

Cheat Sheet for Microsoft Certified Azure Solutions Architect Expert

Microsoft Certified Azure Solutions Architect Expert Cheat Sheet

1. Azure Fundamentals

1.1 Azure Regions and Availability Zones

- **Azure Regions:** Geographical areas with multiple data centers.
- **Availability Zones:** Physically separate data centers within a region.
 - **Example:** East US 2 has 3 Availability Zones.

1.2 Resource Groups

- **Definition:** Logical container for Azure resources.
- **Best Practices:**
 - Group resources with the same lifecycle.
 - Use meaningful names.

1.3 Azure Resource Manager (ARM)

- **Templates:** JSON files for deploying resources.
- **Benefits:**
 - Consistent deployment.
 - Easy management.
 - Declarative syntax.

2. Compute Services

2.1 Virtual Machines (VMs)

- **VM Sizes:** A, D, E, F, etc.
- **Extensions:** Custom Script, DSC, Monitoring.
- **Availability Sets:** Fault and Update domains.

2.2 Azure Kubernetes Service (AKS)

- **Key Features:**
 - Managed Kubernetes.
 - Auto-scaling.

- Integration with Azure services.

- **Commands:**

- ``az aks create``
- ``kubectl get nodes``

2.3 Azure Functions

- **Triggers:** HTTP, Timer, Blob, etc.
- **Consumption Plan:** Pay-per-execution.
- **Durable Functions:** Stateful workflows.

3. Networking

3.1 Virtual Networks (VNETs)

- **Subnets:** Logical division of a VNet.
- **Peering:** Connect VNETs within the same region or globally.
- **NAT Gateway:** For outbound internet connectivity.

3.2 Load Balancers

- **Types:**
 - **Public:** External traffic.
 - **Internal:** Internal traffic.
- **Health Probes:** Monitor backend health.

3.3 Azure Application Gateway

- **Features:**
 - Web Application Firewall (WAF).
 - URL-based routing.
 - SSL termination.

4. Storage

4.1 Azure Storage Accounts

- **Types:**
 - **General-purpose v2:** Blob, File, Table, Queue.
 - **Blob Storage:** Hot, Cool, Archive.

- **Replication:** LRS, ZRS, GRS, RA-GRS.

4.2 Azure Blob Storage

- **Access Tiers:** Hot, Cool, Archive.
- **Blob Types:** Block, Append, Page.
- **Lifecycle Management:** Policies for tiering and deletion.

4.3 Azure Files

- **Features:**
 - SMB and NFS shares.
 - Snapshots.
 - Soft delete.

5. Identity and Access Management

5.1 Azure Active Directory (Azure AD)

- **Roles:** Global Admin, User Admin, etc.
- **Multi-Factor Authentication (MFA):** Enhanced security.
- **Conditional Access:** Policies based on conditions.

5.2 Role-Based Access Control (RBAC)

- **Roles:** Owner, Contributor, Reader, etc.
- **Scope:** Subscription, Resource Group, Resource.
- **Custom Roles:** Define specific permissions.

6. Security

6.1 Azure Security Center

- **Features:**
 - Threat detection.
 - Compliance monitoring.
 - Security recommendations.
- **Pricing:** Free and Standard tiers.

6.2 Azure Key Vault

- **Secrets:** Passwords, API keys.
- **Keys:** Encryption keys.

- **Certificates:** SSL/TLS certificates.

6.3 Azure DDoS Protection

- **Tiers:** Basic (free), Standard.
- **Features:** Real-time mitigation, monitoring.

7. Monitoring and Management

7.1 Azure Monitor

- **Metrics:** Performance data.
- **Logs:** Activity, Diagnostic logs.
- **Alerts:** Based on metrics, logs, and activity.

7.2 Azure Service Health

- **Features:**
 - Service issues.
 - Planned maintenance.
 - Health advisories.

7.3 Azure Automation

- **Runbooks:** PowerShell, Python scripts.
- **Hybrid Runbook Worker:** On-premises automation.
- **Update Management:** Patching schedules.

8. Cost Management

8.1 Azure Cost Management + Billing

- **Features:**
 - Cost analysis.
 - Budgets.
 - Alerts.
- **Pricing Calculator:** Estimate costs.

8.2 Reserved Instances

- **Savings:** Up to 72% compared to pay-as-you-go.
- **Types:** VM, SQL Database, Cosmos DB.

8.3 Azure Advisor

- **Recommendations:**

- Cost optimization.
- Performance.
- Security.
- Operational excellence.

9. Hybrid and Multi-Cloud

9.1 Azure Arc

- **Features:**

- Manage on-premises and multi-cloud resources.
- Kubernetes cluster management.
- SQL Server management.

9.2 Azure Stack

- **Types:**

- **Azure Stack Hub:** Extend Azure services on-premises.
- **Azure Stack Edge:** Hardware for edge computing.

9.3 Azure Lighthouse

- **Features:**

- Cross-tenant management.
- Delegated resource management.
- Multi-cloud management.

10. Best Practices

10.1 Design for High Availability

- **Multi-region deployment.**
- **Load balancing.**
- **Auto-scaling.**

10.2 Security Best Practices

- **Least privilege access.**
- **Regular security audits.**
- **Data encryption at rest and in transit.**

This cheat sheet provides a comprehensive overview of key concepts, features, and best practices for the Microsoft Certified Azure Solutions Architect Expert certification. Use this as a quick reference guide to navigate through the complexities of Azure architecture and design.

By Ahmed Baheeg Khorshid