Networking Lab 2

Network Security Groups

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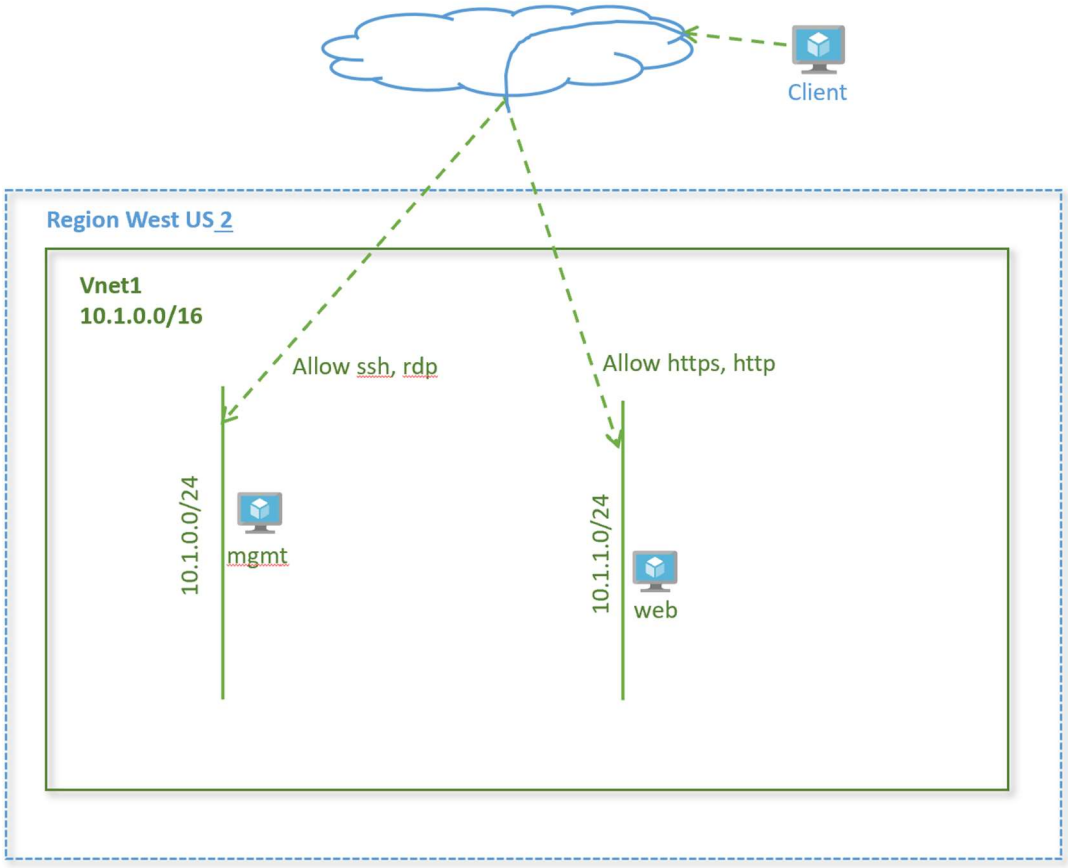
Lab Overview

In this lab, we will see how to create network security groups. Network Security Groups enable restricting flows at a subnet or at a virtual machine's network interface level. We will create rules and apply at a subnet level. We will also see how application security groups are applied.

Lab Diagram



Create application security groups

An application security group enables you to group together servers with similar functions, such as web servers.

1. Select **+ Create a resource** on the Azure portal.
2. In the **Search the Marketplace** box, enter *Application security group*. When **Application security groups** appears in the search results, select it.
3. Click **+Add**. Enter, or select, the following information:

Setting	**Value**
Subscription	Select your subscription
Resource group	Select **rg-lab** from the dropdown
Name	**mgmt**
Location	**West US 2**

4. Click **Review+Create**.
5. Once validation passes, Click **Create**.
6. Repeat steps 3, specifying the following values:

Setting	**Value**
Subscription	Select your subscription
Resource group	Select **rg-lab** from the dropdown
Name	**web**
Location	**West US 2**

Associate application security group to network interface

1. In the *Search resources, services, and docs* box at the top of the portal, begin typing *virtual machines*. From the search results, select **Virtual machines**.
2. Select virtual machine **vnet1-vm-mgmt1**.
3. Under **Settings → Networking → Application security groups**, select **Configure the application security groups**, select **mgmt** for **Application security groups**, and then select **Save**.
4. Repeat steps 1-3 for virtual machines **vnet1-vm-web1** and add application group **web**.

Create a network security group

1. In the *Search resources, services, and docs* box at the top of the portal, begin typing *Network security group*. From the search results, select **Network security group**.
2. Click **+Add**. Enter, or select, the following information.

Setting	**Value**
Subscription	Select your subscription.
Resource group	Select **rg-lab** from the dropdown.
Name	**nsg1**
Location	West US 2

3. Click **Review+Create**. Once validation passes, **Create**.

Create security rules

Create a security rule to allow SSH and RDP to the management servers.

1. On the network security groups page, click on the network security group **nsg1** you just created.
2. Go to **Settings** → **Inbound security rules** and click **+Add**.
3. Enter, or select the following values, accept the remaining defaults, and then select **Add**:

Setting	**Value**
Destination	Select **Application security group**
Destination Application security group	**mgmt**
Destination port ranges	Enter 22, 3389
Protocol	Select TCP
Priority	Enter 100
Name	allow-mgmt-access

4. Create another security rule that allows http and https traffic to the **web** application security group.

Setting	**Value**
Destination	Select **Application security group**
Destination Application security group	**web**
Destination port ranges	Enter 80,443
Protocol	Select TCP

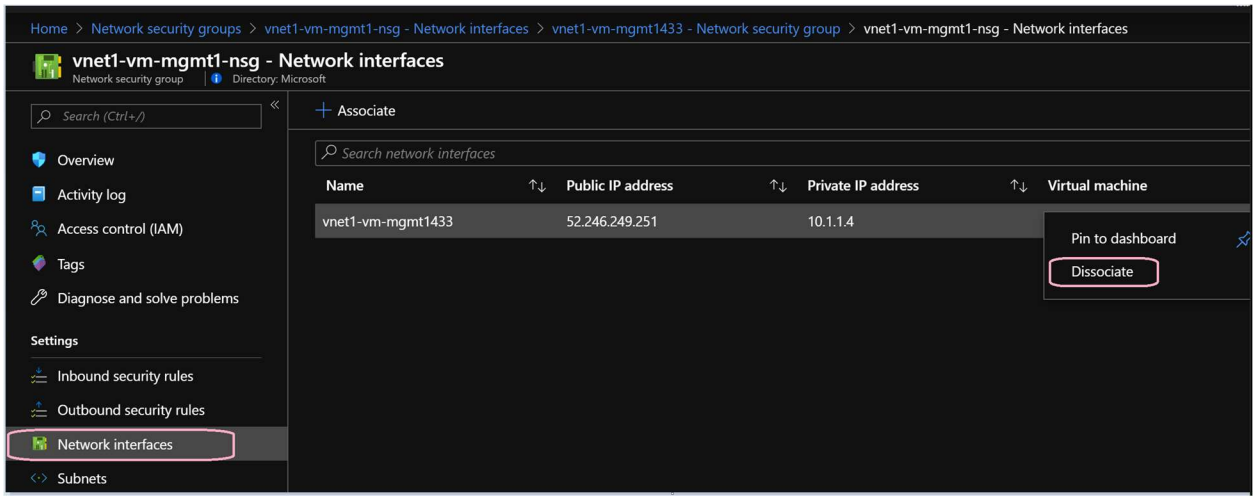
Priority	Enter 120
Name	allow-web

Associate network security group to subnet

1. On the **Network security groups page**, click on the security group **nsg1**.
2. Under **Settings**, select **Subnets** and then select **+ Associate**, as shown in the following picture:
3. Under **Associate subnet**, select **Virtual network** and then select **vnet1**. Select **Subnet**, select **vnet1-subnet1**, and then select **OK**.
4. Repeat step 3 to associate to subnet **vnet1-subnet2** from **vnet1**.

Verify Network Security group for the virtual machine

1. Go to the virtual machine vnet1-vm-mgmt1.
2. Got to **Settings → Networking**.
3. Check the network security group nsg1 is applied to the subnet vnet-subnet1.
4. You will also see another security group vnet1-vm-mgmt1-nsg attached to the network interface of the virtual machine. This was created when you created the VM and assigned Basic network security group as default configuration setting. You can go ahead and disassociate this security group from the network security group as we now have one applied at the subnet level. Note the name of the security group.
5. Click on the network security group attached to the interface.
6. Go to **Settings → Network interfaces**.
7. Click on the three dots **...** on the right and click **Dissociate**.



8. Repeat above steps for each VM created with a basic network security group.

Verify Security rules

It's time to see the rules in action.

Connect to the management server from your laptop.

1. From your laptop, do SSH to the management server.
2. SSH to vnet1-vm-mgmt1 using its public IP address.
3. Verify you are successfully able to login.

Which rule enabled ssh access?

Connect to the web server from your laptop.

1. From your laptop, do SSH to the web server.
   ssh to vnet1-vm-web1.

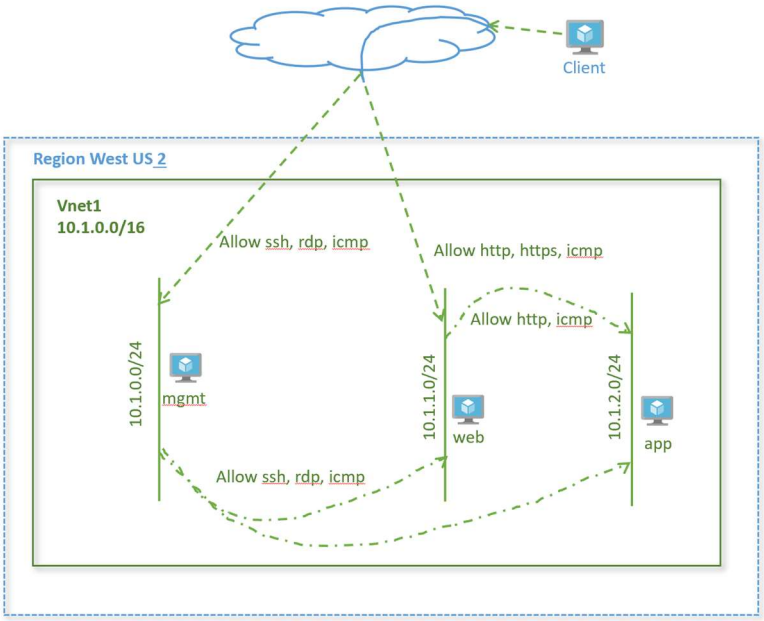
Are you able to reach the login prompt?
Which rule was used for this flow?

Conclusion

We learnt how to configure network security groups and application security groups to protect your compute instances in Azure.

Challenge

Complete additional flows as given in the diagram below to restrict traffic further within your virtual network. Make sure only this traffic is allowed.


Client
Region West US 2
Vnet1
10.1.0.0/16
Allow ssh, rdp, icmp
Allow http, https, icmp
Allow http, icmp
10.1.0.0/24
mgmt
10.1.1.0/24
web
10.1.2.0/24
app
Allow ssh, rdp, icmp