

AZ-104

## Administer Virtual Networking



#### **AZ-104** Course Outline

01: Administer Identity

02: Administer Governance and Compliance

03: Administer Azure Resources

04: Administer Virtual Networking

05: Administer Intersite Connectivity

06: Administer Network Traffic Management

07: Administer Azure Storage

08: Administer Azure Virtual Machines

09: Administer PaaS Compute Options

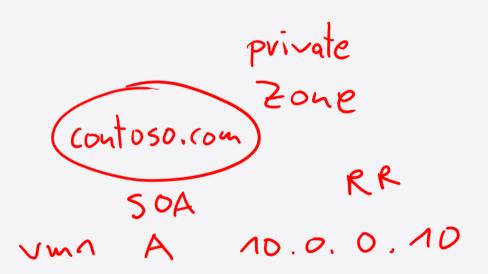
10: Administer Data Protection

11: Administer Monitoring

TCP/IP Vist Cent 1962 IPX6

### Learning Objectives - Administer Virtual Networking

- Configure Virtual Networks
- Configure Network Security Groups
- Host your domain on Azure DNS
- Lab 04 Implement Virtual Networks



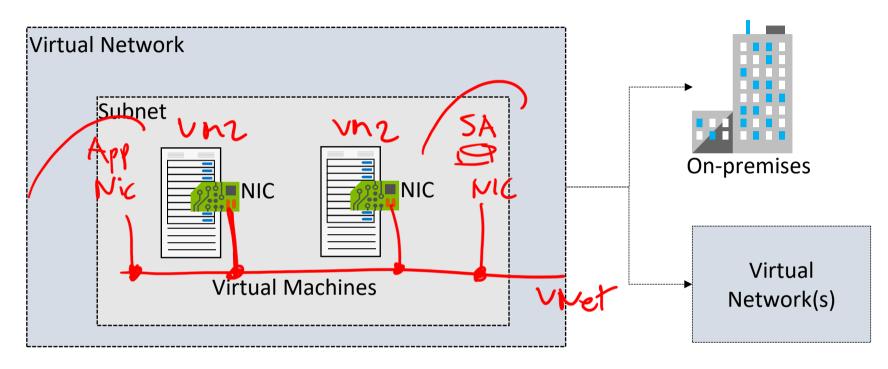
# Configure Virtual Networks



#### **Plan Virtual Networks**







UPN Express Rate

Logical representation of your own network

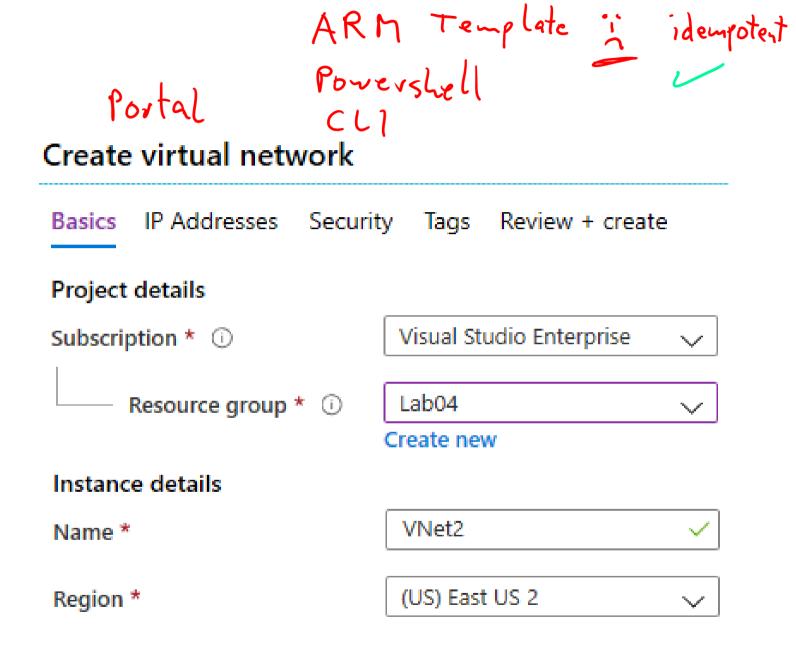
Create a dedicated private cloud-only virtual network

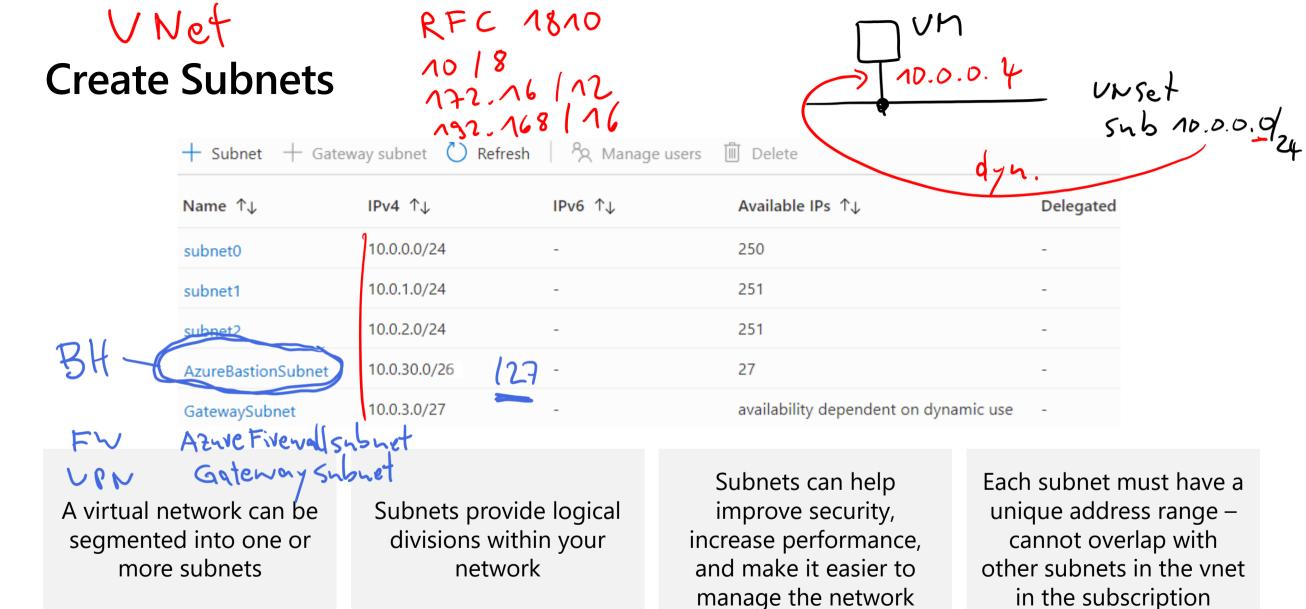
Securely extend your datacenter with virtual networks

Enable hybrid cloud scenarios

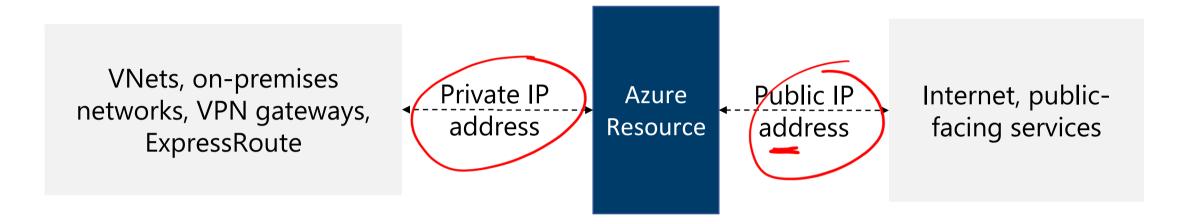
#### **Create Virtual Networks**

- Create new virtual networks at any time
- Add virtual networks when you create a virtual machine
- Define the address space, and at least one subnet
- Check for overlapping address spaces





### Plan IP Addressing



**Private IP addresses** - used within an Azure virtual network (VNet), and your on-premises network, when you use a VPN gateway or ExpressRoute circuit to extend your network to Azure

**Public IP addresses** - used for communication with the Internet, including Azure public-facing services



#### **Create Public IP Addresses**

Available in IPv4 or IPv6 or both

Basic vs Standard SKU

Dynamic vs Static

Microsoft vs. internet routing

Home > Public IP addresses > Create public IP address Tags Review + create Basics **Configuration details** Name \* The name must not be empty. IP Version \* (i) ( ) IPv6 SKU \* (i) Basic O Standard Availability zone \* (i) Zone-redundant Tier \* (i) Global Regional IP address assignment \* (i) Dynamic Static Routing preference \* (i) Microsoft network Idle timeout (minutes) \* (i) DNS name label (i)

#### **Associate Public IP Addresses**

Public IP addresses	IP address association	Dynamic	Static
Virtual Machine	NIC	Yes	Yes
Load Balancer	Front-end configuration	Yes	Yes
VPN Gateway	Gateway IP configuration	Yes	Yes*
Application Gateway	Front-end configuration	Yes	Yes*

A public IP address resource can be associated with virtual machine network interfaces, internet-facing load balancers, VPN gateways, and application gateways

<sup>\*</sup>Static IP addresses only available on certain SKUs.

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### Allocate or Assign Private IP Addresses

Private IP Addresses	IP address association	Dynamic	Static
Virtual Machine	NIC	Yes	Yes
Internal Load Balancer	Front-end configuration	Yes	Yes
Application Gateway	Front-end configuration	Yes	Yes

Dynamic (default). Azure assigns the next available unassigned or unreserved IP address in the subnet's address range

Static. You select and assign any unassigned or unreserved IP address in the subnet's address range

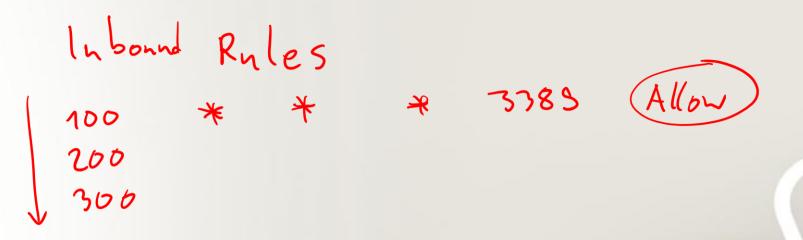
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### **Learning Recap – Virtual Networks**



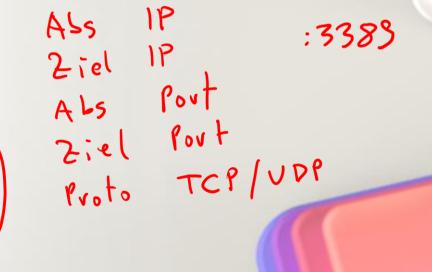
Check your knowledge questions and additional study

- Introduction to Azure Virtual Networks
- Design an IP addressing schema for your Azure deployment
- Implement Windows Server laaS VM IP addressing and routing

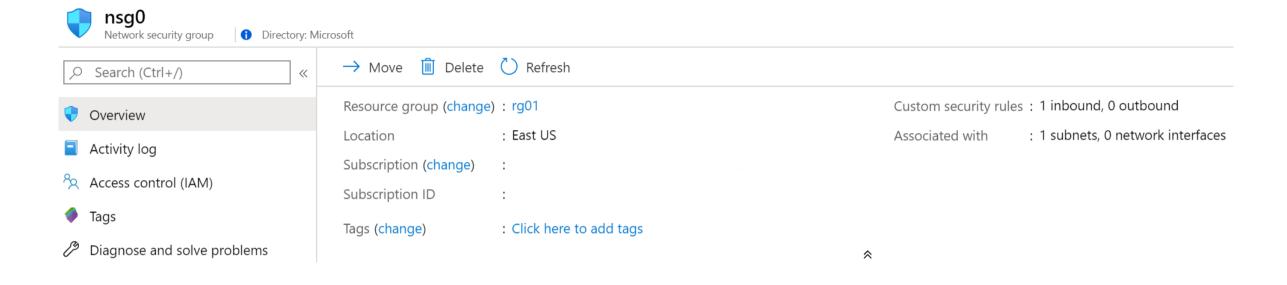


Configure Network Security

Groups (NSGs)



### Implement Network Security Groups

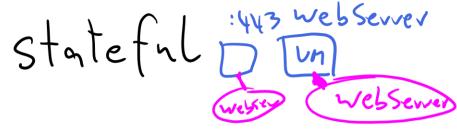


Limits network traffic to resources in a virtual network Lists the security rules that allow or deny inbound or outbound network traffic

Associated to a subnet or a network interface

Can be associated multiple times

### **Determine NSG Rules**



Service 1995 ASS Application Security Gu

Priority	Name	Port	Protocol	Source	Destination	Ällo
00	▲ RDP_Inbound	3389	Any	Any	Any	Allow
55000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
55001	Allow Azure Load Balancer In Bound	Any	Any	AzureLoadBalancer	Any	◆ Allow
55500	DenyAllInBound	Any	Any	Any	Any	Oeny
	rity rules Name	Port	Protocol	Source	Destination	Action
riority		<b>Port</b> Any	<b>Protocol</b> Any	<b>Source</b> VirtualNetwork	<b>Destination</b> Virtual Network	Action  Action
utbound secur Priority 65000	Name					

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

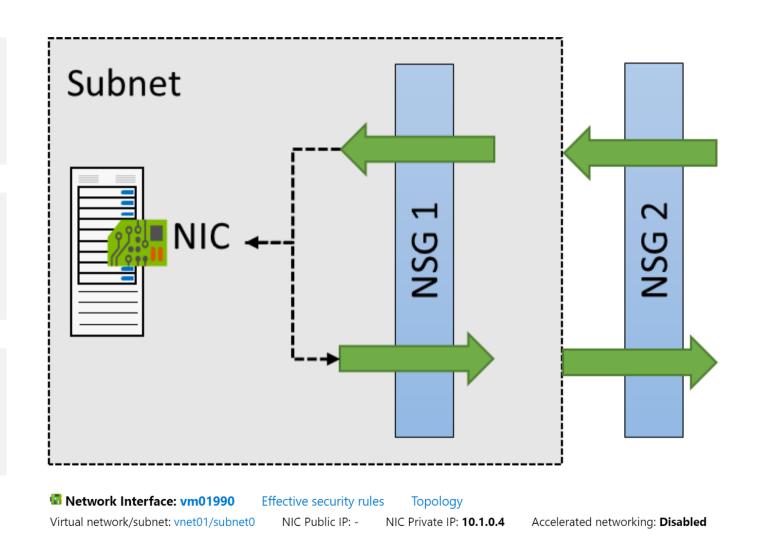
There are default security rules.
You cannot delete the default rules,
but you can add other rules with
a higher priority

#### **Determine 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



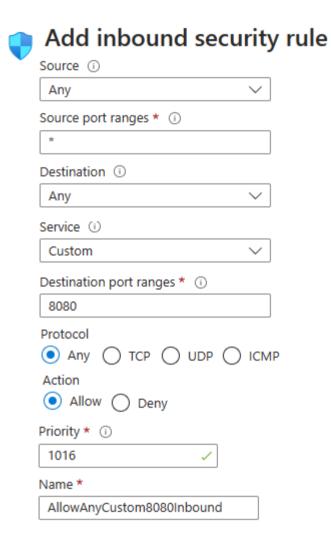
#### **Create NSG rules**

**Source** (Any, IP addresses, My IP address, service tags, and application security group)

**Destination** (Any, IP addresses, service tag, and application security group)

Service (HTTPS, SSH, RDP, DNS, POP3, custom, ...)

**Priority** – The lower the number, the higher the priority



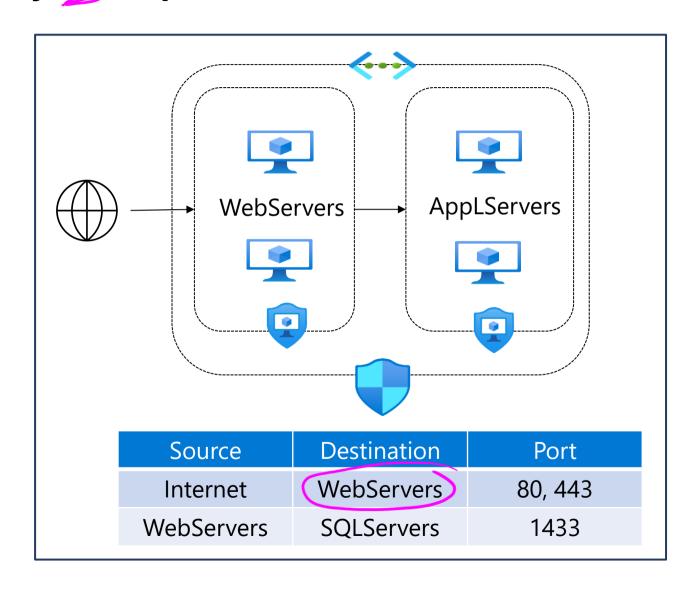
## Implement Application Security Groups

Extends your application's structure

ASGs logically group virtual machines – web servers, application servers

Define rules to control the traffic flow

Wrap the ASG with an NSG for added security

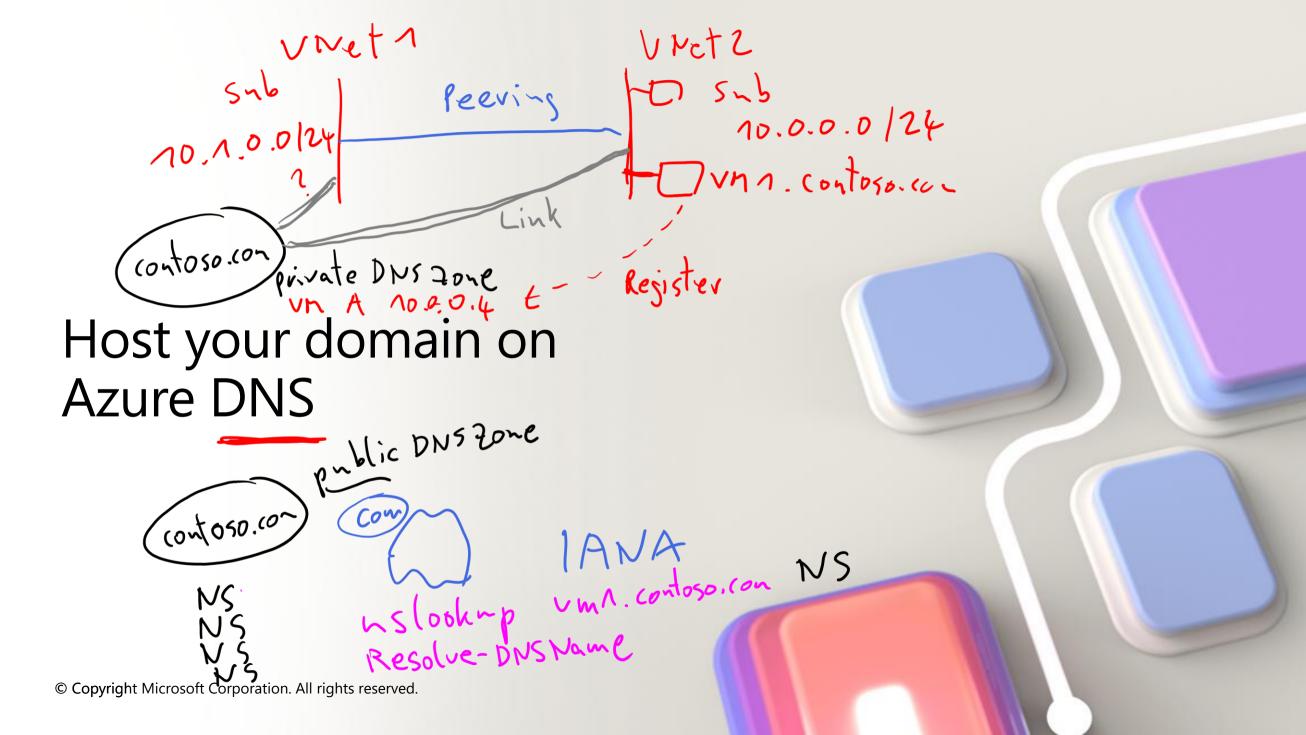


### **Learning Recap – Network Security Groups**



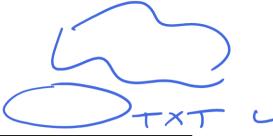
 Secure and isolate access to Azure resources by using network security groups and service endpoints

Check your knowledge questions and additional study



### What is Azure DNS?



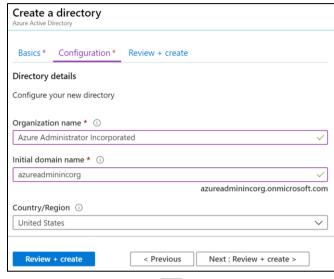


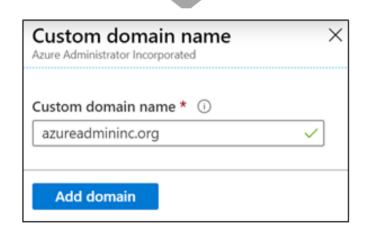
When you create a new tenant, a new default domain is created

The domain has initial domain name in the form domainname.onmicrosoft.com

You can add a custom domain name

After the custom name is added it must be verified – this demonstrates ownership of the domain



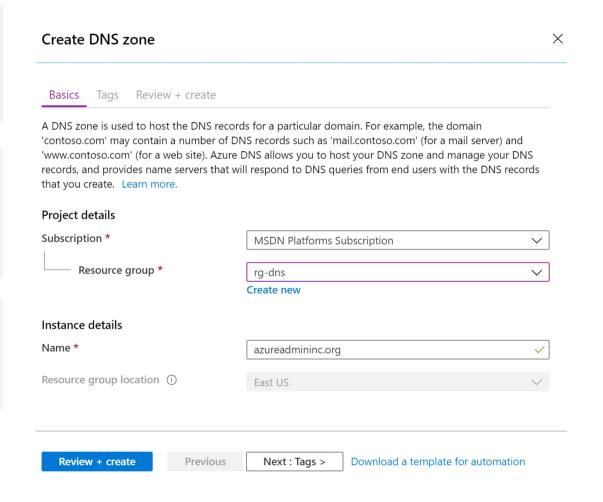


### Configure Azure DNS to host your domain

A DNS zone hosts the DNS records for a domain

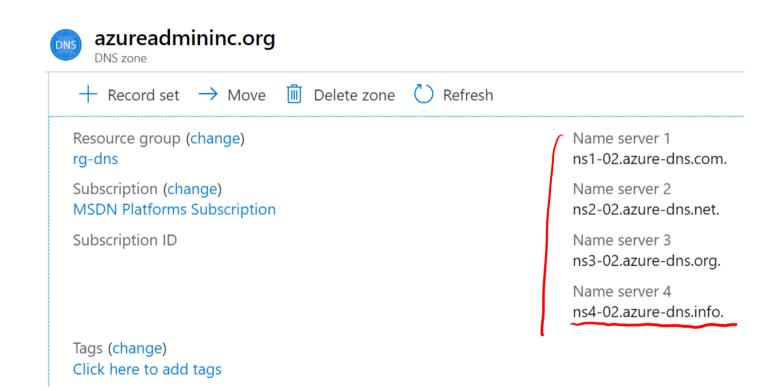
Where multiple zones share the same name, each instance is assigned different name server addresses

Root/Parent domain is registered at the registrar and pointed to Azure NS



### Verify delegation of domain name services

- When delegating a domain to Azure DNS, you must use the name server names provided by Azure DNS – use all four
- Once the DNS zone is created, update the parent registrar
- For child zones, register the NS records in the parent domain



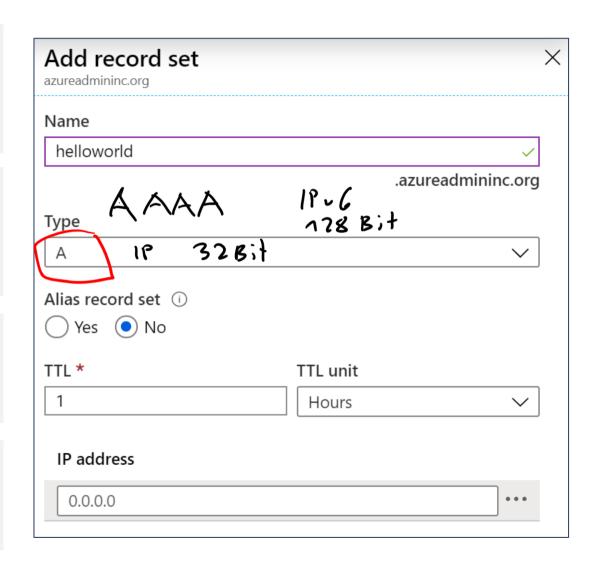
### Dynamically resolve resource name by using alias record

A record set is a collection of records in a zone that have the same name and are the same type

You can add up to 20 records to any record set

A record set cannot contain two identical records

Changing the drop-down Type, changes the information required



### Configure a private DNS zone

Use your own custom domain names

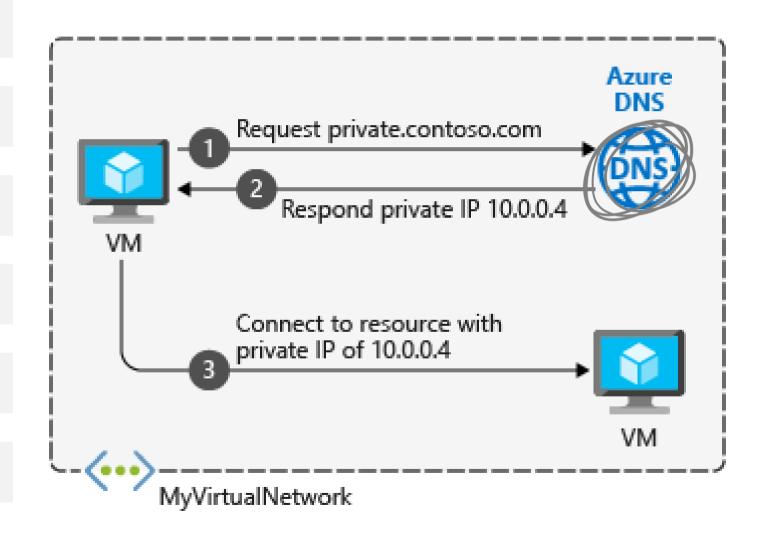
Provides name resolution for VMs within a VNet and between VNets

Automatic hostname record management

Removes the need for custom DNS solutions

Use all common DNS records types

Available in all Azure regions



### Learning Recap – Azure DNS



Check your knowledge questions and additional study

#### **Reference modules**

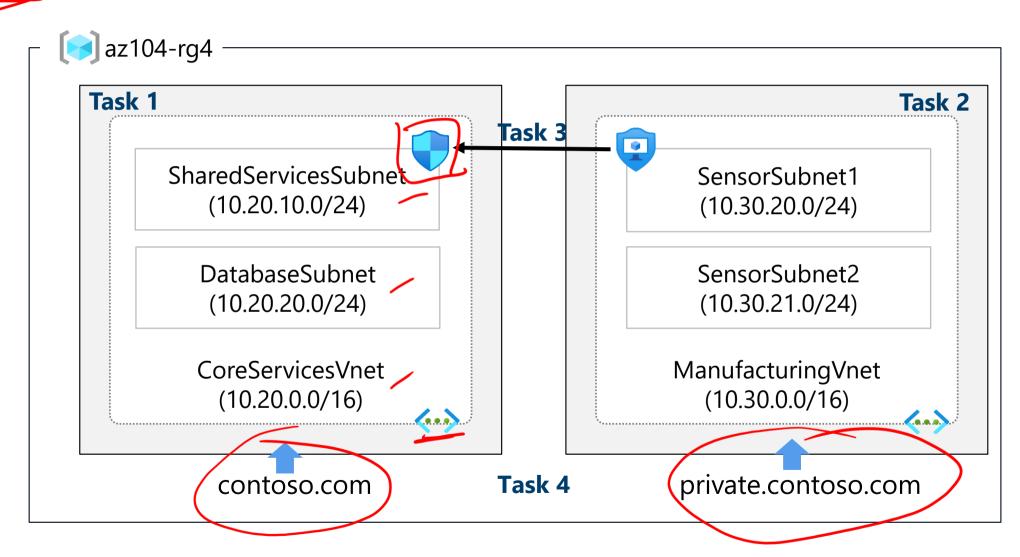
- Introduction to Azure DNS
- Host your domain on Azure DNS
- Implement DNS for Windows Server laaS VMs

# Lab – Implement Virtual Networks



### Lab 04 – Architecture diagram





## End of presentation

