

Azure Database, Monitoring, Backup - Detailed Reference

Azure Database, Monitoring, Backup and DR (Topics 40-48)

Topic 40: Azure SQL Database

Fully managed SQL Server. PaaS. Microsoft handles patching, backups, HA, DR.

Deployment: Single database, Elastic pool, SQL Managed Instance. Purchasing: DTU (simple) or vCore (flexible). Tiers: General Purpose, Business Critical, Hyperscale (10TB+). Compute: Provisioned (always-on) or Serverless (auto-scale, scale to zero). HA/DR: Zone-redundant, active geo-replication, auto-failover groups, PITR (7-35 days), LTR (up to 10 years). Security: Firewall, VNet rules, Private Endpoint, Entra ID auth, Always Encrypted, TDE.

Topic 41: Azure Database for PostgreSQL

Flexible Server. Burstable/GP/Memory tiers. Zone-redundant HA. Private Endpoint.

Topic 42: Azure Database for MySQL

Same pattern as PostgreSQL Flexible Server.

Topic 43: Azure Cosmos DB

Global, multi-model NoSQL. Consistency: Strong, Bounded staleness, Session (default), Consistent prefix, Eventual. APIs: NoSQL, MongoDB, PostgreSQL, Cassandra, Gremlin, Table. Features: Multi-region writes, auto-indexing, serverless, autoscale, change feed, TTL.

Topic 44: Azure Monitor

Unified monitoring. Metrics, Logs (KQL), Traces. Components: Metrics, Log Analytics, Alerts, Dashboards, Workbooks, Application Insights. Log Analytics Workspace: Central logs. KQL. 30-day default, up to 2 years. Diagnostic Settings: Configure each resource to send logs/metrics to Log Analytics, Storage, Event Hub.

Topic 45: Azure Alerts

Types: Metric, Log search, Activity log, Smart. Components: Alert rule, Action group (email/SMS/webhook/Function/Logic App), Processing rule. Severity: Sev0 (Critical) to Sev4 (Verbose).

Topic 46: Application Insights

APM for web apps. Request rate, response time, failure rate, dependencies, exceptions, page load, user behavior. Live Metrics Stream (real-time). Application Map (visual dependency graph). One-click enable on App Service.

Topic 47: Azure Backup

What: Azure VMs, SQL on VMs, Azure Files, Blob, Azure SQL, SAP HANA, on-prem files (MARS), VMware (MABS). Recovery Services Vault: Container for backups. LRS or GRS. Soft delete on by default. Backup Policy: Frequency, retention (daily/weekly/monthly/yearly). Restore Options: Create new VM, Restore disk, File recovery. Immutability: Lock backups so even admin cannot delete before retention expires.

Topic 48: Azure Site Recovery (ASR)

DR as a service. Azure-to-Azure or on-prem-to-Azure. Workflow: Enable replication, Initial replication, Delta replication, Test failover, Failover, Commit, Reprotect, Failback. Multi-VM Consistency: Group VMs for consistent failover. Cost: ~\$25/month per protected VM + storage/egress.