

Study guide for Exam AZ-700: Designing and Implementing Microsoft Azure Networking Solutions

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

Useful links	Description
Review the skills measured as of February 2, 2023	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to February 2, 2023	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Learn allows you to schedule and renew exams and share and print certificates.
Passing score	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.

Useful links	Description
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a practice test	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of February 2, 2023

Audience profile

Candidates for this exam should have subject matter expertise in planning, implementing, and managing Azure networking solutions, including core network infrastructure, hybrid connectivity, application delivery services, private access to Azure services, and network security.

Responsibilities for Azure network engineers include optimizing performance, resiliency, scale, and security of Azure networking solutions. These professionals deploy the solutions by using the Azure portal, the command line, and templates. They proactively monitor network environments to identify issues and minimize risk.

Azure network engineers work with solution architects, cloud administrators, security engineers, application developers, and DevOps engineers to deliver Azure solutions. They also assist Azure support engineers in resolving connectivity issues reported by customers.

Candidates for this exam should have experience creating and managing compute, storage, and networking resources in Azure. They should understand networking fundamentals, such as name resolution, network protocols, and network address management.

- Design and implement core networking infrastructure (20–25%)
- Design, implement, and manage connectivity services (20–25%)
- Design and implement application delivery services (20–25%)
- Design and implement private access to Azure services (5–10%)
- Secure network connectivity to Azure resources (15–20%)

Design and implement core networking infrastructure (20–25%)

Design and implement private IP addressing for Azure resources

- Plan and implement network segmentation and address spaces
- Create a virtual network (VNet)
- Plan and configure subnetting for services, including VNet gateways, private endpoints, firewalls, application gateways, VNet-integrated platform services, and Azure Bastion
- Plan and configure subnet delegation
- Create a prefix for public IP addresses
- Choose when to use a public IP address prefix
- Plan and implement a custom public IP address prefix (bring your own IP)
- Create a new public IP address
- Associate public IP addresses to resources

Design and implement name resolution

- Design name resolution inside a VNet
- Configure DNS settings inside a VNet
- Design public DNS zones
- Design private DNS zones
- Configure a public or private DNS zone
- Link a private DNS zone to a VNet
- Plan and implement Azure Private DNS Resolver

Design and implement VNet connectivity and routing

- Design service chaining, including gateway transit
- Design virtual private network (VPN) connectivity between VNets
- Implement VNet peering
- Design and implement user-defined routes (UDRs)
- Associate a route table with a subnet
- Configure forced tunneling
- Diagnose and resolve routing issues

- Design and implement Azure Route Server
- Identify appropriate use cases for a Virtual Network NAT gateway
- Implement a NAT gateway

Monitor networks

- Configure monitoring, network diagnostics, and logs in Azure Network Watcher
- Monitor and repair network health by using Azure Network Watcher
- Activate and monitor distributed denial-of-service (DDoS) protection
- Activate and monitor Microsoft Defender for DNS

Design, implement, and manage connectivity services (20–25%)

Design, implement, and manage a site-to-site VPN connection

- Design a site-to-site VPN connection, including for high availability
- Select an appropriate VNet gateway SKU for site-to-site VPN requirements
- Implement a site-to-site VPN connection
- Identify when to use a policy-based VPN versus a route-based VPN connection
- Create and configure an IPsec/IKE policy
- Diagnose and resolve virtual network gateway connectivity issues
- Implement Azure Extended Network

Design, implement, and manage a point-to-site VPN connection

- Select an appropriate virtual network gateway SKU for point-to-site VPN requirements
- Select and configure a tunnel type
- Select an appropriate authentication method
- Configure RADIUS authentication
- Configure certificate-based authentication
- Configure authentication by using Azure Active Directory (Azure AD), part of Microsoft Entra
- Implement a VPN client configuration file
- Diagnose and resolve client-side and authentication issues
- Specify Azure requirements for Always On authentication
- Specify Azure requirements for Azure Network Adapter

Design, implement, and manage Azure ExpressRoute

- Select an ExpressRoute connectivity model
- Select an appropriate ExpressRoute SKU and tier
- Design and implement ExpressRoute to meet requirements, including cross-region connectivity, redundancy, and disaster recovery
- Design and implement ExpressRoute options, including Global Reach, FastPath, and ExpressRoute Direct
- Choose between private peering only, Microsoft peering only, or both

- Configure private peering
- Configure Microsoft peering
- Create and configure an ExpressRoute gateway
- Connect a virtual network to an ExpressRoute circuit
- Recommend a route advertisement configuration
- Configure encryption over ExpressRoute
- Implement Bidirectional Forwarding Detection
- Diagnose and resolve ExpressRoute connection issues

Design and implement an Azure Virtual WAN architecture

- Identify appropriate use cases for Azure Virtual WAN
- Select a Virtual WAN SKU
- Design a Virtual WAN architecture, including selecting types and services
- Create a hub in Virtual WAN
- Choose an appropriate scale unit for each gateway type
- Deploy a gateway into a Virtual WAN hub
- Configure virtual hub routing
- Create a network virtual appliance (NVA) in a virtual hub
- Integrate a Virtual WAN hub with a third-party NVA

Design and implement application delivery services (20–25%)

Design and implement an Azure Load Balancer

- Map requirements to features and capabilities of Azure Load Balancer
- Identify appropriate use cases for Azure Load Balancer
- Choose an Azure Load Balancer SKU and tier
- Choose between public and internal
- Create and configure an Azure Load Balancer
- Implement a load balancing rule
- Create and configure inbound NAT rules
- Create and configure explicit outbound rules, including SNAT

Design and implement Azure Application Gateway

- Map requirements to features and capabilities of Azure Application Gateway
- Identify appropriate use cases for Azure Application Gateway
- Create a back-end pool
- Configure health probes
- Configure listeners
- Configure routing rules
- Configure HTTP settings

- Configure Transport Layer Security (TLS)
- Configure rewrite sets

Design and implement Azure Front Door

- Map requirements to features and capabilities of Azure Front Door
- Identify appropriate use cases for Azure Front Door
- Choose an appropriate tier
- Configure an Azure Front Door, including routing, origins, and endpoints
- Configure SSL termination and end-to-end SSL encryption
- Configure caching
- Configure traffic acceleration
- Implement rules, URL rewrite, and URL redirect
- Secure an origin by using Azure Private Link in Azure Front Door

Design and implement Azure Traffic Manager

- Identify appropriate use cases for Azure Traffic Manager
- Configure a routing method
- Configure endpoints

Design and implement private access to Azure services (5–10%)

Design and implement Azure Private Link service and Azure private endpoints

- Plan an Azure Private Link service
- Create a Private Link service
- Integrate a Private Link service with DNS
- Plan private endpoints
- Create private endpoints
- Configure access to Azure resources by using private endpoints
- Connect on-premises clients to a private endpoint
- Integrate a private endpoint with DNS

Design and implement service endpoints

- Choose when to use a service endpoint
- Create service endpoints
- Configure service endpoint policies
- Configure access to service endpoints

Secure network connectivity to Azure resources (15–20%)

Implement and manage network security groups

- Create a network security group (NSG)
- Associate an NSG to a resource

- Create an application security group (ASG)
- Associate an ASG to a network interface card (NIC)
- Create and configure NSG rules
- Interpret NSG flow logs
- Validate NSG flow rules
- Verify IP flow
- Configure an NSG for remote server administration, including Azure Bastion

Design and implement Azure Firewall and Azure Firewall Manager

- Map requirements to features and capabilities of Azure Firewall
- Select an appropriate Azure Firewall SKU
- Design an Azure Firewall deployment
- Create and implement an Azure Firewall deployment
- Configure Azure Firewall rules
- Create and implement Azure Firewall Manager policies
- Create a secure hub by deploying Azure Firewall inside an Azure Virtual WAN hub

Design and implement a Web Application Firewall (WAF) deployment

- Map requirements to features and capabilities of WAF
- Design a WAF deployment
- Configure detection or prevention mode
- Configure rule sets for WAF on Azure Front Door
- Configure rule sets for WAF on Application Gateway
- Implement a WAF policy
- Associate a WAF policy

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure documentation Virtual Private Networking (VPN) Azure Active Directory (AD) RADIUS authentication with Azure Active Directory

Study resources	Links to learning and documentation
	Azure ExpressRoute Overview Create virtual network (VNet) DNS Zones and Records overview - Azure DNS Azure Virtual WAN Overview Azure Route Server documentation Load Balancer Azure Application Gateway documentation Azure Front Door and CDN Documentation Azure Traffic Manager Azure Virtual Network NAT Documentation Azure Firewall documentation Web Application Firewall documentation Azure Monitor documentation What is Azure Private Link? Manage Azure Private Endpoints
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community
Find a video	Exam Readiness Zone Azure Fridays Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

Skill area prior to February 2, 2023	Skill area as of February 2, 2023	Changes
Audience Profile		Major
Design, implement, and manage hybrid networking	Design, implement, and manage connectivity services	% of exam increased, reordered
Design, implement, and manage a site-to-site VPN connection	Design, implement, and manage a site-to-site VPN connection	Major
Design, implement, and manage a point-to-site VPN connection	Design, implement, and manage a point-to-site VPN connection	Major
Design, implement, and manage Azure ExpressRoute	Design, implement, and manage Azure ExpressRoute	Minor
-	Design and implement Azure Virtual WAN architecture	Added
Design and implement core networking infrastructure	Design and implement core networking infrastructure	Reordered
Design and implement private IP addressing for virtual networks (VNETs)	Design and implement private IP addressing for Azure resources	Major
Design and implement name resolution	Design and implement name resolution	Major
Design and implement cross-VNet connectivity	Design and implement VNet connectivity and routing	Major
Design and implement an Azure Virtual WAN architecture	-	Removed
-	Monitor networks	Added
Design and implement routing	Design and implement application delivery services	% of exam decreased
Design, implement, and manage VNet routing	-	Removed
Design and implement an Azure Load Balancer	Design and implement an Azure Load Balancer	Major
Design and implement Azure Application Gateway	Design and implement Azure Application Gateway	Major

Skill area prior to February 2, 2023	Skill area as of February 2, 2023	Changes
Implement Azure Front Door	Design and implement Azure Front Door	Major
Implement an Azure Traffic Manager profile	Design and implement Azure Traffic Manager	Major
Design and implement an Azure Virtual Network NAT		Removed
Secure and monitor networks	Secure network connectivity to Azure resources	Reordered
Design, implement, and manage an Azure Firewall deployment	Design and implement Azure Firewall and Azure Firewall Manager	Major; reordered
Implement and manage Network Security Groups (NSGs)	Implement and manage network security groups	Minor; reordered
Implement a Web Application Firewall (WAF) deployment	Design and implement a Web Application Firewall (WAF) deployment	Major
Monitor networks		Removed
Design and implement private access to Azure services	Design and implement private access to Azure services	% of exam decreased; reordered
Design and implement Azure Private Link service and Azure Private Endpoints	Design and implement Azure Private Link service and Azure private endpoints	Major
Design and implement service endpoints	Design and implement service endpoints	Major
Configure VNet integration for dedicated platform as a service (PaaS) service	-	Removed

Skills measured prior to February 2, 2023

- Design, implement, and manage hybrid networking (10–15%)
- Design and implement core networking infrastructure (20–25%)
- Design and implement routing (25–30%)
- Secure and monitor networks (15–20%)
- Design and implement Private access to Azure Services (10–15%)

Design, implement, and manage hybrid networking (10–15%)

Design, implement, and manage a site-to-site VPN connection

- Design a site-to-site VPN connection for high availability
- Select an appropriate virtual network (VNet) gateway SKU
- Identify when to use policy-based VPN versus route-based VPN
- Create and configure a local network gateway
- Create and configure an IPsec/IKE policy
- Create and configure a virtual network gateway
- Diagnose and resolve virtual network gateway connectivity issues

Design, implement, and manage a point-to-site VPN connection

- Select an appropriate virtual network gateway SKU
- Plan and configure RADIUS authentication
- Plan and configure certificate-based authentication
- Plan and configure OpenVPN authentication
- Plan and configure authentication by using Microsoft Azure Active Directory (Azure AD), part of Microsoft Entra
- Implement a VPN client configuration file
- Diagnose and resolve client-side and authentication issues

Design, implement, and manage Azure ExpressRoute

- Choose between provider and direct model (ExpressRoute Direct)
- Design and implement Azure cross-region connectivity between multiple ExpressRoute locations
- Select an appropriate ExpressRoute SKU and tier
- Design and implement ExpressRoute Global Reach
- Design and implement ExpressRoute FastPath
- Choose between private peering only, Microsoft peering only, or both
- Configure private peering
- Configure Microsoft peering
- Create and configure an ExpressRoute gateway
- Connect a virtual network to an ExpressRoute circuit
- Recommend a route advertisement configuration
- Configure encryption over ExpressRoute
- Implement Bidirectional Forwarding Detection
- Diagnose and resolve ExpressRoute connection issues

Design and implement core networking infrastructure (20–25%)

Design and implement private IP addressing for virtual networks (VNETs)

- Create a VNet

- Plan and configure subnetting for services, including VNet gateways, private endpoints, firewalls, application gateways, and VNet-integrated platform services
- Plan and configure subnet delegation
- Plan and configure subnetting for Azure Route Server

Design and implement name resolution

- Design public DNS zones
- Design private DNS zones
- Design name resolution inside a VNet
- Configure a public or private DNS zone
- Link a private DNS zone to a VNet

Design and implement cross-VNet connectivity

- Design service chaining, including gateway transit
- Design VPN connectivity between VNets
- Implement VNet peering

Design and implement an Azure Virtual WAN architecture

- Design an Azure Virtual WAN architecture, including selecting types and services
- Connect a VNet gateway to Azure Virtual WAN
- Create a hub in Virtual WAN
- Create a network virtual appliance (NVA) in a virtual hub
- Configure virtual hub routing
- Create a connection unit

Design and implement routing (25–30%)

Design, implement, and manage VNet routing

- Design and implement user-defined routes (UDRs)
- Associate a route table with a subnet
- Configure forced tunneling
- Diagnose and resolve routing issues
- Design and implement Azure Route Server

Design and implement an Azure Load Balancer

- Choose an Azure Load Balancer SKU (Basic versus Standard)
- Choose between public and internal
- Create and configure an Azure Load Balancer (including cross-region)
- Implement a load balancing rule
- Create and configure inbound NAT rules
- Create explicit outbound rules for a load balancer

Design and implement Azure Application Gateway

- Recommend Azure Application Gateway deployment options
- Choose between manual and autoscale
- Create a back-end pool
- Configure health probes
- Configure listeners
- Configure routing rules
- Configure HTTP settings
- Configure Transport Layer Security (TLS)
- Configure rewrite sets

Implement Azure Front Door

- Choose an Azure Front Door SKU
- Configure health probes, including customization of HTTP response codes
- Configure SSL termination and end-to-end SSL encryption
- Configure multisite listeners
- Configure back-end targets
- Configure routing rules, including redirection rules

Implement an Azure Traffic Manager profile

- Configure a routing method (mode)
- Configure endpoints
- Create HTTP settings

Design and implement an Azure Virtual Network NAT

- Choose when to use a Virtual Network NAT
- Allocate public IP or public IP prefixes for a NAT gateway
- Associate a Virtual Network NAT with a subnet

Secure and monitor networks (15–20%)

Design, implement, and manage an Azure Firewall deployment

- Design an Azure Firewall deployment
- Create and implement an Azure Firewall deployment
- Configure Azure Firewall rules
- Create and implement Azure Firewall Manager policies
- Create a secure hub by deploying Azure Firewall inside an Azure Virtual WAN hub
- Integrate an Azure Virtual WAN hub with a third-party NVA

Implement and manage network security groups (NSGs)

- Create an NSG

- Associate an NSG to a resource
- Create an application security group (ASG)
- Associate an ASG to a NIC
- Create and configure NSG rules
- Interpret NSG flow logs
- Validate NSG flow rules
- Verify IP flow

Implement a Web Application Firewall (WAF) deployment

- Configure detection or prevention mode
- Configure rule sets for Azure Front Door, including Microsoft managed and user defined
- Configure rule sets for Application Gateway, including Microsoft managed and user defined
- Implement a WAF policy
- Associate a WAF policy

Monitor networks

- Configure network health alerts and logging by using Azure Monitor
- Create and configure a Connection Monitor instance
- Configure and use Traffic Analytics
- Configure NSG flow logs
- Enable and configure diagnostic logging
- Configure Azure Network Watcher

Design and implement private access to Azure services (10–15%)

Design and implement Azure Private Link service and Azure Private Endpoints

- Create a Private Link service
- Plan private endpoints
- Create private endpoints
- Configure access to private endpoints
- Integrate Private Link with DNS
- Integrate a Private Link service with on-premises clients

Design and implement service endpoints

- Create service endpoints
- Configure service endpoint policies
- Configure service tags
- Configure access to service endpoints

Configure VNet integration for dedicated platform as a service (PaaS) service

- Configure App Service for regional VNet integration

- Configure Azure Kubernetes Service (AKS) for regional VNet integration
- Configure clients to access App Service Environment