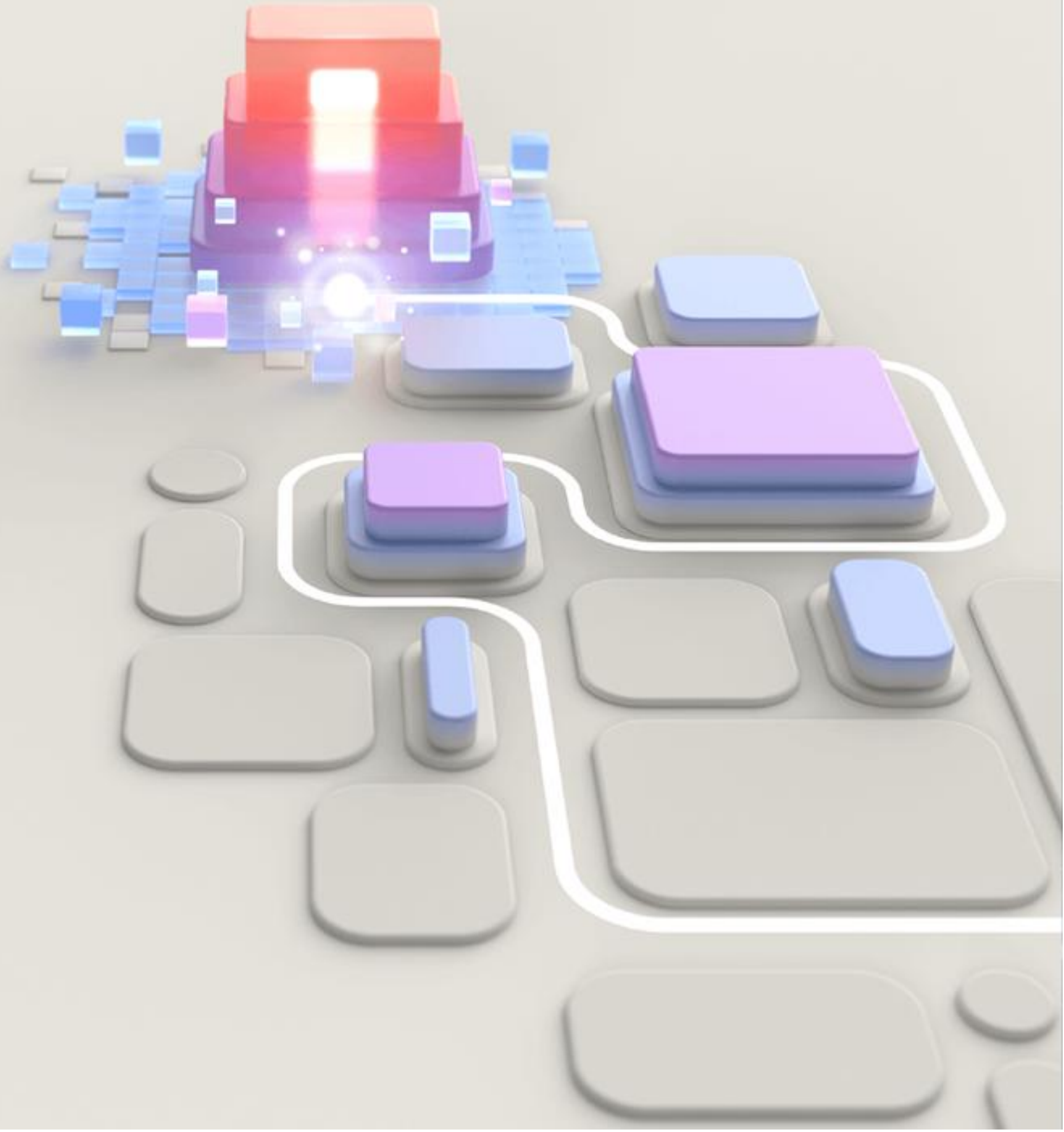
Microsoft

AZ-700

Tag 3

Design and Implement Network Security

Guten Morgen!



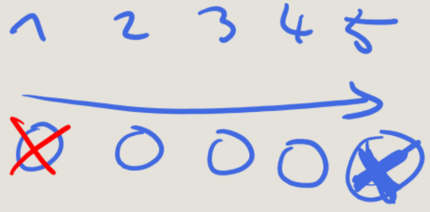
AZ-700 Agenda

MS Learn

Redeem Code

Feedback

MTM



Module 01: Introduction to Azure Virtual Networks

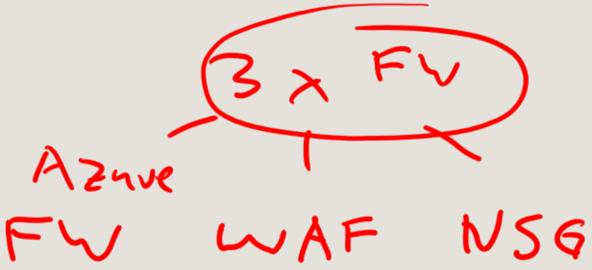
Lab Module 02: Designing and Implementing Hybrid Networking

~~Lab~~ Module 03: Designing and Implementing Azure ExpressRoute

Module 04: Load balance non-HTTP(S) traffic in Azure

Module 05: Load balance HTTP(S) traffic in Azure

Lab Module 06: Design and Implement Network Security



Lab Module 07: Design and Implement private access to Azure Services

Lab Module 08: Design and Implement Network Monitoring

Module Overview

- Get network security recommendations with Microsoft Defender for Cloud
- Deploy Azure DDoS Protection by using the Azure portal
- Exercise – Configure DDoS Protection on a virtual network
- Deploy and configure Network Security Groups
- Design and implement Azure Bastion
- Design and implement Azure Firewall
- Exercise – Deploy and configure Azure Firewall using the Azure portal
- Working with Azure Firewall Manager
- Exercise – Secure your virtual hub using Azure Firewall Manager
- Implement a Web Application Firewall WAF

web

NSG = Firewall für VMs (NIC)

(Subnet)

ASG = Custom Label web

Defender M365

- Def EP
- Def Cloud Apps
- Def O365

⋮

SC-100

SC - 200 Sentinel

Get network security recommendations with Microsoft Defender for Cloud

ASC

ARC - VM

Learning Objectives – Secure Your Virtual Networks

- Network Security Controls
- Microsoft cloud security benchmark
- Using Microsoft Defender for Cloud for regulatory compliance
- Alerts in Microsoft Defender for Cloud
- Learning Recap

Network Security Controls

NS-1: Establish network segmentation boundaries

NS-2: Secure cloud services with network controls

NS-3: Deploy firewall at the edge of enterprise network

NS-4: Deploy intrusion detection/intrusion prevention systems (IDS/IPS)

NS-5: Deploy DDOS protection

NS-6: Deploy web application firewall

NS-7: Simplify network security configuration

NS-8: Detect and disable insecure services and protocols

NS-9: Connect on-premises or cloud network privately

NS-10: Ensure Domain Name System (DNS) security

Microsoft cloud security benchmark

The Microsoft cloud security benchmark (MCSB) includes a collection of high-impact security recommendations you can use to help secure your cloud services in a single or multi-cloud environment

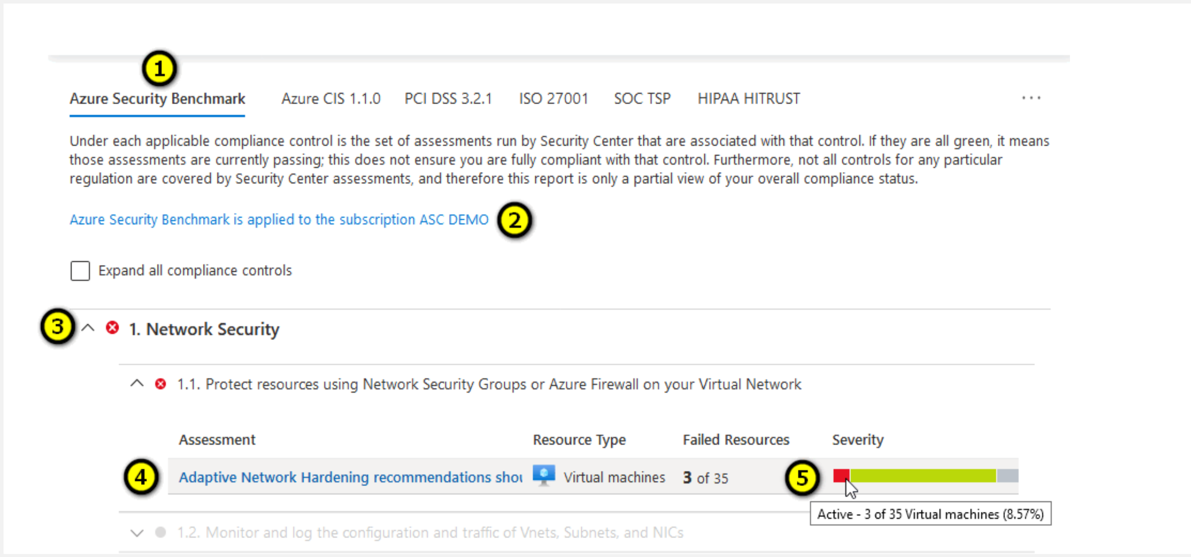
Security controls: These recommendations are generally applicable across your cloud workloads. Each recommendation identifies a list of stakeholders that are typically involved in planning, approval, or implementation of the benchmark.

Service baselines: These apply the controls to individual cloud services to provide recommendations on that service's security configuration.

Term	Description	Example
Control	A control is a high-level description of a feature or activity that needs to be addressed and is not specific to a technology or implementation.	Data Protection is one of the security controls. This control contains specific actions that must be addressed to help ensure data is protected.
Baseline	A baseline is the implementation of the control on the individual Azure services. Each organization dictates a benchmark recommendation and corresponding configurations are needed in Azure. **Note:** Today we have service baselines available only for Azure.	The Contoso company looks to enable Azure SQL security features by following the configuration recommended in the Azure SQL security baseline.

Using Microsoft Defender for Cloud for regulatory compliance

Microsoft Defender for Cloud helps streamline the process for meeting regulatory compliance requirements, using the regulatory compliance dashboard.



Under each applicable compliance control is the set of assessments run by Security Center that are associated with that control. If they are all green, it means those assessments are currently passing; this does not ensure you are fully compliant with that control. Furthermore, not all controls for any particular regulation are covered by Security Center assessments, and therefore this report is only a partial view of your overall compliance status.

Azure Security Benchmark is applied to the subscription ASC DEMO

☐ Expand all compliance controls

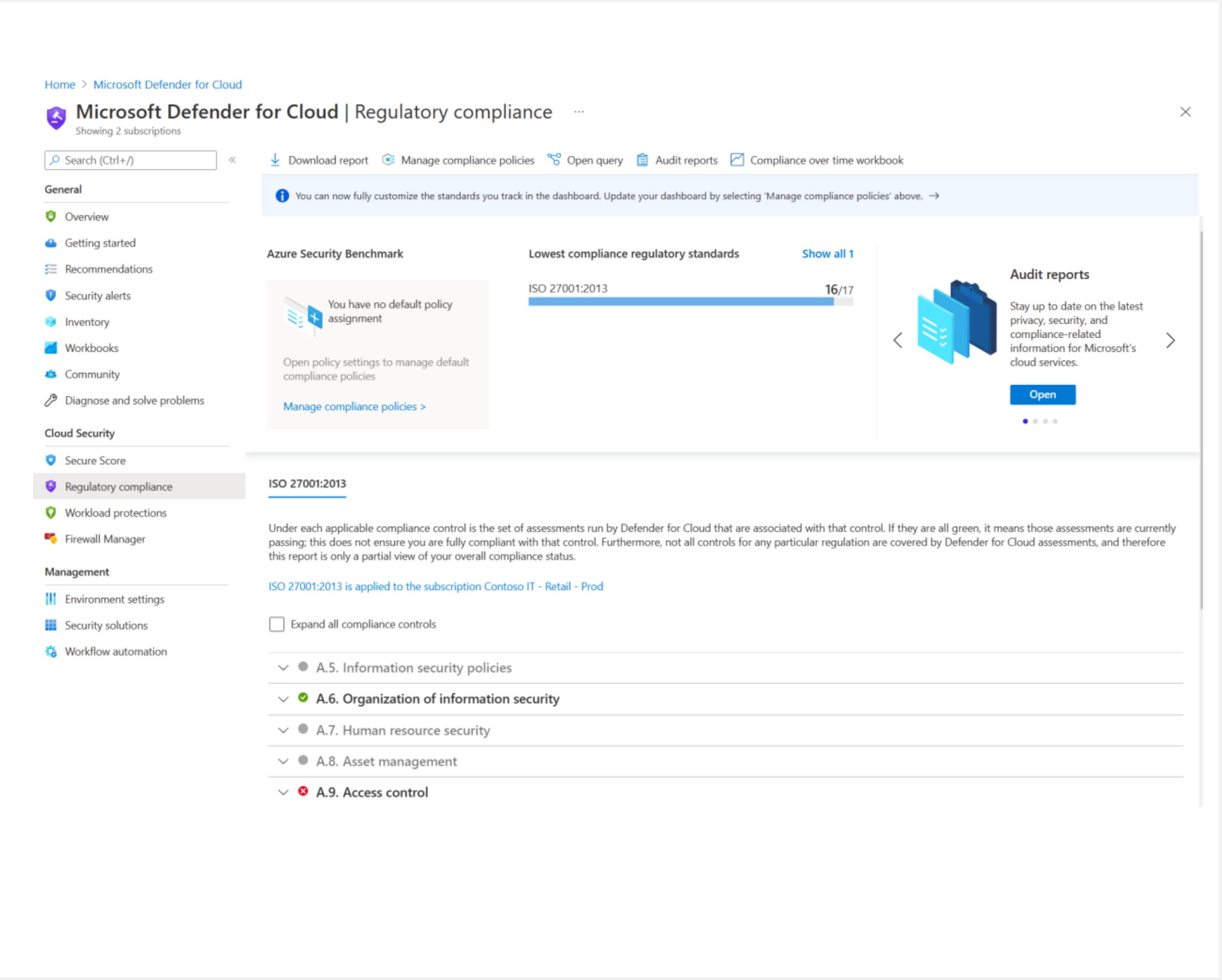
1. Network Security

1.1. Protect resources using Network Security Groups or Azure Firewall on your Virtual Network

Assessment	Resource Type	Failed Resources	Severity
Adaptive Network Hardening recommendations shou	Virtual machines	3 of 35	

Active - 3 of 35 Virtual machines (8.57%)

1.2. Monitor and log the configuration and traffic of Vnets, Subnets, and NICs



You can now fully customize the standards you track in the dashboard. Update your dashboard by selecting 'Manage compliance policies' above. →

Azure Security Benchmark

You have no default policy assignment

Open policy settings to manage default compliance policies

Manage compliance policies >

Lowest compliance regulatory standards Show all 1

ISO 27001:2013 16/17

Audit reports

Stay up to date on the latest privacy, security, and compliance-related information for Microsoft's cloud services.

ISO 27001:2013

Under each applicable compliance control is the set of assessments run by Defender for Cloud that are associated with that control. If they are all green, it means those assessments are currently passing; this does not ensure you are fully compliant with that control. Furthermore, not all controls for any particular regulation are covered by Defender for Cloud assessments, and therefore this report is only a partial view of your overall compliance status.

ISO 27001:2013 is applied to the subscription Contoso IT - Retail - Prod

☐ Expand all compliance controls

A.5. Information security policies

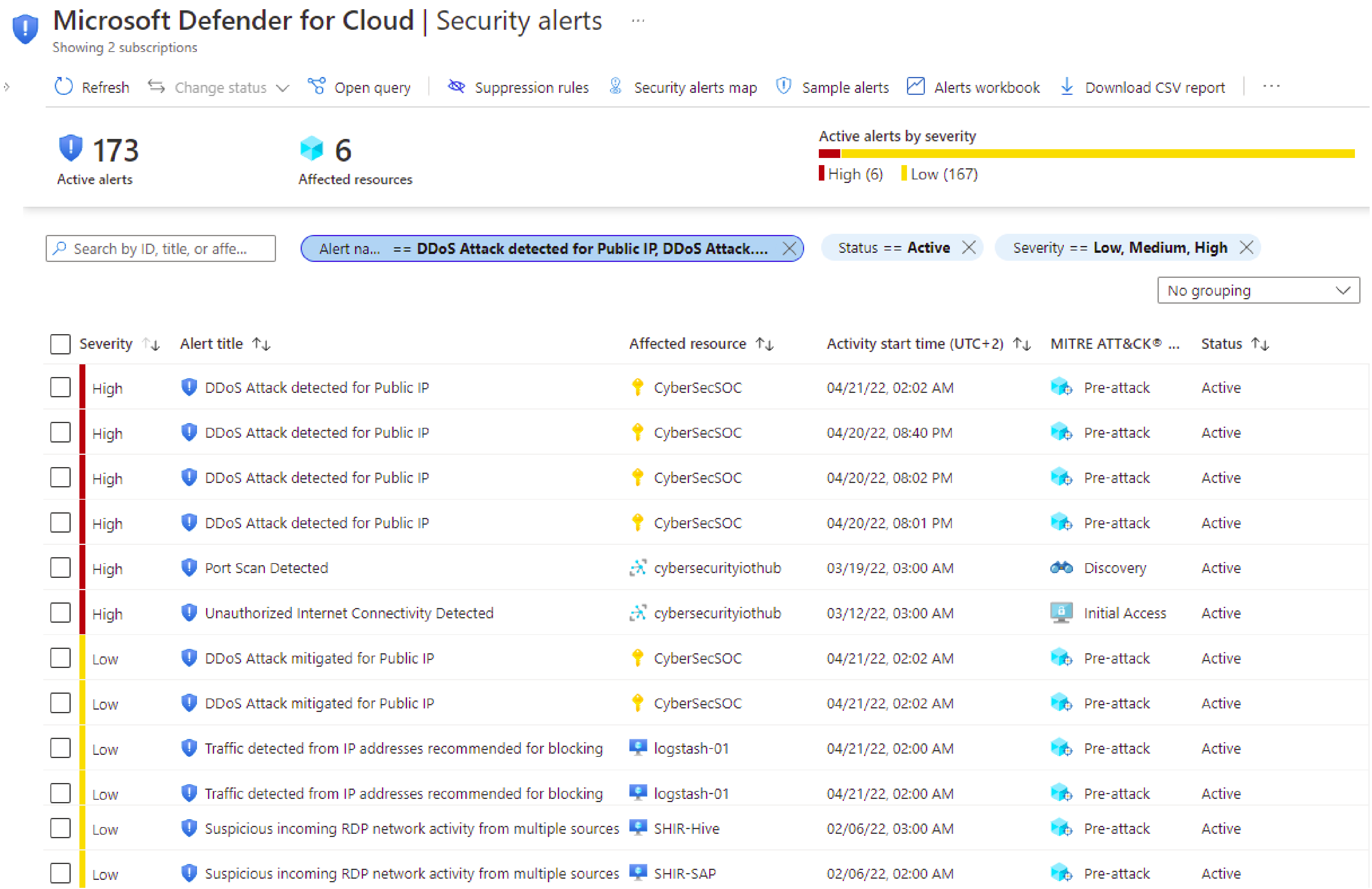
A.6. Organization of information security

A.7. Human resource security

A.8. Asset management

A.9. Access control

Alerts in Microsoft Defender for Cloud



Microsoft Defender for Cloud | Security alerts

Showing 2 subscriptions

173 Active alerts

6 Affected resources

Active alerts by severity

High (6) Low (167)

Search by ID, title, or affe...

Alert na... == DDoS Attack detected for Public IP, DDoS Attack....

Status == Active

Severity == Low, Medium, High

No grouping

□	Severity	Alert title	Affected resource	Activity start time (UTC+2)	MITRE ATT&CK® ...	Status
□	High	DDoS Attack detected for Public IP	CyberSecSOC	04/21/22, 02:02 AM	Pre-attack	Active
□	High	DDoS Attack detected for Public IP	CyberSecSOC	04/20/22, 08:40 PM	Pre-attack	Active
□	High	DDoS Attack detected for Public IP	CyberSecSOC	04/20/22, 08:02 PM	Pre-attack	Active
□	High	DDoS Attack detected for Public IP	CyberSecSOC	04/20/22, 08:01 PM	Pre-attack	Active
□	High	Port Scan Detected	cybersecurityiothub	03/19/22, 03:00 AM	Discovery	Active
□	High	Unauthorized Internet Connectivity Detected	cybersecurityiothub	03/12/22, 03:00 AM	Initial Access	Active
□	Low	DDoS Attack mitigated for Public IP	CyberSecSOC	04/21/22, 02:02 AM	Pre-attack	Active
□	Low	DDoS Attack mitigated for Public IP	CyberSecSOC	04/21/22, 02:02 AM	Pre-attack	Active
□	Low	Traffic detected from IP addresses recommended for blocking	logstash-01	04/21/22, 02:00 AM	Pre-attack	Active
□	Low	Traffic detected from IP addresses recommended for blocking	logstash-01	04/21/22, 02:00 AM	Pre-attack	Active
□	Low	Suspicious incoming RDP network activity from multiple sources	SHIR-Hive	02/06/22, 03:00 AM	Pre-attack	Active
□	Low	Suspicious incoming RDP network activity from multiple sources	SHIR-SAP	02/06/22, 02:00 AM	Pre-attack	Active

Learning Recap – Securing Your Virtual Networks

Check your knowledge questions and additional study

[Network security concepts and requirements in Azure | Microsoft Docs]

[Azure network architecture | Microsoft Docs]

Deploy Azure DDoS Protection by using the Azure portal

Learning Objectives –Azure DDoS Protection

- Distributed Denial of Service (DDoS)
- Types of DDoS attacks
- Azure DDoS protection tiers
- Azure DDoS protection features
- Deploying a DDoS protection plan
- Demonstration
- Learning Recap

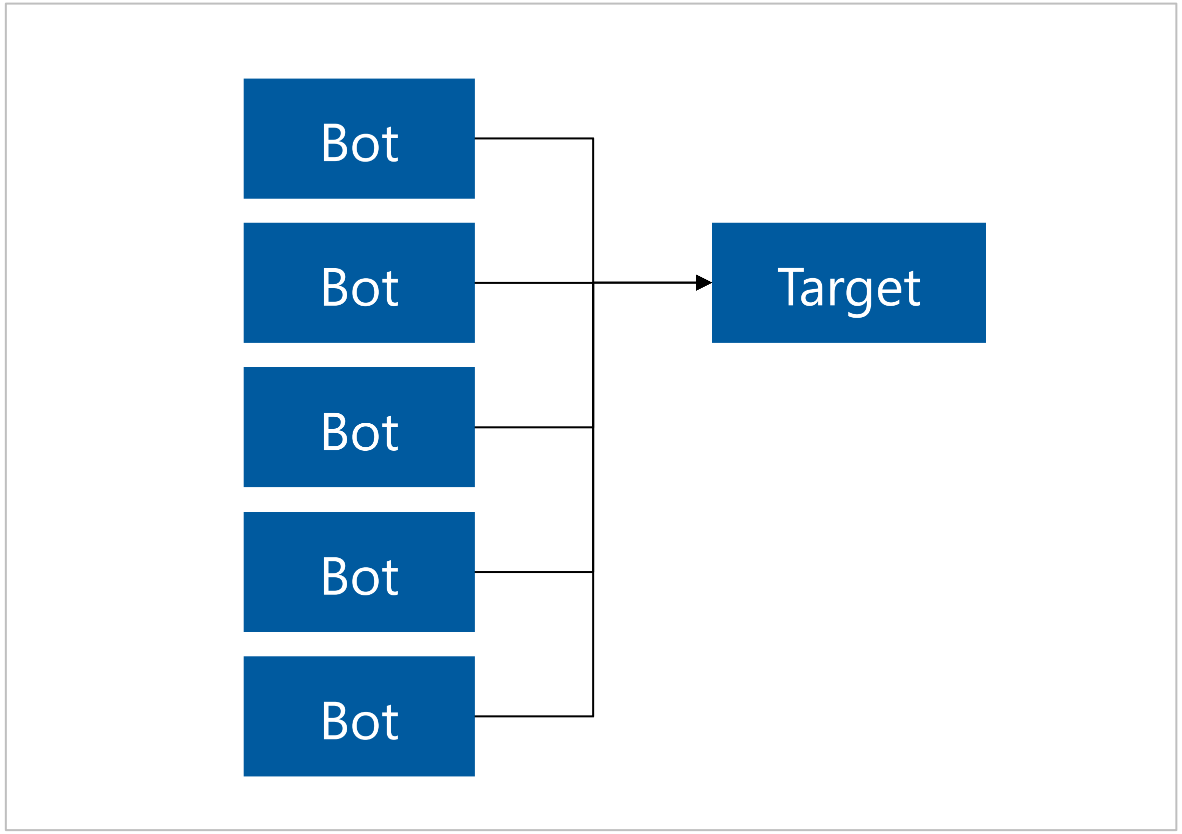
Distributed Denial of Service (DDoS)

The goal of a DoS (Denial of Service) attack is to prevent access to services or systems.

Botnets are collections of internet-connected systems that an individual controls and uses without their owners’ knowledge

DDoS is a collection of attack types aimed at disrupting the availability of a target

DDoS involves many systems sending traffic to targets as part of a botnet



Types of DDoS attacks

Volumetric attacks

These attacks flood the network layer with a substantial amount of seemingly legitimate traffic. They include UDP floods, amplification floods, and other spoofed-packet floods. DDoS Protection mitigates these potential multi-gigabyte attacks by absorbing and scrubbing them, with Azure's global network scale, automatically.

Protocol attacks

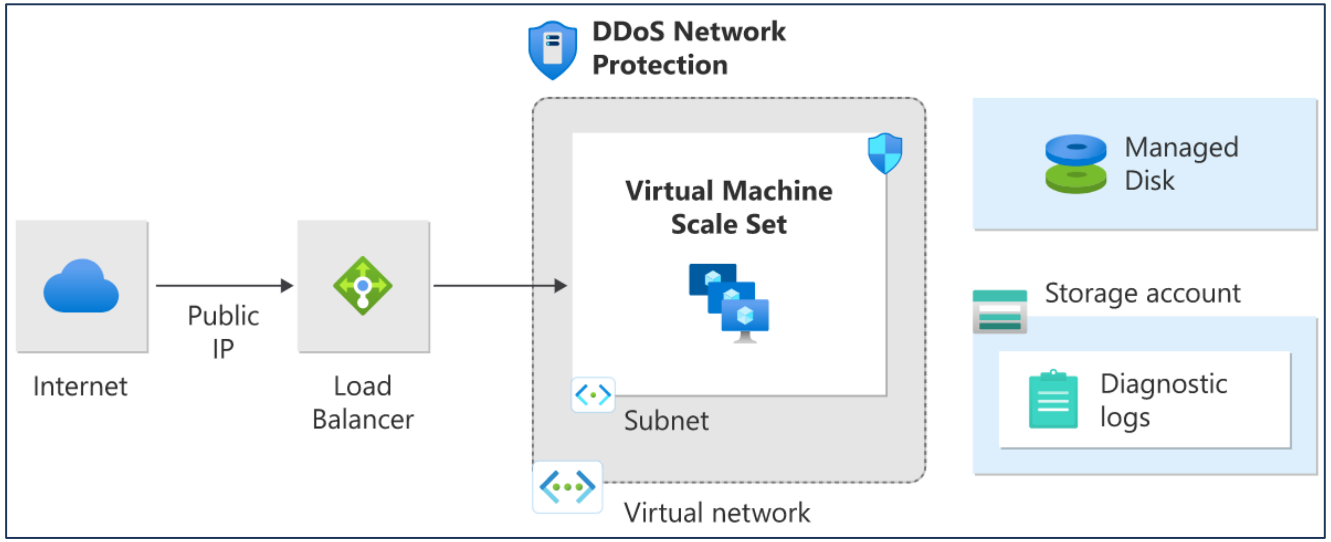
These attacks render a target inaccessible, by exploiting a weakness in the layer 3 and layer 4 protocol stack. They include SYN flood attacks, reflection attacks, and other protocol attacks. DDoS Protection mitigates these attacks, differentiating between malicious and legitimate traffic, by interacting with the client, and blocking malicious traffic.

Resource (application) layer attacks

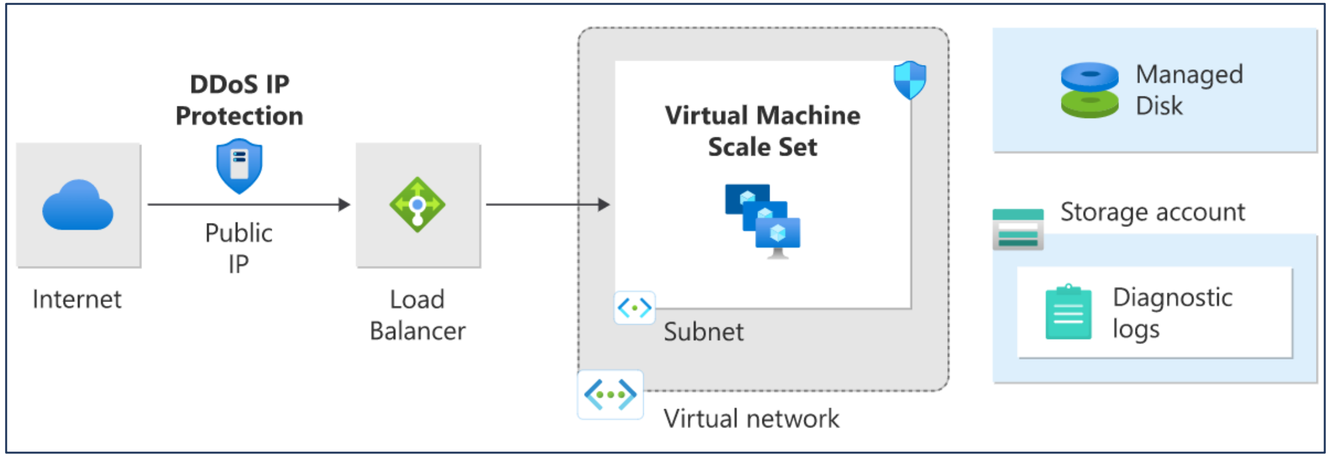
These attacks target web application packets, to disrupt the transmission of data between hosts. They include HTTP protocol violations, SQL injection, cross-site scripting, and other layer 7 attacks. Use a Web Application Firewall, such as the Azure Application Gateway web application firewall, as well as DDoS Protection to provide defense against these attacks. There are also third-party web application firewall offerings available in the Azure Marketplace.

Azure DDoS protection tiers

DDoS Network Protection



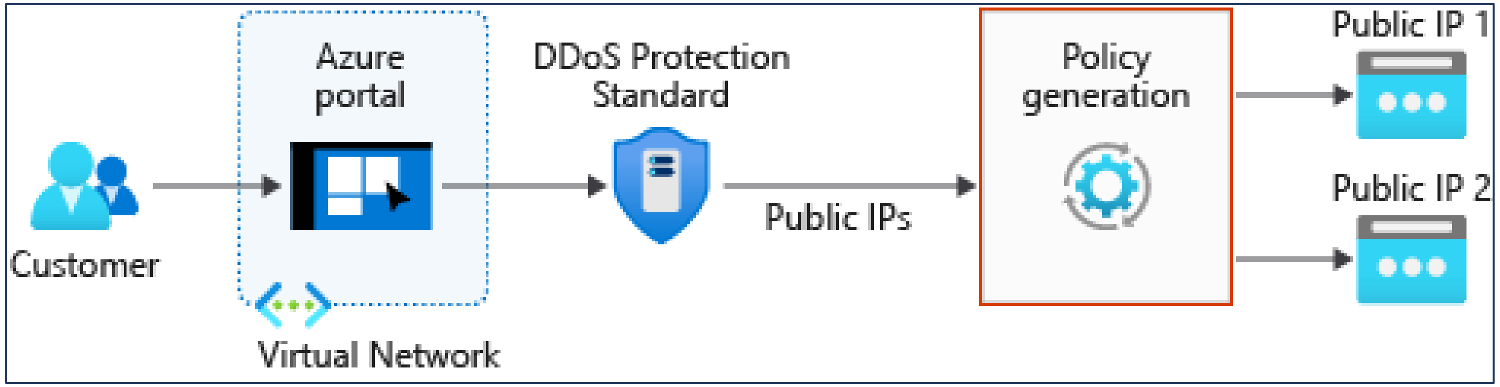
DDoS IP Protection



Azure DDoS protection features

- Always-on traffic monitoring
- Adaptive real time tuning
- DDoS Protection analytics, metrics, and alerting

- Azure DDoS Rapid Response
- Turnkey protection
- Multi-Layered protection
- Extensive mitigation scale



Deploying a DDoS protection plan

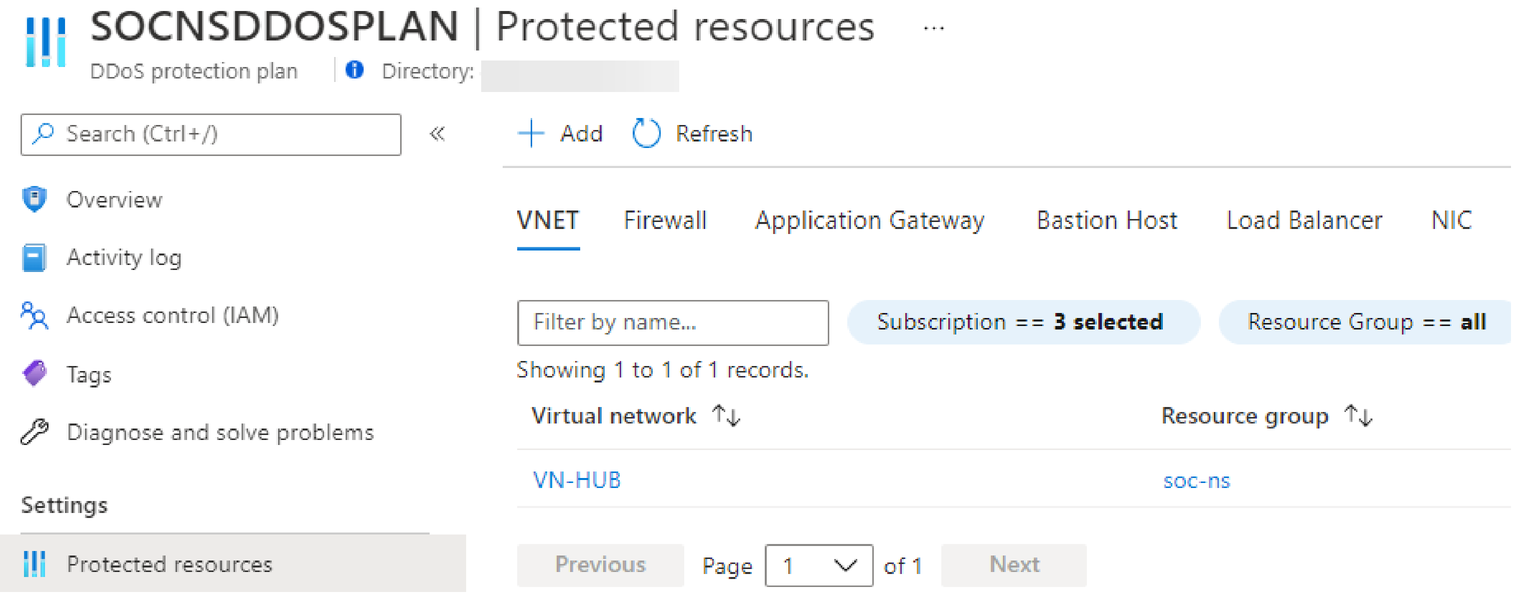
Create a DDoS protection plan

Enable DDoS protection on a new or existing VNet

Configure DDoS telemetry

Configure DDoS diagnostic logs and alerts

Run a test DDoS attack and monitor the results



SOCNSDDOSPLAN | Protected resources

DDoS protection plan | Directory: [redacted]

Subscription == **3 selected** | Resource Group == **all**

Showing 1 to 1 of 1 records.

Virtual network	Resource group
VN-HUB	soc-ns

Demonstration - DDoS Network Protection

- Create a DDoS protection plan
- Enable DDoS protection for a virtual network

Learning Recap –Azure DDoS Protection

Check your knowledge questions and additional study

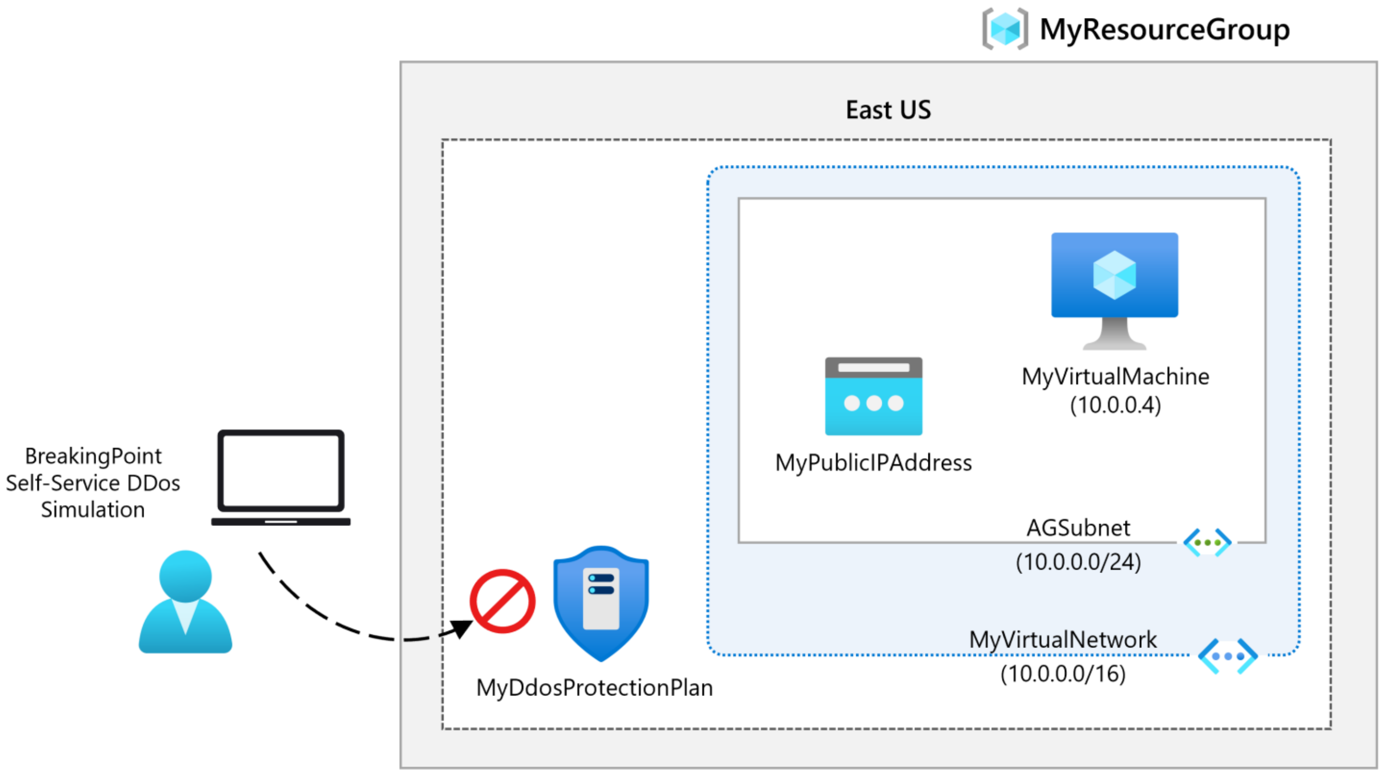
[Azure DDoS Protection Standard documentation | Microsoft Docs]

[Manage Azure DDoS Protection Standard using the Azure portal | Microsoft Docs]

Exercise: Configure DDoS Protection on a virtual network using the Azure portal

Exercise - Configure DDoS Protection on a virtual network using the Azure portal

Task 1: Create a resource group
Task 2: Create a DDoS Protection plan
Task 3: Enable DDoS Protection on a new virtual network
Task 4: Configure DDoS telemetry
Task 5: Configure DDoS diagnostic logs
Task 6: Configure DDoS alerts
Task 7: Submit a DDoS service request to run a DDoS attack



Learning Recap – Azure DDoS protection

Check your knowledge questions and additional study

Introduction to Azure DDoS Protection

Azure DDoS Protection Standard documentation | Microsoft Docs

Deploy and configure Network Security Groups

in
out
NSG

OE

NIC

NIC

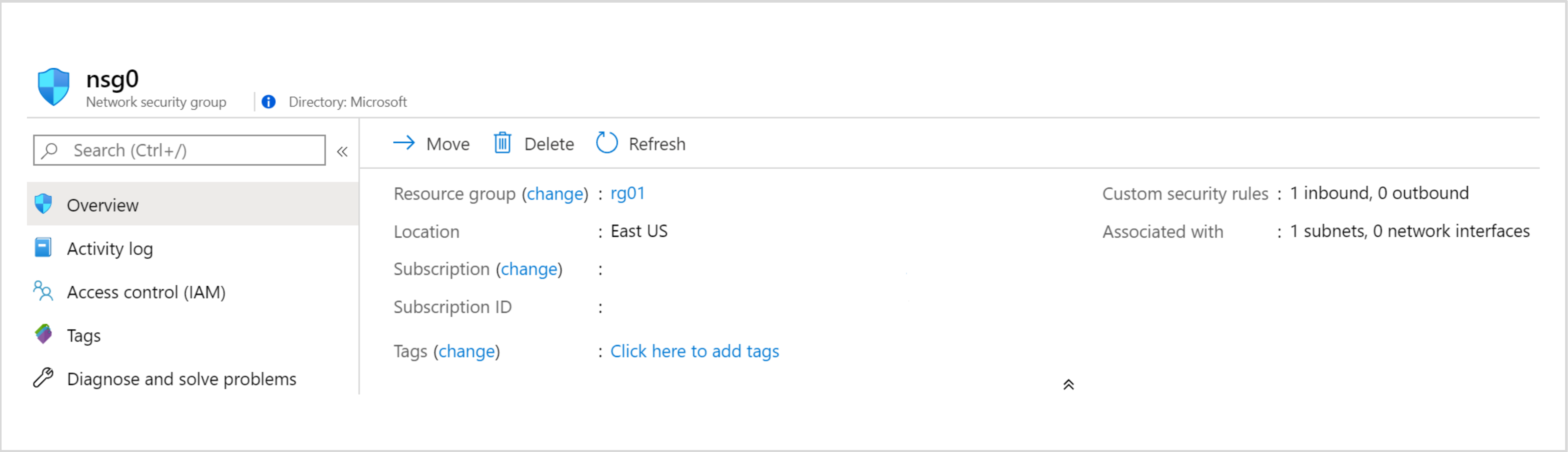
assoc.

Subnet

Learning Objectives –Network Security Groups

- Network Security Groups
- Default NSG Rules
- NSG Effective Rules
- Creating NSG rules
- Use Service Tags to define network access controls
- Application Security Groups
- Demonstration
- Learning Recap

Network Security Groups



nsg0
Network security group | Directory: Microsoft

Resource group (change) : rg01
Location : East US
Subscription (change) :
Subscription ID :
Tags (change) : Click here to add tags

Custom security rules : 1 inbound, 0 outbound
Associated with : 1 subnets, 0 network interfaces

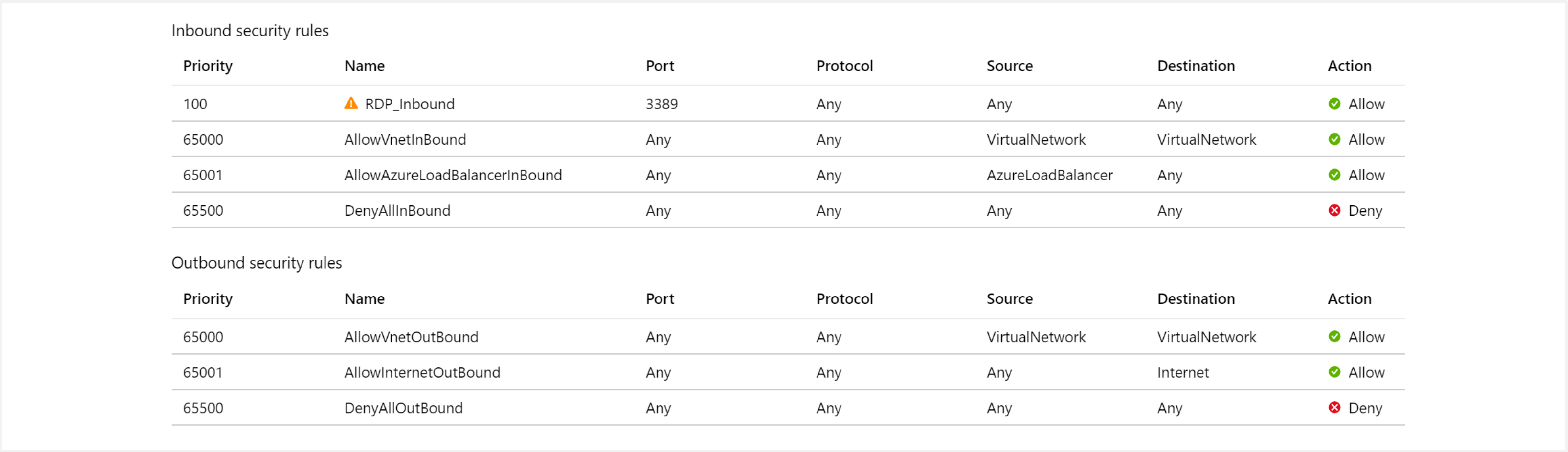
Limits network traffic to resources in a virtual network

Lists the security rules that allow or deny inbound or outbound network traffic

Associated to a subnet or a network interface

Can be associated multiple times

NSG Rules



Inbound security rules

Priority	Name	Port	Protocol	Source	Destination	Action
100	⚠ RDP_Inbound	3389	Any	Any	Any	✓ Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	✓ Allow
65500	DenyAllInBound	Any	Any	Any	Any	✗ Deny

Outbound security rules

Priority	Name	Port	Protocol	Source	Destination	Action
65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
65001	AllowInternetOutBound	Any	Any	Any	Internet	✓ Allow
65500	DenyAllOutBound	Any	Any	Any	Any	✗ Deny

Security rules in NSGs enable you to filter network traffic that can flow in and out of virtual network subnets and network interfaces

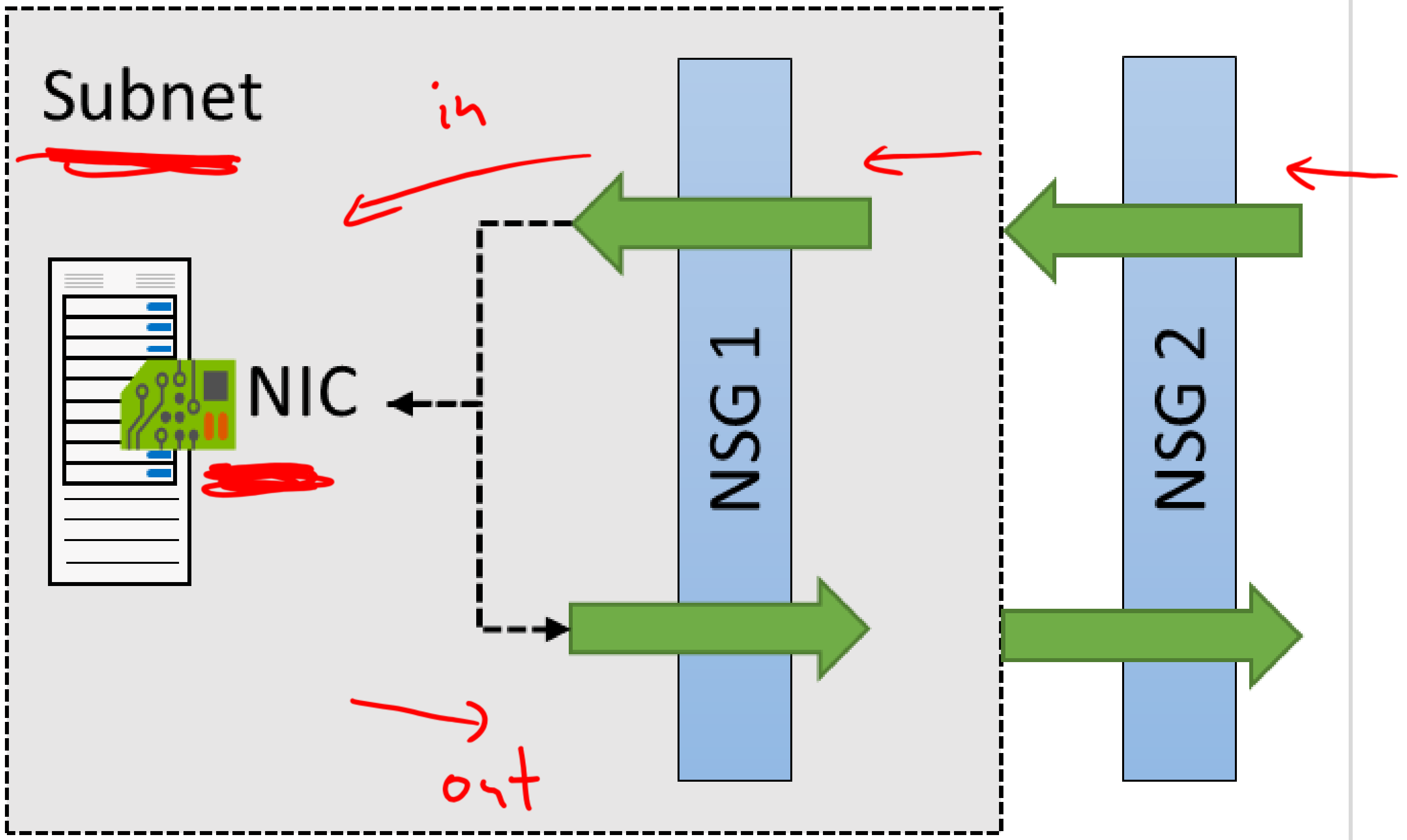
There are default security rules. You cannot delete the default rules, but you can add other rules with a higher priority

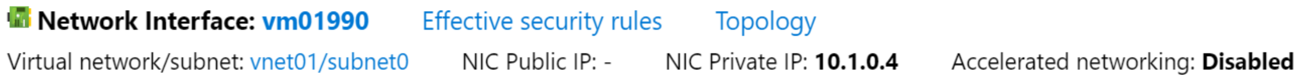
NSG Effective Rules

NSGs are evaluated independently for the subnet and NIC

An “allow” rule must exist at both levels for traffic to be admitted

Use the Effective Rules link if you are not sure which security rules are being applied




Network Interface: vm01990 Effective security rules Topology

Virtual network/subnet: vnet01/subnet0 NIC Public IP: - NIC Private IP: **10.1.0.4** Accelerated networking: **Disabled**

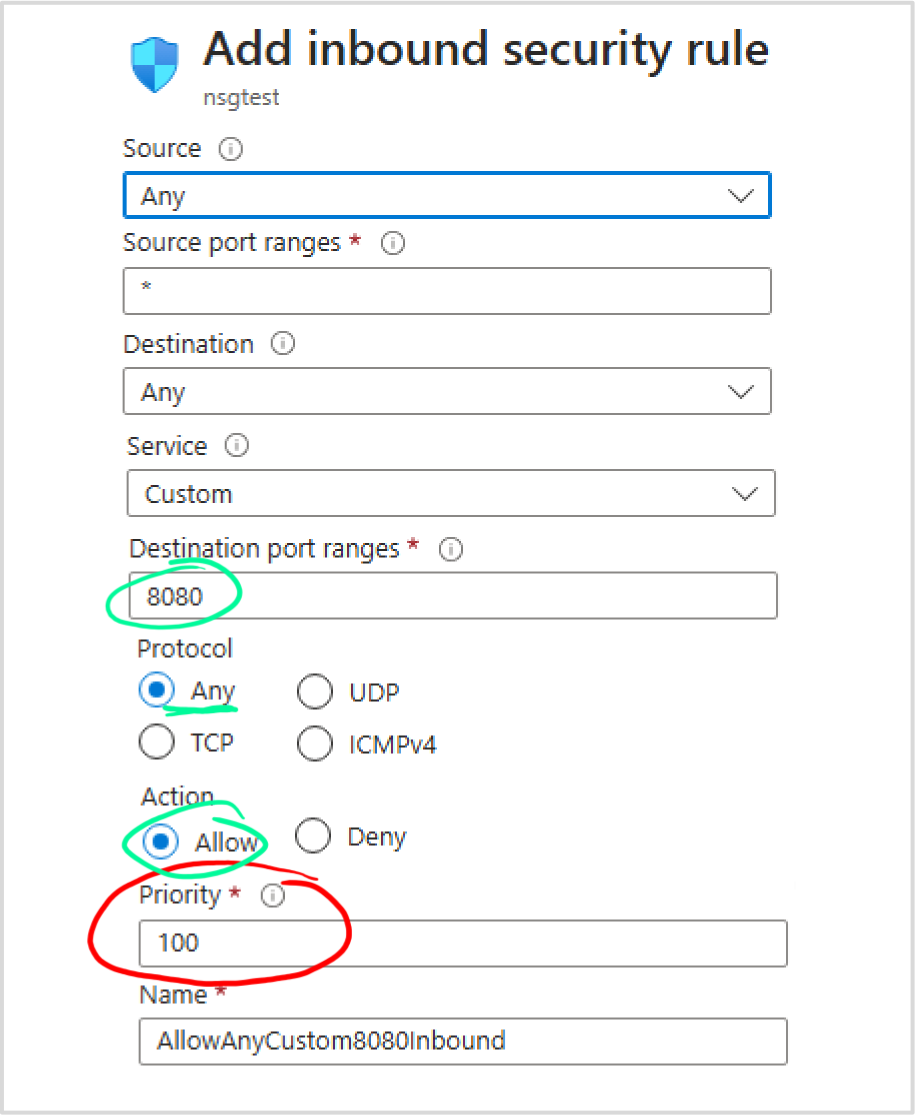
Creating NSG rules

Select from a large variety of services

Service – The destination protocol and port range for this rule

Port ranges – Single port or multiple ports

Priority – The lower the number, the higher the priority



Add inbound security rule

nsgtest

Source: Any

Source port ranges *: *

Destination: Any

Service: Custom

Destination port ranges *: 8080

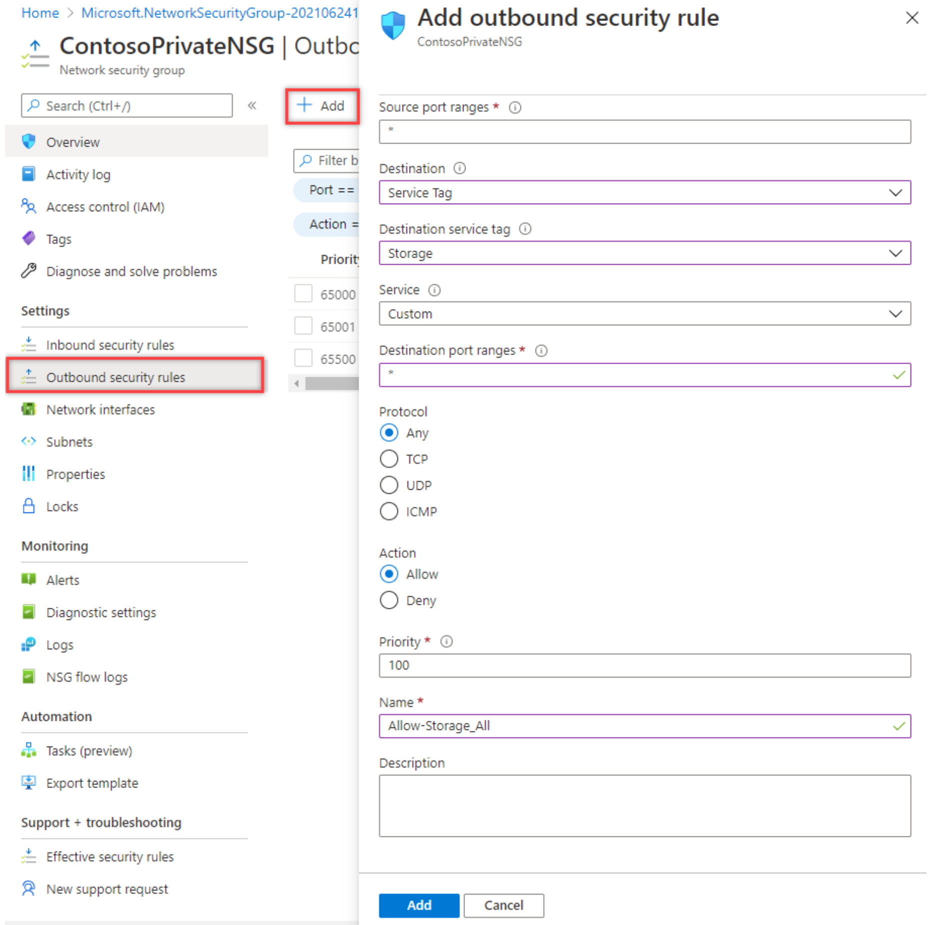
Protocol: ● Any ○ UDP ○ TCP ○ ICMPv4

Action: ● Allow ○ Deny

Priority *: 100

Name *: AllowAnyCustom8080Inbound

Use Service Tags to define network access controls



Add outbound security rule

ContosoPrivateNSG

Source port ranges *: *

Destination: Service Tag

Destination service tag: Storage

Service: Custom

Destination port ranges *: *

Protocol

● Any
○ TCP
○ UDP
○ ICMP

Action

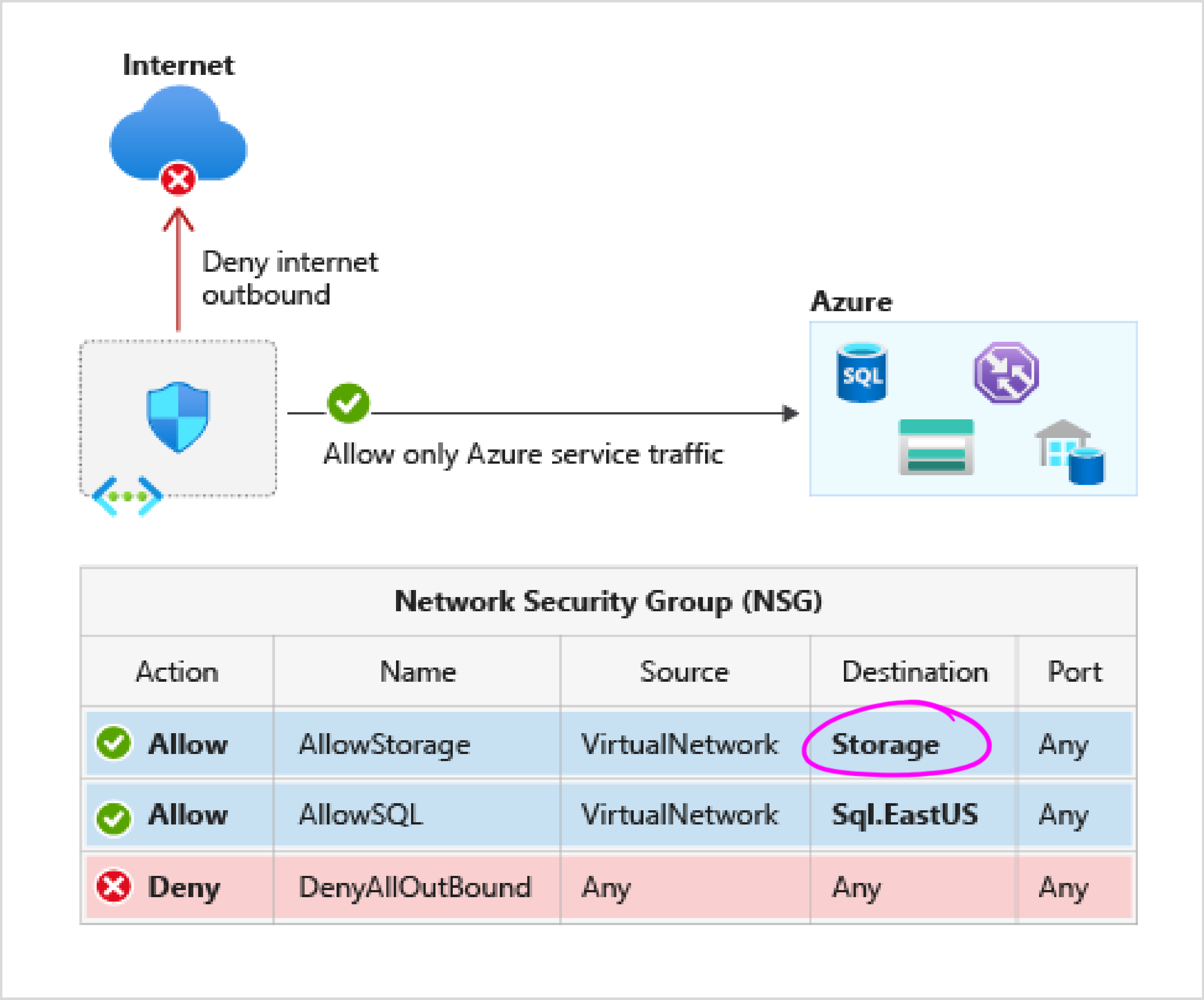
● Allow
○ Deny

Priority *: 100

Name *: Allow-Storage_All

Description:

Add Cancel



Network Security Group (NSG)

Action	Name	Source	Destination	Port
✓ Allow	AllowStorage	VirtualNetwork	Storage	Any
✓ Allow	AllowSQL	VirtualNetwork	Sql.EastUS	Any
✗ Deny	DenyAllOutBound	Any	Any	Any

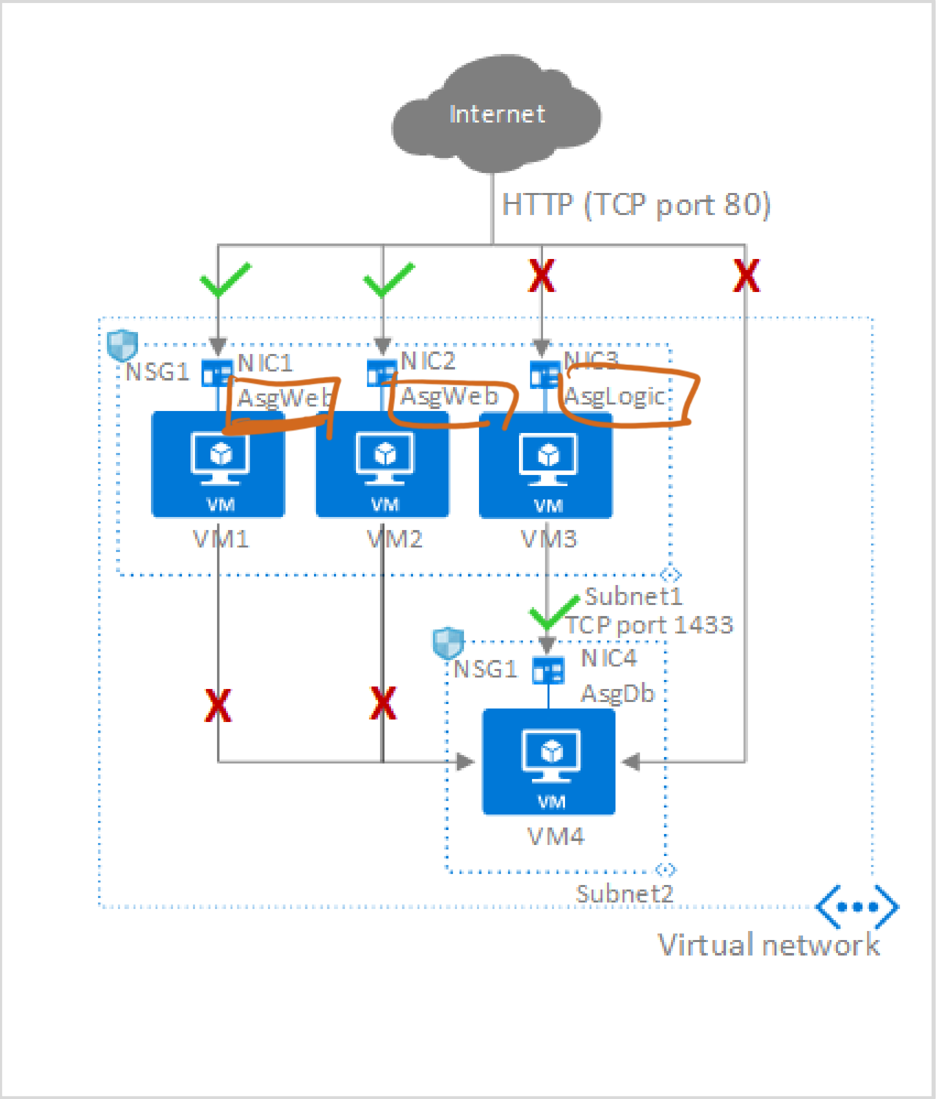
Application Security Groups (ASG)

Configure ASG as a natural extension of an application's structure

ASG can be the source and destination in a security rule

All NIC assigned to an ASG must exist in the same virtual network that the first NIC assigned to the ASG is in

If you specify an ASG as the source and destination in a security rule, the NIC in both ASG must exist in the same virtual network



Demonstration – Network Security Groups

- Access the NSGs blade
- Add a new NSG
- Explore inbound and outbound rules

Learning Recap – Deploy and configure Network Security Groups

Check your knowledge questions and additional study

[Azure network security groups overview | Microsoft Docs]()

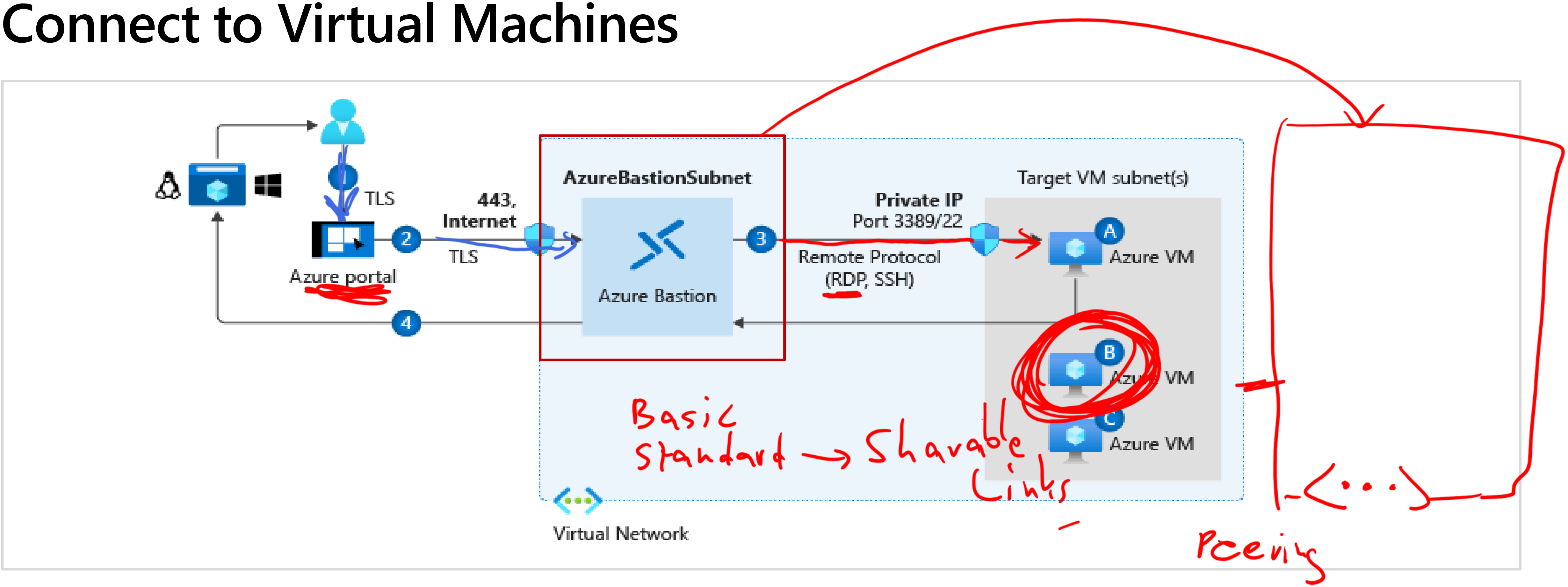
[Azure application security groups overview | Microsoft Docs]()

Design and implement Azure Bastion

Learning Objectives – Design and Implement Azure Bastion

- Connect to virtual machines
- Learning Recap

Connect to Virtual Machines



Bastion Subnet for RDP/SSH through the Portal over SSL

Remote Desktop Protocol for Windows-based Virtual Machines

Secure Shell Protocol for Linux based Virtual Machines

Learning Recap – Design and implement Azure Bastion

Check your knowledge questions and additional study

[Introduction to Azure Bastion - Training | Microsoft Learn]

[QuickStart: Deploy Bastion with default settings - Azure Bastion | Microsoft Learn]

Design and implement Azure Firewall

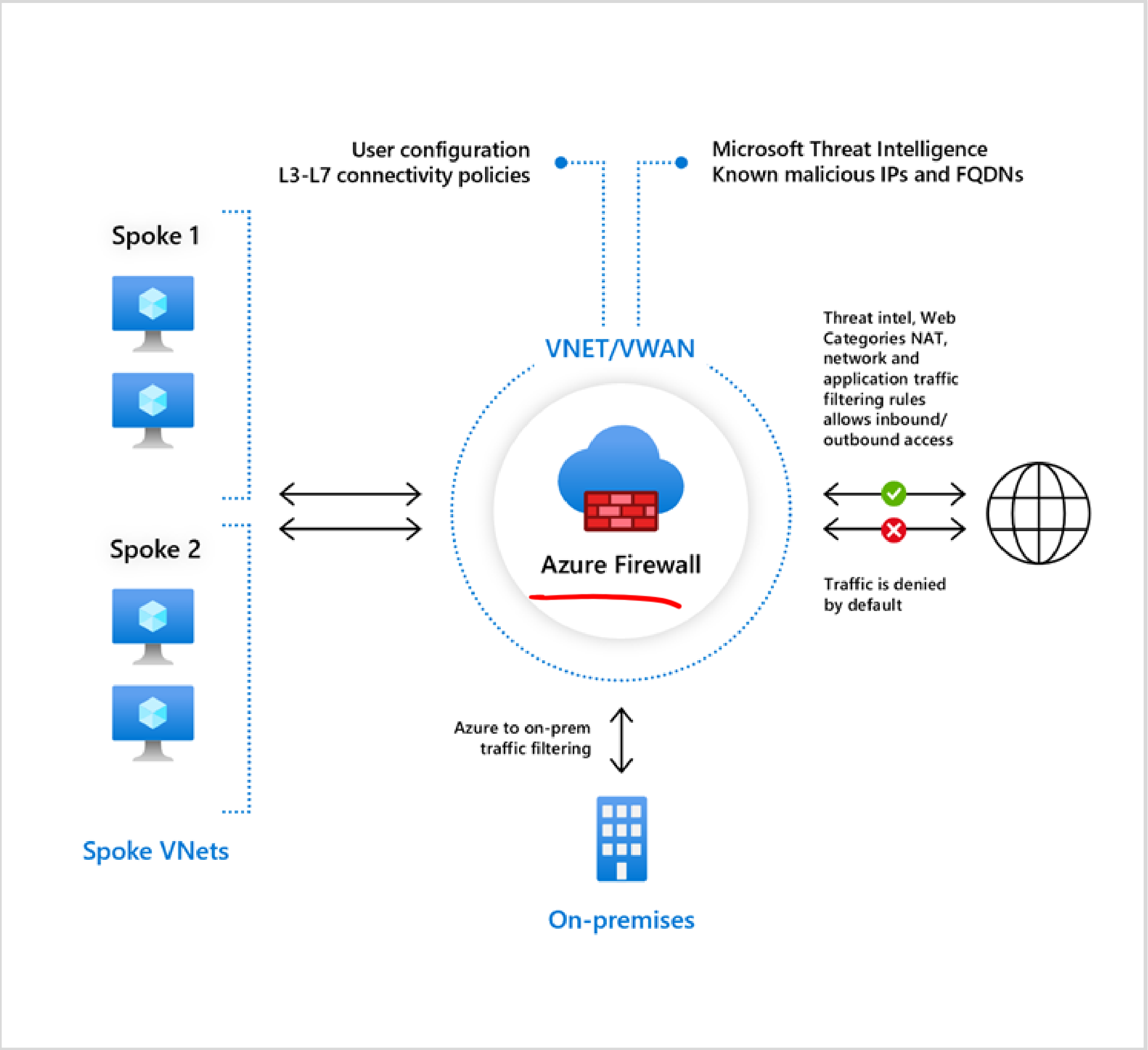
Learning Objectives - Design and Implement Azure Firewall

- Azure Firewall features
- Rule processing in Azure Firewall
- Deploying Azure Firewall in the Azure portal
- Deploying Azure Firewall in a Hub-Spoke network topology
- Compare Azure Firewall to NSGs
- Learning Recap

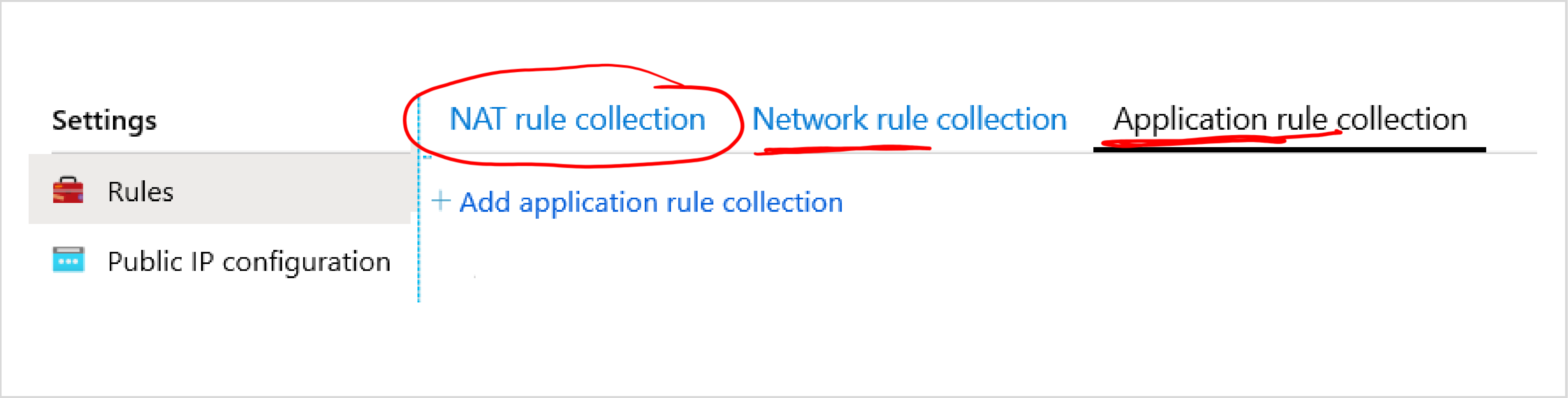
Azure Firewall features

Azure Firewall Subnet

- Stateful firewall as a service
- Built-in high availability with unrestricted cloud scalability
- Create, enforce, and log application and network connectivity policies
- Threat intelligence-based filtering for L3-L7
- Fully integrated with Azure Monitor for logging and analytics
- Support for hybrid connectivity through deployment behind VPN and ExpressRoute Gateways


User configuration
L3-L7 connectivity policies
Microsoft Threat Intelligence
Known malicious IPs and FQDNs
Spoke 1
Spoke 2
Spoke VNets
VNET/VWAN
Azure Firewall
Threat intel, Web Categories NAT, network and application traffic filtering rules allows inbound/ outbound access
Traffic is denied by default
Azure to on-prem traffic filtering
On-premises

Rule processing in Azure Firewall



NAT rules. Configure DNAT rules to allow incoming connections

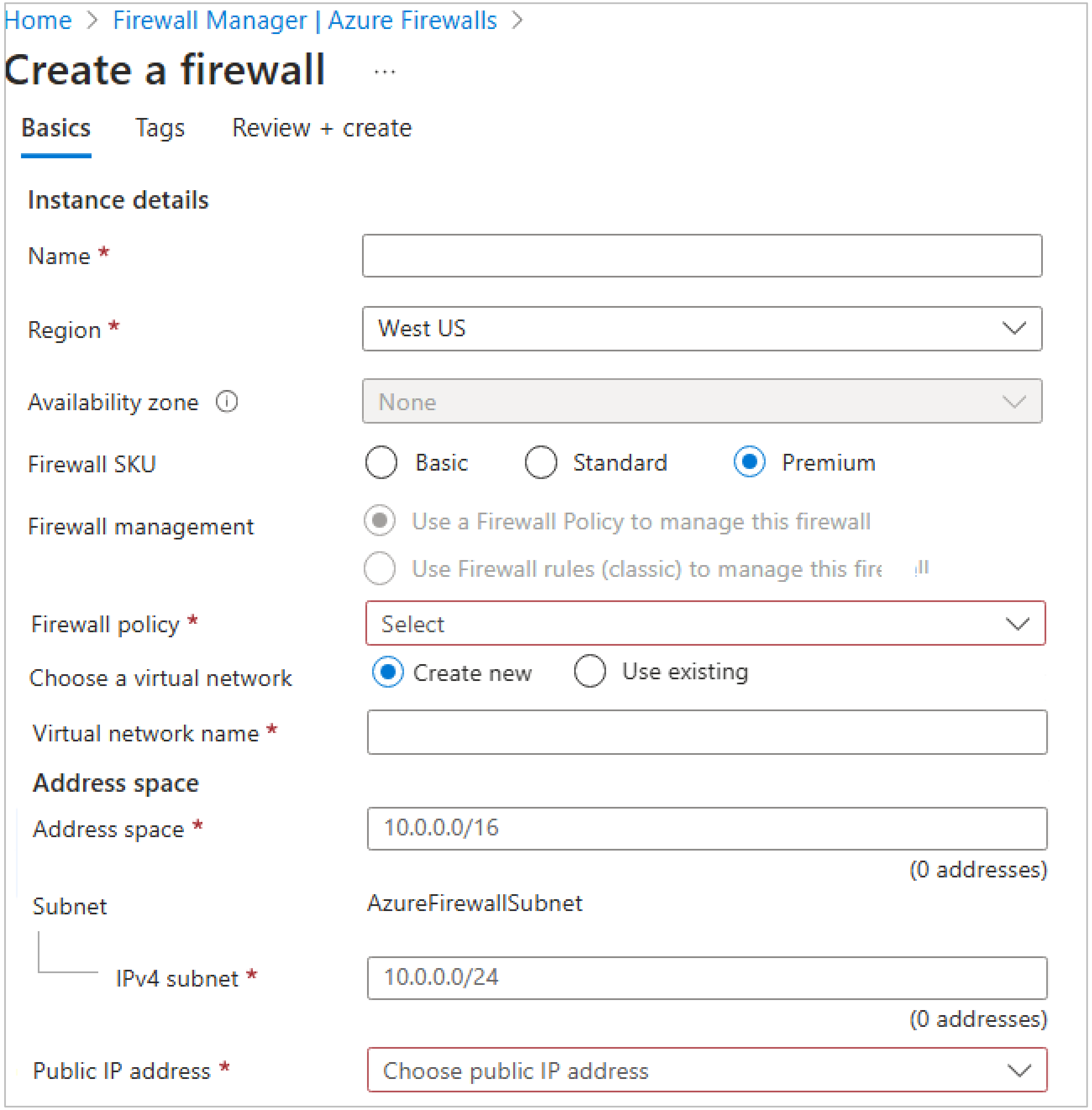
Network rules. Configure rules that contain source addresses, protocols, destination ports, and destination addresses

Application rules. Configure fully qualified domain names (FQDNs) that can be accessed from a subnet

Deploying Azure Firewall

On the Create a Firewall page enter the following:

- Subscription
- Resource Group
- Instance Name, region and Availability Zone if any
- Firewall tier
- Firewall management
- Firewall Policy
- Choose a virtual network
- Forced tunneling



Home > Firewall Manager | Azure Firewalls >

Create a firewall ...

Basics Tags Review + create

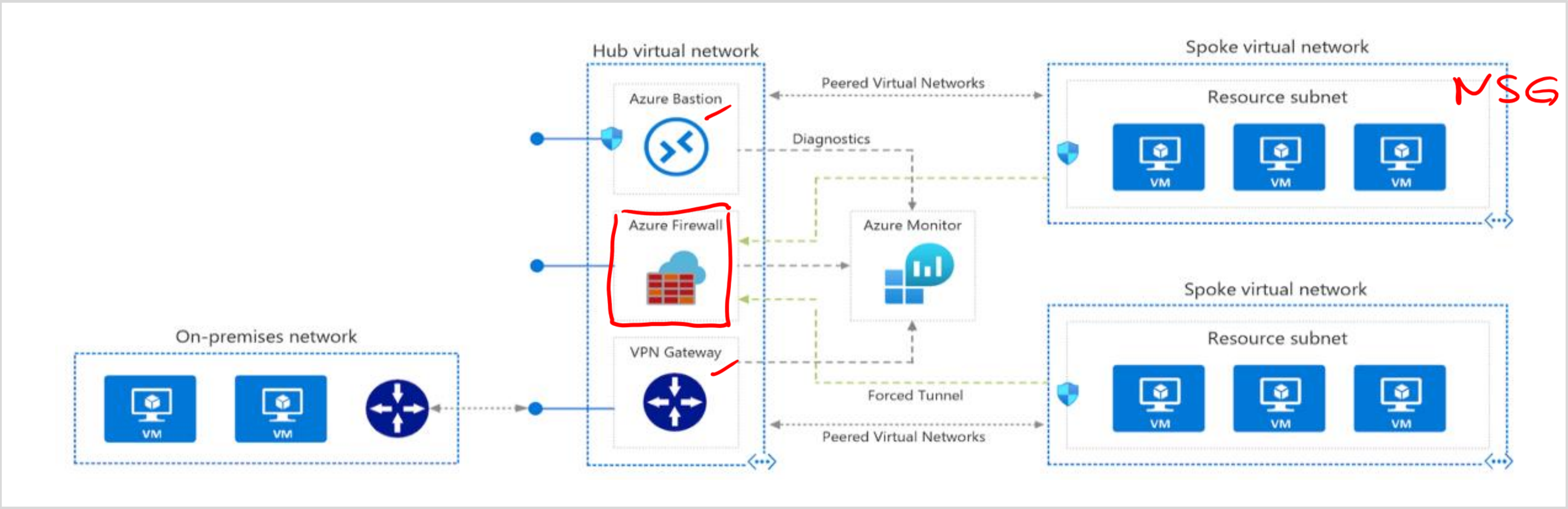
Instance details

Name *	
Region *	West US
Availability zone ⓘ	None
Firewall SKU	○ Basic ○ Standard ● Premium
Firewall management	● Use a Firewall Policy to manage this firewall ○ Use Firewall rules (classic) to manage this fire
Firewall policy *	Select
Choose a virtual network	● Create new ○ Use existing
Virtual network name *	

Address space

Address space *	10.0.0.0/16 (0 addresses)
Subnet	AzureFirewallSubnet
IPv4 subnet *	10.0.0.0/24 (0 addresses)
Public IP address *	Choose public IP address

Deploying Azure Firewall in a Hub-Spoke network topology



A Hub-Spoke network topology is recommended

Shared services are placed in the hub virtual network

Each environment is deployed to a spoke to maintain isolation

Compare Azure Firewall to NSGs

	NSG	Azure Firewall
Protocol based traffic filtering	Yes	Yes
Support Service Tags	Yes	Yes
Support Application FQDN Tags	No ASG	Yes
Integrated with Azure Monitor for diagnostic logging	Yes	Yes
SNAT and DNAT support	No	Yes

VWAN

Learning Recap – Design and implement Azure Firewall

Check your knowledge questions and additional study

[Introduction to Azure Firewall - Training | Microsoft Learn]

[Introduction to Azure Firewall Manager - Training | Microsoft Learn]

[What is Azure Firewall? | Microsoft Docs]

[Azure Firewall features | Microsoft Docs]

Exercise - Deploy and configure the Azure Firewall

Exercise - Deploy and configure Azure Firewall using the Azure portal

Create a resource group, virtual network and subnets

Create a virtual machine

Deploy the firewall and firewall policy

Create a default route

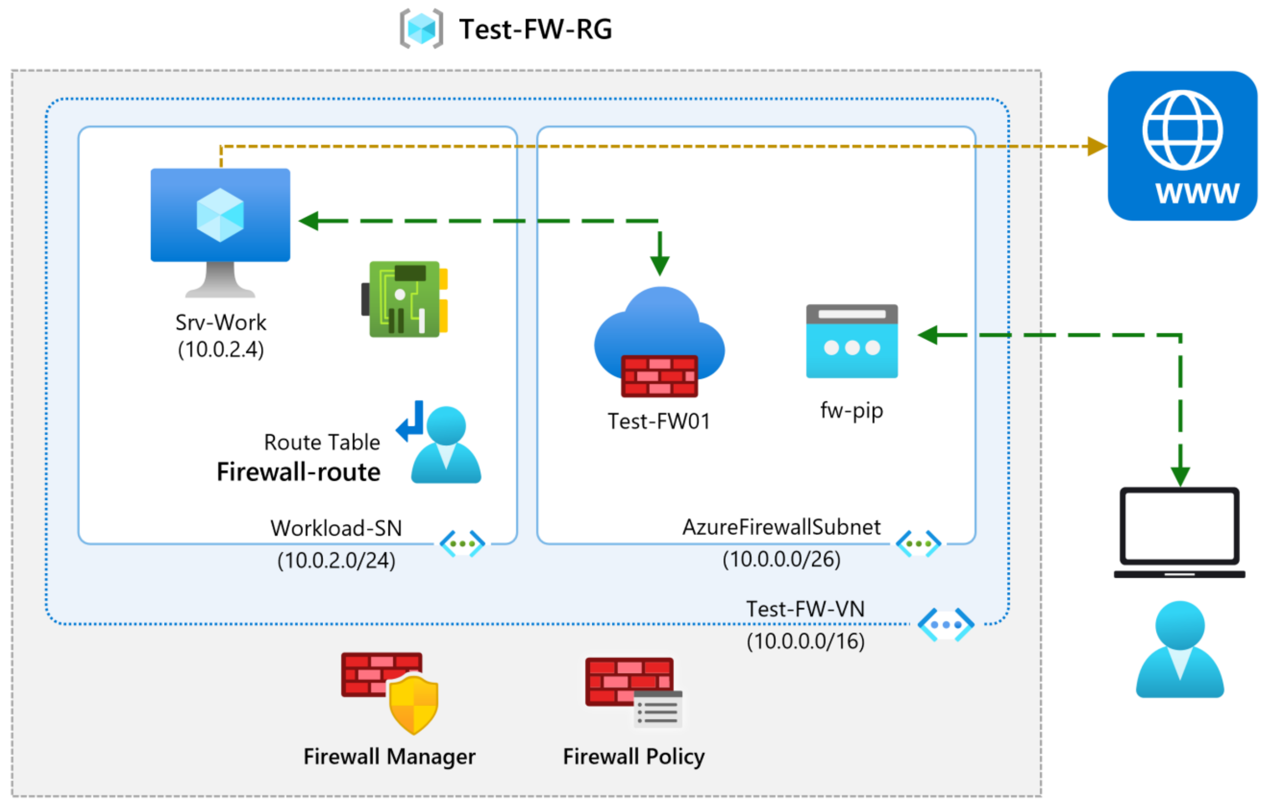
Configure an application rule

Configure a network rule

Configure a Destination NAT (DNAT) rule

Change the primary and secondary DNS address for the server's network interface

Test the firewall



Learning Recap – Deploy and configure Azure Firewall

Check your knowledge questions and additional study

[QuickStart: Create an Azure Firewall and IP Groups - Resource Manager template]

Working with Azure Firewall Manager

Learning Objectives Working with Azure Firewall Manager

- Azure Firewall Manager features
- Azure Firewall Manager policies
- Azure Firewall Manager for Hub Virtual Networks vs Secured Virtual Hubs
- Using Azure Firewall Manager
- Demonstration
- Learning Recap

Azure Firewall Manager features

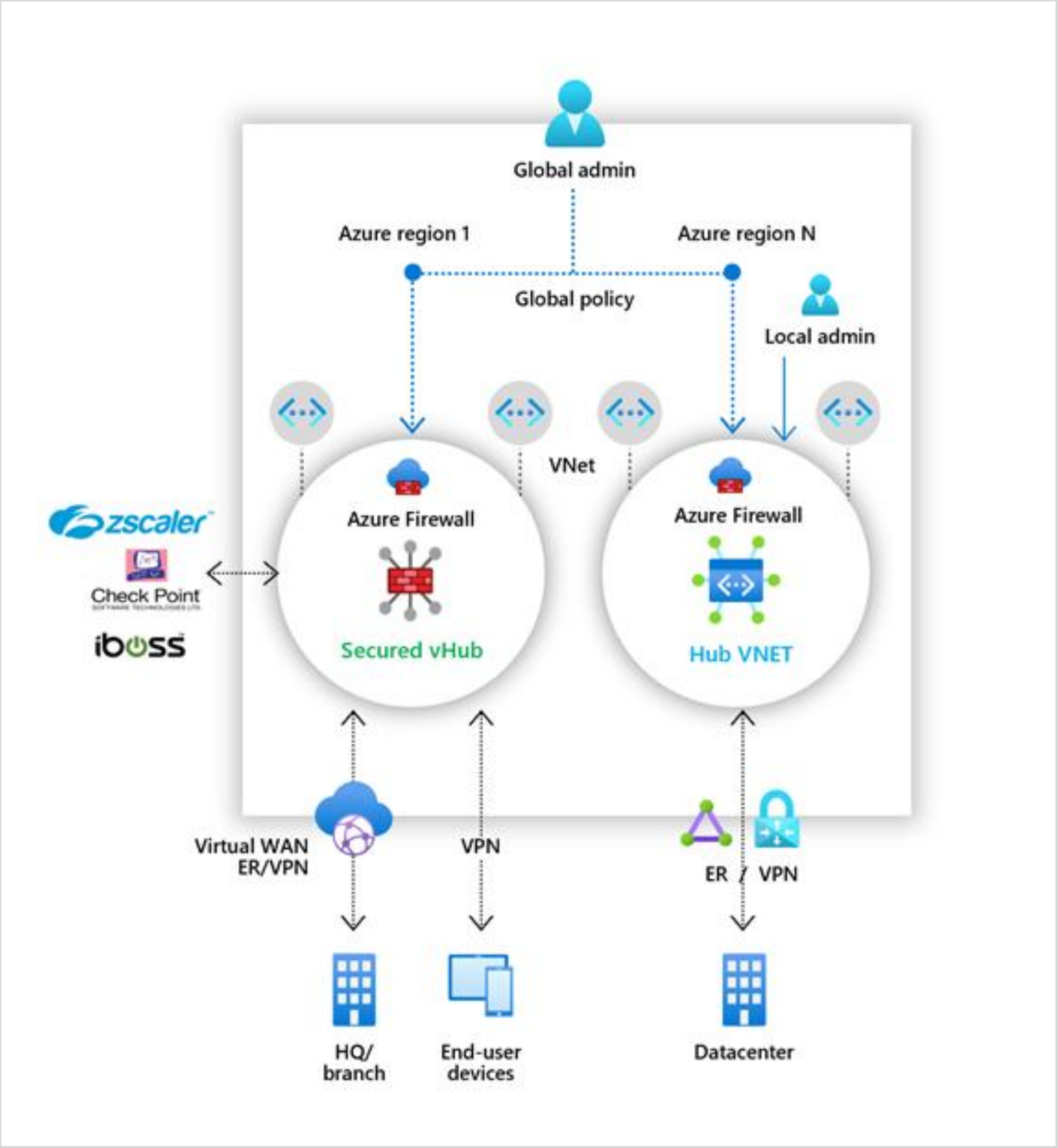
Central Azure Firewall deployment and configuration

Hierarchical policies (global and local)

Integrated with third-party security-as-a-service for advanced security

Centralized route management

Region availability

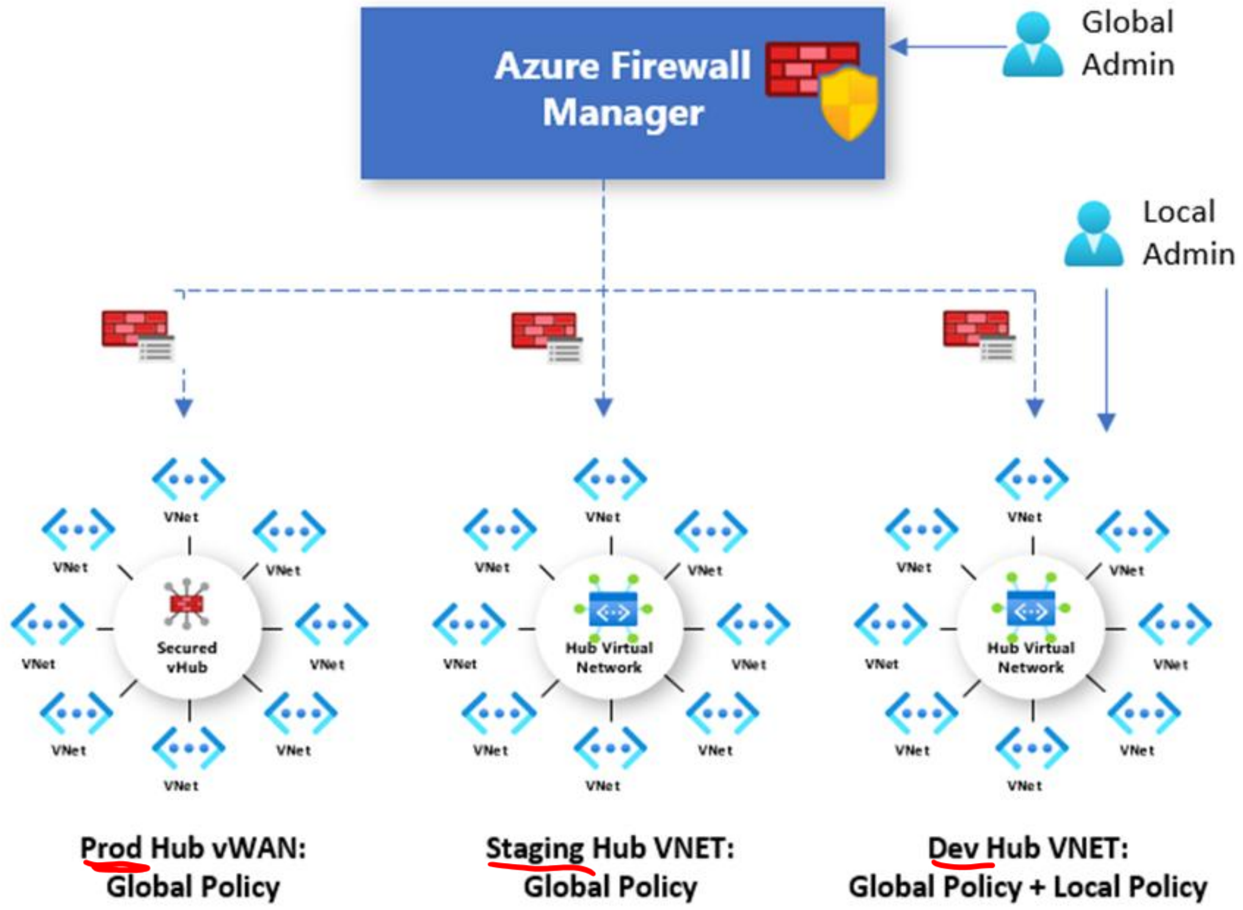


Azure Firewall Manager policies

A policy can be created and managed in multiple ways, including the Azure portal, REST API, templates, Azure PowerShell, and CLI.

json Bicep Terraform

Policies can be associated with one or more virtual hubs or VNets. The firewall can be in any subscription associated with your account and in any region.



Azure Firewall Manager for Hub Virtual Networks vs Secured Virtual Hubs

	Hub virtual network	Secured virtual hub
Underlying resource	Virtual network	Virtual WAN Hub
Hub & Spoke	Uses Virtual network peering	Automated using hub virtual network connection
On-prem connectivity	VPN Gateway up to 10 Gbps and 30 S2S connections; ExpressRoute	More scalable VPN Gateway up 20 Gbps and 1000 S2S connections; Express Route
Automated branch connectivity using SDWAN	Not supported	Supported
Hubs per region	Multiple Virtual Networks per region	Single Virtual Hub per region. Multiple hubs possible with multiple Virtual WANs
Azure Firewall – multiple public IP addresses	Customer provided	Auto generated

Azure Firewall Manager for Hub Virtual Networks vs Secured Virtual Hubs part 2

	Hub virtual network	Secured virtual hub
Azure Firewall Availability Zones	Supported	Supported
Advanced Internet security with third-party Security as a Service partners	Customer established and managed VPN connectivity to partner service of choice	Automated via security partner provider flow and partner management experience
Centralized route management to route traffic to the hub	Customer-managed User Defined Route	Supported using BGP
Multiple security provider support	Supported with manually configured forced tunneling to third-party firewalls	Automated support for two security providers: Azure Firewall for private traffic filtering and third party for Internet filtering
Web Application Firewall on Application Gateway	Supported in Virtual Network	Currently supported in spoke network
Network Virtual Appliance	Supported in Virtual Network	Currently supported in spoke network
Azure DDoS Protection support	Yes	No

Using Azure Firewall Manager

Hub virtual networks

1. Create a firewall policy
2. Create your hub and spoke architecture
3. Select security providers and associate firewall policy. Currently, only Azure Firewall is a supported provider.
4. Configure User Define Routes to route traffic to your Hub Virtual Network firewall.

Secured virtual WAN hubs

1. Create your hub and spoke architecture
2. Select security providers
3. Create a firewall policy and associate it with your hub
4. Configure route settings to route traffic to your secured hub

Demonstration – Firewall Manager

- Create a firewall policy
- Create the virtual networks
- Configure and deploy the firewall
- Create and connect the VPN gateways
- Peer the hub and spoke virtual networks
- Create the routes
- Create the virtual machines
- Test the firewall

Learning Recap – Secure your networks with Azure Firewall Manager

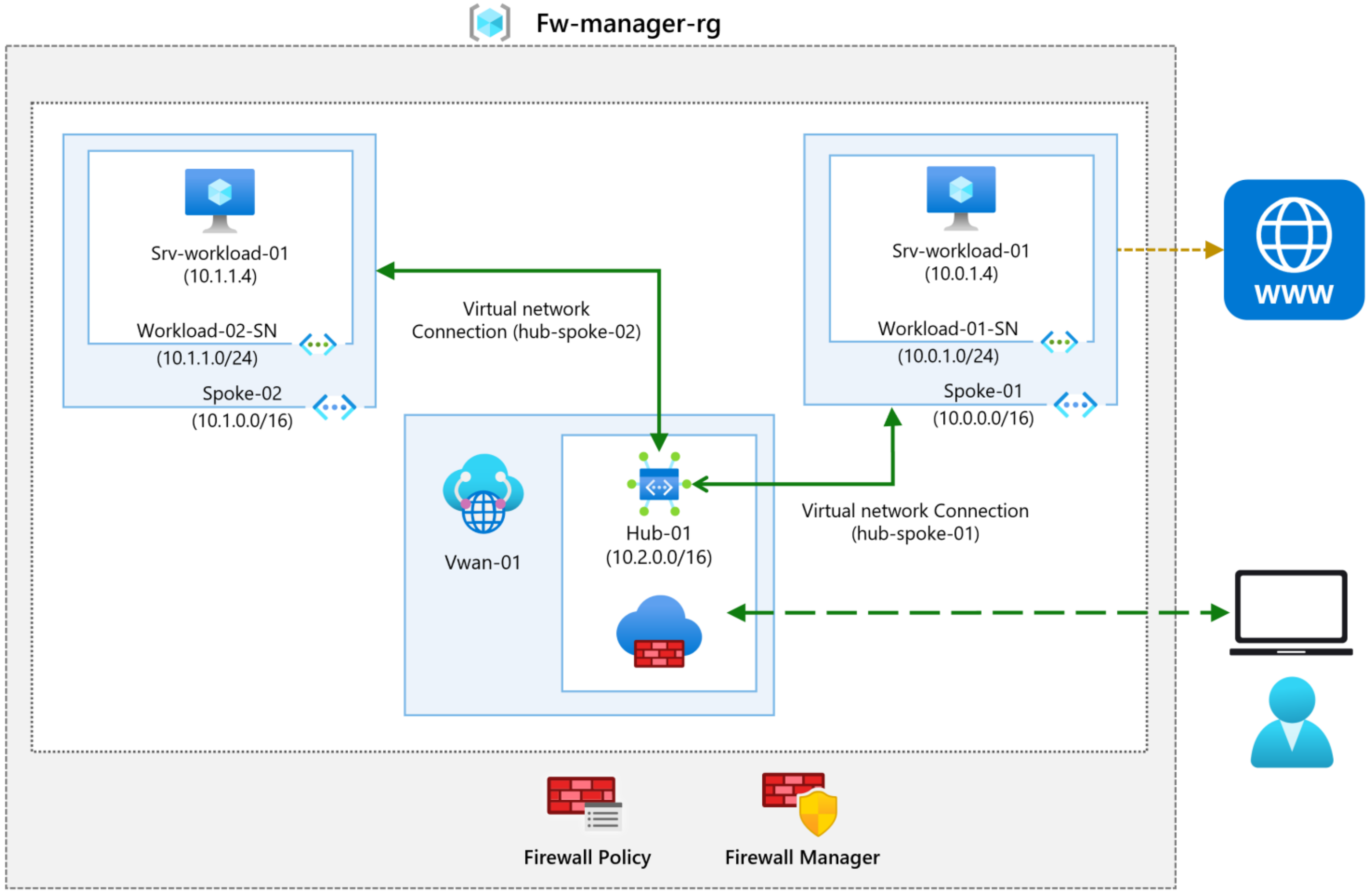
Check your knowledge questions and additional study

[What is Azure Firewall Manager? | Microsoft Docs]()

Exercise- Secure your virtual hub using Azure Firewall Manager

Exercise - Secure your virtual hub using Azure Firewall Manager

- Create two spoke virtual networks and subnets
- Create the secured virtual hub
- Connect the hub and spoke virtual networks
- Deploy the servers
- Create a firewall policy and secure your hub
- Associate the firewall policy
- Route traffic to your hub
- Test the application rule
- Test the network rule



Learning Recap – Exercise: Deploy and configure Azure Firewall

Check your knowledge questions and additional study

Tutorial: Secure your virtual hub using Azure Firewall Manager | Microsoft Docs

Implement a Web Application Firewall

Learning Objectives – Implement a Web Application Firewall

- Web Application Firewall overview
- Web Application Firewall policy modes
- Web Application Firewall Default Rule Set, rule groups, and rules
- Web Application Firewall Custom Rules
- Create a Web Application Firewall policy on Azure Front Door
- Learning Recap

Web Application Firewall overview

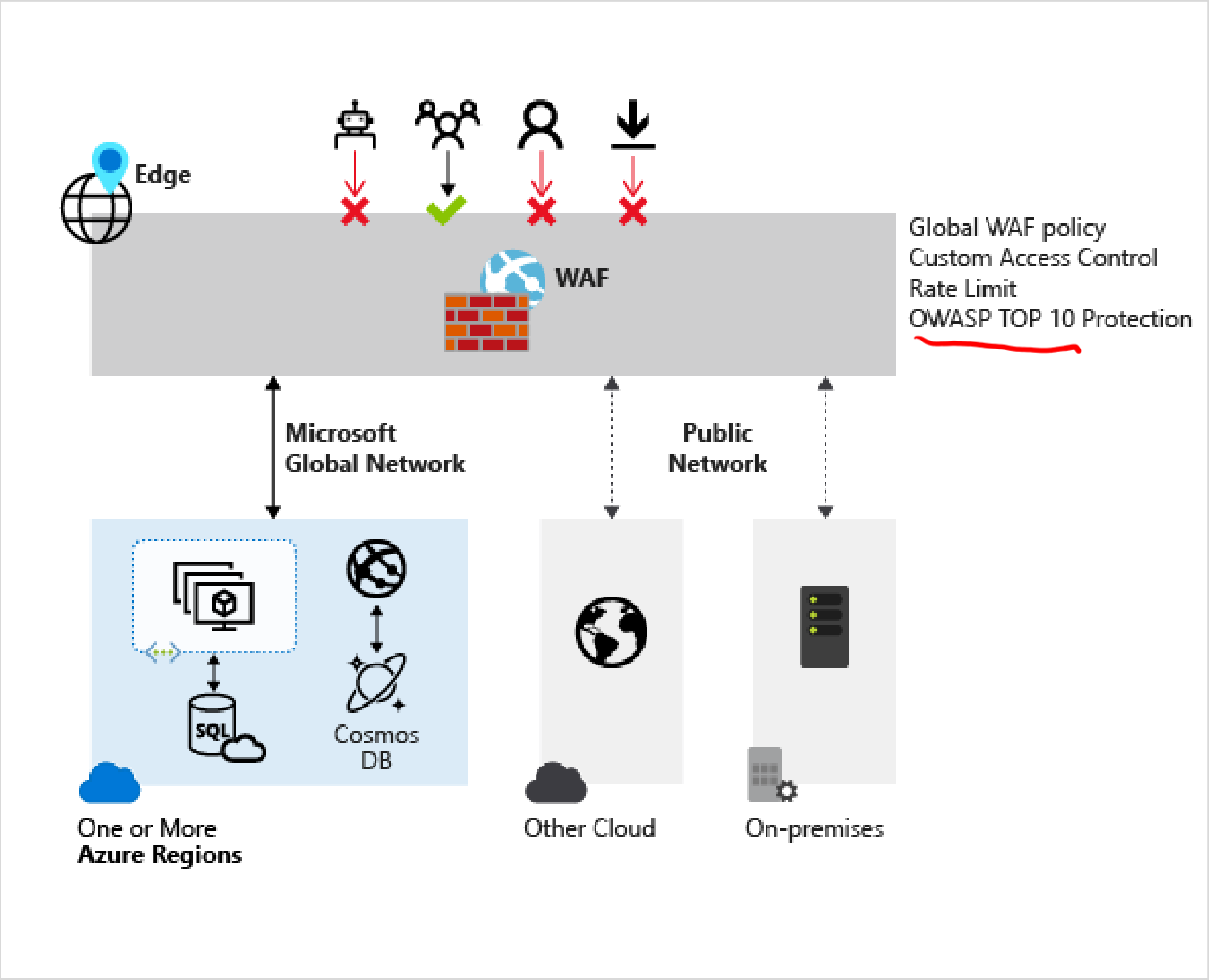
Provides centralized protection of your web applications from common exploits and vulnerabilities

A centralized web application firewall helps make security management much simpler

A WAF also gives application administrators better assurance of protection against threats and intrusions

A WAF solution can react to a security threat faster by centrally patching a known vulnerability, instead of securing each individual web application

Based on OWASP TOP 10 protection



Azure FW

Web Application Firewall with Azure services

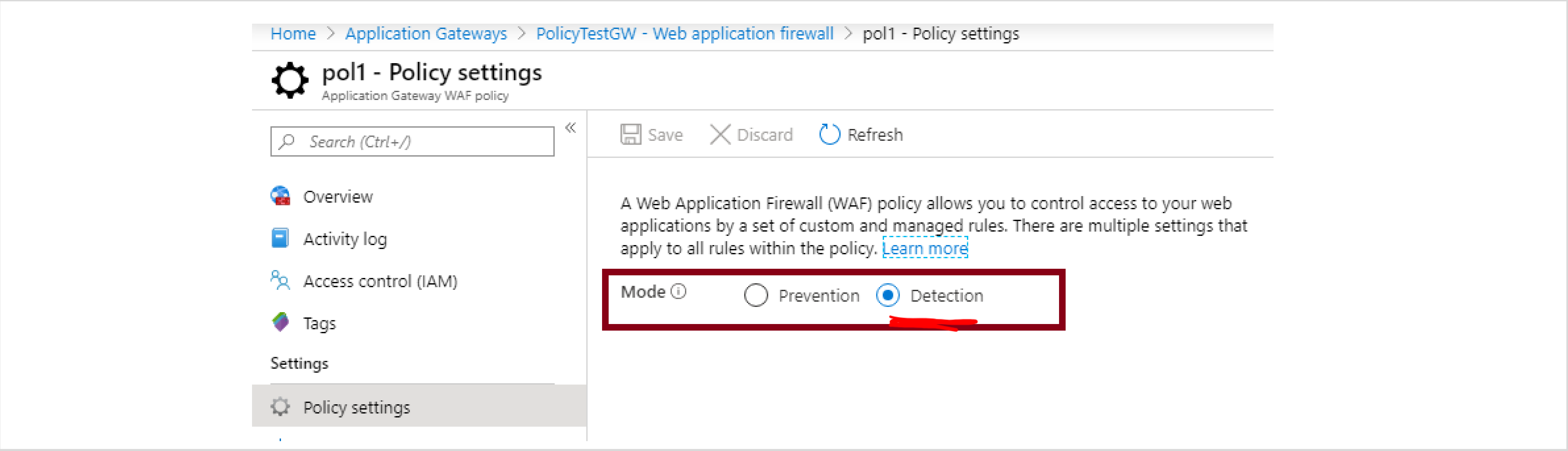
WAF on Azure Application Gateway

- You can create multiple policies, and they can be associated with an Application Gateway, to individual listeners, or to path-based routing rules on an Application Gateway
- Customizable and separate policies for each site behind your Application Gateway if needed
- Monitor attacks

WAF on Azure Front Door

- Global and centralized solution
- WAF enabled web applications inspect every incoming request delivered by Front Door at the network edge
- WAF policy can be associated to one or more Front Door front-ends for protection

Web Application Firewall policy modes



Home > Application Gateways > PolicyTestGW - Web application firewall > pol1 - Policy settings

pol1 - Policy settings

Application Gateway WAF policy

A Web Application Firewall (WAF) policy allows you to control access to your web applications by a set of custom and managed rules. There are multiple settings that apply to all rules within the policy. Learn more

Mode ⓘ ○ Prevention ● Detection

By default, the WAF policy is in Detection mode

In Detection mode, WAF does not block any requests; instead, requests matching the WAF rules are logged at WAF logs

You can change the mode settings from Detection to Prevention

In Prevention mode, requests that match rules that are defined in Default Rule Set (DRS) are blocked and logged at WAF logs

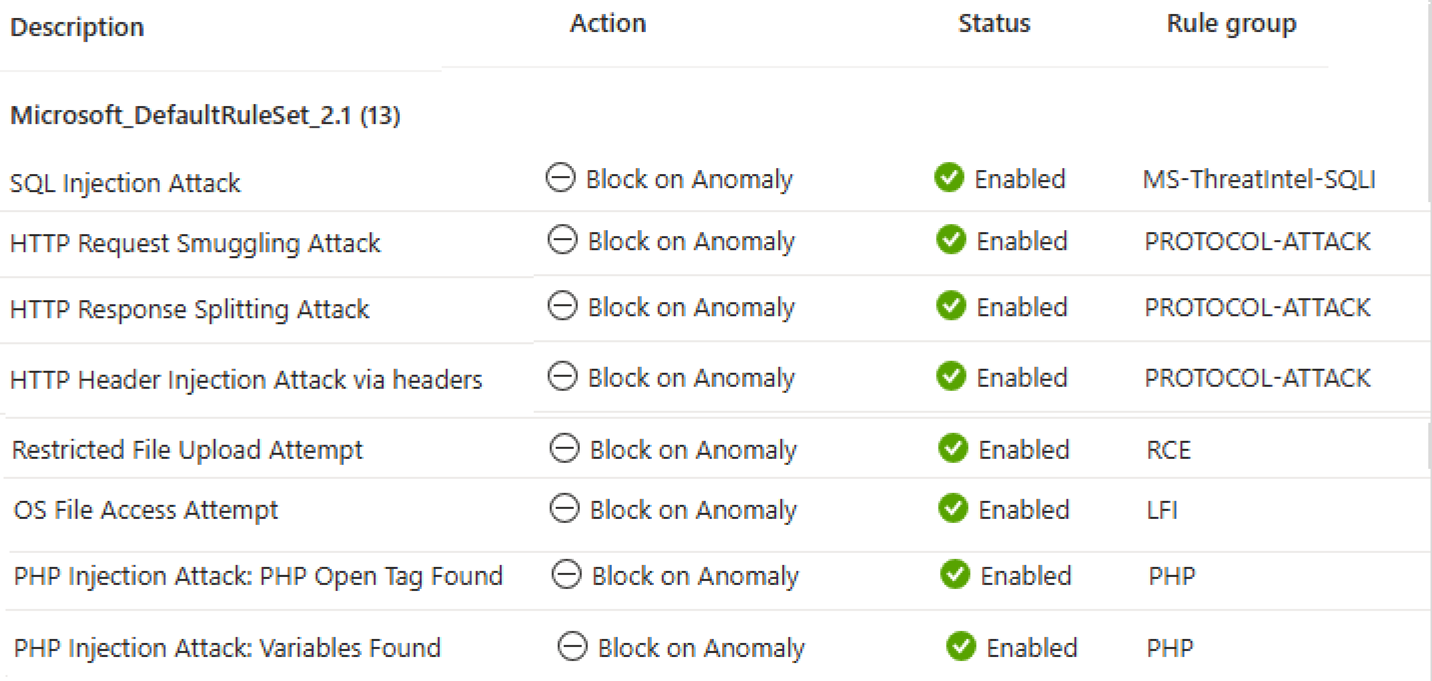
Web Application Firewall Default Rule Set rule groups and rules

Azure-managed Default Rule Set includes rules against the following threat categories:

- Cross-site scripting
- Java attacks
- Local file inclusion
- PHP injection attacks
- Remote command execution
- Remote file inclusion
- Session fixation
- SQL injection protection
- Protocol attackers

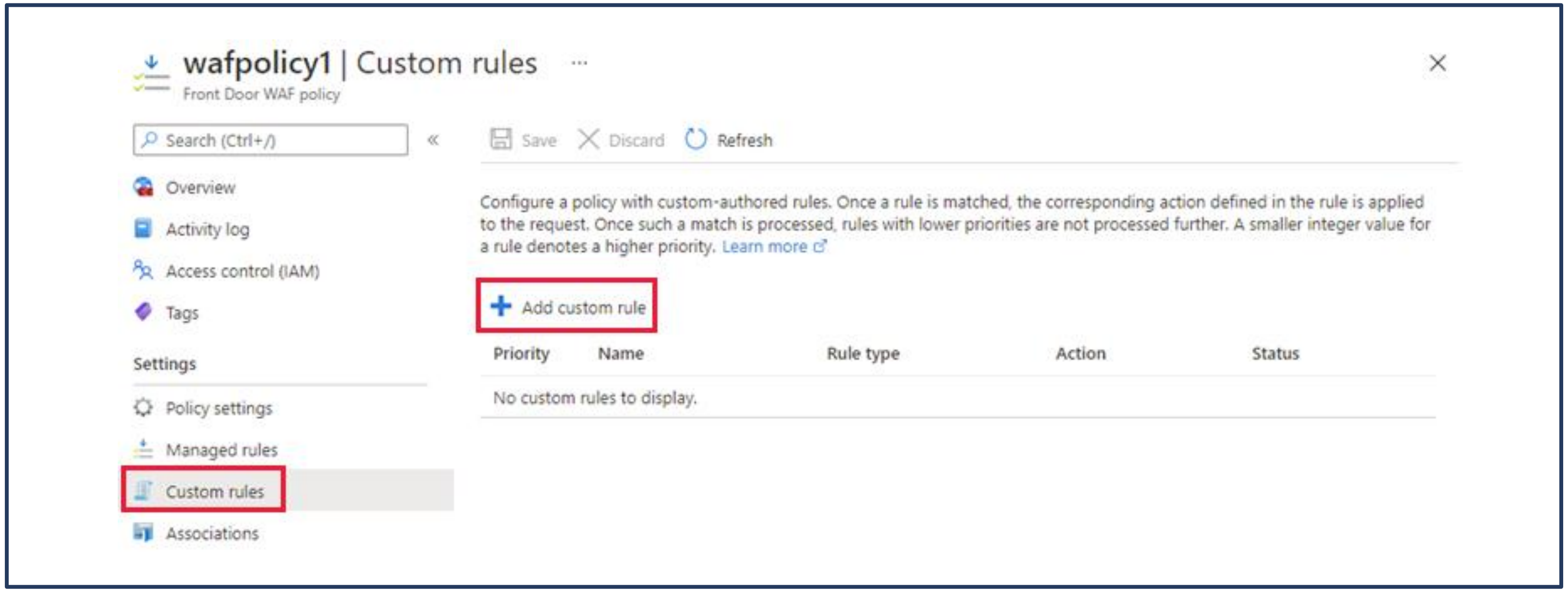
SC - 100

Examples



Description	Action	Status	Rule group
Microsoft_DefaultRuleSet_2.1 (13)			
SQL Injection Attack	⊖ Block on Anomaly	✓ Enabled	MS-ThreatIntel-SQLI
HTTP Request Smuggling Attack	⊖ Block on Anomaly	✓ Enabled	PROTOCOL-ATTACK
HTTP Response Splitting Attack	⊖ Block on Anomaly	✓ Enabled	PROTOCOL-ATTACK
HTTP Header Injection Attack via headers	⊖ Block on Anomaly	✓ Enabled	PROTOCOL-ATTACK
Restricted File Upload Attempt	⊖ Block on Anomaly	✓ Enabled	RCE
OS File Access Attempt	⊖ Block on Anomaly	✓ Enabled	LFI
PHP Injection Attack: PHP Open Tag Found	⊖ Block on Anomaly	✓ Enabled	PHP
PHP Injection Attack: Variables Found	⊖ Block on Anomaly	✓ Enabled	PHP

Web Application Firewall Custom Rules

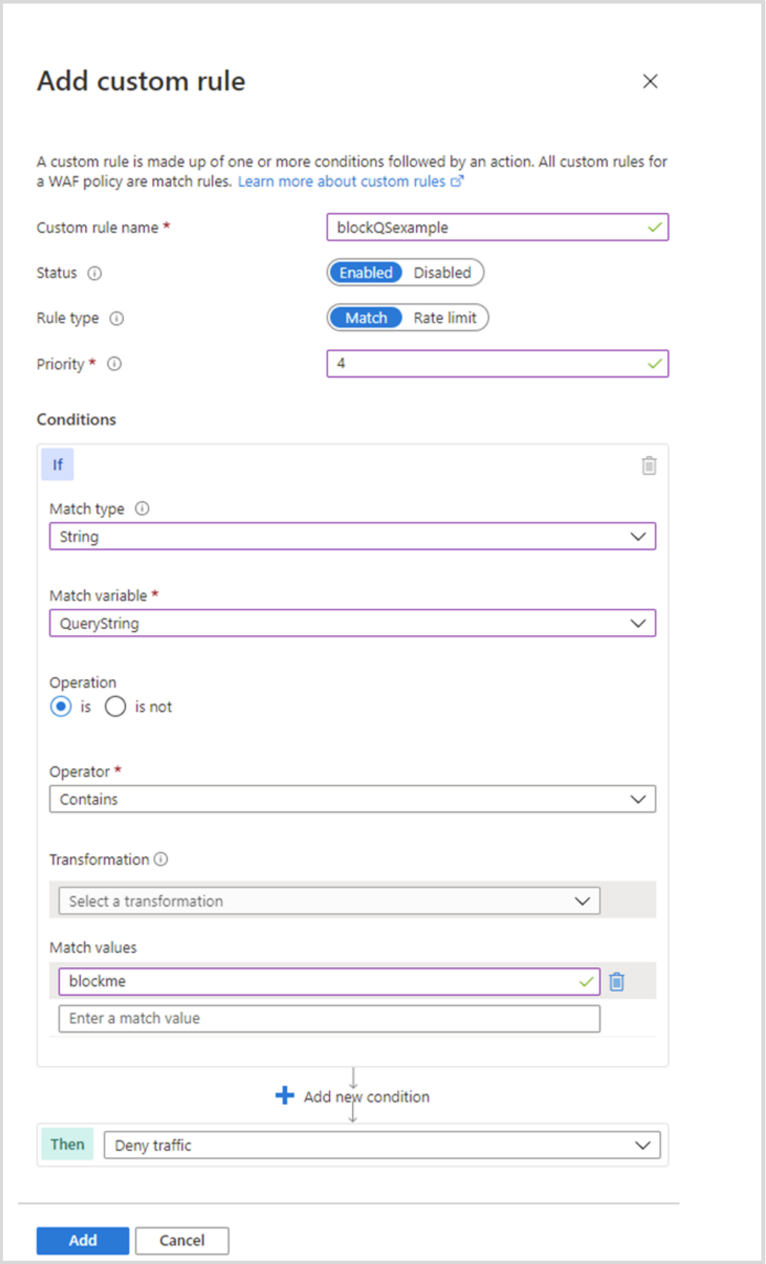


wafpolicy1 | Custom rules

Front Door WAF policy

Configure a policy with custom-authored rules. Once a rule is matched, the corresponding action defined in the rule is applied to the request. Once such a match is processed, rules with lower priorities are not processed further. A smaller integer value for a rule denotes a higher priority. Learn more

Priority	Name	Rule type	Action	Status
No custom rules to display.				



Add custom rule

A custom rule is made up of one or more conditions followed by an action. All custom rules for a WAF policy are match rules. Learn more about custom rules

Custom rule name *: blockQSexample

Status: [✓ Enabled] Disabled

Rule type: [✓ Match] Rate limit

Priority *: 4

Conditions

If

Match type: String

Match variable *: QueryString

Operation: ● is ○ is not

Operator *: Contains

Transformation: Select a transformation

Match values: blockme

Enter a match value

Then: Deny traffic

A custom WAF rule consists of a priority number, rule type, match conditions, and an action

There are two types of custom rules: a **match rule** controls access based on a set of matching conditions

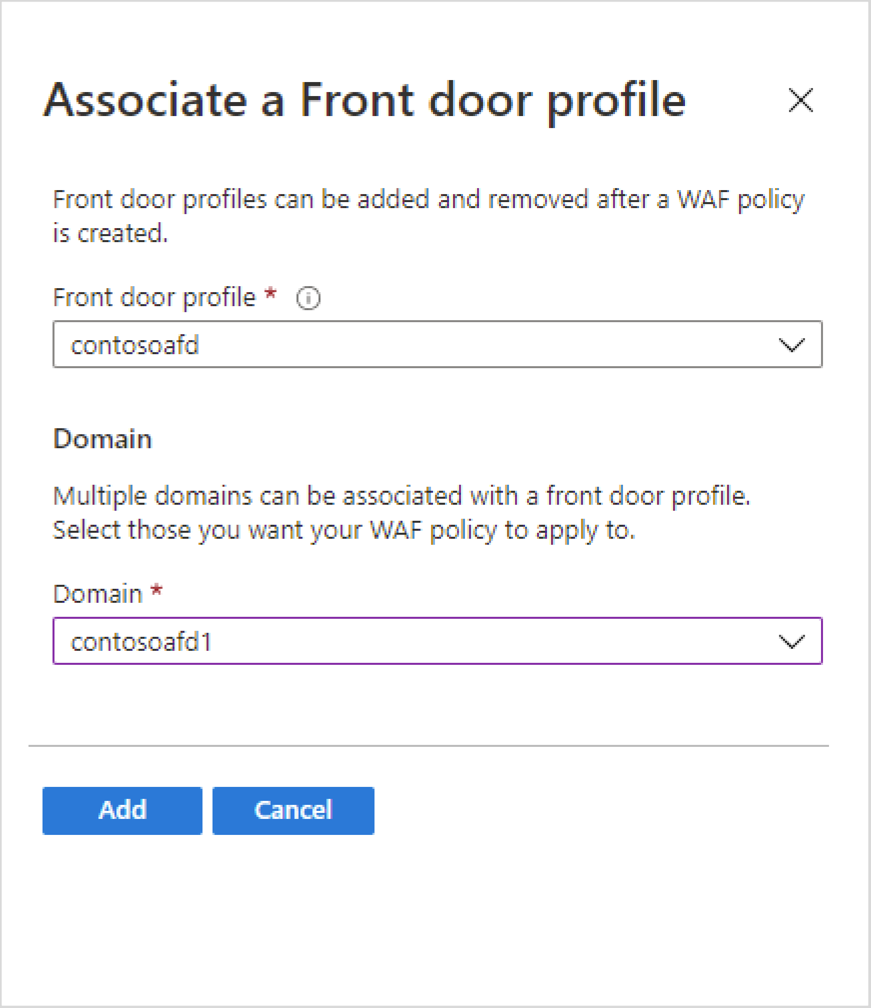
A rate limit rule controls access based on matching conditions and the rates of incoming requests

Create a Web Application Firewall policy on Azure Front Door

Create a Web Application Firewall policy - this is where you create a basic WAF policy with managed Default Rule Set (DRS).

Associate the WAF policy with a Front Door profile - this is where you associate the WAF policy created in stage 1 with a Front Door profile. This association can be done during the creation of the WAF policy, or it can be done on a previously created WAF policy. During the association you specify the Front Door profile and the domain/s within the Front Door profile you want the WAF policy to be applied to.

Configure WAF policy settings and rules - this is an optional stage, where you can configure policy settings such as the Mode (Prevention or Detection) and configure managed rules and custom rules.



Associate a Front door profile

Front door profiles can be added and removed after a WAF policy is created.

Front door profile * : contosoafd

Domain

Multiple domains can be associated with a front door profile. Select those you want your WAF policy to apply to.

Domain * : contosoafd1

Learning Recap – Implement a Web Application Firewall on Azure Front Door

Check your knowledge questions and additional study

What is Azure web application firewall on Azure Front Door? | Microsoft Docs

Azure Web Application Firewall on Azure Front Door Service - frequently asked questions | Microsoft Docs

End of presentation