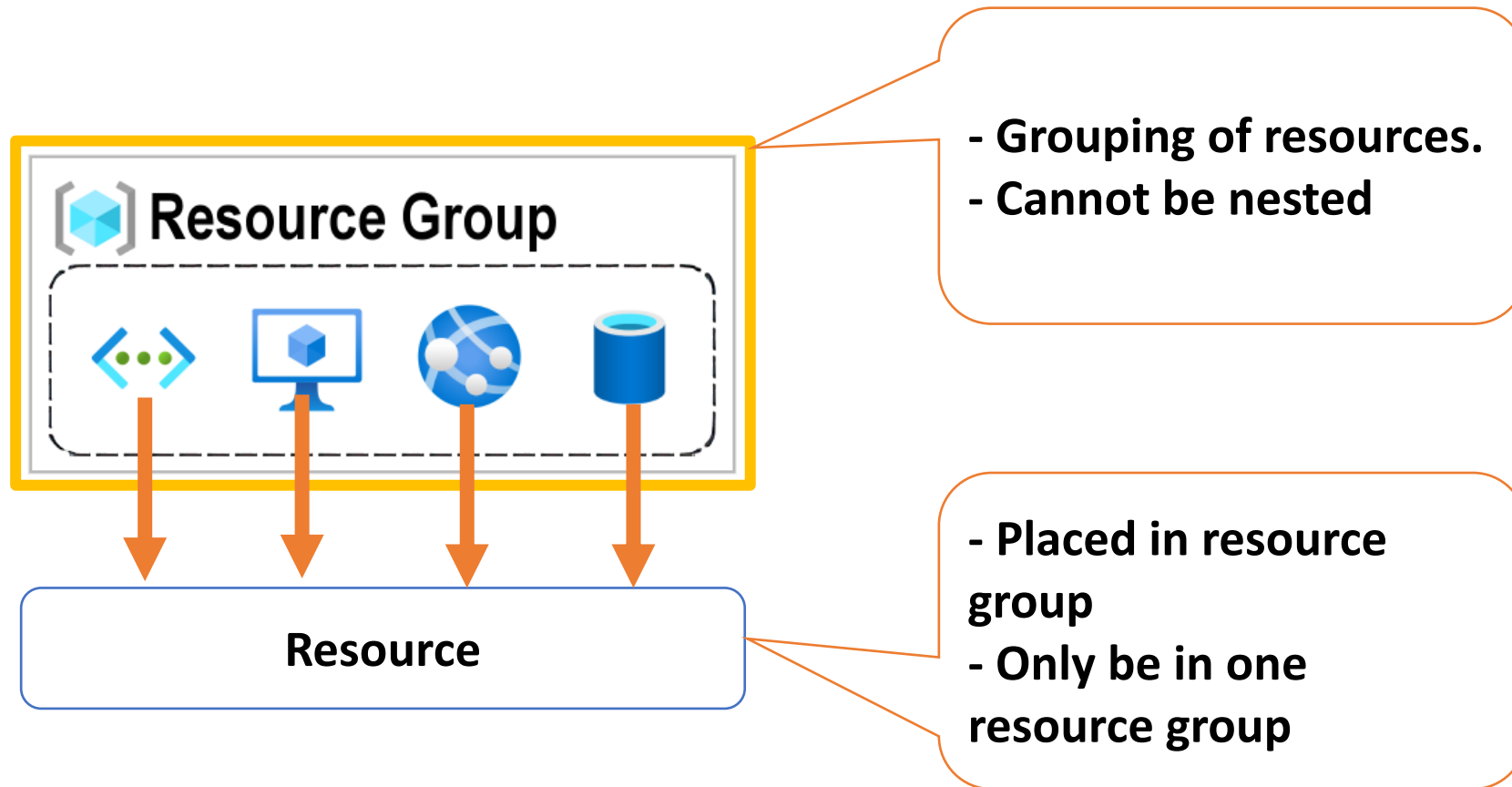
Image from internet

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AZURE MANAGEMENT INFRA – RESOURCE & RESOURCE GROUP

- Grouping of resources.
- Cannot be nested

- Placed in resource group
- Only be in one resource group

AZURE MANAGEMENT INFRA – SUBSCRIPTIONS

A unit of management

Billing

Scale
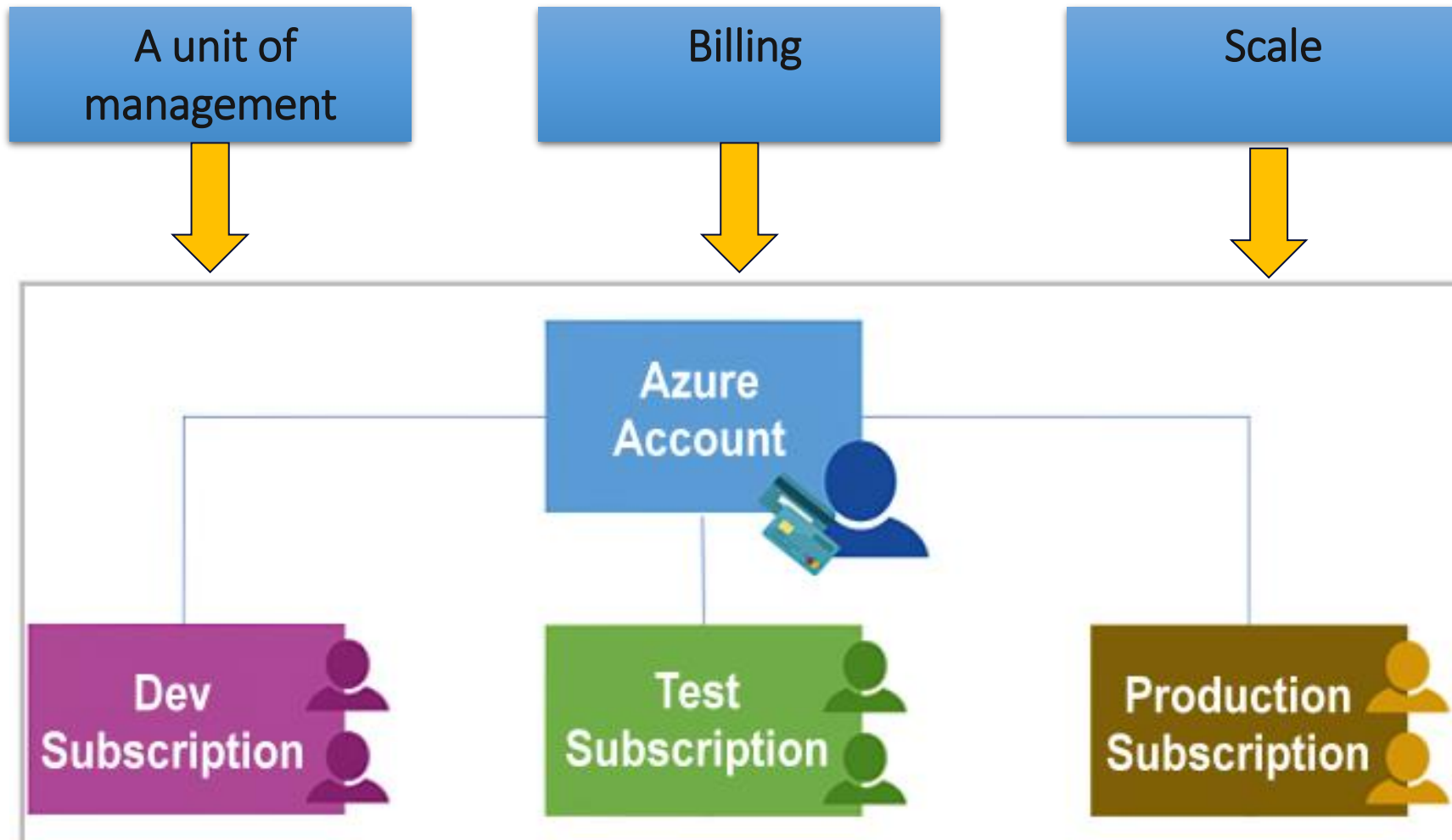
AZURE VIRTUAL NETWORKING

- **Azure virtual network**
- **Azure VPN Gateway**
- **Express route**

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AZURE VIRTUAL NETWORKING - VNET

VPN

On-premises network

VM VM VM

VM VM VM
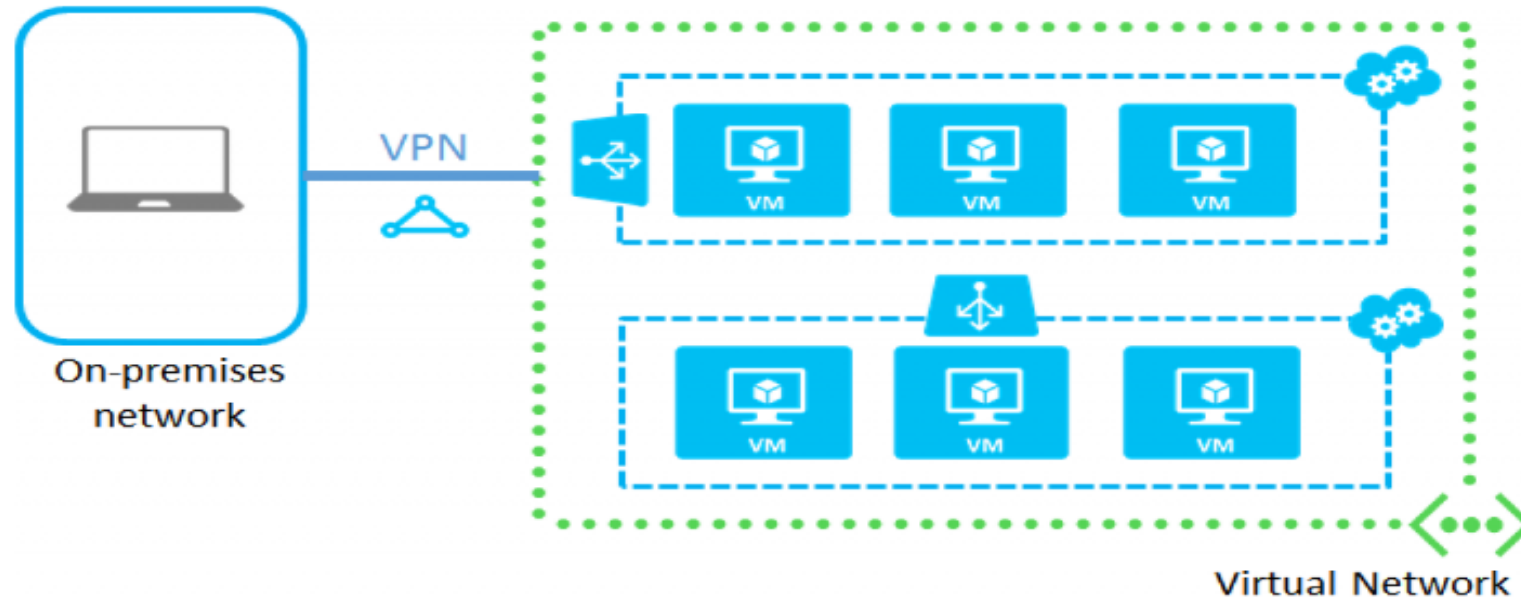
Virtual Network

Enable azure resources (VM, Web app, DB) communicate with each others, internet, on-premises
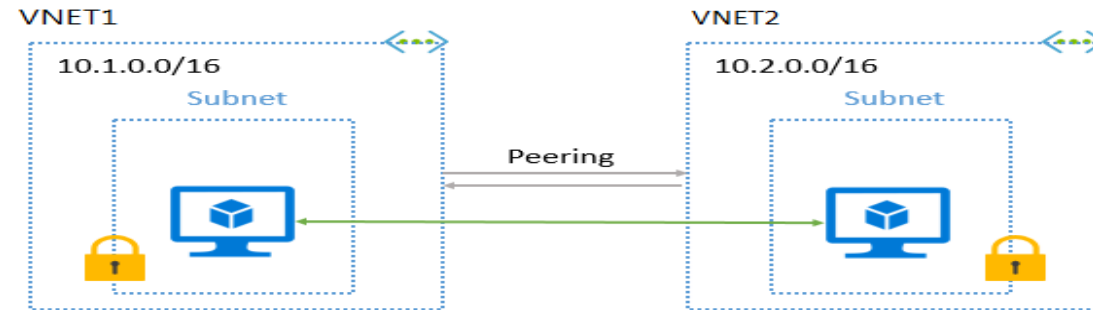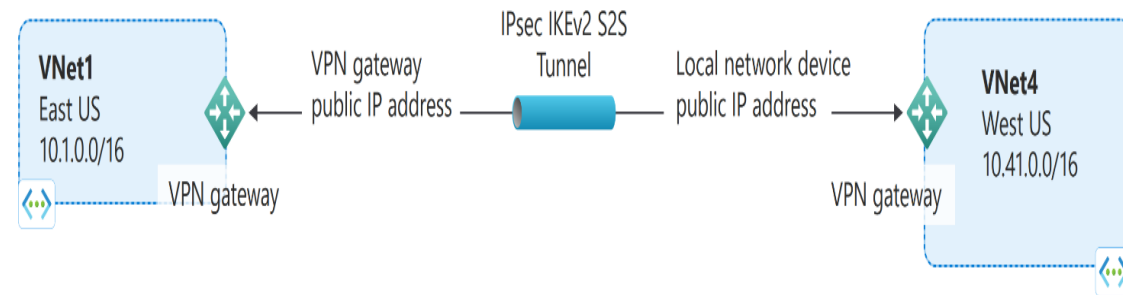
VPN GATEWAY – A TYPE OF VIRTUAL NETWORK GATEWAY

Enable conectivity

**ON-PREMISES
(Side to side)**

**INDIVIDUAL
DEVICES
(Point to side)**

**OTHER VNET
(Vnet to Vnet)**
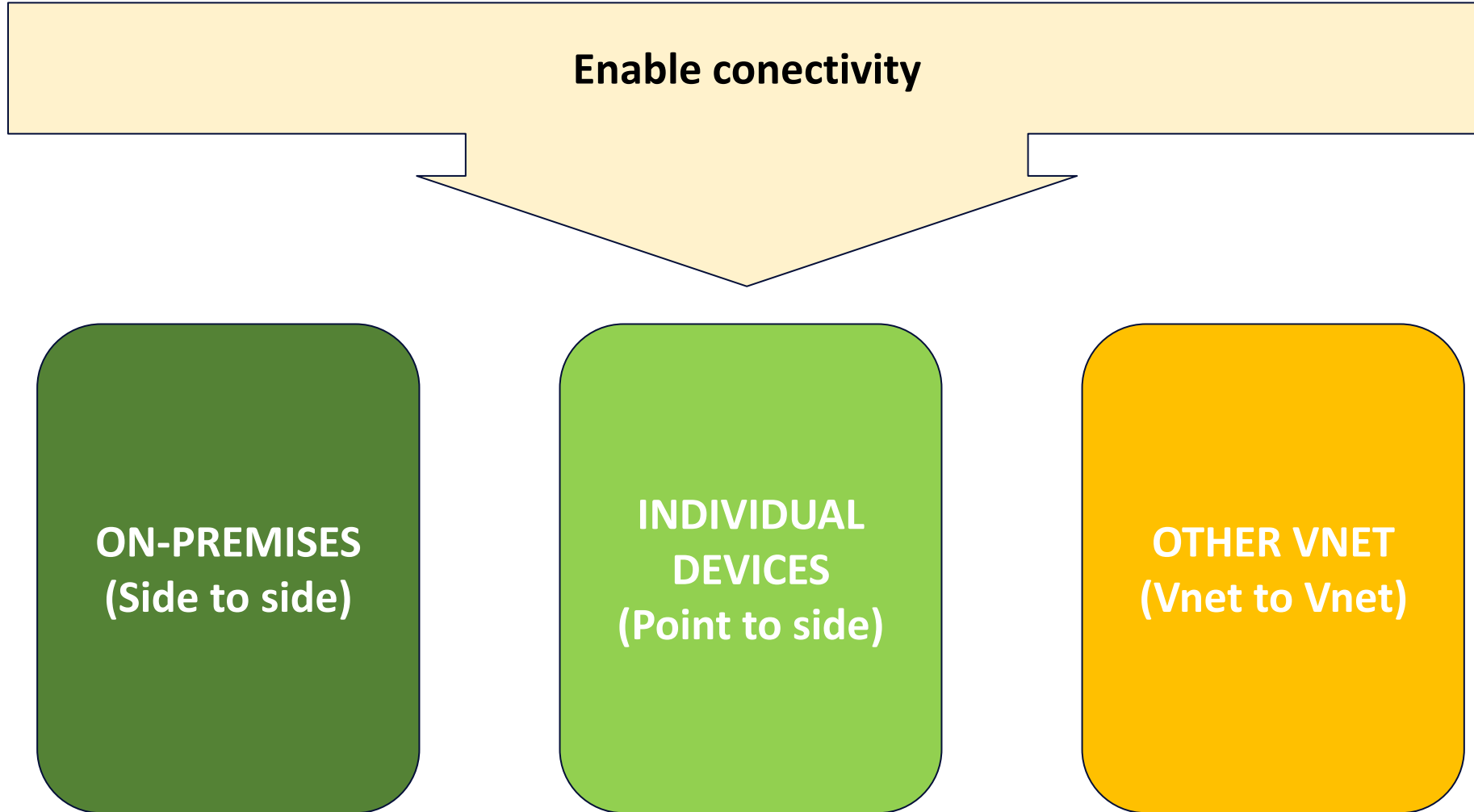
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CONNECTIVITY – VNET TO VNET

Peering

Low-latency
High-bandwidth

VNET1
10.1.0.0/16
Subnet

Peering

VNET2
10.2.0.0/16
Subnet

**VPN Gateway
(Vnet to Vnet)**

VNet1
East US
10.1.0.0/16
VPN gateway

VPN gateway
public IP address

IPsec IKEv2 S2S
Tunnel

Local network device
public IP address

VNet4
West US
10.41.0.0/16
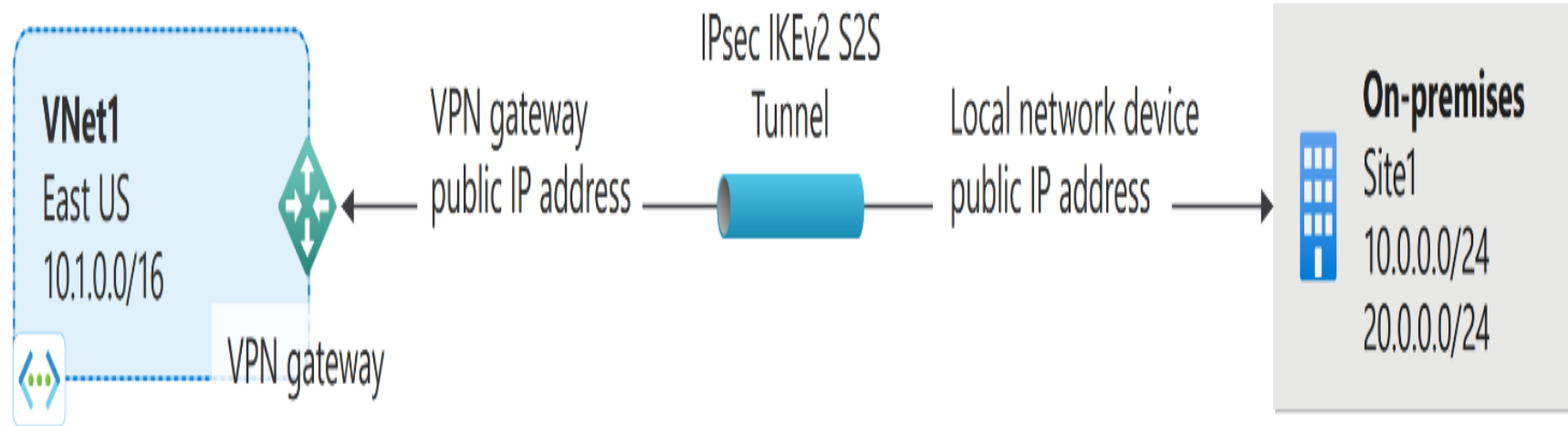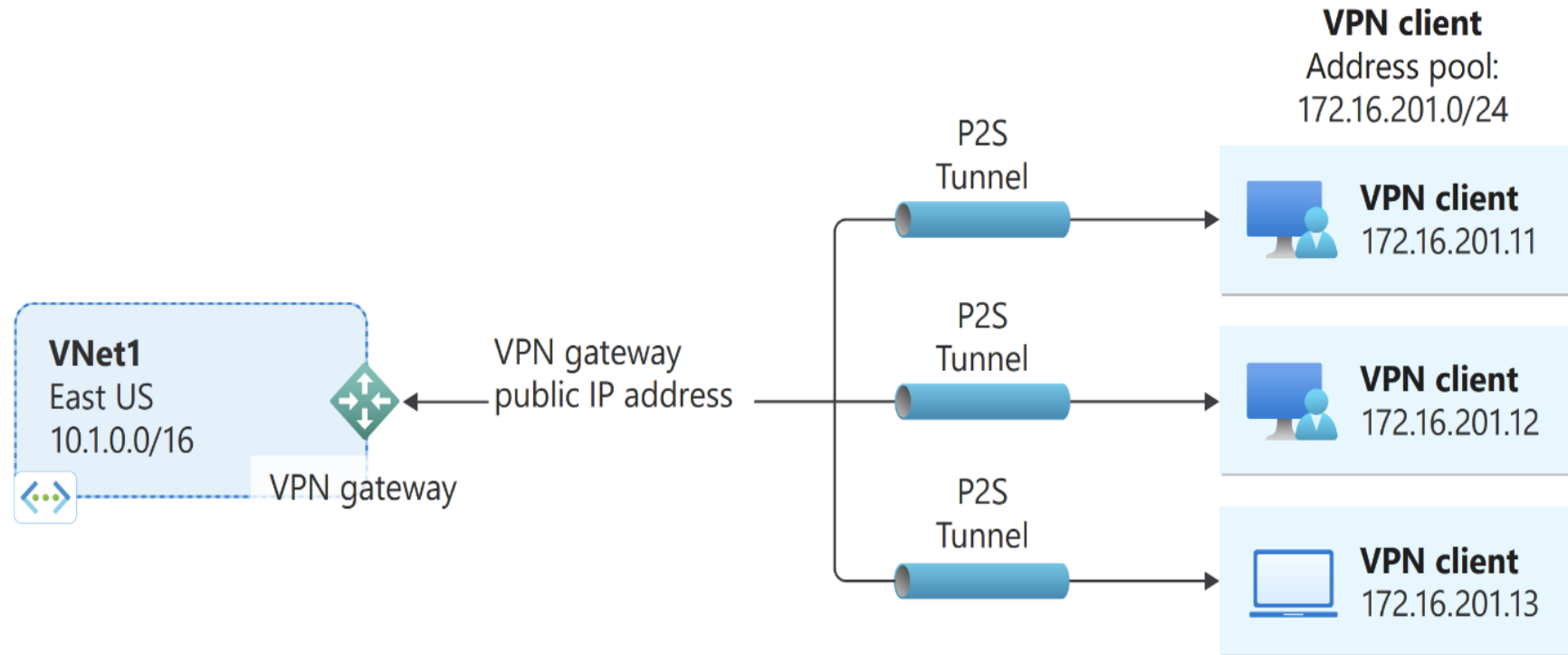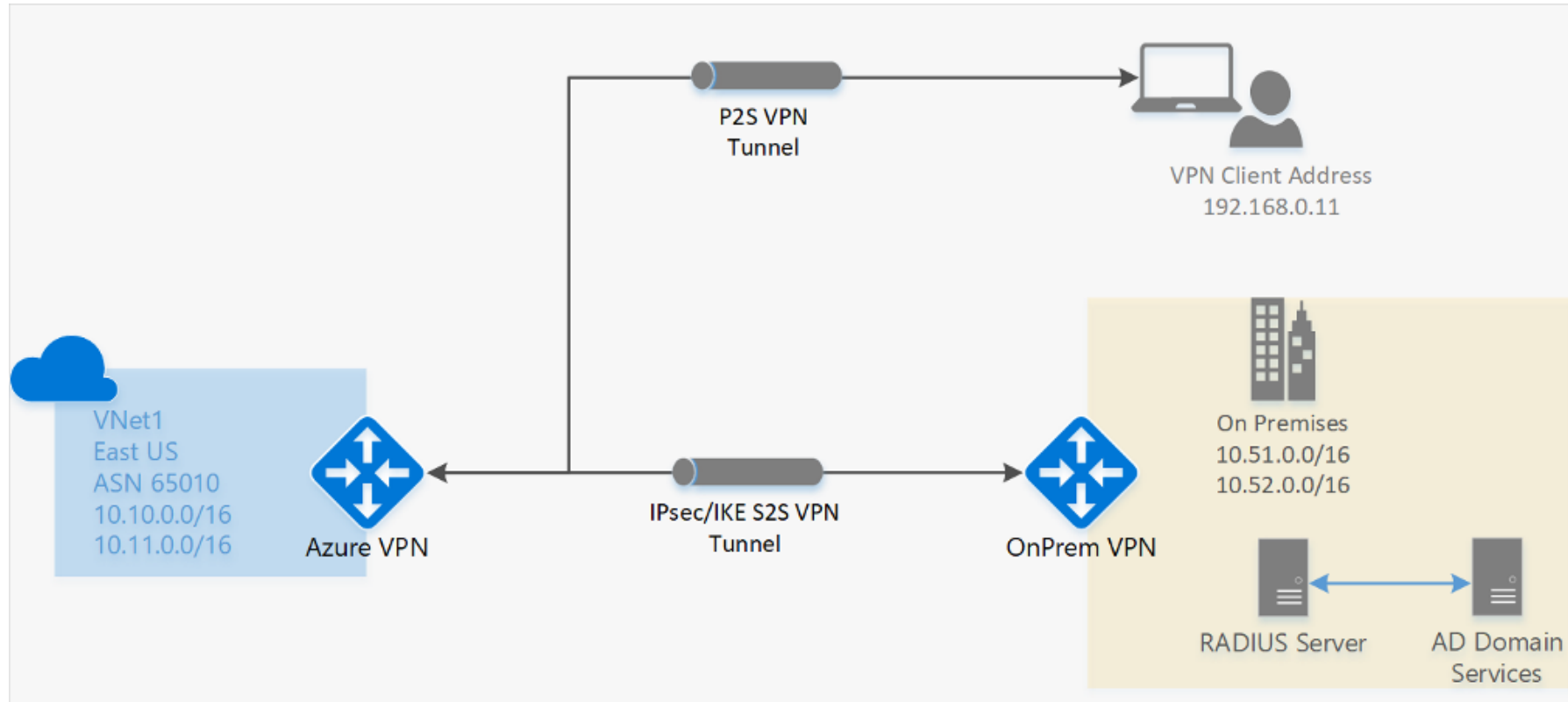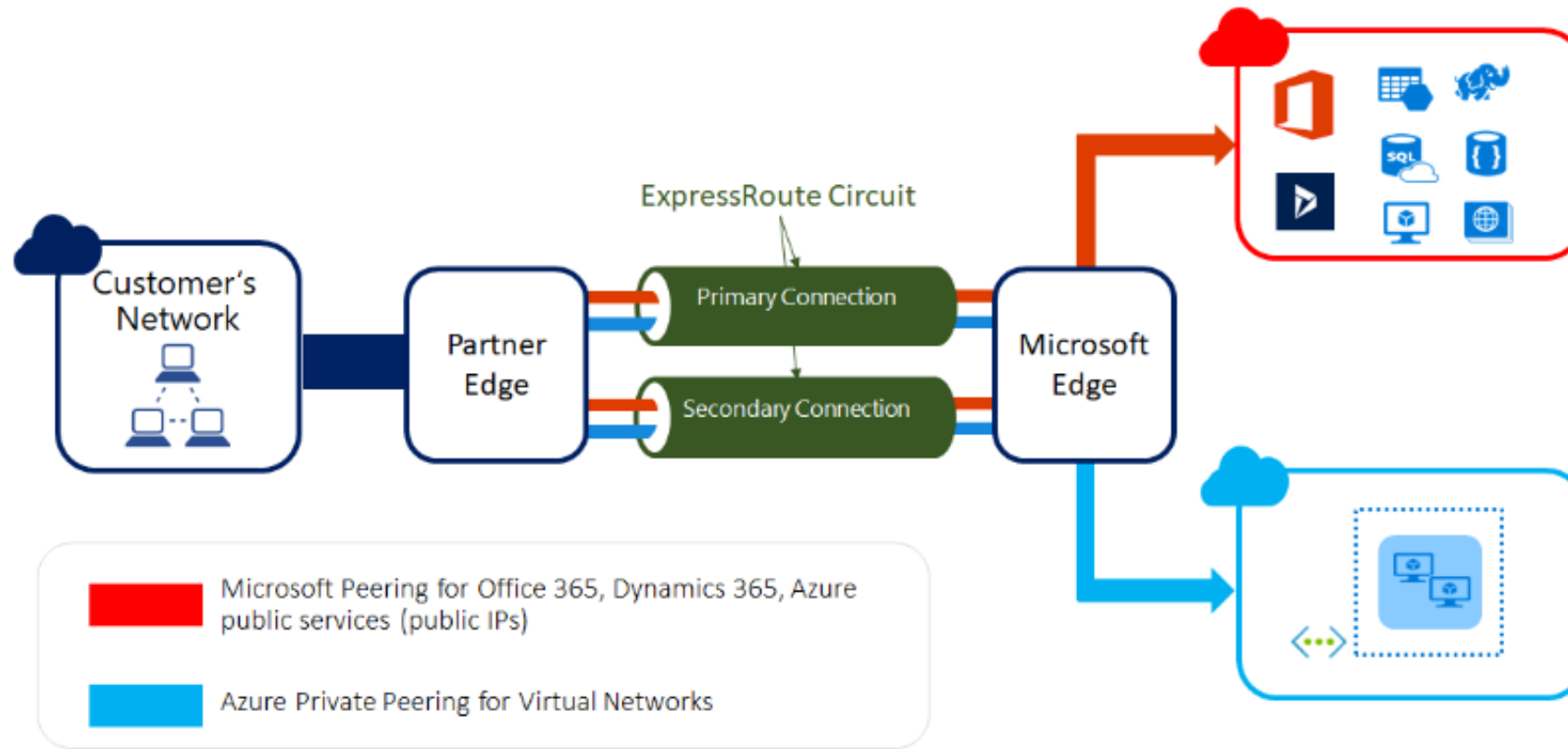VPN gateway

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CONNECTIVITY – SIDE TO SIDE

CONNECTIVITY – POINT TO SIDE

CONNECTIVITY

CONNECTIVITY – EXPRESS ROUTE

ExpressRoute Circuit

Customer's Network — Partner Edge — Primary Connection / Secondary Connection — Microsoft Edge

Microsoft Peering for Office 365, Dynamics 365, Azure public services (public IPs)

Azure Private Peering for Virtual Networks

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CONNECTIVITY – EXPRESS ROUTE/VPN GATEWAY

Site-to-Site VPN connection over ExpressRoute private peering

On-Premises Network

VPN-connected Network

On Prem VPN

On-Prem WAN Edge

ExpressRoute Private Peering

VPN connection over ExpressRoute

Vnet

ExpressRoute GW

VPN GW
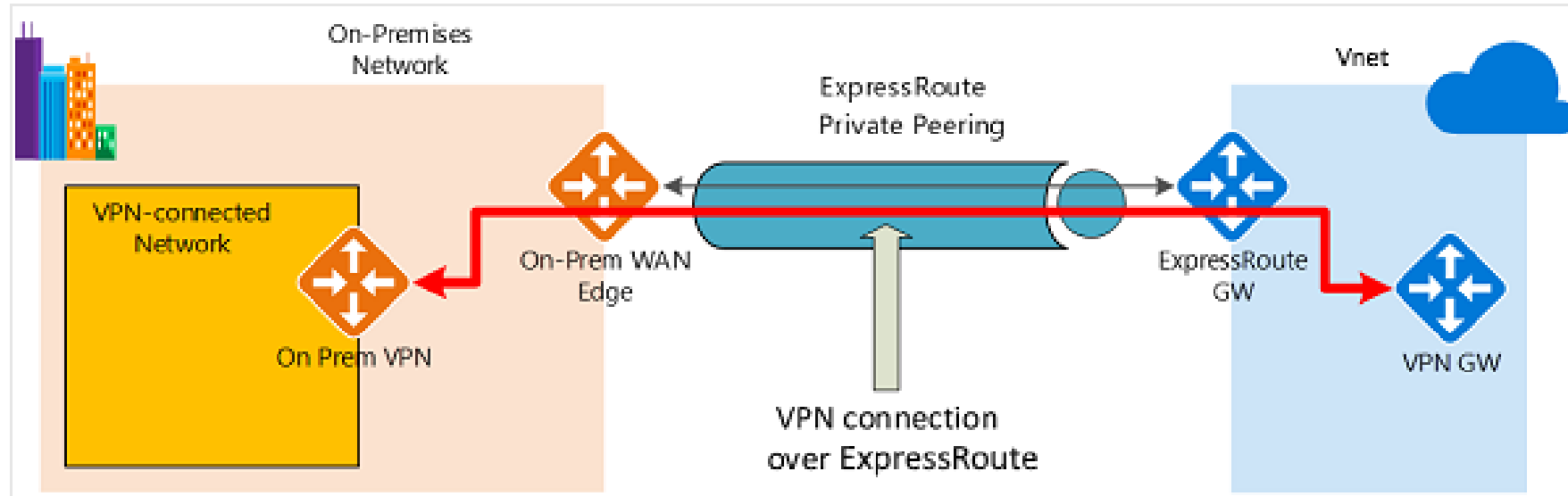
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FACTORS AFFECT COST

- Cost and factors affect cost

COST – IMPACTED FACTORS

Resource type	Consumption	Maintenance
Geography	Network Traffic	Subscription type
	Azure marketplace	

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DEMO - AZURE NETWORK SCENARIO

Thank You!