

A comprehensive study guide that will  
provide you with great preparation tools  
for the AZ-700: Designing and  
Implementing Microsoft Azure  
Networking Solutions exam

# AZ-700 Official Course Study Guide

Jordi Koenderink

11/17/2022

---

## Introduction

Welcome to the AZ-700 Study Guide. This guide will go over each topic of the skills outline, provided by Microsoft for the AZ-700: Designing and Implementing Microsoft Azure Networking Solutions.

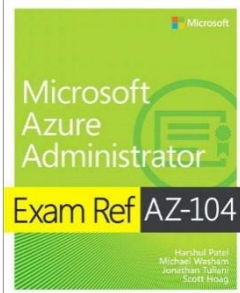
For this exam, Microsoft suggests candidates should have subject matter expertise in planning, implementing, and maintaining Azure networking solutions, including hybrid networking, connectivity, routing, security, and private access to Azure services.

Candidates for this exam should also have expert Azure administration skills, in addition to extensive experience and knowledge of networking, hybrid connections, and network security.

## About the exam



- Taking the exam will cost you \$165 US dollars.
- Microsoft certification exams are scored out of 1000 points. You need 700 points or higher to pass the AZ-700 exam and gain your Azure Administrator Badge.
- The AZ-700 exam will need to be renewed every year. Microsoft will, from time to time, retire certifications, however, and you may also find exam numbers evolve when Microsoft changes the curriculum substantially for the certification.
- The exam will have around 59 questions for which you have 120min to answer.
- As of this moment of writing, there're no labs.

## Books/e-books

	<p><b>Azure Networking Cookbook: Practical recipes for secure network infrastructure, global application delivery, and accessible connectivity in Azure</b></p> <p>Prepare for Microsoft Exam AZ-700—and help demonstrate your real-world mastery of implementing and deploying Microsoft Azure Infrastructure as a Service (IaaS). Designed for experienced cloud professionals ready to advance their status, Exam Ref focuses on the critical thinking and decision-making acumen needed for success at the Microsoft Certified Associate level.</p> <ul style="list-style-type: none"><li>• Amazon.com: <a href="#">Azure Networking Cookbook: Practical recipes for secure network infrastructure, global application delivery, and accessible connectivity in Azure, 2nd Edition: Toroman, Mustafa: 9781800563759: Amazon.com: Books</a></li><li>• Amazon NL: <a href="#">Azure Networking Cookbook: Practical recipes for secure network infrastructure, global application delivery, and accessible connectivity in Azure : Toroman, Mustafa: Amazon.nl: Boeken</a></li><li>• Amazon UK: <a href="#">Azure Networking Cookbook: Practical recipes for secure network</a></li></ul>
---	--

	<p><a href="#">infrastructure, global application delivery, and accessible connectivity in Azure, 2nd Edition: Amazon.co.uk: Toroman, Mustafa: 9781800563759: Books</a></p> <ul style="list-style-type: none"> <li>• Amazon FR: <a href="#">Amazon.fr - Azure Networking Cookbook: Practical recipes for secure network infrastructure, global application delivery, and accessible connectivity in Azure, 2nd Edition - Toroman, Mustafa - Livres</a></li> <li>• Amazon DE: <a href="#">Azure Networking Cookbook: Practical recipes for secure network infrastructure, global application delivery, and accessible connectivity in Azure, 2nd Edition : Toroman, Mustafa: Amazon.de: Boeken</a></li> </ul>
--	--



## Video training






	<p>This course goes through all of the skills needed to take and pass the AZ-700 exam: Designing and Implementing Microsoft Azure Networking Solutions. This course teaches all of the requirements for the exam, one by one. Each of the things that Microsoft tests will be covered in this course.</p> <p><a href="#">AZ-700 Designing and Implementing Azure Networking Exam 2021   Udemy</a></p>
	<p>This path is structured to mimic the organization of the exam so you can more easily follow along during your study preparation.</p> <p><a href="#">Designing and Implementing Microsoft Azure Networking Solutions (AZ-700) Path   Pluralsight</a></p>

	<p>To become an Azure Network Solution engineer, it's important to pass the Exam AZ-700 Designing and Implementing Microsoft Azure Networking Solutions. Before that, it is recommended to try out our updated AZ-700 practice test questions which cover:</p> <ul style="list-style-type: none"> <li>• 3 full-length AZ-700 practice exams with a total of 130 unique AZ-700 practice questions to get a complete idea of the Designing and Implementing Microsoft Azure Networking Solutions(AZ-700) exam.</li> <li>• Learn and master how to plan, implement, and maintain an Azure Networking Solutions environment.</li> <li>• Become an Azure Network Solution Engineer and confidently pass the AZ-700 certification exam in one go!</li> </ul> <p><a href="https://whizlabs.com">AZ-700 Practice Test for Microsoft Azure Networking Exams (whizlabs.com)</a></p>
	<p>Linkedin's Microsoft Azure Exam AZ-700 Online Course helps Professionals to prepare themselves for the actual certification exam.</p> <p><a href="https://linkedin.com">Azure for Architects: Design a Networking Strategy (linkedin.com)</a></p>

## Microsoft Learn

Those tutorials/paths have been combined by Microsoft and published for free. They contain a collection of text, videos, and exercises for the exam:

	<p><b>AZ-700: Introduction to Azure virtual networks</b> You'll learn how to design and implement fundamental Azure Networking resources such as virtual networks, public and private IPs, DNS, virtual network peering, routing, and Azure Virtual NAT.</p> <p><a href="#">Introduction to Azure Virtual Networks - Training   Microsoft Learn</a></p>
	<p><b>AZ-700: Design and implement hybrid networking</b> You will learn how to design and implement hybrid networking solutions such as Site-to-Site VPN connections, Point-to-Site VPN connections, Azure Virtual WAN, and Virtual WAN hubs.</p> <p><a href="#">Design and implement hybrid networking - Learn   Microsoft Docs</a></p>

	<p><b>AZ-700: Design and implement Azure ExpressRoute</b></p> <p>You will learn how to design and implement Azure ExpressRoute, ExpressRoute Global Reach, ExpressRoute FastPath, and when to use each service according to your environment's requirements.</p> <p><a href="#">Design and implement Azure ExpressRoute - Learn   Microsoft Docs</a></p>
	<p><b>AZ-700: Load balance non-HTTP(S) traffic in Azure</b></p> <p>You will learn the different load balancer options in Azure and how to choose and implement the right Azure solution for non-HTTP(S) traffic.</p> <p><a href="#">Load balance non-HTTP(S) traffic in Azure - Learn   Microsoft Docs</a></p>
	<p><b>AZ-700: Load balance HTTP(S) traffic in Azure</b></p> <p>You will learn how to design load balancer solutions for HTTP(S) traffic and how to implement Azure Application Gateway and Azure Front Door.</p> <p><a href="#">Load balance HTTP(S) traffic in Azure - Learn   Microsoft Docs</a></p>
	<p><b>AZ-700: Design and implement network security</b></p> <p>You will learn to design and implement network security solutions such as Azure DDoS, Network Security Groups, Azure Firewall, and Web Application Firewall.</p> <p><a href="#">Design and implement network security - Learn   Microsoft Docs</a></p>
	<p><b>AZ-700: Design and implement private access to Azure Services</b></p> <p>You will learn to design and implement private access to Azure Services with Azure Private Link, and virtual network service endpoints.</p> <p><a href="#">Design and implement private access to Azure Services - Learn   Microsoft Docs</a></p>

**AZ-700: Design and implement network monitoring**

You will learn to design and implement network monitoring solutions such as Azure Monitor and Network watcher.

[Design and implement network monitoring - Learn | Microsoft Docs](#)

**This guide is divided up into the following sections and is also part of the exam:**

- Design, Implement, and Manage Hybrid Networking (10% to 15%)
- Design and Implement Core Networking Infrastructure (20% to 25%)
- Design and Implement Routing (25% to 30%)
- Secure and Monitor Networks (15% to 20%)
- Design and Implement Private Access to Azure Services (10% to 15%)

Feel free to join our [Facebook Azure Study Group](#), or check out the Azure courses on [Udemy](#). Errors and suggestions can also be reported in the Azure Group on Facebook.

Thank you,

Get Cloud Skills team  
Jordi Koenderink

## Contents

Introduction.....	1
About the exam .....	1
Books/e-books.....	1
Video training .....	2
Microsoft Learn .....	3
Design, Implement, and Manage Hybrid Networking (10–15%) .....	8
Design, implement, and manage a site-to-site VPN connection.....	8
Design, implement, and manage a point-to-site VPN connection.....	8
Design, implement, and manage Azure ExpressRoute.....	9
Design and Implement Core Networking Infrastructure (20–25%) .....	10
Design and implement private IP addressing for VNETs.....	10
Design and implement name resolution .....	11
Design and implement cross-VNET connectivity .....	11
Design and implement an Azure Virtual WAN architecture.....	11
Design and Implement Routing (25–30%).....	12
Design, implement, and manage VNET routing.....	12
Design and implement an Azure Load Balancer.....	13
Design and implement Azure Application Gateway.....	13
Implement Azure Front Door .....	14
Implement an Azure Traffic Manager profile.....	14
Design and implement an Azure Virtual Network NAT .....	15
Secure and Monitor Networks (15–20%) .....	15
Design, implement, and manage an Azure Firewall deployment .....	15
Implement and manage network security groups (NSGs) .....	15
Implement a Web Application Firewall (WAF) deployment .....	16
Monitor networks.....	17
Design and Implement Private Access to Azure Services (10–15%) .....	17
Design and implement Azure Private Link service and Azure Private Endpoint .....	17
Design and implement service endpoints .....	18
Configure VNET integration for dedicated platform as a service (PaaS) services .....	18



## 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

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-connect-multiple-policybased-rm-ps#about>

Select an appropriate virtual network (vnet) gateway SKU

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-about-vpngateways#gwsku>

Identify when to use policy-based VPN versus route-based VPN

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-connect-multiple-policybased-rm-ps#about>

Create and configure a local network gateway

<https://docs.microsoft.com/en-us/azure/vpn-gateway/tutorial-site-to-site-portal#LocalNetworkGateway>

Create and configure an ipsec/IKE policy

<https://docs.microsoft.com/en-us/azure/vpn-gateway/ipsec-ike-policy-howto>

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-ipsecikepolicy-rm-powershell>

Create and configure a virtual network gateway

<https://docs.microsoft.com/en-us/azure/vpn-gateway/tutorial-create-gateway-portal>

Diagnose and resolve VPN gateway connectivity issues

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-troubleshoot-site-to-site-cannot-connect>

<https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-diagnose-on-premises-connectivity>

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

Select an appropriate virtual network gateway SKU

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-about-vpngateways#gwsku>

Plan and configure RADIUS authentication

<https://docs.microsoft.com/en-us/azure/vpn-gateway/point-to-site-how-to-radius-ps>

Plan and configure certificate-based authentication

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-howto-point-to-site-resource-manager-portal>

Plan and configure OpenVPN authentication

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-howto-openvpn>

Plan and configure authentication by using Microsoft Azure Active Directory (Azure AD), part of Microsoft Entra

<https://docs.microsoft.com/en-us/azure/vpn-gateway/openvpn-azure-ad-tenant>

Implement a VPN client configuration file

<https://docs.microsoft.com/en-us/azure/vpn-gateway/point-to-site-vpn-client-configuration-radius>

<https://docs.microsoft.com/en-us/azure/vpn-gateway/point-to-site-vpn-client-configuration-azure-cert>

Diagnose and resolve client-side and authentication issues

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-troubleshoot-vpn-point-to-site-connection-problems>

<https://docs.microsoft.com/en-us/azure/vpn-gateway/troubleshoot-ad-vpn-client>

## Design, implement, and manage Azure ExpressRoute

Choose between provider and direct model (ExpressRoute Direct)

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-erdirect-about#expressroute-using-a-service-provider-and-expressroute-direct>

Design and implement Azure cross-region connectivity between multiple ExpressRoute

Locations

<https://docs.microsoft.com/en-us/azure/expressroute/cross-network-connectivity>

Select an appropriate ExpressRoute SKU and tier

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-about-virtual-network-gateways#gwsku>

Design and implement ExpressRoute Global Reach

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-global-reach>

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-set-global-reach>

Design and implement ExpressRoute FastPath

<https://docs.microsoft.com/en-us/azure/expressroute/about-fastpath>

<https://docs.microsoft.com/en-us/azure/expressroute/howto-linkvnet-cli#configure-expressroute-fastpath>

Choose between private peering only, Microsoft peering only, or both

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-circuit-peerings#routingdomains>

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-circuit-peerings#peeringcompare>

Configure private peering

<https://docs.microsoft.com/en-us/azure/vpn-gateway/site-to-site-vpn-private-peering?toc=/azure/expressroute/toc.json>

Configure Microsoft peering

<https://docs.microsoft.com/en-us/azure/expressroute/site-to-site-vpn-over-microsoft-peering>

Create and configure an ExpressRoute gateway

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-about-virtual-network-gateways>

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-add-gateway-portal-resource-manager>

Connect a virtual network to an ExpressRoute circuit

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-linkvnet-portal-resource-manager>

Recommend a route advertisement configuration

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-routing#advertising-default-routes>

Configure encryption over ExpressRoute

<https://docs.microsoft.com/en-us/azure/virtual-wan/vpn-over-expressroute>

Implement Bidirectional Forwarding Detection

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-bfd>

Diagnose and resolve ExpressRoute connection issues

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-troubleshooting-network-performance>

## Design and Implement Core Networking Infrastructure (20–25%)

Design and implement private IP addressing for VNets

Create a VNet

<https://docs.microsoft.com/en-us/azure/virtual-network/quick-create-portal>

Plan and configure subnetting for services, including VNet gateways, private endpoints,

Firewalls, application gateways, and VNet-integrated platform services

<https://techcommunity.microsoft.com/t5/itops-talk-blog/configuring-azure-virtual-network-subnets-with-cidr-notation/ba-p/2047809>

<https://docs.microsoft.com/en-us/azure/application-gateway/configuration-infrastructure>

Plan and configure subnet delegation

<https://docs.microsoft.com/en-us/azure/virtual-network/subnet-delegation-overview>

<https://docs.microsoft.com/en-us/azure/virtual-network/manage-subnet-delegation>

Plan and configure subnetting for Azure Route Server

[Quickstart: Create and configure Route Server using the Azure portal | Microsoft Learn](#)

## Design and implement name resolution

Design public DNS zones

<https://docs.microsoft.com/en-us/azure/architecture/hybrid/hybrid-dns-infra>

Design private DNS zones

<https://docs.microsoft.com/en-us/azure/dns/private-dns-privatednszone>

Design name resolution inside a VNet

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-name-resolution-for-vms-and-role-instances>

Configure a public or private DNS zone

<https://docs.microsoft.com/en-us/azure/dns/dns-getstarted-portal>

<https://docs.microsoft.com/en-us/azure/dns/private-dns-getstarted-portal>

Link a private DNS zone to a VNet

<https://docs.microsoft.com/en-us/azure/dns/private-dns-getstarted-portal#link-the-virtual-network>

## Design and implement cross-VNet connectivity

Design service chaining, including gateway transit

<https://ravikirans.com/coursera/vnet-service-chaining>

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-peering-overview#service-chaining>

Design VPN connectivity between VNets

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-howto-vnet-vnet-resource-manager-portal>

Implement VNet peering

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-manage-peering>

## Design and implement an Azure Virtual WAN architecture

Design an Azure Virtual WAN architecture, including selecting types and services

<https://docs.microsoft.com/en-us/azure/virtual-wan/virtual-wan-about>

<https://docs.microsoft.com/en-us/azure/virtual-wan/migrate-from-hub-spoke-topology#architecture>

Connect a VNet gateway to Azure Virtual WAN

<https://docs.microsoft.com/en-us/azure/virtual-wan/connect-virtual-network-gateway-vwan>

Create a hub in Virtual WAN

<https://docs.microsoft.com/en-us/azure/virtual-wan/virtual-wan-site-to-site-portal#hub>

Create a network virtual appliance (NVA) in a virtual hub

<https://docs.microsoft.com/en-us/azure/virtual-wan/about-nva-hub>

<https://docs.microsoft.com/en-us/azure/virtual-wan/how-to-nva-hub>

Configure virtual hub routing

<https://docs.microsoft.com/en-us/azure/virtual-wan/about-virtual-hub-routing>

<https://docs.microsoft.com/en-us/azure/virtual-wan/how-to-virtual-hub-routing>

Create a connection unit

<https://docs.microsoft.com/en-us/azure/virtual-wan/pricing-concepts#connection-unit>

## Design and Implement Routing (25–30%)

**Design, implement, and manage VNet routing**

Design and implement user-defined routes (UDRs)

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-udr-overview#user-defined>

<https://docs.microsoft.com/en-us/azure/virtual-network/tutorial-create-route-table-portal>

Associate a route table with a subnet

<https://docs.microsoft.com/en-us/azure/virtual-network/manage-route-table#associate-a-route-table-to-a-subnet>

Configure forced tunneling

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-forced-tunneling-rm>

Diagnose and resolve routing issues

<https://docs.microsoft.com/en-us/azure/network-watcher/diagnose-vm-network-routing-problem-powershell>

<https://docs.microsoft.com/en-us/azure/virtual-network/diagnose-network-routing-problem>

Design and implement Azure Route Server

[What is Azure Route Server? | Microsoft Learn](#)

[Quickstart: Create and configure Route Server using the Azure portal | Microsoft Learn](#)

## Design and implement an Azure Load Balancer

Choose an Azure Load Balancer SKU (Basic versus Standard)

<https://docs.microsoft.com/en-us/azure/load-balancer/skus>

Choose between public and internal

<https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-overview>

Create and configure an Azure Load Balancer (including cross-region)

<https://docs.microsoft.com/en-us/azure/load-balancer/quickstart-load-balancer-standard-public-portal?tabs=option-1-create-load-balancer-standard>

<https://docs.microsoft.com/en-us/azure/load-balancer/tutorial-cross-region-portal>

Implement a load balancing rule

<https://docs.microsoft.com/en-us/azure/virtual-machines/windows/tutorial-load-balancer#create-a-load-balancer-rule>

Create and configure inbound NAT rules

<https://docs.microsoft.com/en-us/azure/load-balancer/tutorial-load-balancer-port-forwarding-portal#create-an-inbound-nat-port-forwarding-rule>

Create explicit outbound rules for a load balancer

<https://docs.microsoft.com/en-us/azure/load-balancer/outbound-rules>

<https://docs.microsoft.com/en-us/azure/load-balancer/quickstart-load-balancer-standard-public-portal?tabs=option-1-create-load-balancer-standard#create-outbound-rule-configuration>

## Design and implement Azure Application Gateway

Recommend Azure Application Gateway deployment options

<https://docs.microsoft.com/en-us/azure/application-gateway/quick-create-portal>

Choose between manual and autoscale

<https://docs.microsoft.com/en-us/azure/application-gateway/application-gateway-autoscaling-zone-redundant#scaling-application-gateway-and-waf-v2>

Create a back-end pool

<https://docs.microsoft.com/en-us/azure/application-gateway/quick-create-portal#backends-tab>

Configure health probes

<https://docs.microsoft.com/en-us/azure/application-gateway/application-gateway-create-probe-portal#create-probe-for-application-gateway-v2-sku>

Configure listeners

<https://docs.microsoft.com/en-us/azure/application-gateway/configuration-listeners>

Configure routing rules

<https://docs.microsoft.com/en-us/azure/application-gateway/configuration-request-routing-rules>

Configure HTTP settings

<https://docs.microsoft.com/en-us/azure/application-gateway/configuration-http-settings>

Configure Transport Layer Security (TLS)

<https://docs.microsoft.com/en-us/azure/application-gateway/application-gateway-end-to-end-ssl-powershell>

Configure rewrite sets

<https://docs.microsoft.com/en-us/azure/application-gateway/rewrite-url-portal>

## Implement Azure Front Door

Choose an Azure Front Door SKU

<https://docs.microsoft.com/en-us/azure/frontdoor/standard-premium/tier-comparison>

Configure health probes, including customization of HTTP response codes

<https://docs.microsoft.com/en-us/azure/frontdoor/front-door-health-probes>

Configure SSL termination and end-to-end SSL encryption

<https://docs.microsoft.com/en-us/azure/frontdoor/standard-premium/how-to-configure-https-custom-domain>

Configure multisite listeners

<https://docs.microsoft.com/en-us/azure/application-gateway/multiple-site-overview>

Configure back-end targets

<https://docs.microsoft.com/en-us/azure/frontdoor/front-door-backend-pool>

Configure routing rules, including redirection rules

<https://docs.microsoft.com/en-us/azure/frontdoor/front-door-route-matching>

<https://docs.microsoft.com/en-us/azure/frontdoor/front-door-how-to-redirect-https>

## Implement an Azure Traffic Manager profile

Configure a routing method (mode)

<https://docs.microsoft.com/en-us/azure/traffic-manager/traffic-manager-routing-methods>

<https://docs.microsoft.com/en-us/azure/traffic-manager/traffic-manager-configure-priority-routing-method>

Configure endpoints

<https://docs.microsoft.com/en-us/azure/traffic-manager/quickstart-create-traffic-manager-profile#add-traffic-manager-endpoints>

Create HTTP settings

<https://docs.microsoft.com/en-us/azure/traffic-manager/traffic-manager-monitoring#configure-endpoint-monitoring>

## Design and implement an Azure Virtual Network NAT

Choose when to use a Virtual Network NAT

<https://docs.microsoft.com/en-us/azure/virtual-network/nat-overview>

Allocate public IP or public IP prefixes for a NAT gateway

<https://docs.microsoft.com/en-us/azure/virtual-network/nat-gateway-resource>

Associate a Virtual Network NAT with a subnet

<https://docs.microsoft.com/en-us/azure/virtual-network/nat-overview>

## Secure and Monitor Networks (15–20%)

### Design, implement, and manage an Azure Firewall deployment

Design an Azure Firewall deployment

<https://docs.microsoft.com/en-us/azure/firewall/tutorial-firewall-deploy-portal>

Create and implement an Azure Firewall deployment

<https://docs.microsoft.com/en-us/azure/firewall/tutorial-firewall-deploy-portal-policy>

Configure Azure Firewall rules

<https://docs.microsoft.com/en-us/azure/firewall/rule-processing>

Create and implement Azure Firewall Manager policies

<https://docs.microsoft.com/en-us/azure/firewall-manager/policy-overview>

Create a secure hub by deploying Azure Firewall inside an Azure Virtual WAN hub

<https://docs.microsoft.com/en-us/azure/virtual-wan/howto-firewall>

<https://docs.microsoft.com/en-us/azure/firewall-manager/secure-cloud-network>

Integrate an Azure Virtual WAN hub with a third-party NVA

<https://docs.microsoft.com/en-us/azure/virtual-wan/about-nva-hub>

<https://docs.microsoft.com/en-us/azure/virtual-wan/scenario-route-through-nva>

### Implement and manage network security groups (NSGs)

Create an NSG

<https://docs.microsoft.com/en-us/azure/virtual-network/manage-network-security-group#create-a-network-security-group>

Associate an NSG to a resource

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-network-interface#associate-or-dissociate-a-network-security-group>

<https://docs.microsoft.com/en-us/azure/virtual-network/tutorial-filter-network-traffic#associate-network-security-group-to-subnet>

Create an application security group (ASG)



<https://docs.microsoft.com/en-us/azure/virtual-network/tutorial-filter-network-traffic#create-application-security-groups>

Associate an ASG to a NIC

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-network-interface#associate-or-dissociate-a-network-security-group>

Create and configure NSG rules

<https://docs.microsoft.com/en-us/azure/virtual-network/manage-network-security-group#create-a-security-rule>

Interpret NSG flow logs

<https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-read-nsg-flow-logs>

Validate NSG flow rules

<https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-nsg-flow-logging-overview>

Verify IP flow

<https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-ip-flow-verify-overview>

<https://channel9.msdn.com/Blogs/Azure-Help/Troubleshoot-NSG-configuration-using-IP-Flow-Verify>

**Implement a Web Application Firewall (WAF) deployment**

Configure detection or prevention mode

<https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/ag-overview#waf-modes>

<https://docs.microsoft.com/en-us/azure/web-application-firewall/afds/waf-front-door-create-portal#change-mode>

Configure rule sets for Azure Front Door, including Microsoft managed and user defined

<https://docs.microsoft.com/en-us/azure/web-application-firewall/afds/waf-front-door-create-portal#default-rule-set-drs>

<https://docs.microsoft.com/en-us/azure/web-application-firewall/afds/waf-front-door-drs?tabs=drs20>

<https://docs.microsoft.com/en-us/azure/web-application-firewall/afds/waf-front-door-custom-rules>

Configure rule sets for Application Gateway, including Microsoft managed and user Defined

<https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/application-gateway-crs-rulegroups-rules?tabs=owasp31>

<https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/custom-waf-rules-overview>

<https://github.com/MicrosoftDocs/azure-docs/blob/master/articles/web-application-firewall/ag/create-custom-waf-rules.md>

Implement a WAF policy

<https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/create-waf-policy-ag>

Associate a WAF policy

<https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/associate-waf-policy-existing-gateway>

## Monitor networks

Configure network health alerts and logging by using Azure Monitor

<https://docs.microsoft.com/en-us/azure/azure-monitor/insights/network-insights-overview#networkhealth>

Create and configure a Connection Monitor instance

<https://docs.microsoft.com/en-us/azure/network-watcher/connection-monitor-create-using-portal>

Configure and use Traffic Analytics

<https://docs.microsoft.com/en-us/azure/network-watcher/traffic-analytics>

Configure NSG flow logs

<https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-nsg-flow-logging-azure-resource-manager>

Enable and configure diagnostic logging

<https://docs.microsoft.com/en-us/azure/azure-monitor/essentials/diagnostic-settings?tabs=CMD>

Configure Azure Network Watcher

<https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-create>

## Design and Implement Private Access to Azure Services (10–15%)

Design and implement Azure Private Link service and Azure Private Endpoint

Create a Private Link service

<https://docs.microsoft.com/en-us/azure/private-link/create-private-link-service-portal>

Plan private endpoints

<https://docs.microsoft.com/en-us/azure/private-link/private-endpoint-overview>

Create private endpoints

<https://docs.microsoft.com/en-us/azure/private-link/create-private-endpoint-portal>

Configure access to private endpoints

<https://docs.microsoft.com/en-us/azure/storage/common/storage-private-endpoints>

Integrate Private Link with DNS

<https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/ready/azure-best-practices/private-link-and-dns-integration-at-scale>

Integrate a Private Link service with on-premises clients

<https://docs.microsoft.com/en-us/azure/private-link/tutorial-private-endpoint-sql-portal>

## Design and implement service endpoints

Create service endpoints

<https://docs.microsoft.com/en-us/azure/virtual-network/tutorial-restrict-network-access-to-resources>

Configure service endpoint policies

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-service-endpoint-policies-portal>

Configure service tags

<https://docs.microsoft.com/en-us/azure/virtual-network/service-tags-overview>

Configure access to service endpoints

<https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-service-endpoints>

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

Configure App Service for regional VNet integration

<https://docs.microsoft.com/en-us/azure/app-service/web-sites-integrate-with-vnet>

Configure Azure Kubernetes Service (AKS) for regional VNet integration

<https://docs.microsoft.com/en-us/azure/aks/private-clusters>

Configure clients to access App Service Environment

<https://docs.microsoft.com/en-us/azure/app-service/environment/using-an-ase#app-access>