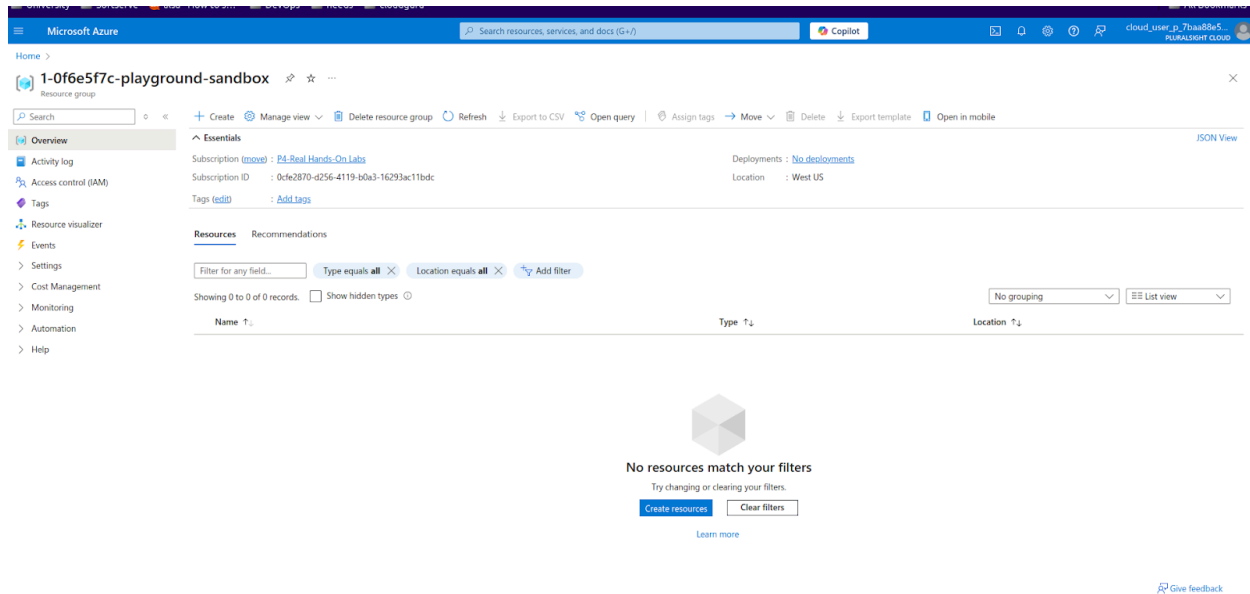


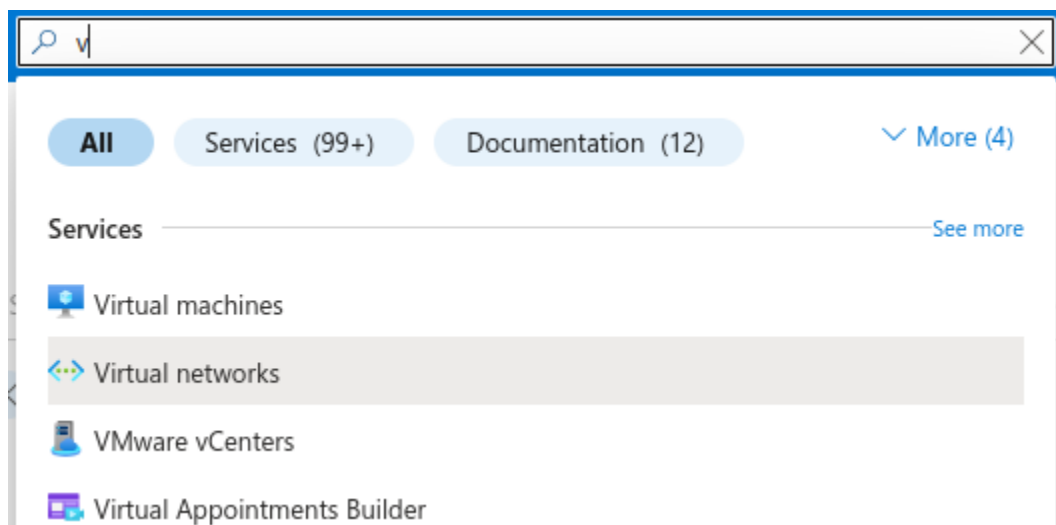
Lab 04 - Implement Virtual Networking

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

1. Sign in to the Azure portal - <https://portal.azure.com>.



2. Search for and select Virtual Networks.



Microsoft Azure

Search resources, services, and docs (G+)

Home >

Virtual networks


Pluralsight Cloud

+ Create Manage view Refresh Export to CSV Open query Assign tags

Filter for any field... Subscription equals all Resource group equals all Location equals all Add filter

Showing 0 to 0 of 0 records.

Name ↑↓	Resource group ↑↓	Location ↑↓
---------	-------------------	-------------




No virtual networks to display

Create a virtual network to securely connect your Azure resources to each other. Connect your virtual network to your on-premises network using an Azure VPN Gateway or ExpressRoute.

[Create virtual network](#)

[Learn more](#)

3. Select Create on the Virtual networks page.



No virtual networks to display

Create a virtual network to securely connect your Azure resources to each other. Connect your virtual network to your on-premises network using an Azure VPN Gateway or ExpressRoute.

[Create virtual network](#)

[Learn more](#)

4. Complete the Basics tab for the CoreServicesVnet.

Option	Value
Resource Group	<code>az104-rg4</code> (if necessary, create new)
Name	<code>CoreServicesVnet</code>
Region	(US) East US

Project details

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

Subscription *	<div>P6-Real Hands-On Labs</div>
Resource group *	<div>1-8155447d-playground-sandbox</div> <div>Create new</div>

Instance details

Virtual network name *	<div></div>
Region * ⓘ	<div>az104-rg4</div> <div>You do not have permissions to create resource groups under subscription 2213e8b1-dbc7-4d54-8aff-b5e315df5e5b.</div>

Project details

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

Subscription *

P6-Real Hands-On Labs

Resource group *

1-8155447d-playground-sandbox

[Create new](#)

Instance details

Virtual network name *

Region * ⓘ

[Deploy to an Azure Extended Zone](#)

5. Move to the IP Addresses tab.

Option	Value
IPv4 address space	Replace the prepopulated IPv4 address space with <code>10.20.0.0/16</code> (separate the entries)

[+ Add a subnet](#)

10.20.0.0/16

10.20.0.0

/16

10.20.0.0 - 10.20.255.25565,536 addresses


Delete address space

Subnets	IP address range	Size	NAT gateway
default	10.20.0.0 - 10.20.0.255	/24 (256 addresses)	-

Add IPv4 address space |

6. Select + Add a subnet. Complete the name and address information for each subnet. Be sure to select Add for each new subnet. Be sure to delete the default subnet - either before or after creating the other subnets.

Subnet	Option	Value
SharedServicesSubnet	Subnet name	SharedServicesSubnet
	Starting address	10.20.10.0
	Size	/24
DatabaseSubnet	Subnet name	DatabaseSubnet
	Starting address	10.20.20.0
	Size	/24

 Add a subnet

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 ⓘ	Default
Name * ⓘ	SharedServicesSubnet
IPv4	
Include an IPv4 address space	<input checked="" type="checkbox"/>
IPv4 address range * ⓘ	10.20.0.0/16 10.20.0.0 - 10.20.255.255
Starting address * ⓘ	10.20.10.0
Size ⓘ	/24 (256 addresses)
Subnet address range ⓘ	10.20.10.0 - 10.20.10.255

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 ⓘ	Default
Name * ⓘ	DatabaseSubnet
IPv4	
Include an IPv4 address space	<input checked="" type="checkbox"/>
IPv4 address range * ⓘ	10.20.0.0/16 10.20.0.0 - 10.20.255.255
Starting address * ⓘ	10.20.20.0
Size ⓘ	/24 (256 addresses)
Subnet address range ⓘ	10.20.20.0 - 10.20.20.255

10.20.0.0/16 Delete address space

10.20.0.0

/16

10.20.0.0 - 10.20.255.255 65,536 addresses

Subnets	IP address range	Size	NAT gateway	
default	10.20.0.0 - 10.20.0.255	/24 (256 addresses)	-	
SharedServicesSubnet	10.20.10.0 - 10.20.10.255	/24 (256 addresses)	-	
DatabaseSubnet	10.20.20.0 - 10.20.20.255	/24 (256 addresses)	-	

7. To finish creating the CoreServicesVnet and its associated subnets, select Review + create.

Basics Security IP addresses Tags Review + create

Running validation...

Basics Security IP addresses Tags **Review + create**

[View automation template](#)

Basics

Subscription	P6-Real Hands-On Labs
Resource Group	1-8155447d-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

Previous

Next

Create

8. Verify your configuration passed validation, and then select Create.

Previous

Next

Create

*** Initializing deployment...



Initializing template deployment to resource group '1-8155447d-playground-sandbox'.

9. Wait for the virtual network to deploy and then select Go to resource.

Delete

Cancel

Redeploy

Download

Refresh

Your deployment is complete

Deployment name : CoreServicesVnet-1729711113813

Subscription : P6-Real Hands-On Labs

Resource group : 1-8155447d-playground-sandbox

Start time : 10/23/2024, 10:18:43 PM

Correlation ID : 246699dd-60a7-47c5-b957-d267b2c4d9b2

>

Deployment details

✓

Next steps

Go to resource

10. Take a minute to verify the Address space and the Subnets. Notice your other choices in the Settings blade.

Virtual network

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

The address space for a virtual network is composed of one or more non-overlapping address ranges that are specified in CIDR notation. IP Address Management (IPAM) is recommended to simplify address management and avoid overlapping address space. When not using IPAM, it is recommended to use an address range that is not globally routable, such as 172.16.0.0/12, or a range defined in RFC 1918 or RFC 6598. [Learn more](#)

Address space	Address range	Address count
10.20.0.0/16	10.20.0.0 - 10.20.255.255	65,536
<div>Add additional address range</div>		

Peered virtual network address space

Peering name	Peered to	Address space	Address range
--------------	-----------	---------------	---------------

CoreServicesVnet | Subnets

Virtual network

Search

+ Subnet + Gateway subnet Refresh Manage users Delete

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

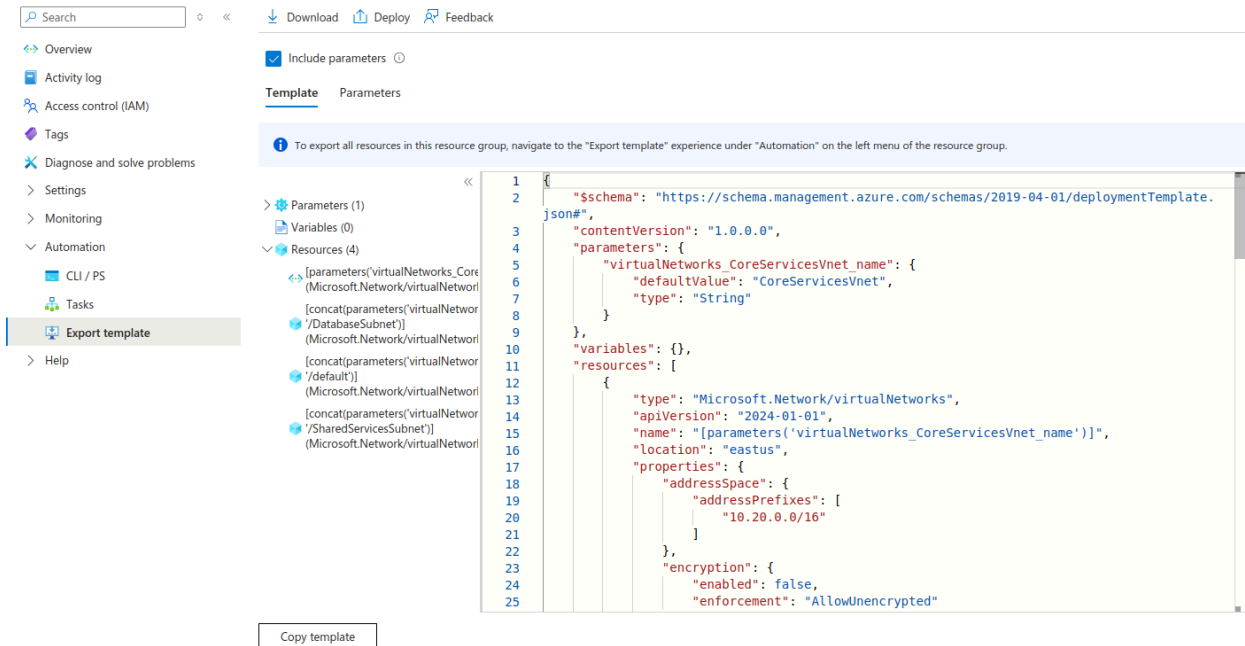
Connected devices

Subnets

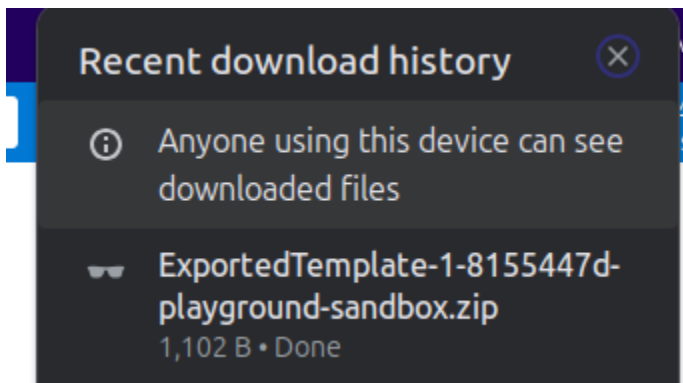
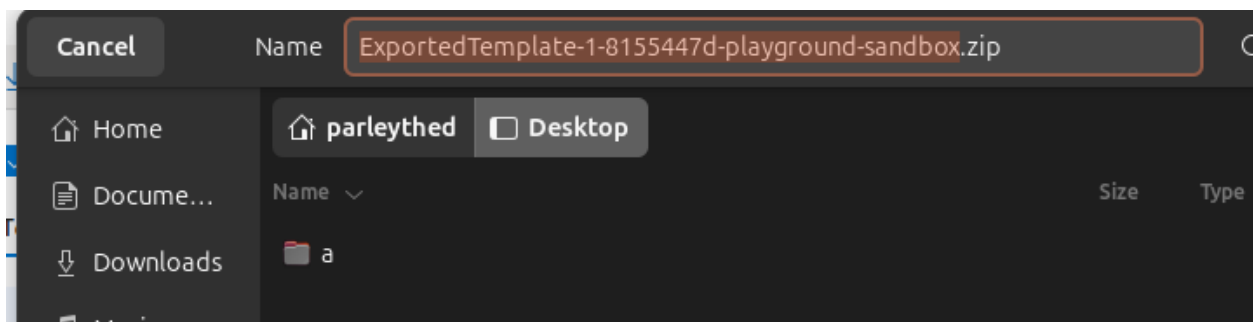
Search subnets

Name ↑↓	IPv4 ↑↓	IPv6 ↑↓	Available IPs ↑↓	Delegated to ↑↓	Security group ↑↓	Route table ↑↓	
default	10.20.0.0/24	-	251	-	-	-	...
SharedServicesSubnet	10.20.10.0/24	-	251	-	-	-	...
DatabaseSubnet	10.20.20.0/24	-	251	-	-	-	...

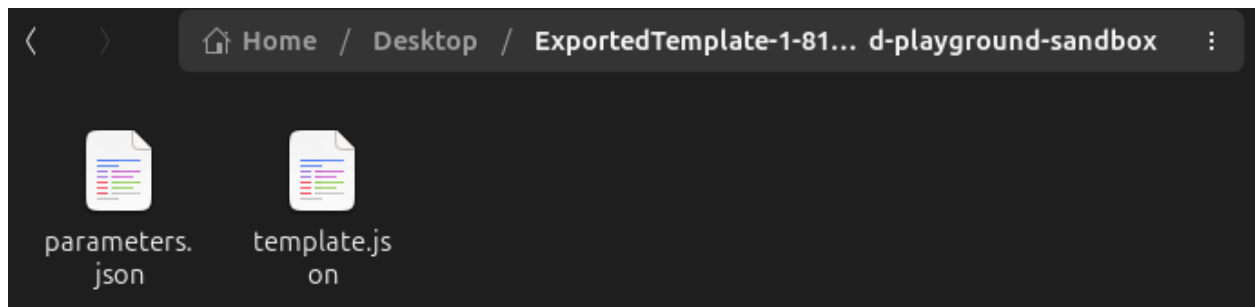
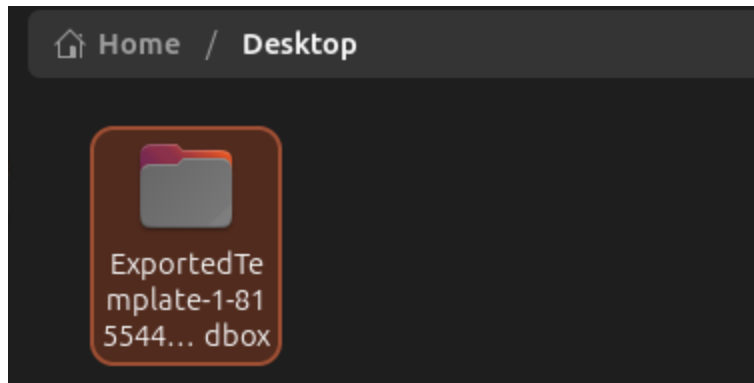
11. In the Automation section, select Export template, and then wait for the template to be generated.



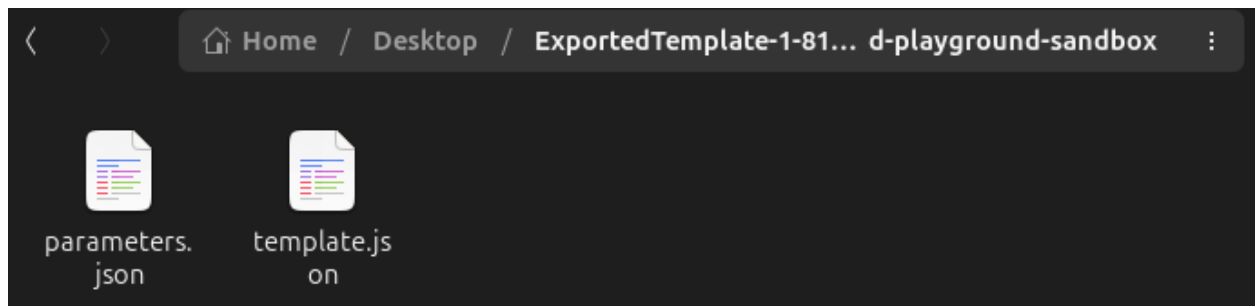
12. Download the template.



13. Navigate on the local machine to the Downloads folder and Extract all the files in the downloaded zip file.



14. Before proceeding, ensure you have the template.json file. You will use this template to create the ManufacturingVnet in the next task.



```
Save Copy Collapse All Expand All Filter JSON
$schema: "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#"
contentVersion: "1.0.0.0"
parameters:
  virtualNetworks_CoreServicesVnet_name:
    defaultValue: "CoreServicesVnet"
    type: "String"
variables:
  ()
resources:
  - type: "Microsoft.Network/virtualNetworks"
    apiVersion: "2024-01-01"
    name: "[parameters('virtualNetworks_CoreServicesVnet_name')]"
    location: "eastus"
    properties:
      addressSpace:
        addressPrefixes:
          - "10.20.0.0/16"
      encryption:
        enabled: false
        enforcement: "AllowUnencrypted"
      subnets:
        - type: "Microsoft.Network/virtualNetworks/subnets"
          name: "default"
          id: "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_CoreServicesVnet_name'), 'default')]"
          properties:
            addressPrefixes:
              - "10.20.0.0/24"
            delegations:
              - {}
            privateEndpointNetworkPolicies: "Disabled"
            privateLinkServiceNetworkPolicies: "Enabled"
        - type: "Microsoft.Network/virtualNetworks/subnets"
          name: "SharedServicesSubnet"
          id: "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_CoreServicesVnet_name'), 'SharedServicesSubnet')]"
          properties:
            addressPrefixes:
              - "10.20.10.0/24"
            delegations:
              - {}
            privateEndpointNetworkPolicies: "Disabled"
            privateLinkServiceNetworkPolicies: "Enabled"
        - type: "Microsoft.Network/virtualNetworks/subnets"
          name: "DatabaseSubnet"
```

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

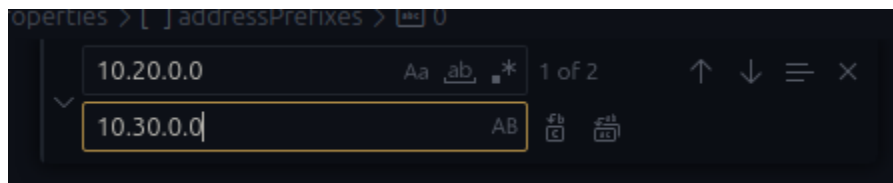
Make changes for the ManufacturingVnet virtual network

1.Replace all occurrences of CoreServicesVnet with ManufacturingVnet.



```
{
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "parameters": {
    "virtualNetworks_ManufacturingVnet_name": {
      "defaultValue": "ManufacturingVnet",
      "type": "String"
    }
  },
  "variables": {},
  "resources": [
    {
      "type": "Microsoft.Network/virtualNetworks",
      "apiVersion": "2024-01-01",
      "name": "[parameters('virtualNetworks_ManufacturingVnet_name')]",
      "location": "eastus",
      "properties": {
        "addressSpace": {
          "addressPrefixes": [
            "10.20.0.0/16"
          ]
        },
        "encryption": {
          "enabled": false,
          "enforcement": "AllowUnencrypted"
        },
        "subnets": [
          {
            "name": "default",
            "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'default')]",
            "properties": {
              "addressPrefixes": [
                "10.20.0.0/24"
              ],
              "delegations": [],
              "privateEndpointNetworkPolicies": "Disabled",
              "privateLinkServiceNetworkPolicies": "Enabled"
            },
            "type": "Microsoft.Network/virtualNetworks/subnets"
          },
          {
            "name": "SharedServicesSubnet",
            "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'SharedServicesSubnet')]",
            "properties": {
              "addressPrefixes": [
                "10.20.10.0/24"
              ]
            },
            "type": "Microsoft.Network/virtualNetworks/subnets"
          }
        ]
      }
    }
  ]
}
```

2. Replace all occurrences of 10.20.0.0 with 10.30.0.0.

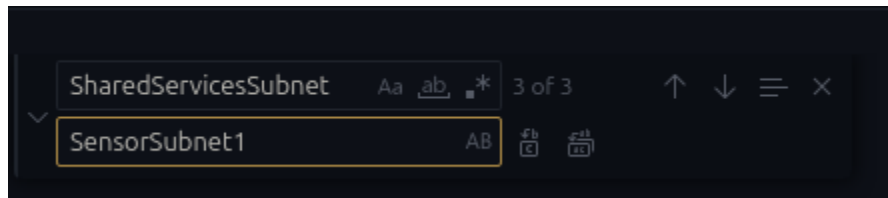


```

    "defaultValue": "ManufacturingVnet",
    "type": "String"
  },
  "variables": {},
  "resources": [
    {
      "type": "Microsoft.Network/virtualNetworks",
      "apiVersion": "2024-01-01",
      "name": "[parameters('virtualNetworks_ManufacturingVnet_name')]",
      "location": "eastus",
      "properties": {
        "addressSpace": {
          "addressPrefixes": [
            "10.30.0.0/16"
          ]
        },
        "encryption": {
          "enabled": false,
          "enforcement": "AllowUnencrypted"
        },
        "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": "SharedServicesSubnet",
            "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'SharedServicesSubnet')]",
            "properties": {
              "addressPrefixes": [
                "10.30.10.0/24"
              ]
            },
            "type": "Microsoft.Network/virtualNetworks/subnets"
          }
        ]
      }
    }
  ]
}
```

Make changes for the ManufacturingVnet subnets

1. Change all occurrences of SharedServicesSubnet to `SensorSubnet1`.



```
{
  "type": "Microsoft.Network/virtualNetworks/subnets",
  "apiVersion": "2024-01-01",
  "name": "[concat(parameters('virtualNetworks_ManufacturingVnet_name'), '/SensorSubnet1')]",
  "dependsOn": [
    "[resourceId('Microsoft.Network/virtualNetworks', parameters('virtualNetworks_ManufacturingVnet_name'))]"
  ],
  "properties": {
    "addressPrefixes": [
      "10.20.10.0/24"
    ],
    "delegations": [],
    "privateEndpointNetworkPolicies": "Disabled",
    "privateLinkServiceNetworkPolicies": "Enabled"
  }
}
```

2. Change all occurrences of 10.20.10.0/24 to 10.30.20.0/24.

```
{
  "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"
},
```

3. Change all occurrences of DatabaseSubnet to SensorSubnet2.

```
{
  "type": "Microsoft.Network/virtualNetworks/subnets",
  "apiVersion": "2024-01-01",
  "name": "[concat(parameters('virtualNetworks_ManufacturingVnet_name'), '/SensorSubnet2')]",
  "dependsOn": [
    "[resourceId('Microsoft.Network/virtualNetworks', parameters('virtualNetworks_ManufacturingVnet_name'))]"
  ],
  "properties": {
    "addressPrefixes": [
      "10.20.20.0/24"
    ],
    "delegations": [],
  }
}
```

4. Change all occurrences of 10.20.20.0/24 to 10.30.21.0/24.

```

properties": {
  "subnets": [
    {
      "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_
      "properties": {
        "addressPrefixes": [
          "10.30.21.0/24"
        ],
        "delegations": [],
        "privateEndpointNetworkPolicies": "Disabled",
        "privateLinkServiceNetworkPolicies": "Enabled"
      },
      "type": "Microsoft.Network/virtualNetworks/subnets"
    }
  ]
}

```

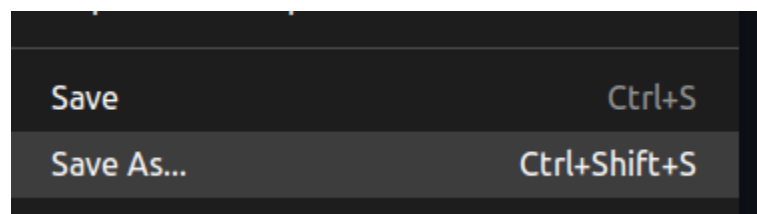
5. Read back through the file and ensure everything looks correct.

```

() template.json x
home > parleythd > Desktop > ExportedTemplate-1-8155447d-playground-sandbox > () template.json > [ ] resources > ( ) 0 > ( ) properties > [ ] subnets > ( ) 2 > ( ) properties > [ ] addressPrefixes > [ ] 0
1
2 {
3   "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
4   "contentVersion": "1.0.0.0",
5   "parameters": {
6     "virtualNetworks_ManufacturingVnet_name": {
7       "defaultValue": "ManufacturingVnet",
8       "type": "String"
9     }
10  },
11  "variables": {},
12  "resources": [
13    {
14      "type": "Microsoft.Network/virtualNetworks",
15      "apiVersion": "2024-01-01",
16      "name": "[parameters('virtualNetworks_ManufacturingVnet_name')]",
17      "location": "eastus",
18      "properties": {
19        "addressSpace": {
20          "addressPrefixes": [
21            "10.30.0.0/16"
22          ]
23        },
24        "encryption": {
25          "enabled": false,
26          "enforcement": "AllowUnencrypted"
27        },
28        "subnets": [
29          {
30            "name": "default",
31            "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'default')]",
32            "properties": {
33              "addressPrefixes": [
34                "10.30.0.0/24"
35              ],
36              "delegations": [],
37              "privateEndpointNetworkPolicies": "Disabled",
38              "privateLinkServiceNetworkPolicies": "Enabled"
39            },
40            "type": "Microsoft.Network/virtualNetworks/subnets"
41          },
42          {
43            "name": "SensorSubnet1",
44            "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'SensorSubnet1')]",
45            "properties": {
46              "addressPrefixes": [
47                "10.30.20.0/24"
48              ],
49            }
50          }
51        ]
52      }
53    }
54  ]
55 }

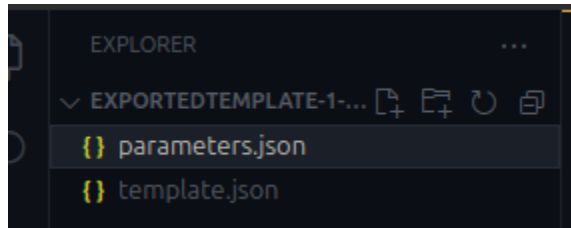
```

6. Be sure to Save your changes.



Make changes to the parameters file

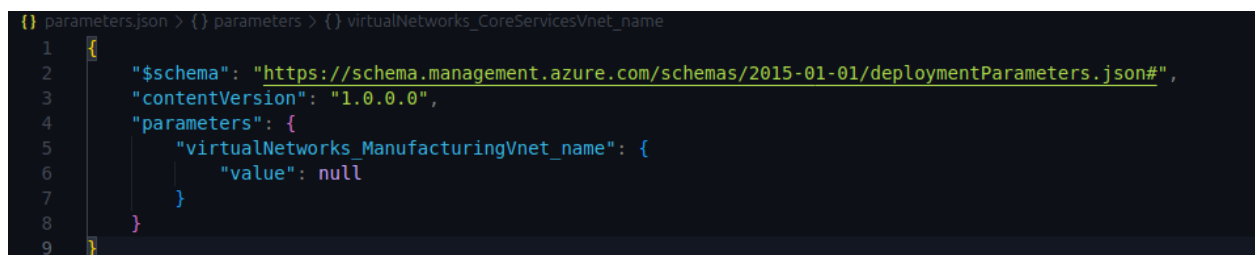
1. Locate the parameters.json file exported in the previous task. It should be in your Downloads folder.



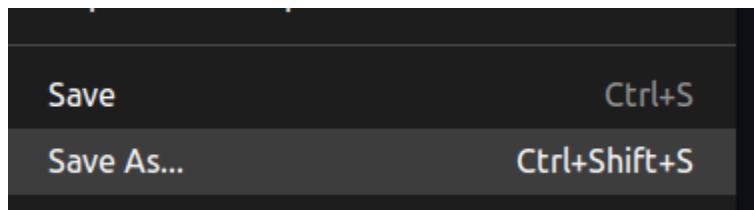
2. Edit the file using the editor of your choice.

Using VS code.

3. Replace the one occurrence of CoreServicesVnet with ManufacturingVnet.

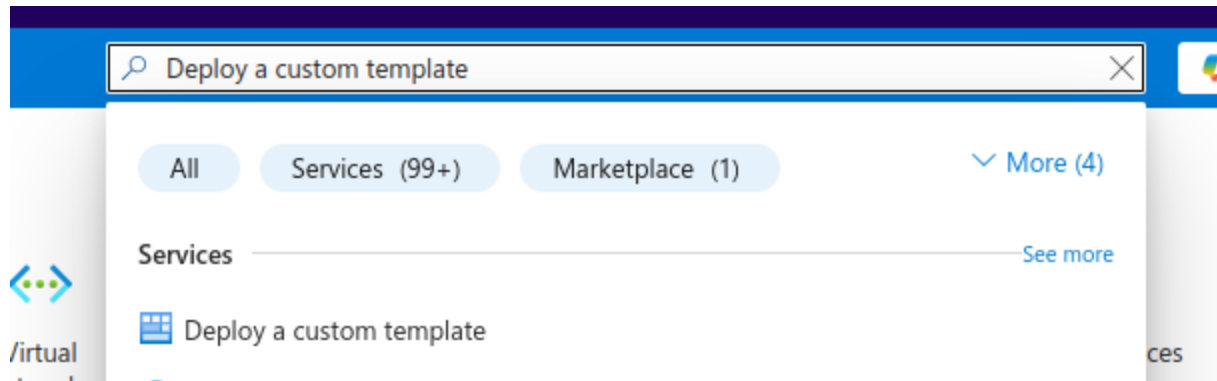


4. Save your changes.



Deploy the custom template

1. In the portal, search for and select Deploy a custom template.



2. Select Build your own template in the editor and then Load file.

[Home](#) >

Custom deployment

Deploy from a custom template

Select a template

Basics

Review + create

Automate deploying resources with Azure Resource Manager templates in a single, c select a template below to get started. [Learn more about template deployment](#)



[Build your own template in the editor](#)

[Home](#) > [Custom deployment](#) >

Edit template

Edit your Azure Resource Manager template



Add resource



Quickstart template



Load file



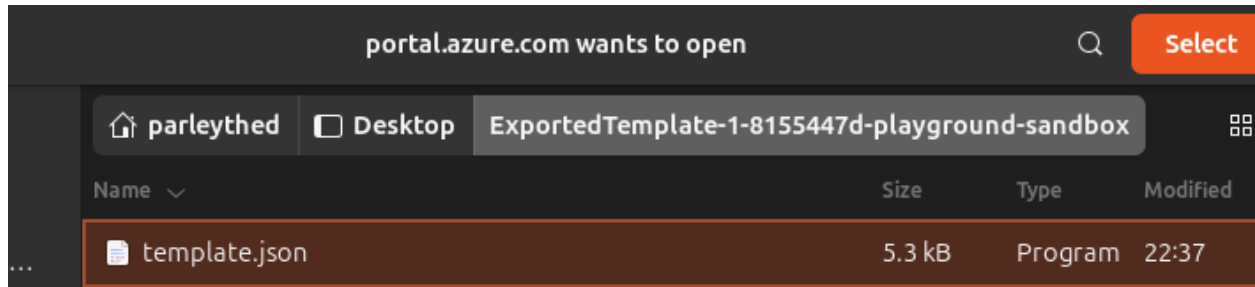
Download

```
1 {  
2
```

```
"$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json"
```

Load file

3. Select the templates.json file with your Manufacturing changes, then select Save.




4. Select Review + create and then Create.

[Home](#) >

Custom deployment ...

Deploy from a custom template

 New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →

Select a template **Basics** Review + create

Template



Customized template [↗](#)
4 resources


Edit template


Edit parameters


Visualize

Project details

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

Subscription * ⓘ

P6-Real Hands-On Labs



Resource group * ⓘ

[Create new](#)

Instance details

Region ⓘ

Loading...

Virtual Networks_Manufacturing
Vnet_name

ManufacturingVnet

[Previous](#)

[Next](#)

[Review + create](#)

Select a template Basics **Review + create**

Summary



Customized template
4 resources

Terms

[Azure Marketplace Terms](#) | [Azure Marketplace](#)

By clicking "Create," I (a) agree to the applicable legal terms associated with the offering; (b) authorize or bill my current payment method for the fees associated with the offering(s), including applying the same billing frequency as my Azure subscription, until I discontinue use of the offering(s); and (c) if deployment involves third-party offerings, Microsoft may share my contact information and other information with the publisher of that offering.

Microsoft assumes no responsibility for any actions performed by third-party templates and does not warrant third-party products or services. See the [Azure Marketplace Terms](#) for additional terms.

Deploying this template will create one or more Azure resources or Marketplace offerings. You are responsible for reviewing the applicable pricing and legal terms associated with all resources as part of this template. Prices and associated legal terms for any Marketplace offerings can be found on the [Marketplace](#); both are subject to change at any time prior to deployment.

Neither subscription credits nor monetary commitment funds may be used to purchase non-Microsoft purchases are billed separately.

If any Microsoft products are included in a Marketplace offering (e.g. Windows Server or SQL Server) they are licensed by Microsoft and not by any third party.

Basics

Subscription	P6-Real Hands-On Labs
Resource group	1-8155447d-playground-sandbox
Region	West US
Virtual Networks_Manufacturing Vnet_n...	ManufacturingVnet

Previous

Next

Create

5. Wait for the template to deploy, then confirm (in the portal) the Manufacturing virtual network and subnets were created.

Home >

Microsoft.Template-20241023224819 | Overview

Deployment

Search x << Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

✓ Your deployment is complete

Deployment name : Microsoft.Template-20241023224819 Start time : 10/23/2024, 10:48:29 PM

Subscription : P6-Real Hands-On Labs Correlation ID : bc8e6f99-632c-4bc3-aa6c-5d5bee9caa28

Resource group : 1-8155447d-playground-sandbox

> Deployment details

✓ Deployment succeeded

Deployment 'Microsoft.Template-20241023224819' to resource group '1-8155447d-playground-sandbox' was successful.

Pin to dashbo... Go to resource gr...

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

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

1. In the Azure portal, search for and select Application security groups.

Application security groups

All Services (34) Marketplace (1) More (4)

Services See more

Application security groups

Application groups

Microsoft Azure Search resources, services, and docs (G+)

Copilot

Home >

Application security groups

Pluralsight Cloud

+ Create Manage view Refresh Export to CSV Open query Assign tags

Filter for any field... Subscription equals all Resource group equals all Location equals all Add filter

Showing 0 to 0 of 0 records.

Name ↑↓	Type ↑↓	Resource group ↑↓	Location ↑↓
---------	---------	-------------------	-------------

2. Click Create and provide the basic information.

Setting	Value
Subscription	<i>your subscription</i>
Resource group	az104-rg4
Name	asg-web
Region	East US

Create an application security group ...

Basics Tags Review + create

Project details

Subscription *

P6-Real Hands-On Labs



Resource group *

1-8155447d-playground-sandbox

[Create new](#)

Instance details

Name *

asg-web



Region *

East US

3. Click Review + create and then after the validation click Create.

✓ Validation passed

Basics Tags Review + create

Summary

Basics

Subscription
Resource group
Location
Name

P6-Real Hands-On Labs
1-8155447d-playground-sandbox
East US
asg-web

Create

< Previous

Next >

[Download a template for automation](#)

Create the Network Security Group and associate it with the ASG subnet

1. In the Azure portal, search for and select Network security groups.

All

Services (59)

Marketplace (2)

More (4)

Services

Network security groups (classic)

Network security groups

Microsoft Azure

Search resources, services, and docs (0/7)

Copilot

[Home](#) >

Network security groups

Pluralsight Cloud

[+ Create](#)
[Manage view](#)
[Refresh](#)
[Export to CSV](#)
[Open query](#)
[Assign tags](#)

Subscription equals all

Resource group equals all

Location equals all

Add filter

Showing 0 to 0 of 0 records.

No grouping

Name ↑↓	Resource group ↑↓	Location ↑↓	Subscription ↑↓	Flow log
<div> </div> <div> <h3>No network security groups to display</h3> <p>Create a network security group with rules to filter inbound traffic to, and outbound traffic from, virtual machines and subnets.</p> <div>Create network security group</div> Learn more </div>				

2. Select + Create and provide information on the Basics tab.

Setting	Value
Subscription	<i>your subscription</i>
Resource group	az104-rg4
Name	myNSGSecure
Region	East US

Create network security group ...

Basics Tags Review + create

Project details

Subscription *	P6-Real Hands-On Labs
Resource group *	1-8155447d-playground-sandbox

[Create new](#)

Instance details

Name *	myNSGSecure
Region *	East US

3. Click Review + create and then after the validation click Create.

Review + create



Create

< Previous


Next >

Go to resource

4. After the NSG is deployed, click Go to resource.

«  Delete  Cancel  Redeploy  Download  Refresh

✓ Your deployment is complete

 Deployment name : Microsoft.NetworkSecurityGroup-20... Start time : 10/23/2024, 11:00:36 PM
 Subscription : [P6-Real Hands-On Labs](#) Correlation ID : 829075bc-d6a9-42b8-8734-13105c...
 Resource group : [1-8155447d-playground-sandbox](#)

> Deployment details

✓ Next steps

[Go to resource](#)

Give feedback

 [Tell us about your experience with deployment](#)

Microsoft Azure Search resources, services, and docs (G+T) Copilot PLURALSIGHT CLOUD

Home > Microsoft.NetworkSecurityGroup-2024102325829 | Overview >

myNSGSecure Network security group

Search ◊ ◀ ▶ Move Delete Refresh Give feedback

Overview JSON View

Essentials

Resource group (move) : [1-8155447d-playground-sandbox](#) Custom security rules : 0 inbound, 0 outbound
 Location : East US Associated with : 0 subnets, 0 network interfaces
 Subscription (move) : [P6-Real Hands-On Labs](#)
 Subscription ID : 2213e8b1-dbc7-4d54-8aff-b5e315df5e5b
 Tags (edit) : [Add tags](#)

Filter by name Port == all Protocol == all Source == all Destination == all Action == all

Priority ↑↓	Name ↑↓	Port ↑↓	Protocol ↑↓	Source ↑↓	Destination ↑↓	Action ↑↓
▼ Inbound Security Rules						
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
65001	AllowAzureLoadBalan...	Any	Any	AzureLoadBalancer	Any	✓ Allow
65500	DenyAllInBound	Any	Any	Any	Any	✗ Deny
▼ Outbound Security Rules						
65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
65001	AllowInternetOutBound	Any	Any	Any	Internet	✓ Allow
65500	DenyAllOutBound	Any	Any	Any	Any	✗ Deny

5. Under Settings click Subnets and then Associate.

Setting	Value
Virtual network	CoreServicesVnet (az104-rg4)
Subnet	SharedServicesSubnet

Microsoft Azure Search resources, services, and docs (G+/) Copilot PLURALSIGHT CLOUD

Home > Microsoft.Network.SecurityGroup-20241023225829 | Overview > myNSGSecure

myNSGSecure | Subnets

Network security group

Search Associate

Search subnets

Name	Address range	Virtual network
No results.		

Give feedback

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
 - Inbound security rules
 - Outbound security rules
 - Network interfaces
 - Subnets**
 - Properties
 - Locks
- Monitoring
- Automation
- Help

Copilot PLURALSIGHT CLOUD

Associate subnet

myNSGSecure

Virtual network ⓘ

CoreServicesVnet (1-8155447d-playground-sandbox) ✓

Subnet * ⓘ

SharedServicesSubnet ✓

6. Click OK to save the association.

OK

Configure an inbound security rule to allow ASG traffic

1. Continue working with your NSG. In the Settings area, select Inbound security rules.

myNSGSecure | Inbound security rules

Network security group

Search

+ Add Hide default rules Refresh Delete Give feedback

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Inbound security rules
Outbound security rules
Network interfaces
Subnets

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Filter by name

Port == all Protocol == all Source == all Destination == all Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalanc...	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

2. Review the default inbound rules. Notice that only other virtual networks and load balancers are allowed access.

3. Select + Add.

4. On the Add inbound security rule blade, use the following information to add an inbound port rule. This rule allows ASG traffic. When you are finished, select Add.

Setting	Value
Source	Application security group
Source application security groups	asg-web
Source port ranges	*
Destination	Any
Service	Custom (notice your other choices)
Destination port ranges	80,443
Protocol	TCP
Action	Allow
Priority	100
Name	AllowASG

Configure an outbound NSG rule that denies Internet access

1. After creating your inbound NSG rule, select Outbound security rules.
2. Notice the AllowInternetOutboundRule rule. Also notice the rule cannot be deleted and the priority is 65001.
3. Select + Add and then configure an outbound rule that denies access to the internet. When you are finished, select Add.

access to the internet. When you are finished, select Add.

Setting	Value
Source	Any
Source port ranges	*
Destination	Service tag
Destination service tag	Internet
Service	Custom
Destination port ranges	8080
Protocol	Any
Action	Deny
Priority	4096
Name	DenyAnyCustom8080Outbound

Add inbound security rule ✕

myNSGSecure

Source ⌵

Application security group ⌵

Source application security groups

asg-web 🗑️

No application security groups found ⌵

Source port ranges * 📘

*

Destination 📘

Any ⌵

Service 📘

Custom ⌵

Destination port ranges * 📘

80,443 ✓

Protocol

☐ Any

☒ TCP

☐ UDP

☐ ICMPv4

Action

☒ Allow

☐ Deny

Priority * 📘

100

Name *

AllowASG ✓

Description

Configure an outbound NSG rule that denies Internet access

1. After creating your inbound NSG rule, select Outbound security rules.

Home > Microsoft.Network.SecurityGroup-20241023225829 | Overview > myNSGSecure

myNSGSecure | Outbound security rules ☆ ⋮

Network security group

Search ⌵ ⏏ + Add 🔍 Hide default rules 🔄 Refresh 🗑️ Delete 🗨️ Give feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Inbound security rules

Outbound security rules ☆

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule with the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Filter by name 🔍 Port == all Protocol == all Source == all Destination == all Action == all

Priority ↑↓	Name ↑↓	Port ↑↓	Protocol ↑↓	Source ↑↓	Destination ↑↓	Action ↑↓
<input type="checkbox"/> 65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
<input type="checkbox"/> 65001	AllowInternetOutBound	Any	Any	Any	Internet	✓ Allow
<input type="checkbox"/> 65500	DenyAllOutBound	Any	Any	Any	Any	✗ Deny

2. Notice the AllowInternetOutboundRule rule. Also notice the rule cannot be deleted and the priority is 65001.

⌵

+ Add

🔒 Hide default rules

🔄 Refresh

🗑️ Delete

🗣️ Give feedback

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

🔍 Filter by name

Port == all

Protocol == all

Source == all

Destination == all

Action == all

Priority ↑↓	Name ↑↓	Port ↑↓	Protocol ↑↓	Source ↑↓	Destination ↑↓	Action ↑↓	
<input type="checkbox"/> 65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	✔️ Allow	🗑️
<input type="checkbox"/> 65001	AllowInternetOutBound	Any	Any	Any	Internet	✔️ Allow	🗑️
<input type="checkbox"/> 65500	DenyAllOutBound	Any	Any	Any	Any	❌ Deny	🗑️ Def

3. Select + Add and then configure an outbound rule that denies access to the internet. When you are finished, select Add.

Setting	Value
Source	Any
Source port ranges	*
Destination	Service tag
Destination service tag	Internet
Service	Custom
Destination port ranges	8080
Protocol	Any
Action	Deny
Priority	4096
Name	DenyAnyCustom8080Outbound



Add outbound security rule

myNSGSecure



Source ⓘ

Any



Source port ranges * ⓘ

*

Destination ⓘ

Service Tag



Destination service tag ⓘ

Internet



Service ⓘ

Custom



Destination port ranges * ⓘ

8080

Protocol

☒ Any

☐ TCP

☐ UDP

☐ ICMPv4

Action

☐ Allow

☒ Deny

Priority * ⓘ

4096



Name *

DenyAnyCustom8080Outbound



Description

Add

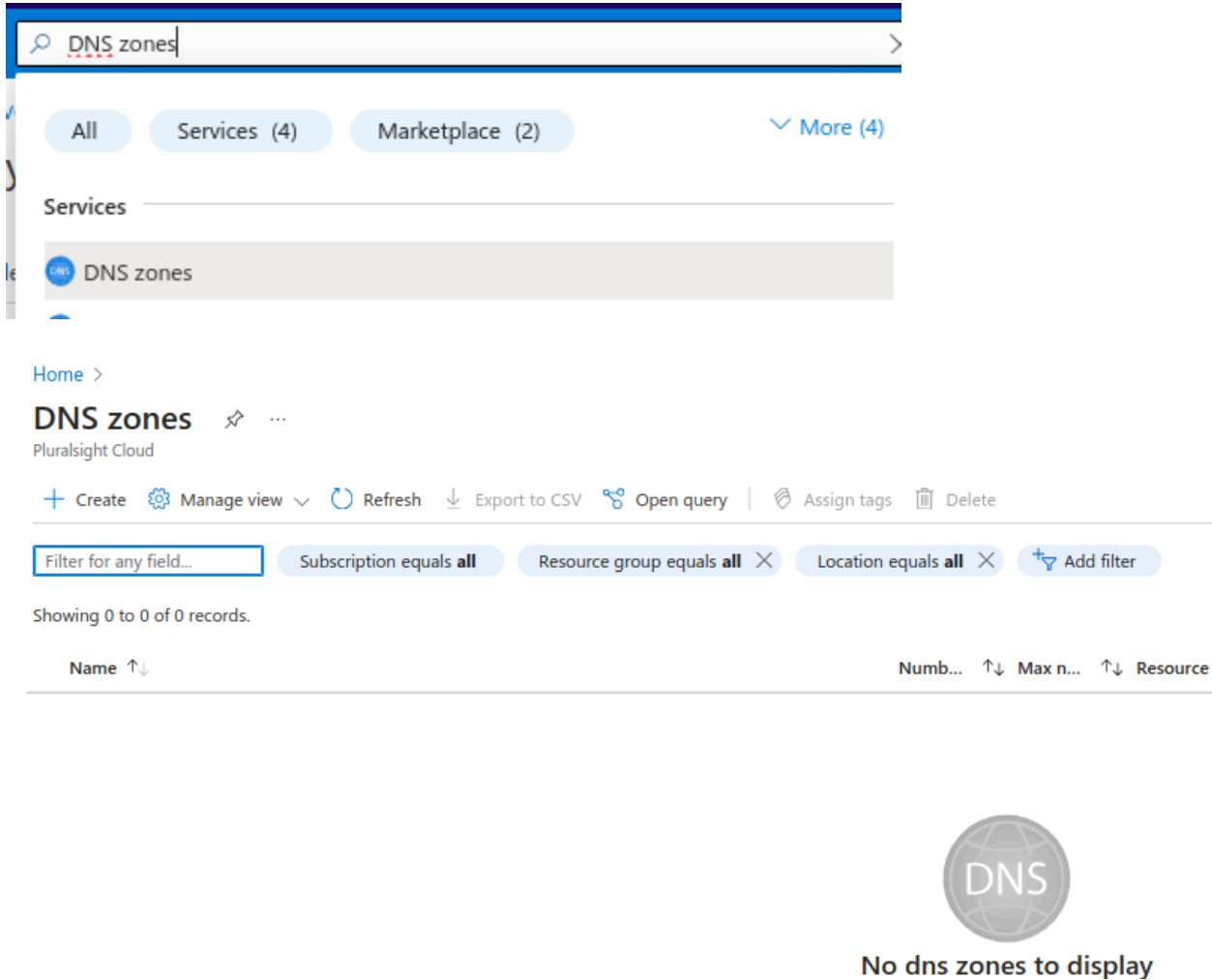
Cancel

Give feedback

Task 4: Configure public and private Azure DNS zones

Configure a public DNS zone

1. In the portal, search for and select DNS zones.



The screenshot shows the Azure portal interface. At the top, a search bar contains the text "DNS zones". Below the search bar, there are tabs for "All", "Services (4)", "Marketplace (2)", and "More (4)". Under the "Services" tab, "DNS zones" is listed. Below this, the breadcrumb "Home >" is followed by "DNS zones" with a pin icon and a menu icon. Underneath "DNS zones" is the text "Pluralsight Cloud". A toolbar contains buttons for "Create", "Manage view", "Refresh", "Export to CSV", "Open query", "Assign tags", and "Delete". Below the toolbar is a filter bar with a search input "Filter for any field...", and three filter buttons: "Subscription equals all", "Resource group equals all", and "Location equals all", followed by an "Add filter" button. Below the filter bar, it says "Showing 0 to 0 of 0 records." A table header is visible with columns: "Name", "Numb...", "Max n...", and "Resource". Below the table header, there is a large gray circle with the text "DNS" inside, and below that, the text "No dns zones to display".

2. Select + Create.

3. Configure the Basics tab.

Property	Value
Subscription	Select your subscription
Resource group	az-104-rg4
Name	<input type="text" value="contoso.com"/> (if reserved adjust the name)
Region	East US (review the informational icon)

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 * ⓘ

Resource group * ⓘ [Create new](#)

Instance details

☐ This zone is a child of an existing zone already hosted in Azure DNS ⓘ

Name *

Resource group location * ⓘ

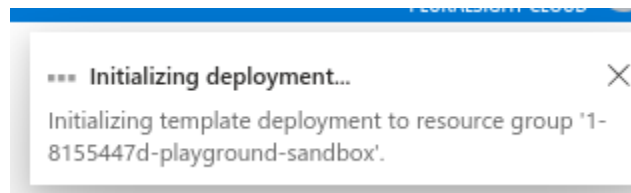
4. Select Review create and then Create.

Review + create

< Previous

Next : DNS Zone Editor >

5.Wait for the DNS zone to deploy and then select Go to resource.



Delete Cancel Redeploy Download Refresh

✓ Your deployment is complete



Deployment name : DNSZonecontoso.com_1729714644126
Subscription : [P6-Real Hands-On Labs](#)
Resource group : [1-8155447d-playground-sandbox](#)

Start time : 10/23/2024, 11:17:33 PM
Correlation ID : c11a4520-3493-48ac-a5c4-b39d1e776620

Deployment details

Resource	Type	Status	Operation details
✓ DNSZonecontoso.com	DNS zone	Created	Operation details

Next steps

Go to resource

Home > DNSZonecontoso.com_1729714644126 | Overview >

DNSZonecontoso.com ☆ ...
DNS zone

Search

+ Child zone Record sets ↑ Import ↓ Export → Move ↻ Refresh 🗑 Delete

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
- DNS Management
- Monitoring
- Automation
- Help

Essentials

Resource group (move) : 1-8155447d-playground-sandbox Max number of record s... : 10000

Location : Global Name server 1 : ns1-01.azure-dns.com.

Subscription (move) : P6-Real Hands-On Labs Name server 2 : ns2-01.azure-dns.net.

Subscription ID : 2213e8b1-dbc7-4d54-8aff-b5e315df5e5b Name server 3 : ns3-01.azure-dns.org.

Recordsets : 2 Name server 4 : ns4-01.azure-dns.info.

Tags (edit) : Add tags

Get Started Tutorials Tools + SDK

Azure DNS is a hosting service for DNS domains that provides name resolution by using Microsoft Azure infrastructure. By hosting your domains in Azure, you can manage your DNS records same credentials, APIs, tools, and billing as your other Azure services.

6.On the Overview blade notice the names of the four Azure DNS name servers assigned to the zone. Copy one of the name server addresses. You will need it in a future step.

```
Open ▾ + Name server 1 ns1 01
Draft
Name server 1
:
ns1-01.azure-dns.com.
Name server 2
:
ns2-01.azure-dns.net.
Name server 3
:
ns3-01.azure-dns.org.
Name server 4
:
ns4-01.azure-dns.info.
```

7.Select + Record set. You add a virtual network link record for each virtual network that needs private name-resolution support.

Property	Value
Name	www
Type	A
TTL	1
IP address	10.1.1.4

Home > DNSZonecontoso.com_1729714644126 | Overview >



DNSZonecontoso.com



DNS zone



Child zone

Record sets



Import



Overview

Essentials

Home > DNSZonecontoso.com



DNSZonecontoso.com | Recordsets



DNS zone



Add



Refresh



Delete



Overview



Activity log

A record set is a collection of records in a that have been loaded on this page. If you [load](#) [learn more](#)

Add record set



DNSZonecontoso.com

Name

.DNSZonecontoso.com

Type

A – Address record

Alias record set ⓘ

No

TTL *

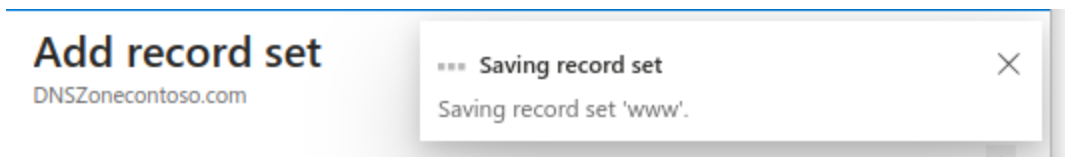
TTL unit

Hours

IP address



1. Select OK and verify contoso.com has an A record set named www.



2. Open a command prompt, and run the following command.

```
ccloud [ ~ ]$ nslookup www.contoso.com ns1-01.azure-dns.com
Server:      ns1-01.azure-dns.com
Address:     13.107.236.1#53

** server can't find www.contoso.com: NXDOMAIN

ccloud [ ~ ]$ nslookup www.contoso.com ns2-01.azure-dns.net
Server:      ns2-01.azure-dns.net
Address:     150.171.21.1#53

** server can't find www.contoso.com: NXDOMAIN

ccloud [ ~ ]$ nslookup www.contoso.com ns3-01.azure-dns.org
Server:      ns3-01.azure-dns.org
Address:     204.14.183.1#53

** server can't find www.contoso.com: NXDOMAIN

ccloud [ ~ ]$ nslookup www.contoso.com ns4-01.azure-dns.info
Server:      ns4-01.azure-dns.info
Address:     208.84.5.1#53

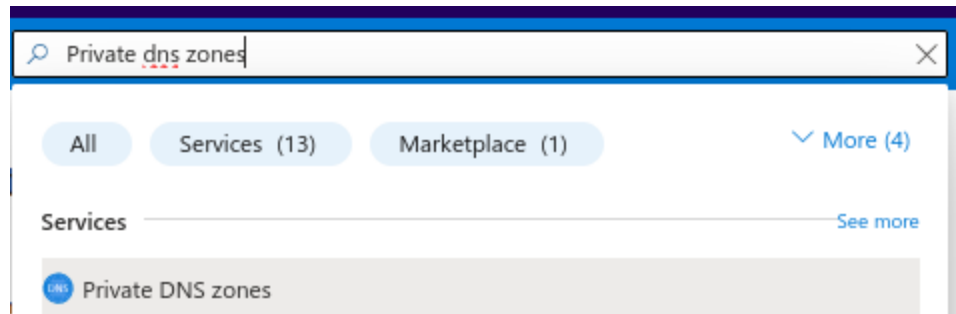
** server can't find www.contoso.com: NXDOMAIN
```

3. Verify the host name `www.contoso.com` resolves to the IP address you provided. This confirms name resolution is working correctly.

```
ccloud [ ~ ]$ nslookup www.contoso.com 10.1.1.4
;; connection timed out; no servers could be reached
```

Configure a private DNS zone

1. In the portal, search for and select Private dns zones.



2. Select + Create.

A screenshot of the Azure Private DNS zones management page. The page title is 'Private DNS zones' with a 'Pluralsight Cloud' tag. Below the title are action buttons: '+ Create', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', 'Assign tags', and 'Delete'. There are also filter buttons: 'Filter for any field...', 'Subscription equals all', 'Resource group equals all', and 'Location equals all', along with an 'Add filter' button. The status 'Showing 0 to 0 of 0 records.' is displayed. Below this is a table header with columns: 'Name', 'Numb...', 'Max n...', 'Numb...', and 'Numb...'. The main content area shows a large 'DNS' icon and the text 'No private dns zones to display'. Below this, a paragraph explains that Azure Private DNS provides a reliable, secure DNS service to manage and resolve domain names without the need to add a custom DNS solution.

3. On the Basics tab of Create private DNS zone, enter the information as listed in the table below:

are information as listed in the table below.

Property	Value
Subscription	Select your subscription
Resource group	az-104-rg4
Name	private.contoso.com (adjust if you had to rename)
Region	East US

[Home](#) > [Private DNS zones](#) >

Create Private DNS Zone ...

Basics Private DNS Zone Editor Tags Review + Create

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

Project details

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

Subscription * ⓘ

Resource group * ⓘ
[Create new](#)

Instance details

Name *

Resource group location * ⓘ

4. Select Review create and then Create.

Create Private DNS Zone



✓ Validation passed

Basics Private DNS Zone Editor Tags Review + Create

[View automation template](#)

Basics

Subscription P6-Real Hands-On Labs
Resource group 1-8155447d-playground-sandbox
Resource group location West US
Name DNSprivate.contoso.com

DNS Zone Record Set(s)

Number of record sets 0 record set(s)

Create

< Previous

Next >

5. Wait for the DNS zone to deploy and then select Go to resource.

Home > DNSprivate.contoso.com_1729715363309 | Overview

Deployment

Search x « Delete Cancel Redeploy Download Refresh

Overview

- Inputs
- Outputs
- Template

✓ Your deployment is complete

Deployment name : DNSprivate.contoso.com_1729715363309 Start time : 10/23/2024, 11:29:38 PM
Subscription : P6-Real Hands-On Labs Correlation ID : f0ba012a-48ec-484a-a666-9cd5e2f998f5
Resource group : 1-8155447d-playground-sandbox

> Deployment details

✓ Next steps

Go to resource

Deployment succeeded

Deployment 'DNSprivate.contoso.com_1729715363309' to resource group '1-8155447d-playground-sandbox' was successful.

Go to resource Go to resource group

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill. [Set up cost alerts >](#)

Microsoft Defender for Cloud

Secure your apps and infrastructure

Home > DNSprivate.contoso.com_1729715363309 | Overview >

DNSprivate.contoso.com ☆ ... Private DNS zone

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

DNS Management

Monitoring

Automation

Import Export Move Refresh Delete

Essentials

Resource group (move) : 1-8155447d-playground-sandbox

Location : Global

Subscription (move) : P6-Real Hands-On Labs

Subscription ID : 2213e8b1-dbc7-4d54-8aff-b5e315df5e5b

Tags (edit) : Add tags

Recordsets : 1

Virtual Network Links : 0

Virtual Network Links W... : 0

JSON View

Monitoring Capabilities Tutorials Tools + SDKs Recommendations (0)

Azure Monitor Tools

6. Notice on the Overview blade there are no name server records.

Home > DNSprivate.contoso.com_1729715363309 | Overview >

DNSprivate.contoso.com ☆ ... Private DNS zone

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

DNS Management

Recordsets

Virtual Network Links

Monitoring

Automation

Help

Import Export Move Refresh Delete

Essentials

Resource group (move) : 1-8155447d-playground-sandbox

Location : Global

Subscription (move) : P6-Real Hands-On Labs

Subscription ID : 2213e8b1-dbc7-4d54-8aff-b5e315df5e5b

Tags (edit) : Add tags

Recordsets : 1

Virtual Network Links : 0

Virtual Network Links W... : 0

Monitoring Capabilities Tutorials Tools + SDKs Recommendations (0)

Azure Monitor Tools

Get alerted to issues
Create alerts to monitor resource health, usage, cost and more.

Get started with Log Analytics
Leverage the value of the data in Azure Monitoring Logs and perform complex operations with minimal code.

Monitor at scale with Insights
Get visibility into the resource's performance and health, accounting for different processes and interconnected dependencies.

7. Select Settings and then DNS Management.

DNS Management

Recordsets

Virtual Network Links

8. Select Virtual network links and configure the link.

Property	Value
Link name	manufacturing-link
Virtual network	ManufacturingVnet

Home > DNSprivate.contoso.com_1729715363309 | Overview > DNSprivate.contoso.com

DNSprivate.contoso.com | Virtual Network Links ☆ ...

Private DNS zone

 Search



Add




Refresh




Delete

 Overview

 Activity log

 Access control (IAM)

 Tags

 Diagnose and solve problems



Search virtual network links

0 Virtual Network links selected

Link Name	Link Status
-----------	-------------

Add Virtual Network Link ...

DNSprivate.contoso.com

Link name *

manufacturing-link

Virtual network details

ⓘ Only virtual networks with Resource Manager deployment model are supported for linking with Private DNS zones. Virtual networks with Classic deployment model are not supported.

☐ I know the resource ID of virtual network ⓘ

Subscription *

P6-Real Hands-On Labs

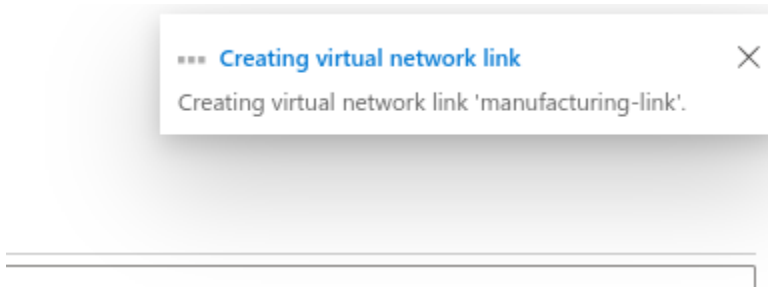
Virtual Network *

ManufacturingVnet (1-8155447d-playground-sandbox)

Configuration

☐ Enable auto registration ⓘ

9.Select Create and wait for the link to create.

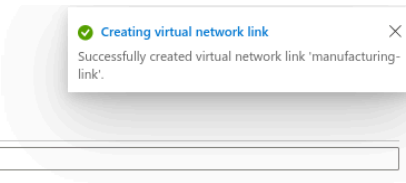


« + Add ↻ Refresh 🗑 Delete

🔍 Search virtual network links

0 Virtual Network links selected

Link Name	Link Status	Virtual Network	Auto-Registration	
manufacturing-link	Completed	ManufacturingVnet	Disabled	✎ 🗑



10. From the Overview blade select + Record set. You would now add a record for each virtual machine that needs private name-resolution support.

Property	Value
Name	sensorvm
Type	A
TTL	1
IP address	10.1.1.4

Home / DNSprivate.contoso.com | Recordsets ☆ ...

Private DNS zone

Advisor recommendat... x x << + Add ↻ Refresh 🗑 Delete

▼ DNS Management

Recordsets ☆

▼ Monitoring

🌐 Advisor recommendations

A record set is a collection of records in a zone that have the same name and are the same type. Record Sets will be automatically fetched in batches of 100 as you scroll through the existing record sets. [Learn more](#)

🔍 Search

Fetches 1 record set(s).

0 record sets selected

	Name	Type	TTL	Value
--	------	------	-----	-------

Add record set

DNSprivate.contoso.com

Name

sensorvm

.DNSprivate.contoso.com

Type

A – Address record

TTL *

1

TTL unit

Hours

IP address

10.1.1.4

Saving record set

Saving record set 'sensorvm'.

Private DNS zone

Recordsets

Star icon

More icon

Close icon

Advisor recommendat...

Close icon

More icon

+ Add

Refresh icon

Refresh

Delete icon

Delete

DNS Management

Recordsets

Monitoring

Advisor recommendations

Search

Fetches 2 record set(s).

0 record sets selected

Name	Type	TTL	Value	Auto registered		
sensorvm	A	3600	10.1.1.4	False	Edit	Delete