

Azure Architecture Scenarios

Azure Architecture Scenarios — Simple (1-10)

Scenario 1: Single Web Server on Azure

A small retail shop wants to host their product catalog website on Azure. The site is static HTML + a small MySQL database. Expected traffic: 100 visitors/day. Budget is tight. The site must be reachable via a custom domain with HTTPS.

Keywords to google: Azure VM sizes, NSG basics, public IP, Azure DNS, Let's Encrypt

Scenario 2: File Server in the Cloud

A small accounting firm needs a central file share accessible from 5 employee laptops (Windows). They currently use a USB drive passed around the office. Total data: 200GB. They need SMB access and automatic backup.

Keywords to google: Azure Files, SMB Azure Files, Azure Backup for Files, Azure File Sync

Scenario 3: Development Environment for a Startup

A 3-person startup needs a development environment. Each developer needs a Windows VM with Visual Studio and SQL Server Express. VMs should auto-shutdown at 7 PM to save costs. No production workload.

Keywords to google: Azure VM dev/test, auto-shutdown, DevTest Labs, Azure DevOps, B-series VMs

Scenario 4: Static Website with Custom Domain

A photographer wants to host their portfolio website. It's entirely static (HTML, CSS, images). No server-side code. They want a custom domain (www.janedoe.com) with HTTPS. Budget is minimal.

Keywords to google: Azure Static Web Apps, Azure Blob static website, Azure DNS, custom domain, free SSL

Scenario 5: Backup for On-Premises File Server

A dental clinic has a Windows file server on-premises with 500GB of patient records. They need cloud backup with 30-day retention. Backup must be encrypted. They have no Azure experience.

Keywords to google: Azure Backup, MARS agent, Recovery Services vault, backup encryption, on-prem backup

Scenario 6: Email Migration from On-Prem Exchange to M365

A law firm with 50 employees runs Exchange 2016 on-premises. They want to move to Microsoft 365. All mailboxes must migrate with zero data loss. Calendar and contacts must transfer. They need hybrid coexistence during transition.

Keywords to google: Exchange Online migration, cutover vs staged vs hybrid migration, Entra Connect, MX record cutover

Scenario 7: Small Database Application

A local bakery wants to host their order management system. It's a .NET application with a SQL Server Express database. 10 concurrent users max. Budget is very tight. Needs to be accessible from the bakery and the owner's home.

Keywords to google: Azure SQL Database, Basic tier, firewall rules, Azure App Service, connection strings

Scenario 8: VPN for Remote Workers

A consulting firm has 20 employees working from home. They need secure access to the on-premises file server and internal web applications. The on-prem network has a firewall that supports IPsec VPN.

Keywords to google: Azure VPN Gateway Point-to-Site, VPN client configuration, certificate authentication, Entra ID authentication

Scenario 9: Website Monitoring and Alerts

A small e-commerce site running on a single Azure VM needs monitoring. The owner wants an email alert if the website goes down or if CPU stays above 90% for 5 minutes. No budget for premium tools.

Keywords to google: Azure Monitor, metric alerts, action groups, Application Insights, availability tests

Scenario 10: Cost Optimization Review

A startup has been using Azure for 6 months. Their bill went from \$500/month to \$2,000/month. They don't know why. They need someone to review their resources, identify waste, and recommend cost savings. They have VMs running 24/7 that are only used during business hours.

Keywords to google: Azure Cost Management, Advisor recommendations, auto-shutdown, right-sizing VMs, reserved instances

Azure Architecture Scenarios — Medium (11-30)

Scenario 11: Highly Available Web Application

A retail company's e-commerce site gets 5,000 visitors/day with spikes during sales. The current single VM crashed during a flash sale. They need HA within a single region. The checkout process cannot go down. Budget is moderate.

Keywords to google: Availability Sets, Azure Load Balancer, VMSS, health probes, Application Gateway

Scenario 12: Three-Tier Application with Network Segmentation

A financial services company is deploying a 3-tier application (IIS frontend, Java app tier, SQL Server database). Security policy requires: no direct internet access to app or database tiers, all management via Bastion, micro-segmentation between tiers.

Keywords to google: VNet subnets, NSG rules, Application Security Groups, Azure Bastion, Private Endpoints

Scenario 13: Hub-Spoke Network for Multi-Department Organization

A company has 4 departments (Finance, HR, Engineering, Marketing), each with their own subscription. They share: Azure Firewall, ExpressRoute to on-prem, and DNS servers. Each department must be isolated from others but all must reach shared services and on-prem network.

Keywords to google: Hub-spoke topology, VNet peering, Azure Firewall, gateway transit, UDR

Scenario 14: Hybrid Identity Setup

A manufacturing company with 2,000 on-prem AD users is moving to Azure. Users must use the same credentials for on-prem and cloud. They need self-service password reset. Some users only need M365 access (no on-prem resources).

Keywords to google: Entra Connect, Password Hash Sync, self-service password reset, hybrid identity, Entra Connect Health

Scenario 15: Secure Internet Egress for All VMs

A company has 150 VMs across 5 VNets. Currently every VM has a public IP and connects to the internet directly. Security team mandates: no VM should have a public IP. All internet-bound traffic must go through a centralized firewall for inspection.

Keywords to google: Azure Firewall, forced tunneling, UDR, NAT Gateway, AzureFirewallSubnet

Scenario 16: Application Migration from On-Prem VMware to Azure

A retail company has 20 VMware VMs running their ERP system on-premises. They want to lift-and-shift to Azure IaaS. The VMs run a mix of Windows and Linux. Network connectivity to on-prem AD is required during and after migration.

Keywords to google: Azure Migrate, agentless VMware migration, replication, cutover, ExpressRoute

Scenario 17: Database Migration from On-Prem SQL Server to Azure SQL

A healthcare company runs SQL Server 2016 on-premises (2TB database). They want to migrate to Azure SQL Managed Instance. The database must remain available during migration with minimal downtime. HIPAA compliance required.

Keywords to google: Azure SQL Managed Instance, DMA Data Migration Assistant, DMS, online migration, Managed Instance networking

Scenario 18: Private Endpoints for All PaaS Services

A company uses Azure Storage, Azure SQL Database, Azure Key Vault, and Azure App Service. Currently all have public endpoints. Security policy requires all PaaS services to be accessible only from within the VNets — no public internet exposure.

Keywords to google: Azure Private Endpoint, Private Link, Private DNS zones, disable public access

Scenario 19: Multi-Region Web Application with Front Door

A SaaS company has users in US, Europe, and Asia. Their application is currently hosted only in East US. European users experience 200ms+ latency. They want global routing to nearest healthy region with automatic failover.

Keywords to google: Azure Front Door, multi-region deployment, geo-replication, health probes, WAF

Scenario 20: Centralized Logging and Monitoring

A company has 40 VMs across 3 subscriptions. Each team logs into individual VMs to check event logs. They need: all Windows Event Logs and Linux syslog centralized in one place, 90-day retention for ops, 7-year retention for compliance (cheap), single search interface.

Keywords to google: Azure Monitor, Log Analytics workspace, diagnostic settings, KQL, data collection rules, archive tier

Scenario 21: RBAC Implementation for Large Organization

A company with 3 Azure subscriptions needs: 2 admins with full access, 10 developers with VM access in dev and read-only in staging, 5 QA engineers with restart access in staging, nobody except admins can access prod. Use built-in roles where possible.

Keywords to google: Azure RBAC, built-in roles, custom roles, role assignments, scope hierarchy

Scenario 22: Conditional Access and Zero Trust

A company wants to enforce: MFA for all admin portal access, managed devices only for M365, MFA + manager approval for sign-ins from new countries, block legacy authentication, contractors can only access specific apps from specific IPs.

Keywords to google: Conditional Access, named locations, device compliance, legacy auth block, Entra ID P1

Scenario 23: Azure Policy for Governance

A company needs to enforce across all subscriptions: resources only in East US/Central US/West US, all storage accounts must enforce HTTPS, all resources must have CostCenter and Environment tags, no public Load Balancers, all SQL servers must have auditing enabled.

Keywords to google: Azure Policy, policy definitions, policy initiative, DeployIfNotExists, remediation tasks

Scenario 24: VM Backup Strategy with Compliance

A healthcare company has 20 production VMs. Requirements: RPO 4 hours for app VMs, 1 hour for database VMs, retention: 30 days daily + 12 months monthly + 7 years yearly, backups must be encrypted, database VMs must have application-consistent backups.

Keywords to google: Azure Backup, Recovery Services vault, backup policy, application-consistent backup, backup encryption, long-term retention

Scenario 25: IIS to App Service Migration

A company runs 3 .NET web applications on IIS VMs (Windows Server 2019). Each app has its own VM. The team spends hours weekly patching and managing VMs. Move to PaaS with zero code changes. Need: custom domain with HTTPS, auto-scale, deployment slots, VNet integration for backend database.

Keywords to google: Azure App Service, App Service plan, deployment slots, VNet integration, managed certificate, custom domain

Scenario 26: SQL Server VM to Azure SQL Managed Instance

A company runs SQL Server 2019 on an Azure VM. Problems: 8 hours/month on patching/backups/maintenance, CPU hits 100% during month-end reporting, they want read replicas without managing replication. Migrate to Azure SQL MI.

Keywords to google: Azure SQL Managed Instance, vCore purchasing model, General Purpose tier, read replicas, DMA, DMS

Scenario 27: ETL VMs to Data Factory and Functions

A company runs nightly ETL jobs on 2 VMs: SSIS packages extracting from 3 on-prem SQL databases, and Python scripts processing CSV files from FTP. Both VMs run 3 hours nightly, idle 21 hours. Replace with serverless/PaaS.

Keywords to google: Azure Data Factory, SSIS Integration Runtime, Azure Functions, blob trigger, self-hosted integration runtime

Scenario 28: Containerize Java App on Azure

A company has a Java Spring Boot application on 3 Tomcat VMs. They want to containerize and run on Azure without managing Kubernetes. Need: blue/green deployments, auto-scale, internal only (no public endpoint), logs to Log Analytics.

Keywords to google: Azure Container Apps, container registry, ingress internal, KEDA autoscaling, revision management

Scenario 29: Cross-Region DR with Azure Site Recovery

A company's primary region is East US. They need DR in Central US: RTO 2 hours / RPO 1 hour for 8 critical VMs, RTO 24 hours / RPO 4 hours for 12 non-critical VMs, must be able to test DR without affecting production, failback must be supported.

Keywords to google: Azure Site Recovery, recovery plan, test failover, multi-VM consistency, reprotect

Scenario 30: Sentinel SIEM Implementation

A company with 300 Azure resources needs centralized SIEM: collect security logs from Entra ID, Defender for Cloud, Azure Firewall, and VMs, detect brute force attacks and impossible travel, auto-block source IPs and create incident tickets, build CISO dashboards.

Keywords to google: Microsoft Sentinel, data connectors, analytics rules, KQL, playbooks, workbooks, SOAR

Azure Architecture Scenarios — Complex (31-50)

Scenario 31: Healthcare HIS Platform — Greenfield

A mid-size healthcare provider (12 hospitals, 18,000 employees) needs to deploy a Hospital Information System on Azure IaaS. The app is n-tier monolithic (IIS + Java + Oracle RAC + PACS + Mirth Connect). HIPAA/HITRUST compliance required. 99.95% SLA. Budget: \$85K/month for Phase 1 (2 hospitals). Hybrid identity with on-prem AD. Hub-spoke with zero trust. DR in secondary region.

Keywords to google: Azure healthcare, HIPAA Azure, Oracle RAC on Azure, PACS Azure, hub-spoke healthcare, zero trust Azure, Azure for health

Scenario 32: Enterprise Landing Zone for 50 Subscriptions

A large enterprise needs an Azure landing zone for 50 subscriptions. Requirements: centralized networking team manages hub/firewalls/ExpressRoute, app teams self-serve spoke subscriptions within guardrails, baseline policies (allowed regions, required tags, encryption), shared services (Key Vault, Log Analytics, Sentinel) in hub, connectivity to 3 on-prem data centers via ExpressRoute.

Keywords to google: Azure landing zone, enterprise-scale architecture, platform subscriptions, connectivity subscription, management subscription, Azure landing zone accelerator

Scenario 33: Multi-Region Active-Active Financial Platform

A financial services company needs an application deployed in East US and West Europe simultaneously: users route to nearest region via Front Door, failover in <30 seconds if one region goes down, database consistent across regions (no data loss), session state survives failover.

Keywords to google: Azure Front Door active-active, Azure SQL active geo-replication, Cosmos DB multi-region write, Azure Cache for Redis, session state management

Scenario 34: AVS Landing Zone with HCX Migration

A company has 500 VMware VMs on-premises. They want to move to Azure VMware Solution as a first step. Requirements: ExpressRoute connectivity to on-prem and native Azure, HCX for workload migration, NSX-T network segmentation, backup to Azure-native vault, access to Azure PaaS via private endpoints.

Keywords to google: Azure VMware Solution, AVS private cloud, ExpressRoute Global Reach, HCX migration, NSX-T segments, AVS backup

Scenario 35: Lift-and-Shift Migration from AWS to Azure

A company has 80 EC2 instances and 10 RDS databases on AWS. They want to migrate everything to Azure IaaS. Applications include: web servers, app servers, Oracle databases, MySQL databases. Need: assessment first, then phased migration with minimal downtime, hybrid connectivity during migration.

Keywords to google: Azure Migrate AWS, agent-based migration, AWS to Azure assessment, DMS for MySQL/Oracle, multi-cloud migration

Scenario 36: Zero Trust Network for SaaS Company

A SaaS company hosts a multi-tenant application on Azure. They need: zero trust network architecture, micro-segmentation between all tiers, WAF on all public endpoints, no management ports open (Bastion only), all PaaS services via Private Endpoints, centralized firewall inspection, DDoS protection.

Keywords to google: Zero trust Azure, Azure Firewall Premium, TLS inspection, IDPS, Private Endpoints, Azure Bastion, WAF, DDoS Standard

Scenario 37: SAP HANA on Azure

A manufacturing company is deploying SAP S/4HANA on Azure. Requirements: certified HANA VM sizes, high availability within region, DR in paired region, ANF or premium storage for data, backup with 30-day and 7-year retention, ExpressRoute connectivity to on-prem SAP, SAP-specific monitoring.

Keywords to google: SAP on Azure, SAP HANA certified VMs, Azure NetApp Files SAP, SAP HA Azure, Azure Site Recovery SAP, SAP monitoring Azure

Scenario 38: Multi-Cloud Architecture (Azure + AWS)

A company's primary cloud is Azure, but they acquired a company running on AWS. They need: unified identity (Entra ID for both), network connectivity between Azure and AWS, centralized monitoring across both clouds, governance with Azure Arc for AWS resources.

Keywords to google: Azure Arc multi-cloud, Entra ID AWS SSO, Azure-AWS VPN, Azure Monitor multi-cloud, cross-cloud networking

Scenario 39: Azure Virtual Desktop for 5,000 Users

A global company wants to deploy AVD for 5,000 remote workers. Requirements: pooled multi-session for 4,000 task workers, personal desktops for 1,000 power users, FSLogix profiles on Azure Files Premium, image management with Shared Image Gallery, conditional access policies, cost optimization with auto-scaling host pools.

Keywords to google: Azure Virtual Desktop, AVD host pools, FSLogix, Azure Files Premium, Shared Image Gallery, AVD scaling plans, Conditional Access AVD

Scenario 40: Microservices on AKS with Full Security

A company is migrating their monolithic application to microservices on AKS. Requirements: private cluster (no public API server), Entra ID workload identity, network policies for pod-to-pod traffic, Key Vault CSI driver for secrets, ingress controller with WAF, container image scanning, monitoring with Container Insights.

Keywords to google: AKS private cluster, workload identity, network policies Calico, Key Vault CSI, AGIC WAF, Defender for Containers, Container Insights

Scenario 41: Data Platform with Synapse and Data Factory

A retail company needs a modern data platform: ingest data from 15 sources (on-prem SQL, SaaS APIs, blob storage), ETL/ELT with Data Factory, data warehouse in Synapse dedicated SQL pool, real-time analytics with Synapse Spark, Power BI dashboards, data governance with Purview.

Keywords to google: Azure Synapse Analytics, Data Factory ETL, Synapse SQL pool, Synapse Spark, Microsoft Purview, Power BI Azure

Scenario 42: IoT Platform for Manufacturing

A factory has 5,000 sensors generating telemetry every 5 seconds. Requirements: ingest millions of events/day via IoT Hub, real-time anomaly detection with Stream Analytics, store raw data in Data Lake, process with Databricks, dashboards in Power BI, device management and provisioning, edge computing for low-latency decisions.

Keywords to google: Azure IoT Hub, Device Provisioning Service, Stream Analytics, Azure Databricks, Azure Data Lake, IoT Edge, Digital Twins

Scenario 43: RAG Application with Azure OpenAI

A legal firm wants an AI assistant that answers questions based on their internal documents (50,000 PDFs). Requirements: document ingestion and indexing, vector search for semantic retrieval, Azure OpenAI for generation, access control per document, no data used for model training, Private Endpoints for all services.

Keywords to google: Azure OpenAI, RAG architecture, Azure AI Search, vector search, document cracking, content filtering, Private Endpoints OpenAI

Scenario 44: Compliance-Driven Landing Zone (PCI DSS)

A payment processing company needs an Azure environment compliant with PCI DSS. Requirements: isolated network with no internet egress without inspection, encryption everywhere (CMK), dedicated HSM for key management, continuous compliance monitoring, audit logging with 7-year retention, restricted admin access via PIM.

Keywords to google: PCI DSS Azure, Azure Key Vault HSM, Azure Firewall Premium TLS inspection, Microsoft Purview compliance, PIM, Customer Lockbox

Scenario 45: Global E-Commerce Platform

An e-commerce company serves 1M daily visitors across 5 regions. Requirements: Front Door for global routing with WAF, App Service for web tier, Azure SQL with geo-replication for product catalog, Cosmos DB for shopping cart (multi-region write), Redis Cache for session state, CDN for static assets, auto-scale based on traffic.

Keywords to google: Azure Front Door WAF, App Service auto-scale, Azure SQL geo-replication, Cosmos DB multi-region, Azure Cache for Redis, Azure CDN

Scenario 46: Lift-and-Shift from On-Prem Hyper-V to Azure

A government agency has 200 Hyper-V VMs running on-premises. They must migrate to Azure within 12 months. Requirements: assessment and right-sizing, phased migration by application tier, hybrid connectivity during migration (S2S VPN initially, ExpressRoute later), compliance with government security standards, minimal downtime per workload.

Keywords to google: Azure Migrate Hyper-V, agentless Hyper-V migration, VPN Gateway S2S, ExpressRoute, Azure Government, migration wave planning

Scenario 47: Enterprise Security Operations Center

A financial institution needs a comprehensive security operations center on Azure. Requirements: Sentinel SIEM with all data sources, automated incident response playbooks, threat intelligence integration, vulnerability management with Defender for Cloud, PIM for all admin access, conditional access with device compliance, continuous compliance monitoring for ISO 27001 and SOC 2.

Keywords to google: Microsoft Sentinel enterprise, SOAR playbooks, threat intelligence, Defender for Cloud, PIM, Conditional Access, compliance dashboards

Scenario 48: Multi-Tenant SaaS Architecture

A SaaS company needs to build a multi-tenant application on Azure. Requirements: tenant isolation (data, compute, network), shared platform services, per-tenant billing, auto-scale per tenant, custom domains per tenant, centralized management with tenant-specific configurations, GDPR compliance with data residency.

Keywords to google: Azure multi-tenant SaaS, tenant isolation, Azure AD multi-tenant, per-tenant billing, SaaS architecture patterns, GDPR Azure

Scenario 49: Azure Stack HCI for Edge Manufacturing

A manufacturing company has 5 factories with unreliable internet. They need: local compute at each factory for real-time quality control (ML inference), Azure Arc management from central Azure, data sync to Azure when connected, AKS on HCI for containerized workloads, consistent security policies across all sites.

Keywords to google: Azure Stack HCI, Azure Arc, AKS on HCI, edge computing, disconnected operations, Azure IoT Operations

Scenario 50: Complete Cloud Transformation Program

A large enterprise (5,000 employees, 1,000 servers) is moving entirely to Azure over 18 months. Design the complete program: landing zone, identity, networking, governance, migration waves, modernization roadmap, operations model, security framework, cost management, and organizational change management.

Keywords to google: Azure CAF, cloud transformation program, landing zone design, migration wave planning, Azure governance, cloud operating model, organizational change management

End of 50 Azure Architecture Scenarios