Microsoft Azure Fundamentals (AZ-900)

Quick Exam Refresher

*This is your condensed, high-impact review guide for **AZ-900**. It's designed for last-minute recall and confidence building, not deep dives.*

AZ-900 Domains

Each domain is weighted differently on the exam:

- **Domain 1: Cloud Concepts (25–30%)**
- **Domain 2: Azure Architecture and Services (35–40%)**
- **Domain 3: Azure Management and Governance (30–35%)**

Quick Reminder: How the Exam Works

- **Number of Questions:** ~35–40
- **Format:** Multiple choice, drag & drop, fill in the blank, hot area
- **Time Limit:** 45 minutes
- **Passing Score:** 700/1000 (≈70%)
- **Test Provider:** Pearson VUE or Certiport (onsite or online)

Remember — you don't need to be perfect to pass!

A 700/1000 passing score means you can miss several questions and still pass.

Domain 1: Cloud Concepts (25–30%)

Core Ideas:

- **Cloud computing:** On-demand, scalable IT delivered over the internet with consumption-based pricing.
- **Five characteristics:** On-demand self-service, broad network access, resource pooling, rapid elasticity, measured service.

Deployment Models:

- Public = Azure's default, shared infra.
- Private = dedicated infra for one org.
- Hybrid = mix on-prem + cloud.
- Multi-cloud = multiple providers.

Service Models:

- IaaS = customer manages OS/apps/data. Example: Azure VM.
- PaaS = customer manages code/data. Example: App Service, SQL Database.
- SaaS = provider manages all. You manage data/access. Example: Microsoft 365.

Shared Responsibility

- IaaS: you manage OS, apps, data.
- PaaS: you manage apps/data only.
- SaaS: you manage just data/access.

Cloud Benefits

- **Scalability:** Handle growth in workload.
- **Elasticity:** Auto-adjust to demand spikes.
- **High availability:** SLA uptime guarantees.
- **Disaster recovery:** Geo-redundancy.
- **Cost efficiency:** CapEx → OpEx.
- **Global reach:** Deploy worldwide.

Cloud Economics

- **CapEx vs OpEx:** On-prem hardware vs cloud subscription.
- **Consumption-based model:** Pay-as-you-go.
- **Reserved instances:** Prepay for discount.
- **Spot pricing:** Cheap, interruptible workloads.

Domain 2: Azure Architecture and Services (35–40%)

Global Infrastructure

- **Regions:** Geographic areas hosting datacenters (e.g., East US, West Europe).
- **Availability Zones (AZs):** Physically separate datacenters in a region. Use for HA.
- **Region Pairs:** Each region paired with another for disaster recovery.

Core Compute

- **Virtual Machines (VMs):** IaaS. You manage OS, apps, data.
- **VM Scale Sets:** Autoscaling groups of VMs.
- **App Service:** PaaS for hosting web apps/APIs.
- **Azure Functions:** Serverless, event-driven. Pay per execution.
- **Logic Apps:** Low-code workflows.
- **Container Instances (ACI):** Run containers without infrastructure.
- **AKS (Kubernetes):** Managed container orchestration.

Networking

- **Virtual Network (VNet):** Private network with subnets.
- **Network Security Groups (NSGs):** Firewall rules (IP, port, protocol).
- **VPN Gateway:** Secure site-to-site or point-to-site connections.
- **ExpressRoute:** Private dedicated link to Azure.
- **Load Balancer:** Layer 4 (TCP/UDP).
- **Application Gateway:** Layer 7 + WAF.
- **Front Door:** Global app acceleration and edge routing.
- **Traffic Manager:** DNS-based traffic distribution.
- **Private Endpoint:** Private IP to PaaS service.
- **Service Endpoints:** Secure service access from a VNet.

Storage

- **Blob Storage:** Object storage, tiers = Hot, Cool, Archive.
- **Azure Files:** SMB/NFS shares. Sync with on-prem.
- **Managed Disks:** For VMs (SSD, HDD, Ultra).
- **Queues:** Message queuing.
- **Tables:** NoSQL key-value.
- **Data Box:** Offline bulk transfer.

Databases

- **Azure SQL Database:** PaaS relational DB, auto patch/backup.
- **SQL Managed Instance:** Near full SQL Server compatibility.
- **Database for MySQL/Postgres:** Managed open-source DBs.
- **Cosmos DB:** Global NoSQL, multi-API, consistency levels.

Identity & Security

- **Microsoft Entra ID (Azure AD):** Core identity (SSO, MFA, Conditional Access).
- **RBAC:** Assign roles at scopes.
- **Managed Identities:** Secure app-to-service authentication.
- **Key Vault:** Secrets, keys, certificates.
- **Defender for Cloud:** Security posture + workload protection.
- **Microsoft Sentinel:** Cloud-native SIEM/SOAR.

Domain 3: Azure Management and Governance (30–35%)

Cost Management & Pricing

- **Pricing Calculator:** Estimate service costs before deployment.
- **TCO Calculator:** Compare on-prem vs Azure costs.
- **Budgets & Alerts:** Set thresholds for spend.
- **Tags:** Organize and report costs by project/department.

SLAs (Service-Level Agreements)

- Define uptime guarantees (e.g., 99.9%, 99.99%).
- **Single VM:** 99.9% SLA.
- **VM with Zones:** 99.99% SLA.
- **Composite SLA:** Multiply SLAs of services.

Governance Tools

- **Resource Groups:** Logical containers for resources.
- **Management Groups:** Organize subscriptions.
- **Azure Policy:** Enforce compliance (allowed locations, required tags, SKU restrictions).
- **Blueprints:** Package policies + RBAC + templates.
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- **Resource Locks:** Protect critical resources (ReadOnly / CanNotDelete).

Monitoring & Optimization

- **Azure Monitor:** Metrics, logs, alerts for resources.
- **Log Analytics:** Central log querying (KQL).
- **Application Insights:** Application telemetry & performance monitoring.
- **Service Health:** Personalized outage/maintenance notifications.
- **Azure Advisor:** Best practice recommendations (cost, performance, security).

Identity & Security (Light Touch for Governance Domain)

- **Microsoft Entra ID (Azure AD):** Core identity platform.
- **RBAC:** Assign permissions at resource, RG, subscription, or mgmt group.
- **Authentication vs Authorization:** Auth = who you are. AuthZ = what you can do.
- **Defender for Cloud:** Security posture + threat protection.

Compliance

- Azure certified in global frameworks (ISO, SOC, HIPAA, GDPR).
- **Trust Center:** Lists certifications.
- **Compliance Manager:** Dashboard for audits and regulatory mapping.

Services Overview (by Category)

Compute

Service	Purpose / What You Need to Know
Virtual Machines (VMs)	IaaS compute. Full OS control. Pricing: pay-as-you-go, reserved, spot.
VM Scale Sets	Autoscaling set of identical VMs.
Availability Sets	Spread VMs across fault/update domains in a datacenter.
Availability Zones	Spread VMs across datacenters for resiliency.
App Service	PaaS hosting for web apps/APIs. Supports multiple runtimes.
Azure Functions	Serverless, event-driven code execution. Pay per execution.
Logic Apps	Low-code workflows across SaaS, Azure, and on-prem.
Container Instances (ACI)	Run containers without infrastructure management.
Azure Kubernetes Service (AKS)	Managed Kubernetes orchestration.

Networking

Service	Purpose / What You Need to Know
Virtual Network (VNet)	Private network in Azure. Organize into subnets.
Network Security Groups (NSG)	Firewall rules by IP, port, protocol.
VPN Gateway	Site-to-site or point-to-site secure connections.
ExpressRoute	Dedicated private link to Azure.
Load Balancer	Layer 4 TCP/UDP load distribution.
Application Gateway	Layer 7 HTTP/S load balancing + WAF.

Azure Front Door	Global app acceleration and edge routing.
Traffic Manager	DNS-based routing and failover.
Private Endpoint	Private IP access to PaaS services.
Service Endpoints	Extend VNet identity to Azure services.

Storage

Service	Purpose / What You Need to Know
Blob Storage	Object storage for unstructured data. Hot, Cool, Archive tiers.
Azure Files	SMB/NFS file shares. Sync on-prem with File Sync.
Managed Disks	VM disks (SSD, HDD, Ultra).
Queues	Simple message queuing.
Tables	NoSQL key-value store.
Data Box	Physical device for offline bulk data transfer.

Databases

Service	Purpose / What You Need to Know
Azure SQL Database	PaaS relational database. Auto patching, backup, HA.
Azure SQL Managed Instance	Near full SQL Server compatibility.
Azure Database for MySQL/Postgres	Managed open-source relational databases.
Cosmos DB	Globally distributed NoSQL, multi-API, low latency.

Identity & Security

Service	Purpose / What You Need to Know
Microsoft Entra ID (Azure AD)	Core identity. SSO, MFA, Conditional Access.
RBAC	Assign permissions at scope (mgmt group → resource).
Managed Identities	Secure app-to-service auth without secrets.
Key Vault	Secure storage for secrets, keys, certificates.
Defender for Cloud	Security posture management + workload protection.
Microsoft Sentinel	SIEM + SOAR for security monitoring/response.

Governance & Management

Service	Purpose / What You Need to Know
Resource Groups	Logical containers for resources.
Management Groups	Organize subscriptions for RBAC + Policy.
Azure Policy	Enforce compliance (locations, SKUs, tags).
Resource Locks	Protect critical resources from changes/deletion.
Tags	Metadata for organization and cost tracking.
Azure Monitor	Collect metrics, logs, alerts.
Log Analytics	Query logs using KQL.
Application Insights	Application performance monitoring.
Service Health	Personalized outage/maintenance info.
Azure Advisor	Best practice recommendations (cost, performance, security).

Cost & SLA

Service	Purpose / What You Need to Know
Pricing Calculator	Estimate cost of resources before deployment.
TCO Calculator	Compare on-prem vs Azure costs.
Budgets	Set spending limits and alerts.
SLA (Service Level Agreement)	Defines uptime guarantees. Composite SLA = multiplication of services.