Implement Virtual Networking

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Task 1: Create a virtual network with subnets using the portal.

I'm trying to create a Resource Group for a virtual network, so I decided to use an existing one:

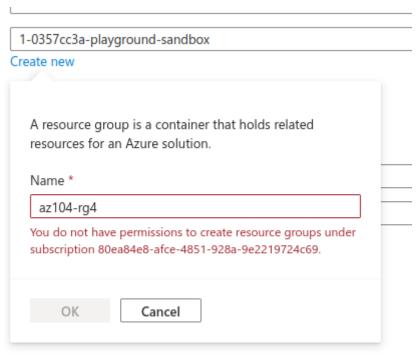


Figure 1. Try to create a resource group.

I'm building a virtual network:

Create virtual network

Basics	Security	IP addresses	Tags	Review + create
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Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation.

Learn more. 🗹

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *	P5-Real Hands-On Labs	V
Resource group *	1-0357cc3a-playground-sandbox	~
	Create new	
Instance details		
Virtual network name *	CoreServicesVnet	
Region * (i)	(US) East US	V
	Deploy to an Azure Extended Zone	

Figure 2. Creating a virtual network.

Set IP Addresses:

Create virtual network

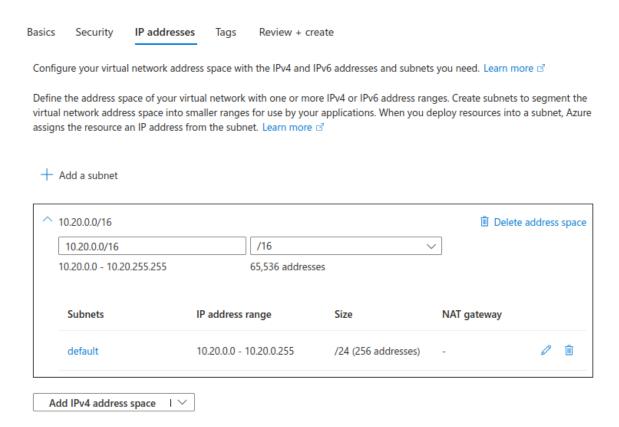


Figure 1. Creating a user.

Create a subnet:

Subnet address range (i)

Add a subnet Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to add select services later. Learn more 🗹 Subnet purpose (i) Default Name * (i) SharedServicesSubnet IPv4 Include an IPv4 address space 10.20.0.0/16 IPv4 address range (i) 10.20.0.0 - 10.20.255.255 Starting address * (i) 10.20.10.0 /24 (256 addresses) Size (i)

Figure 3. IP Addresses.

10.20.10.0 - 10.20.10.255

Add a subnet	×	
Select an address space and configure you select services later. Learn more ♂	r subnet. You can customize a default subnet or select from subnet templates if you plan to add	
Subnet purpose ①	Default ~	,
Name * ①	DatabaseSubnet	
IPv4		
Include an IPv4 address space		
IPv4 address range ①	10.20.0.0/16	,
-	10.20.0.0 - 10.20.255.255	_
Starting address * ①	10.20.20.0	
Size ①	/24 (256 addresses) ~	_
Subnet address range (i)	10.20.20.0 - 10.20.20.255	

Figure 4. Add subnet.

The result of the creation:

Basics Security IP addresses Tags Review + create

View automation template

Basics

Subscription P5-Real Hands-On Labs

Resource Group 1-0357cc3a-playground-sandbox

Name CoreServicesVnet

Region East US

Security

Azure Bastion Disabled

Azure Firewall Disabled

Azure DDoS Network Protection Disabled

IP addresses

Address space 10.20.0.0/16 (65,536 addresses)

Subnet default (10.20.0.0/24) (256 addresses)

Subnet SharedServicesSubnet (10.20.10.0/24) (256 addresses)

Subnet DatabaseSubnet (10.20.20.0/24) (256 addresses)

Tags

Figure 5. Review.

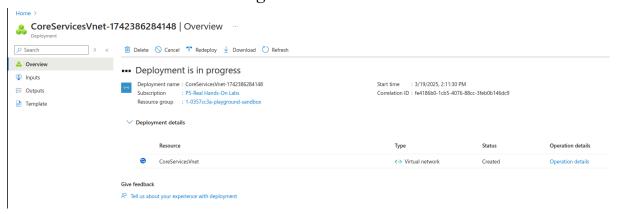


Figure 6. Deployment.

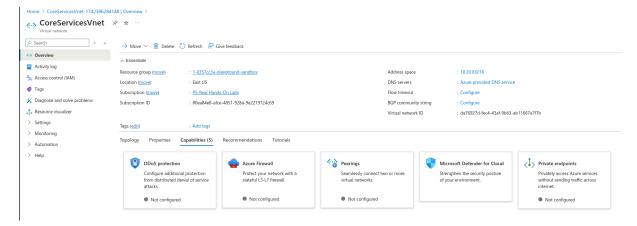


Figure 7. Deployed.

I'll get it:

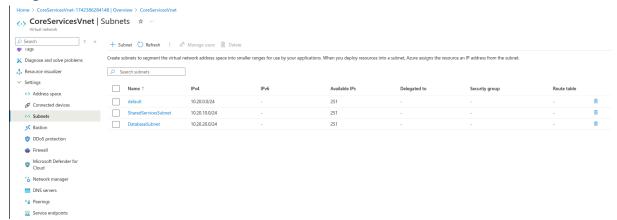


Figure 8. Subnets.

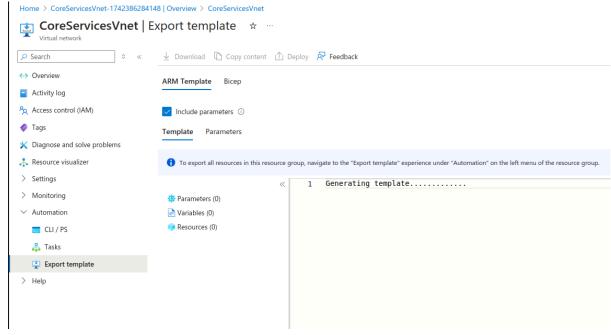
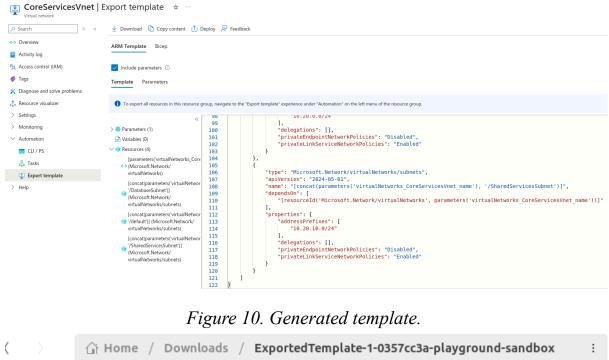


Figure 9. Generating template.



parameters. template.js json on

Figure 11. Downloaded template.



Figure 12. Template.json.

Task 2: Create a virtual network and subnets using a template.

I edit template.json according to the plan Make changes for the ManufacturingVnet virtual network

- 1. Replace all occurrences of CoreServicesVnet with ManufacturingVnet.
- 2. Replace all occurrences of 10.20.0.0 with 10.30.0.0.

Make changes for the Manufacturing Vnet subnets

- 1. Change all occurrences of SharedServicesSubnet to SensorSubnet1.
- 2. Change all occurrences of 10.20.10.0/24 to 10.30.20.0/24.
- 3. Change all occurrences of DatabaseSubnet to SensorSubnet2.
- 4. Change all occurrences of 10.20.20.0/24 to 10.30.21.0/24.

```
"$schema":
"https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.js
   "contentVersion": "1.0.0.0",
   "parameters": {
       "virtualNetworks ManufacturingVnet name": {
           "defaultValue": "ManufacturingVnet",
           "type": "String"
       }
   } ,
   "variables": {},
   "resources": [
       {
           "type": "Microsoft.Network/virtualNetworks",
           "apiVersion": "2024-05-01",
           "name": "[parameters('virtualNetworks ManufacturingVnet name')]",
           "location": "eastus",
           "properties": {
               "addressSpace": {
                   "addressPrefixes": [
                       "10.30.0.0/16"
               },
               "encryption": {
                   "enabled": false,
                   "enforcement": "AllowUnencrypted"
               "privateEndpointVNetPolicies": "Disabled",
               "subnets": [
                   {
                       "name": "default",
                       "id":
"[resourceId('Microsoft.Network/virtualNetworks/subnets',
parameters('virtualNetworks ManufacturingVnet name'), 'default')]",
                       "properties": {
                            "addressPrefixes": [
                               "10.30.0.0/24"
                            "delegations": [],
```

```
"privateEndpointNetworkPolicies": "Disabled",
                           "privateLinkServiceNetworkPolicies": "Enabled"
                       },
                       "type": "Microsoft.Network/virtualNetworks/subnets"
                   },
                       "name": "SensorSubnet1",
                       "id":
"[resourceId('Microsoft.Network/virtualNetworks/subnets',
parameters('virtualNetworks ManufacturingVnet name'), 'SensorSubnet1')]",
                       "properties": {
                           "addressPrefixes": [
                               "10.30.20.0/24"
                           ],
                           "delegations": [],
                           "privateEndpointNetworkPolicies": "Disabled",
                           "privateLinkServiceNetworkPolicies": "Enabled"
                       },
                       "type": "Microsoft.Network/virtualNetworks/subnets"
                   },
                       "name": "SensorSubnet2",
                       "id":
"[resourceId('Microsoft.Network/virtualNetworks/subnets',
parameters('virtualNetworks ManufacturingVnet name'), 'SensorSubnet2')]",
                       "properties": {
                           "addressPrefixes": [
                               "10.30.21.0/24"
                           "delegations": [],
                           "privateEndpointNetworkPolicies": "Disabled",
                           "privateLinkServiceNetworkPolicies": "Enabled"
                       },
                       "type": "Microsoft.Network/virtualNetworks/subnets"
                   }
               ],
               "virtualNetworkPeerings": [],
               "enableDdosProtection": false
       },
           "type": "Microsoft.Network/virtualNetworks/subnets",
           "apiVersion": "2024-05-01",
           "name":
"[concat(parameters('virtualNetworks ManufacturingVnet name'),
'/SensorSubnet2')]",
           "dependsOn": [
               "[resourceId('Microsoft.Network/virtualNetworks',
parameters('virtualNetworks ManufacturingVnet name'))]"
           ],
           "properties": {
               "addressPrefixes": [
                   "10.30.21.0/24"
```

```
],
               "delegations": [],
               "privateEndpointNetworkPolicies": "Disabled",
               "privateLinkServiceNetworkPolicies": "Enabled"
           }
       },
           "type": "Microsoft.Network/virtualNetworks/subnets",
           "apiVersion": "2024-05-01",
           "name":
"[concat(parameters('virtualNetworks ManufacturingVnet name'), '/default')]",
           "dependsOn": [
               "[resourceId('Microsoft.Network/virtualNetworks',
parameters('virtualNetworks ManufacturingVnet name'))]"
           "properties": {
               "addressPrefixes": [
                   "10.30.0.0/24"
               ],
               "delegations": [],
               "privateEndpointNetworkPolicies": "Disabled",
               "privateLinkServiceNetworkPolicies": "Enabled"
       },
           "type": "Microsoft.Network/virtualNetworks/subnets",
           "apiVersion": "2024-05-01",
"[concat(parameters('virtualNetworks_ManufacturingVnet_name'),
'/SensorSubnet1')]",
               "[resourceId('Microsoft.Network/virtualNetworks',
parameters('virtualNetworks ManufacturingVnet name'))]"
           "properties": {
               "addressPrefixes": [
                   "10.30.20.0/24"
               ],
               "delegations": [],
               "privateEndpointNetworkPolicies": "Disabled",
               "privateLinkServiceNetworkPolicies": "Enabled"
       }
   ]
```

I edit the template.json according to the plan:

Replace the one occurrence of CoreServicesVnet with ManufacturingVnet

Figure 13. Edited Parameters.json.

I upload the edited templates:

Home >		
Custom deployment Deploy from a custom template		
Select a template Basics Revi	iew + create	
	rure Resource Manager templates in a single, coordinated operation. Create or Learn more about template deployment ☑	
Build your own template in the	ne editor	
Common templates		
Create a Linux virtual machine		
Create a Windows virtual mad	thine	
Create a web app		
Create a SQL database		
Azure landing zone		
Start with a quickstart template or	template spec	
Template source (i)	Quickstart template	
	Template spec	
Quickstart template (disclaimer) (i	V	

Figure 14. Uploading templates.

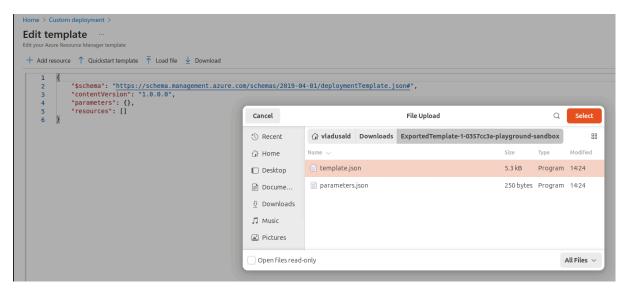
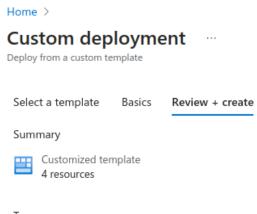


Figure 15. Uploading templates.



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Basics

Subscription P5-Real Hands-On Labs

Resource group 1-0357cc3a-playground-sandbox

Region South Central US
Virtual Networks_Manufacturing Vnet_n... ManufacturingVnet



Figure 16. Review.



Figure 17. Complete deployment.

Task 3: Create and configure communication between an Application Security Group and a Network Security Group.

I create application security groups:

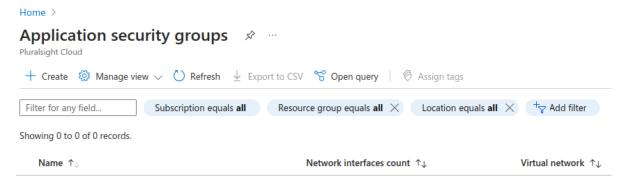


Figure 18. Creating Application security group.

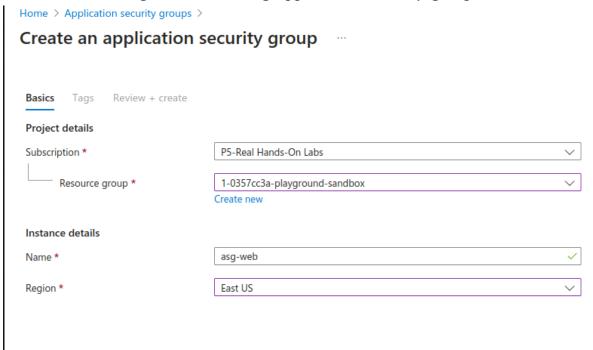


Figure 19. Basics.



Figure 20. Review.

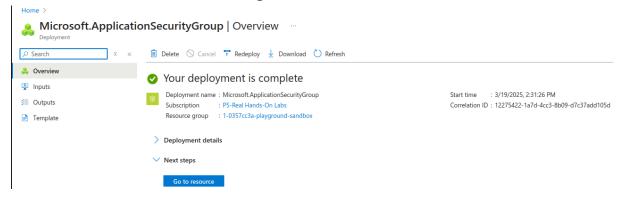


Figure 21. Complete deployment.

I create Network security groups:

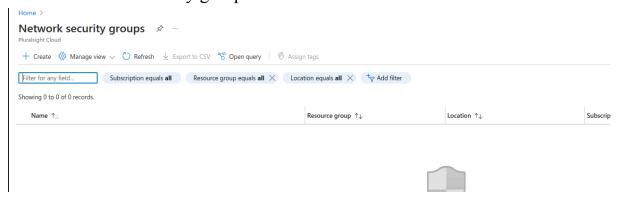


Figure 22. Creating network security groups.

Create network security group

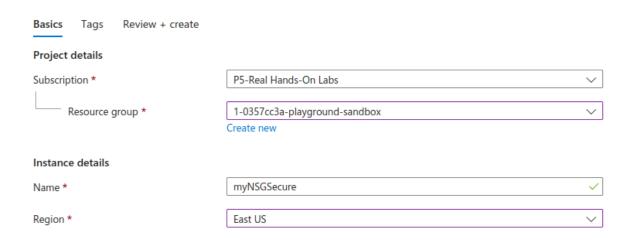


Figure 23. Basics.

Home > Network security groups >

Create network security group

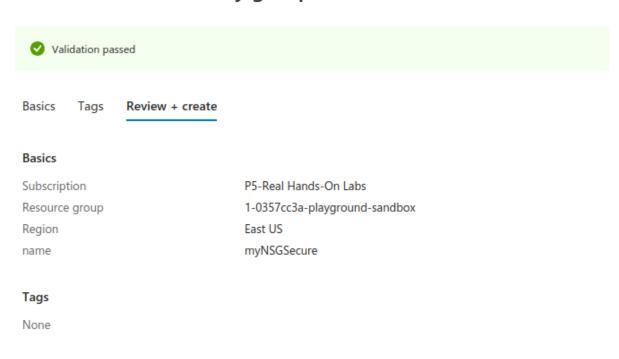


Figure 24. Review.

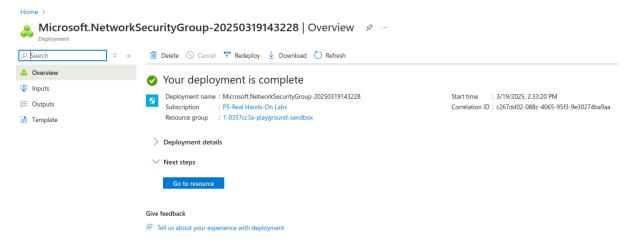


Figure 25. Complete deployment.

Adding a subnet:



Figure 26. Adding a subnet.

Configure an inbound security rule:

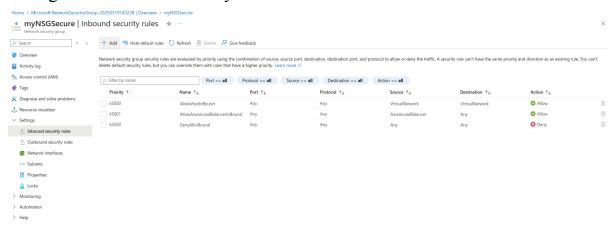


Figure 27. Configure an inbound security rule.

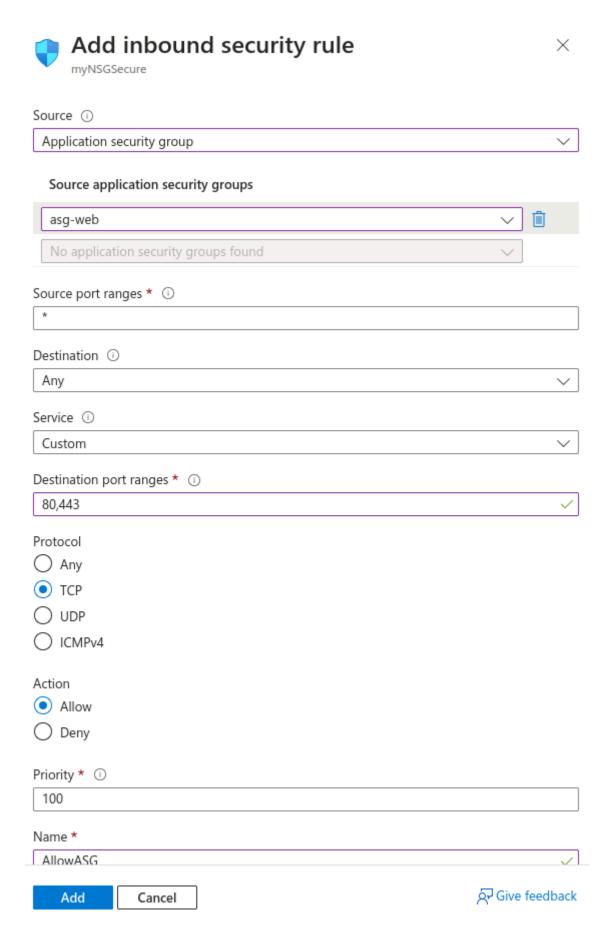


Figure 28. Configing.

Configure an outbound NSG rule:

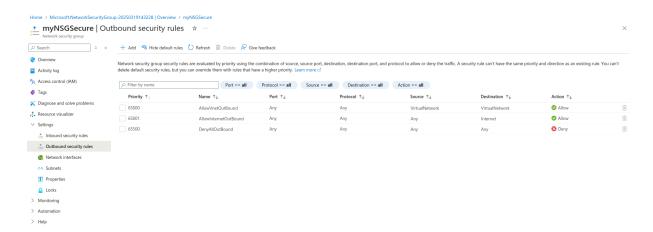


Figure 29. Configure an outbound security rule.

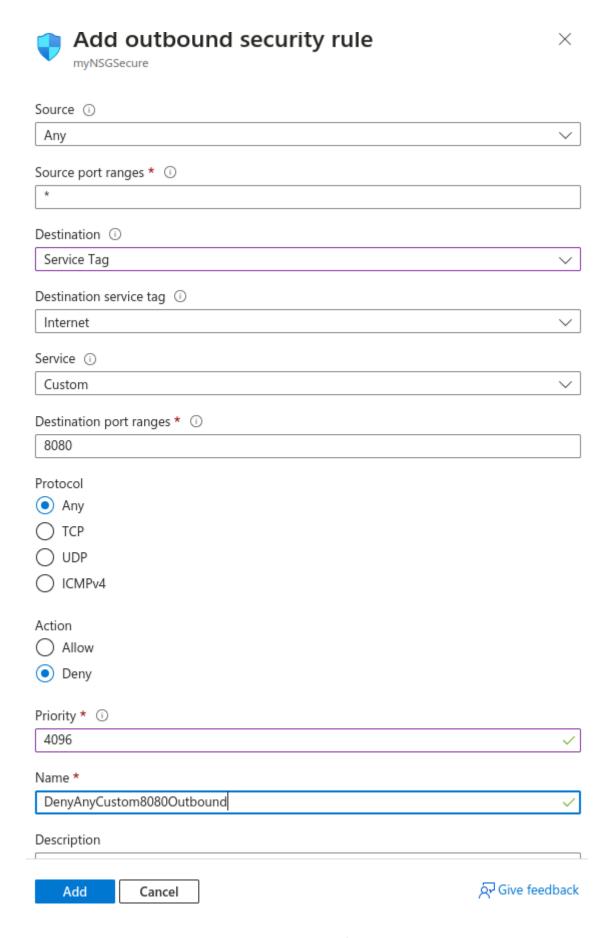


Figure 30. Configing.

Task 4: Configure public and private Azure DNS zones.

Configure a public DNS zone:

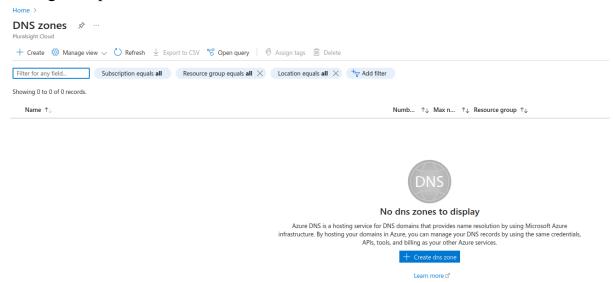


Figure 31. Creating a public DMS zone.

Create a DNS Zone ...

Basics DNS Zone Editor Tags Review + Create

A DNS zone is used to host the DNS records for a particular domain. For example, the domain 'contoso.com' may contain a number of DNS records such as 'mail.contoso.com' (for a mail server) and 'www.contoso.com' (for a web site). Azure DNS allows you to host your DNS zone and manage your DNS records, and provides name servers that will respond to DNS queries from end users with the DNS records that you create. Learn more

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

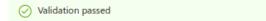
Subscription * ()	P5-Real Hands-On Labs	
Resource group * ①	1-0357cc3a-playground-sandbox	~
	Create new	

Instance details

This zone is a child of an existing zone	already hosted in Azure DNS ①
Name *	contoso1.com
Resource group location * (i)	(US) South Central US

Figure 32. Basics.

Create a DNS Zone



Basics DNS Zone Editor Tags Review + Create

View automation template

Basics

Subscription P5-Real Hands-On Labs

Resource group 1-0357cc3a-playground-sandbox

Resource group location South Central US
Name contoso1.com

DNS Zone Record Set(s)

Number of record sets 0 record set(s)

Figure 33. Review.

I changed the name a bit because it gave an error when deploying:

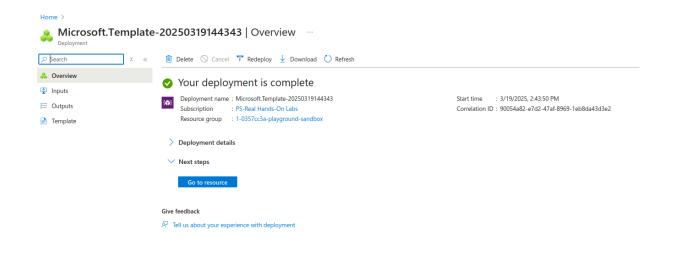


Figure 34. Complete deployment.

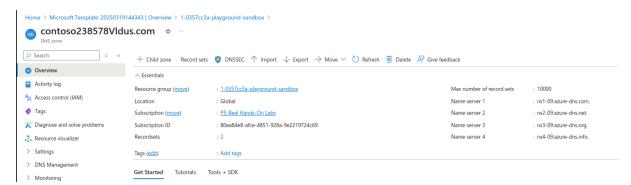


Figure 35. Public DNS zone.

Add a Record set:

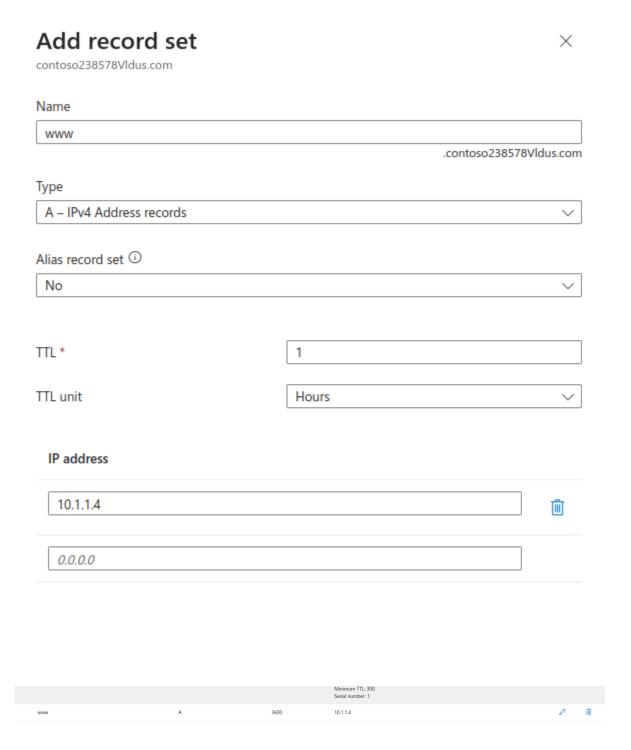


Figure 36. Add record set.

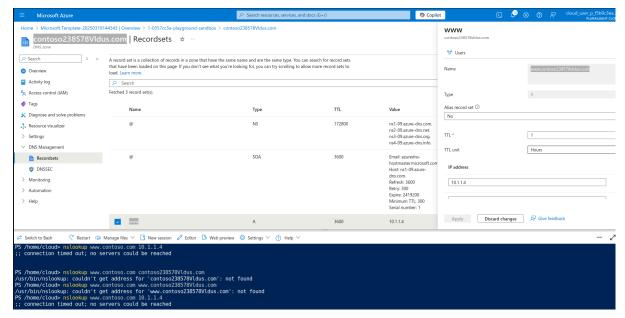


Figure 37. Try to check recordsets.

Configure a private DNS zone:

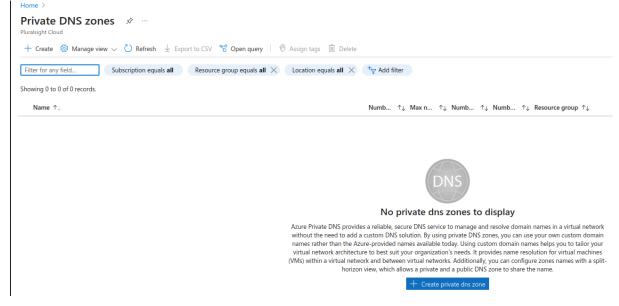


Figure 38. Creating a private DNS zone.

A Private DNS zone provides name resolution services within virtual networks. A Private DNS zone is accessible only from the virtual networks that it is linked to and can't be accessed over internet. For example you can create a Private DNS zone named contoso.com and then create DNS records like www.contoso.com in this zone. You can then link the zone to a one or more virtual networks. Learn more

Review + Create

Project details

Resource group location * (i)

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

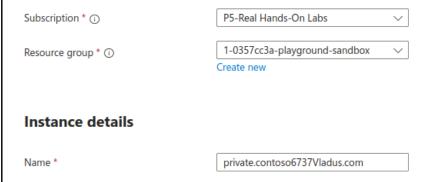


Figure 39. Basics.

(US) South Central US

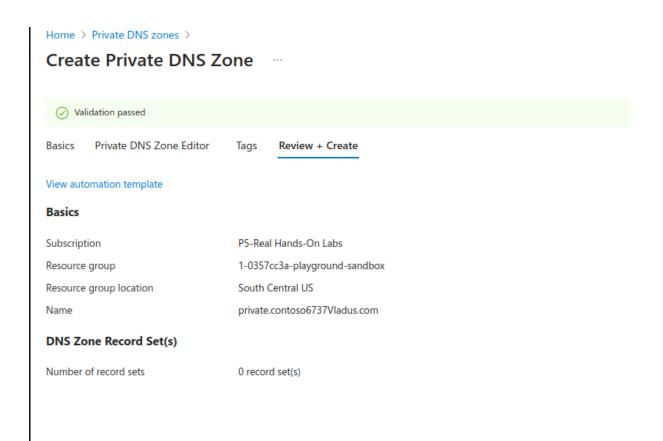


Figure 40. Review.

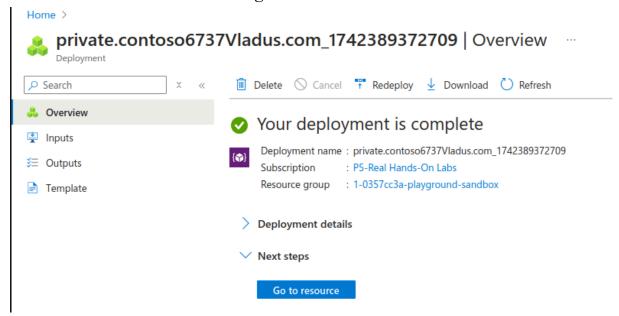


Figure 41. Complete deployment.

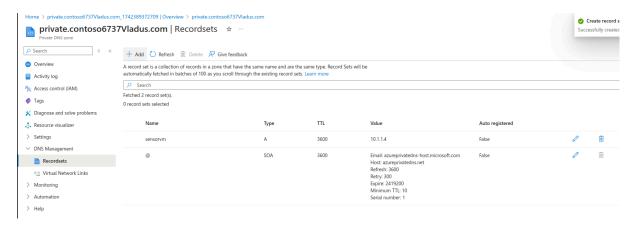


Figure 42. Check Recordsets.