

Azure Network Watcher provides tools to monitor, diagnose, view metrics, and enable or disable logs for resources in Azure VNets.

In this lab, you will learn how to do the following:

Log into the Azure CLI

Understand Azure Network Watcher

Use the Azure Network Watcher Connection Monitor

Login to azure cli :

Az login -u \$username -p \$password

To create a new Azure Virtual Network and a subnet:

az network vnet create --resource-group \$resource --name \$vnetName --address-prefix 10.0.0.0/24 --subnet-name subnet01 --subnet-prefix 10.0.0.0/28

```
Terminal +
}
$ echo $username
user-vmzogerphzx@oreilly-cloudlabs.com
$ echo $password
ydgw10r3emsv06j0
$ az network vnet create -g $resource --name $vnetName --address-prefix 10.0.0.0/24 --subnet-name subnet01 --subnet-prefix 10.0.0.0/28
{
  "newVnet": {
    "addressSpace": {
      "addressPrefixes": [
        "10.0.0.0/24"
      ]
    },
    "logCommunities": null,
    "ddosProtectionPlan": null,
    "dhcpOptions": {
      "dnsServers": []
    },
    "enableDdosProtection": false,
    "enableVmProtection": null,
    "encryption": null,
    "etag": "W/\"39e904c5-4650-40d9-a052-a810d67b3749\"\"",
    "extendedLocation": null,
    "flowTimeoutInMinutes": null,
    "id": "/subscriptions/fb326778-1e8f-455c-ac0b-f2e7b5a7c03f/resourceGroups/user-vmzogerphzx/providers/Microsoft.Network/virtualNetworks/vnet396470304",
    "ipAllocations": null,
    "location": "eastus",
    "name": "vnet396470304",
    "provisioningState": "Succeeded",
    "resourceGroup": "user-vmzogerphzx",
    "resourceGuid": "1f9a3fbf-9410-4487-b6ff-e0045b34acf1",
    "subnets": [
      {
        "addressPrefix": "10.0.0.0/28",
        "addressPrefixes": null,
        "applicationGatewayIpConfigurations": null,
        "delegations": [],
        "etag": "W/\"39e904c5-4650-40d9-a052-a810d67b3749\"\"",
        "id": "/subscriptions/fb326778-1e8f-455c-ac0b-f2e7b5a7c03f/resourceGroups/user-vmzogerphzx/providers/Microsoft.Network/virtualNetworks/vnet396470304/subnets/subnet01",
        "ipAllocations": null,
        "ipConfigurationProfiles": null,
        "ipConfigurations": null,
        "name": "subnet01",
        "natGateway": null,

```

To create a new Azure Virtual Machine in the preceding subnet:

az vm create --resource-group \$resource --name \$vmName --image win2016datacenter --vnet-name vnetName --subnet subnet01 --public-ip-sku Standard --admin-username katavmuser --admin-password \$password

--public-ip-sku: This specifies the SKU of the public IP address to use for the virtual machine. In this case, it's the Standard SKU.

```
$ az vm create -g $resource --name $vmName --image win2016datacenter --vnet-name vnetName --subnet subnet01 --public-ip-sku Standard --admin-username katavmuser --admin-password $password
{
  "fqdns": "",
  "id": "/subscriptions/fb326778-1e8f-455c-ac0b-f2e7b5a7c03f/resourceGroups/user-vmzogerphzx/providers/Microsoft.Compute/virtualMachines/vm396470304",
  "location": "eastus",
  "macAddress": "60-45-BD-F0-6C-A7",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "20.62.156.150",
  "resourceGroup": "user-vmzogerphzx",
  "zones": ""
}
$
```

In this lab, we will work with the Azure Network Watcher.

Understand Azure Network Watcher

Azure directs Azure VNet subnet traffic to destinations (next hop) using route tables. Azure automatically creates a default route table for each VNet subnet and adds system default routes to the table. These default routes specify where the subnet network traffic should be routed to.

Azure Network Watcher provides tools to monitor, diagnose, view metrics, and enable or disable logs for resources in Azure VNets.

We already created a new Azure Virtual Machine for you.

`az vm list --resource-group $resource --query "[].{Name:name}"`

```
$ az vm list --resource-group $resource --query "[].{Name:name}"
[
  {
    "Name": "vm396470304"
  }
]
$
```

In this lab, we will use the Azure Network Watcher to confirm (diagnose) the connectivity between this machine and the internet.

Work with Azure Network Watcher Connection Monitor using Azure CLI

In order to use Azure Network Watcher to diagnose VM network connectivity, you need to install an extension agent in the machine using this command:

`az vm extension set --name NetworkWatcherAgentWindows --version 1.4.2331.0 --resource-group $resource -vm-name $vmName --publisher Microsoft.Azure.NetworkWatcher`

Note: The NetworkWatcher agent has both Linux and Windows versions. Choose the right version based on your VM OS.

```
$ az vm extension set --name NetworkWatcherAgentWindows --version 1.4.2331.0 --resource-group $resource --vm-name $vmName --publisher Microsoft.Azure.NetworkWatcher
{
  "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
  "forceUpdateTag": null,
  "id": "/subscriptions/fb326778-1e8f-455c-ac0b-f2e7b5a7c03f/resourceGroups/user-vmzogerpzhx/providers/Microsoft.Compute/virtualMachines/vm396470304/extensions/NetworkWatcherAgentWindows",
  "instanceView": null,
  "location": "eastus",
  "name": "NetworkWatcherAgentWindows",
  "protectedSettings": null,
  "protectedSettingsFromKeyVault": null,
  "provisioningState": "Succeeded",
  "publisher": "Microsoft.Azure.NetworkWatcher",
  "resourceGroup": "user-vmzogerpzhx",
  "settings": null,
  "suppressFailures": null,
  "tags": null,
  "type": "Microsoft.Compute/virtualMachines/extensions",
  "typeHandlerVersion": "1.4",
  "typePropertiesType": "NetworkWatcherAgentWindows"
}
$
```

This appears to be a command for setting the Network Watcher Agent extension on a Windows virtual machine in an Azure environment. Let me break it down for you:

`az`: This is the Azure CLI command prefix.

`vm extension set`: This is the command to set a virtual machine extension.

`--name NetworkWatcherAgentWindows`: This specifies the name of the extension to set, which is the Network Watcher Agent for Windows.

`--version 1.4.2331.0`: This specifies the version of the extension to set.

`--resource-group $resource`: This specifies the name of the Azure resource group that contains the virtual machine. The `$resource` variable likely contains the name of the resource group.

`--vm-name $vmName`: This specifies the name of the virtual machine to which the extension should be added. The `$vmName` variable likely contains the name of the virtual machine.

`--publisher Microsoft.Azure.NetworkWatcher`: This specifies the name of the publisher of the extension, which is Microsoft.Azure.NetworkWatcher.

Now, you can use the `az network watcher test-connectivity` command to check connectivity between your VM and a public IP address (randomly chosen):

```
az network watcher test-connectivity --resource-group $resource --source-resource $vmName --dest-address 141.193.213.20 --dest-port 443 --query "connectionStatus"
```

Here are the command parameters:

--source-resource: The VM name for which you are checking connectivity

--dest-address: The IP address the VM needs to reach

--dest-port: The port number for which you are diagnosing connectivity

--query: The port number for which you are diagnosing connectivity

The preceding command is useful when you need to make sure that applications running on your VM can access a specific destination—for example, a Docker container registry or any other public service.

```
$ az network watcher test-connectivity --resource-group $resource --source-resource $vmName --dest-address 141.193.213.20 --dest-port 443 --query "connectionStatus"
This command is in preview and under development. Reference and support levels: https://aka.ms/CLI_refstatus
network watcher is not enabled for region 'eastus'.
$ az vm delete -g $resource --name $vmName
```

In the next step, we will clean the VM we created in this lab.

```
$ az vm delete --resource-group $resource --name $vmName
Are you sure you want to perform this operation? (y/n): y
$ az vm list -g $resource
[]
$
```

The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with the 'All resources - Microsoft Azure' tab selected. Below the navigation bar, the 'All resources' page is displayed for the 'O'REILLY MEDIA CLOUD LABS' subscription. The page includes a search bar, a filter bar with options like 'Subscription equals all', 'Resource group equals all', 'Type equals all', and 'Location equals all', and a table of resources. The table has columns for Name, Type, Resource group, Location, and Subscription. The resources listed include a disk, a network security group, a public IP address, a network interface (highlighted), and two virtual networks. At the bottom of the page, there's a status bar showing the current page (1 of 1) and a 'Give feedback' link.