Azure Virtual Machines

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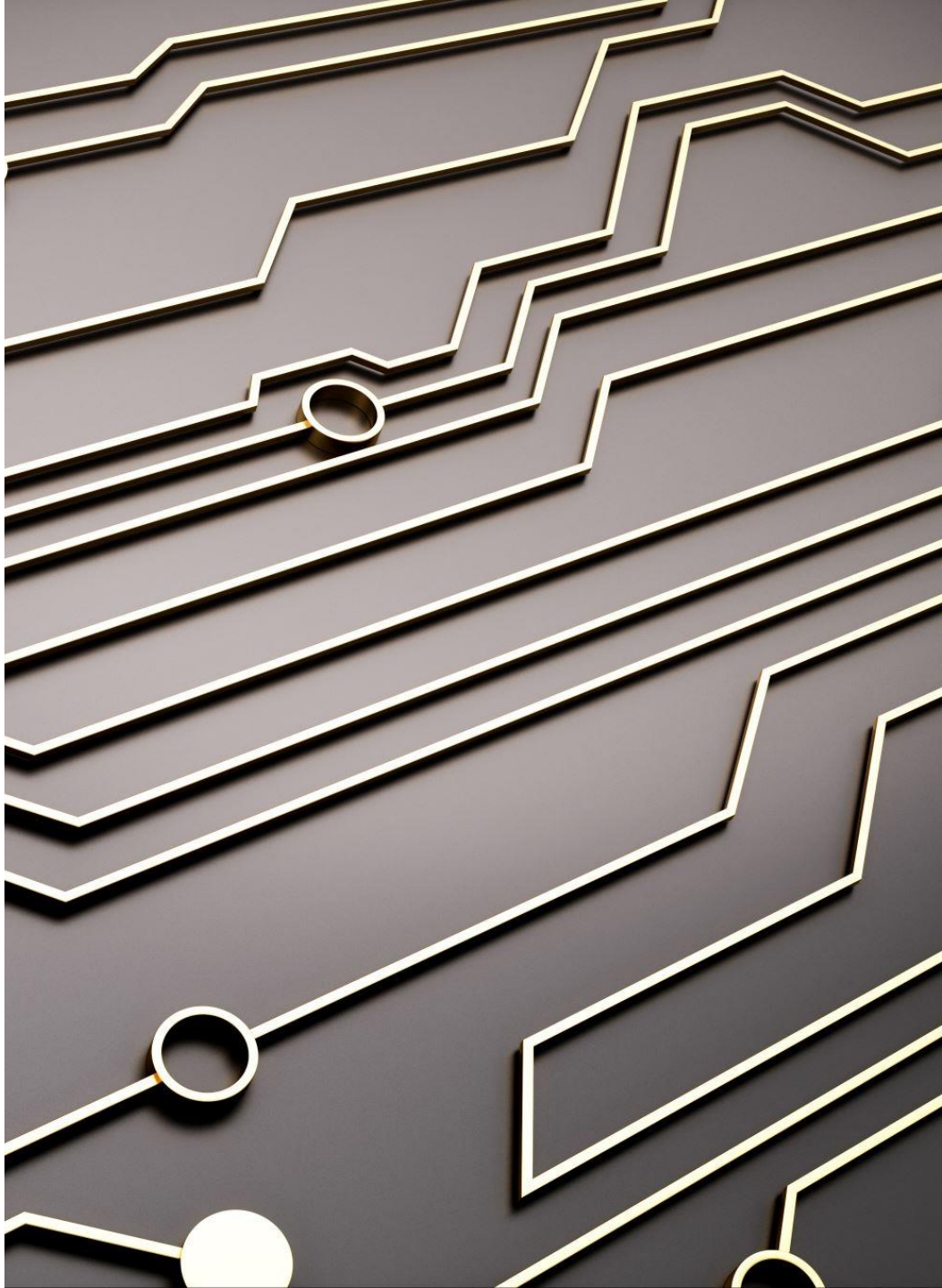
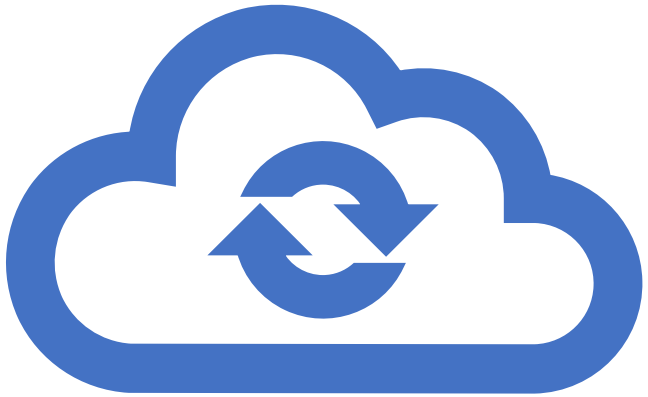
Azure VM

- Create VMs in the cloud
- No need to maintain physical hardware
- Building block of IaaS
- Different types of base images available

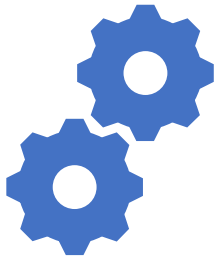


When to Use Azure VM?

- You need more control
- You want to run custom software
- Migrate from on-prem to cloud



Scaling VMs in Azure



Virtual Machine Scale Sets

Virtual Machine Availability Sets

Virtual Machine Scale Sets

- Group of identical VMs
- Load balance the VMs
- Central management
- Auto scale based on demand

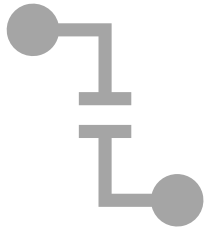
Virtual Machine Availability Sets

- Enables highly available VMs
- Handles network & power failures
- No additional cost

Ways of Grouping VMs

Update domain

- VMs can be rebooted as same time
- During update, only 1 group will be offline



Fault domain

- VMs have common power and network
- 3 fault domains by default

Uses of Azure VM

TESTING & DEVELOPMENT

LIFT-AND-SHIFT OPERATIONS

SCALE APPLICATIONS DURING DEMAND

SUPPORT HIGH-AVAILABILITY

Azure Virtual Desktop

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Azure Virtual Desktop

- Desktop & application virtualization on cloud
- Access Windows from any location or device

Security Features of Virtual Desktop

- Access using Azure AD
- Multifactor authentication
- Role-based access control

Support for Multi-session

Windows 10 or Windows 11 Enterprise

Concurrent usage

Azure Containers

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Overview of Containers

- Virtualization environment
- Multiple containers in a single machine
- Lightweight and starts quickly
- Docker – popular container solution

Virtual Machines vs. Containers

VMs manage the OS, while containers do not

Containers are light and starts fast

VMs are constrained to a single OS

Azure Services for Containers

Azure Container App

Azure Container Instance

Azure Kubernetes Service (AKS)

Azure Functions

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Overview of Azure Functions

- Serverless compute option
- Skip VM & container management
- Event-driven

Uses of Azure Functions

- Focus on code
- Faster execution
- Auto-scales
- Can be stateless or stateful (Durable Functions)

Azure App Service

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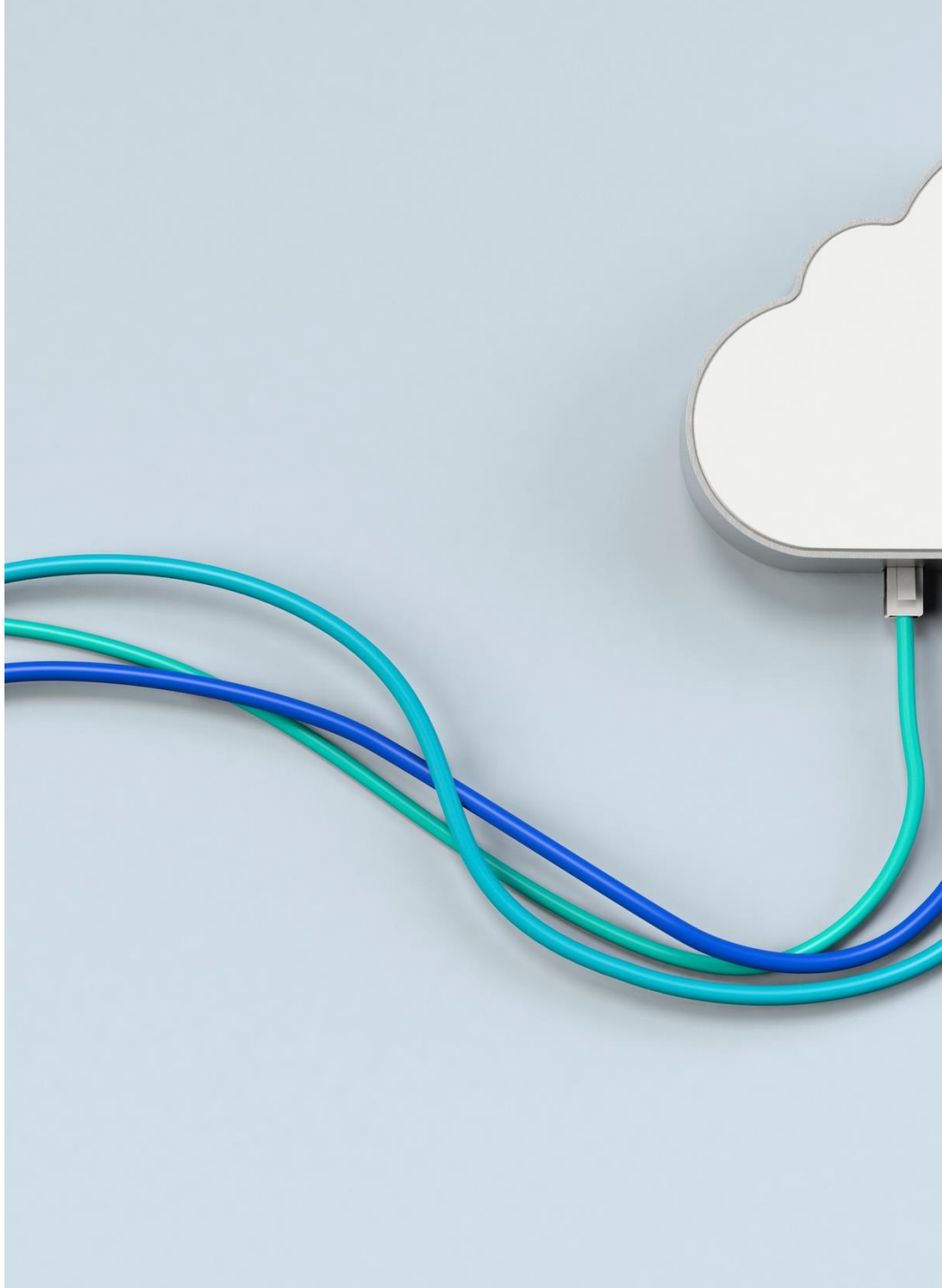
Overview of Azure App Service

- Supports different types of apps
- Support for auto scale & high availability
- Supports multiple languages



Types of Apps in App Service

Web Apps

API Apps

Web Jobs

Mobile Apps

Benefits of App Service

Ease infrastructure management

Support for scaling and high availability

Geared for web applications

Azure Virtual Networks

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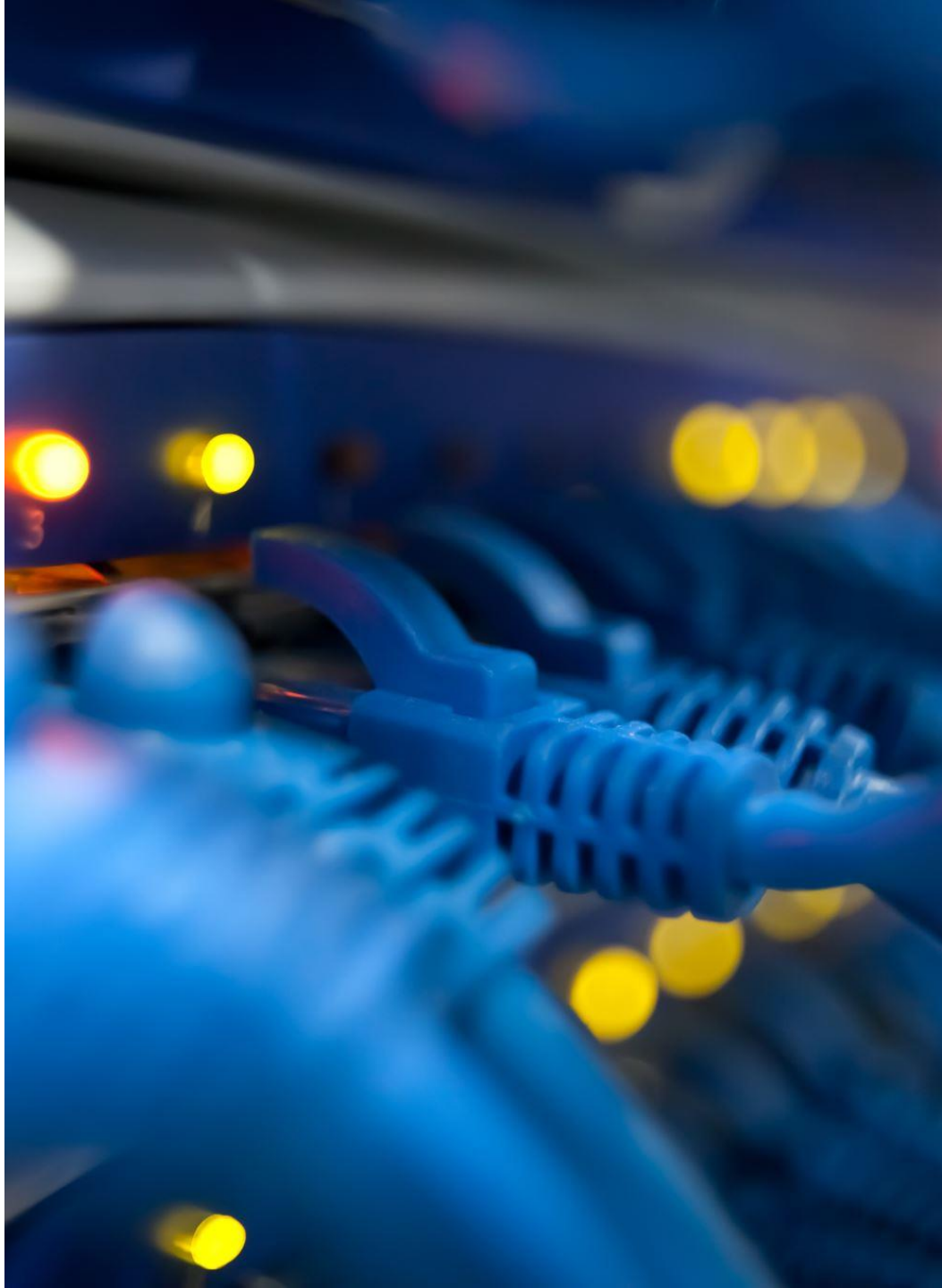
Overview of Azure Virtual Networks

- Aids communication between Azure resources
- Supports extending on-premise network
- Supports both public & private endpoints



Key Networking Capabilities

- Isolation and segmentation
- Communication between Azure resources & on-prem resources
- Route and filter network traffic
- Connect to virtual networks

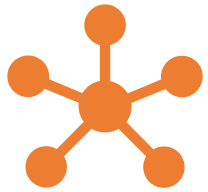
Connectivity Options

Point-to-site VPN

Site-to-site VPN

Azure ExpressRoute

Virtual Network Peering



Connect multiple virtual networks

Works on Microsoft backbone network