WEEK 2
AZURE CORE SERVICES

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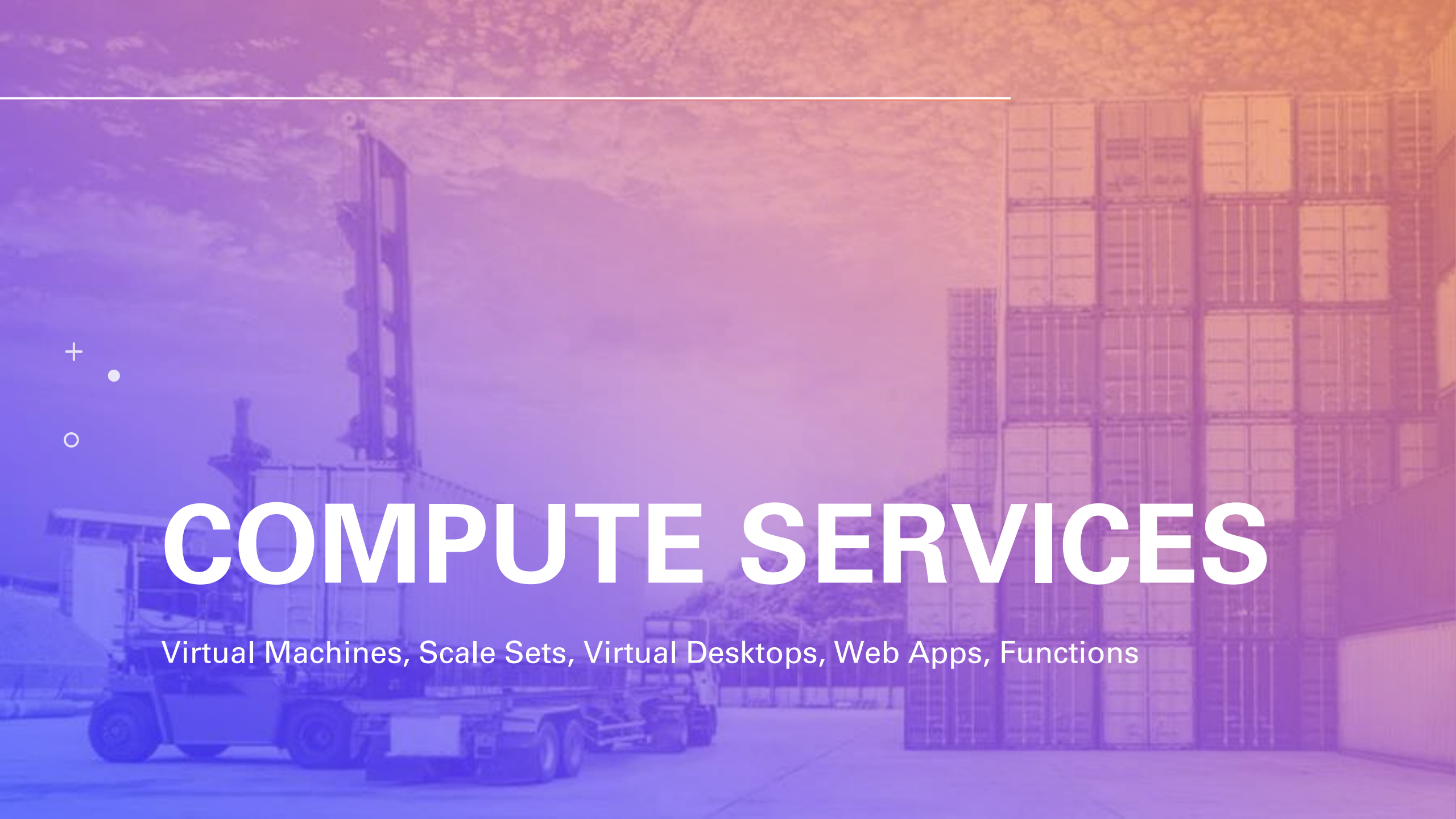
Agenda

- Azure Compute Services
- Networking Service
- Network Peering
- Public and Private Endpoints
- Azure Storage Overview
- Blob Storage



COMPUTE SERVICES

Virtual Machines, Scale Sets, Virtual Desktops, Web Apps, Functions

“Compute”

“being ability to run code in the cloud”

Scott Duffy

Compute Services

- Virtual Machines (VM)
- VM Scale Sets (VMSS)
- App Services (Web apps)
- Azure Container Instances (ACI)
- Azure Kubernete Service (AKS)
- Windows Virtual Desktop

Virtual Machines

- IaaS
- Many operating system options
- Many configuration options (Number of cores, CPU speed, RAM size, etc.)
- A “slice” of a physical machine with other users
- Full control over

VM Scale Sets

- Elasticity
- Two or more VMs running the exact same code
- Load balancer direct traffic to one of the VMs
- Able to add more machines as demand grows
- Able to reduce machines as demand slows
- Can handle up to 100 VMs in a single scale set (can be configured that to 1000 VMs)

App Services

- A new paradigm for running code in the cloud
- Give your code and configuration to Cloud provider and they will run it
- Promise of performance
- No access to hardware
- PaaS

Containers

- Another paradigm for running code in the cloud
- Containers contain everything in the app need to run in a “container image”
- Fastest and easiest to deploy
- **Azure Container Instance(ACI)** – single instance, quickest way to deploy a container
- **Azure Kubernetes Service(AKS)** – runs on a cluster of servers, enterprise-grade

Azure Virtual Desktop

- Desktop version of Windows that runs in the cloud
- All data (software installed, files) available from everywhere
- Can even see your desktop on iOS and Android or from any Web browser
- Runs on Azure

NETWORKING SERVICES

Virtual networks, VPN Gateway, Vnet peering, ExpressRoute

Types of Networking Services

- Connectivity Services
- Protection Services
- Delivery Services
- Monitoring Services

Connectivity

- **Virtual Network:** emulating a physical network
- **Subnet:** a subdivision of a virtual network
- **Virtual Private Network (VPN)**: connecting two networks as if they were on the same network, uses a Network Gateway
- **Express Route**: high-speed private connection to Azure
- **DNS**: domain name resolution

Protection

- DDoS Protection
- Azure Firewall
- Network Security Groups
- Private Link

Delivery

- **Load Balancer:** Distribute traffic evenly between multiple servers
- **Application Gateway:** A Higher level of load balancer with an optional firewall
- **Content Delivery Network(CDN):** Stores common static files on the edge, closer to the users for improved performance
- **Azure Front Door:** a load balancer, CD and firewall all-in-one

Monitoring

- **Network Watcher**
- **ExpressRoute Monitor**
- **Azure Monitor**

Network peering

- Connecting two or more virtual networks (VNets) within the same cloud region or across different regions
- Direct, secure communication between Vnets
- One-directional / bi-directional
- Transitive Routing (VNet A - VNet B, VNet B - VNet C, then VNet A - VNet C through VNet B)
- Cost efficient (VPNs, ExpressRoute)

Public and Private Endpoints

- Enable public access from all networks
- Enable public access from selected virtual networks and IP addresses
- Disable public access and use private access

STORAGE SERVICES

Blob Storage, Disk storage,
File storage, Storage Tiers

Storage

"one of the foundational technologies on which much is built"

Container (Blob) and File Storage

Azure Storage Account

General Purpose v2 (gpv2) is the most common type

Blobs, Tables, Queues, Files

Azure Data Lake Storage Gen2

Cheapest type of storage

Pay Per GB (~1.8 cents per GB)

BLOB

- Binary Large Object
- A collection of binary data
- File or data stored in a database

Storage Options

Access Tiers: Hot, Cool, Archive

Performance Tiers: Standard or Premium

Location

Redundancy/Replication

Failover options

Disk Storage

- Azure virtual Machine Disks
- Managed Disks
- Reserve Capacity in advance
- Optimized to virtual hard disks

Homework

Following concepts will be covered in the class quizzes, midterms and finals!

- AZCOPY
- Azure File Sync
- Azure Migrate
- Azure Data Box

THANK YOU

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