# Module 2: Azure Networking

## Exercise 2: Verify Azure Networking

In this exercise, you verify the FrontEnd subnet and BackEnd subnet networking.

## Objectives

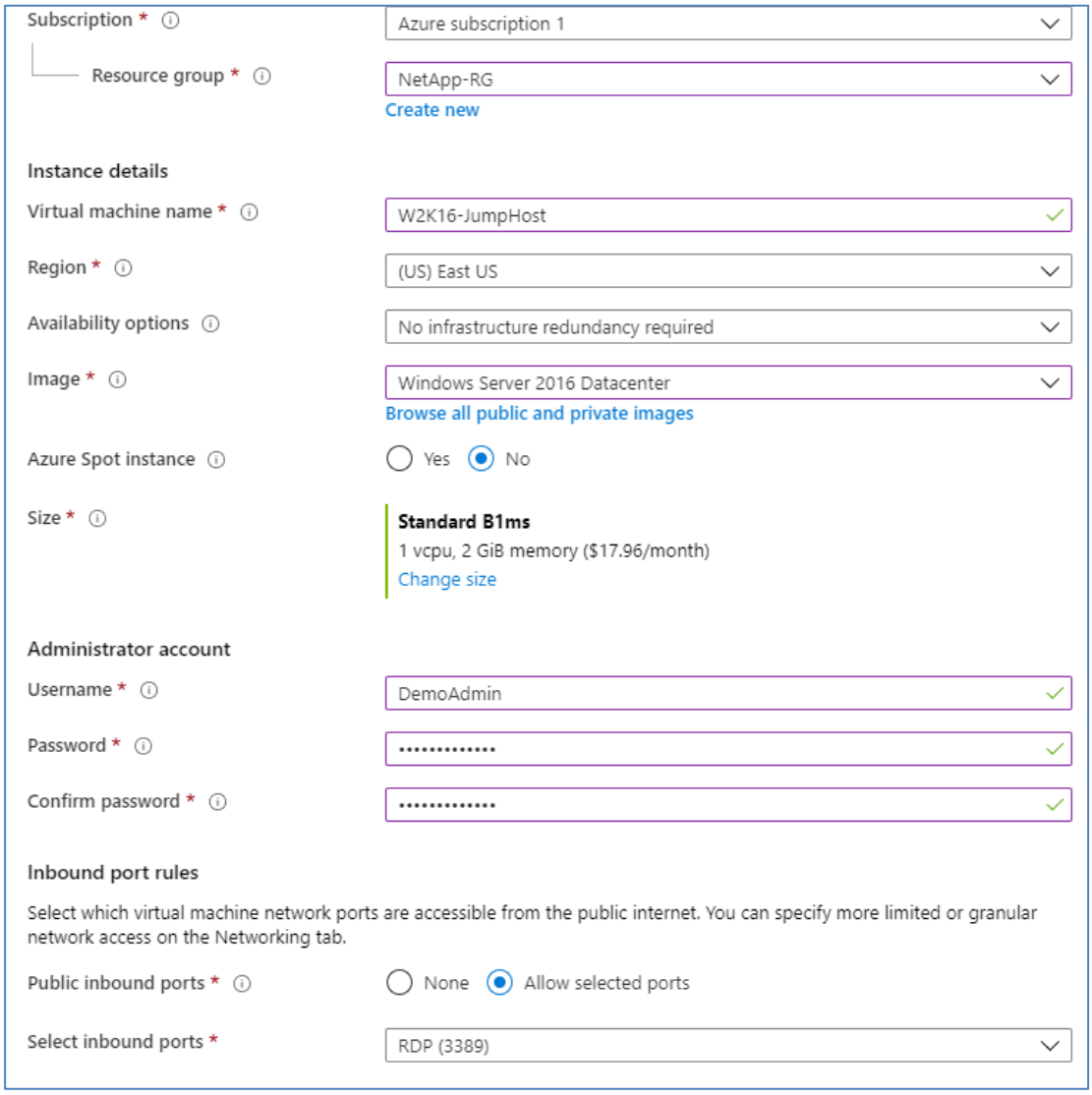
This exercise focuses on enabling you to do the following:

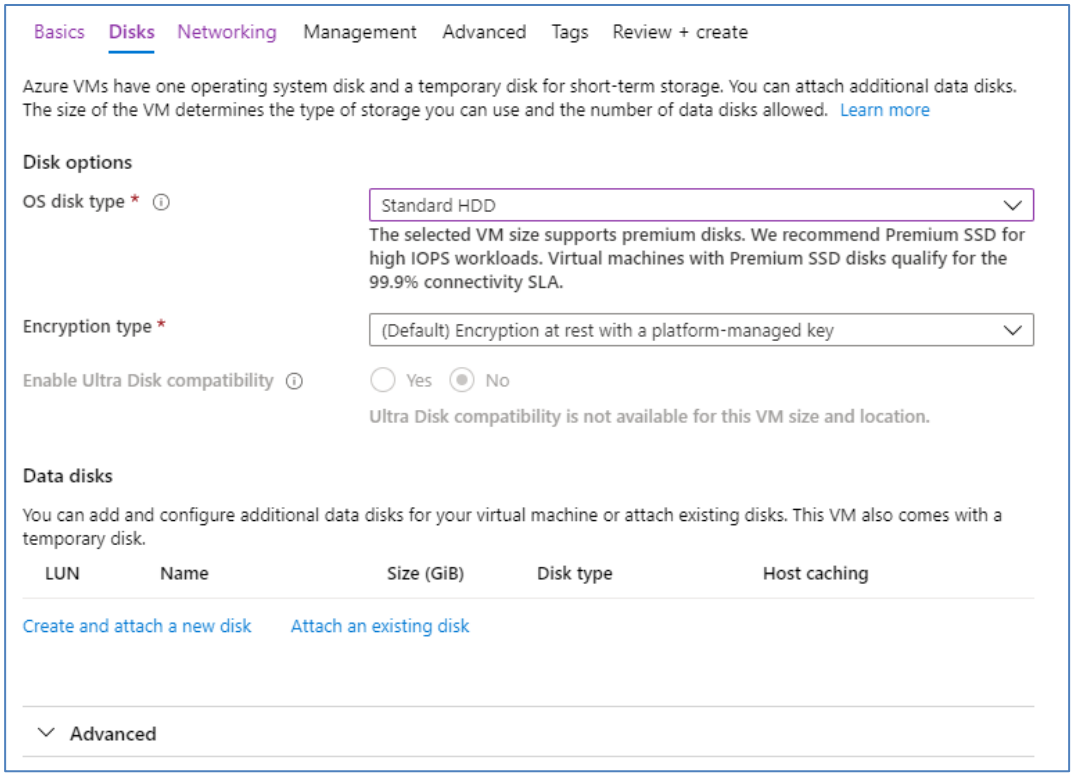
- Verify that the front-end network is publicly accessible.
- Verify that the front-end network where Cloud Manager will be installed can communicate with the back-end network where Cloud Volumes ONTAP will be deployed.
- Verify that the back-end network has outbound internet access but cannot be connected to directly from the internet.

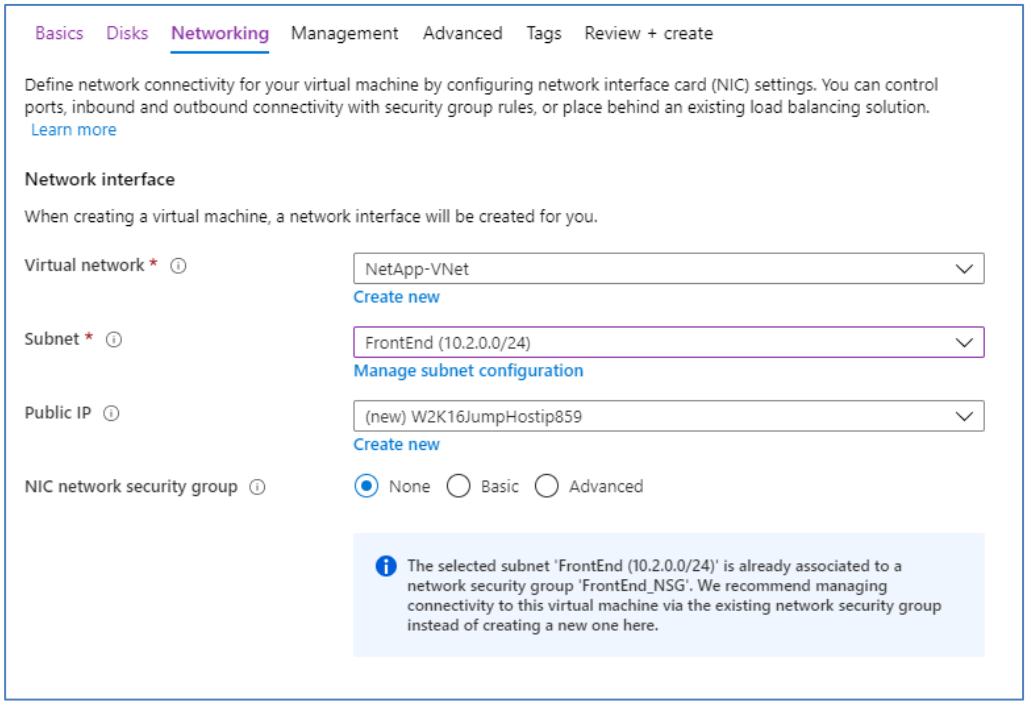
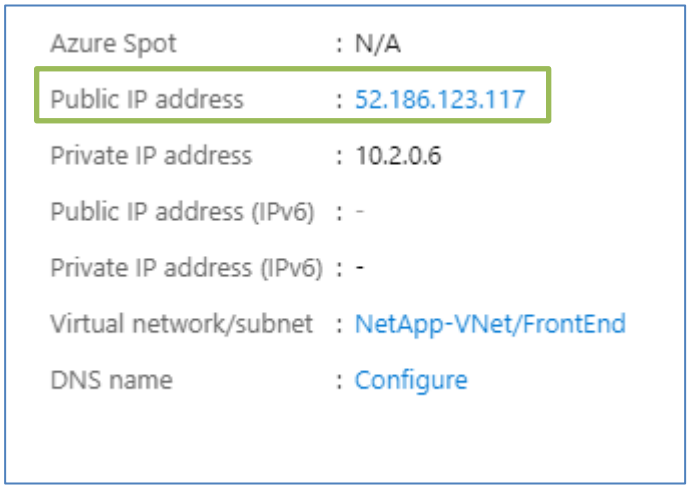
## Task 1: Verify That the Front-End Network Is Publicly Accessible

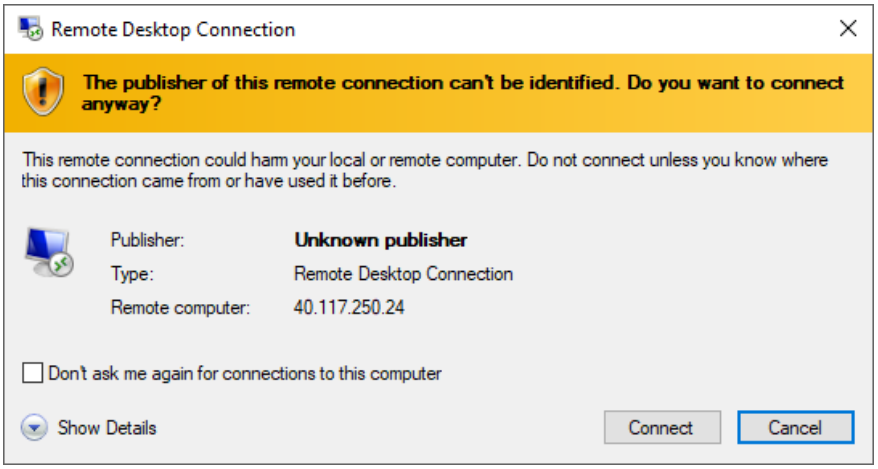
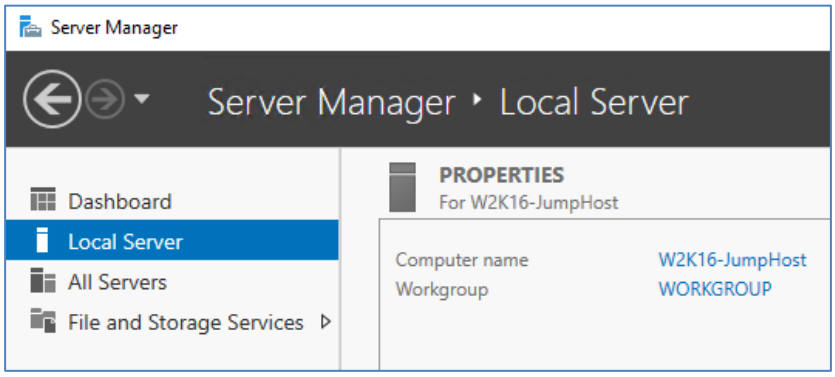
| Step | Action |
|---|---|
| **1-1** | Open a web browser, and enter the URL **https://portal.azure.com**. |
| **1-2** | In the favorites panel, click **Virtual machines**. |
| **1-3** | In the Virtual machines page, click + **Add**. |

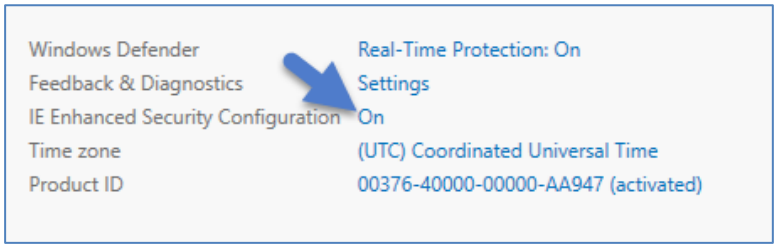
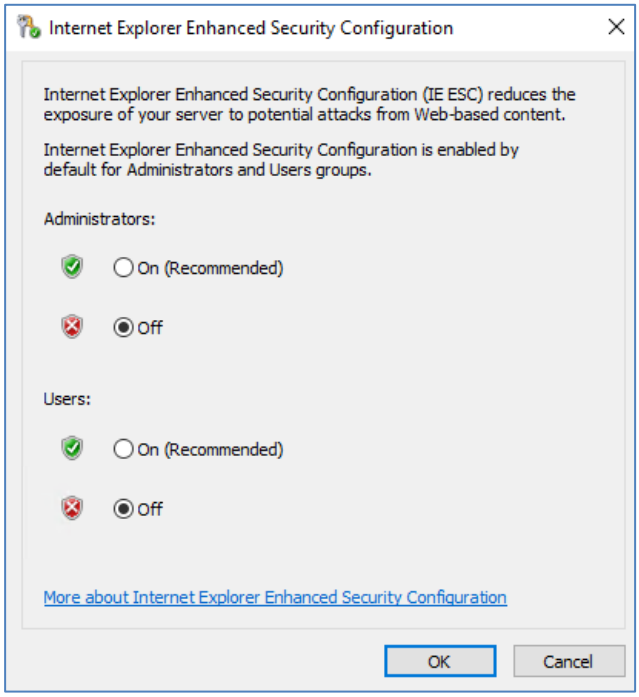
| Step | Action |
|---|---|
| 1-4 | In the Create virtual machine page, under Basics do the following:<br>a. For the subscription, ensure your subscription is selected.<br>b. For the Resource group, click the drop-down menu and select **NetApp-RG**.<br>c. For the Virtual machine name, enter **W2K16-JumpHost**.<br>d. For the Region select **(US) East**.<br>e. For the Image, click the drop-down menu and select **Windows Server 2016 Datacenter**.<br>f. For the Size, click Change size and select **B1ms Standard,** then click **Select**.<br>g. For the Username, enter **DemoAdmin**.<br>h. For the Password and Confirm password, enter **HappyCloud123**.<br>i. For the Public inbound ports, select **Allow selected port,** then choose **RDP(3389)**. (default)<br>j. Click **Next: Disks** at the bottom of the page. |

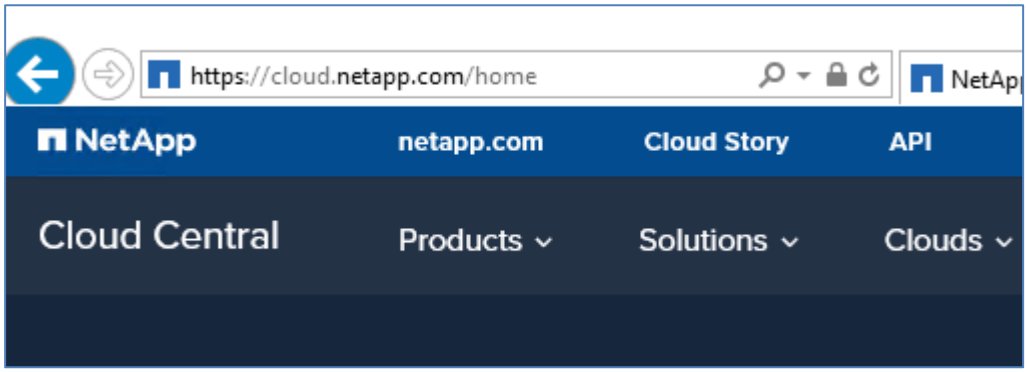


| Step | Action |
|---|---|
| 1-5 | In the Create virtual machine page under Disks, click the drop-down menu and select **Standard HDD**.<br>  |
| 1-6 | Click **Next: Networking** at the bottom of the page. |

| Step | Action |
|---|---|
| 1-7 | In the Create virtual machine page under Networking, do the following:<br>a. For the Virtual network, click the drop-down menu and select **NetApp-VNet**.<br>b. For the Subnet, click the drop-down menu and select **FrontEnd (10.2.0.0/24)**.<br>c. For the Configure network security group, select **None**.<br>d. Leave all other defaults.<br>e. Click **Review + create** at the bottom of the bottom of the page.<br>  |
| 1-8 | After Validation passed is displayed, click **Create** at the bottom of the page. |
| 1-9 | Click the Notifications icon and wait for the VM to deploy, when it does click **Go to resource**. |
| 1-10 | In the W2K16-JumpHost blade, verify that a Public IP address is assigned.<br>  |
| 1-11 | Click **Connect > RDP > Download RDP File.** |

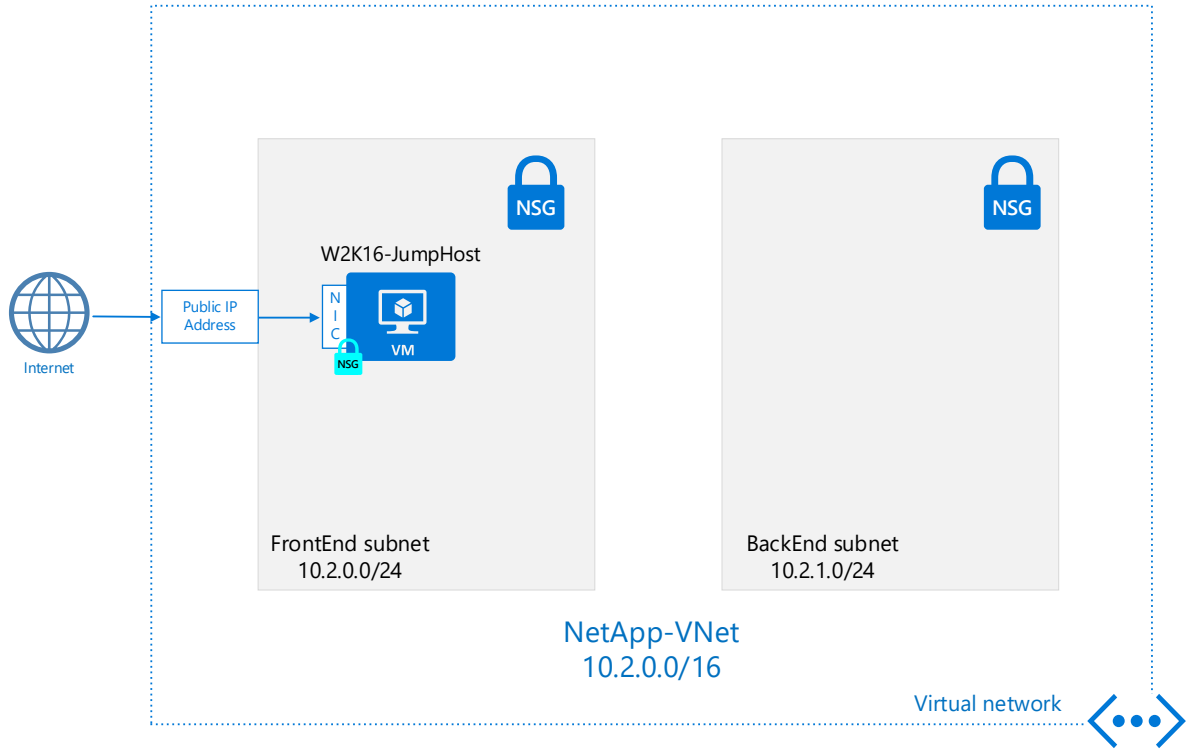
| Step | Action |
|---|---|
| 1-12 | Verify that a W2K16-JumpHost.rdp file is downloaded to your computer. |
| 1-13 | Open the file. |
| 1-14 | In the Remote Desktop Connection dialog box, click **Connect**.<br>The Remote computer is the Public IP address for the W2K16VM.<br>  |
| 1-15 | In the Windows Security dialog box, enter the following:<br>• More Choices<br>• Use a different account<br>• Username: **DemoAdmin**<br>• Password: **HappyCloud123** |
| 1-16 | Click **OK**. |
| 1-17 | If a message appears stating that "The identity of the remote computer cannot be verified. Do you want to connect anyway," click **Yes**. |
| 1-18 | On the Windows Server 2016 Datacenter virtual machine (VM), in the Server Manager dashboard, click **Local Server**.<br>  |

| Step | Action |
|---|---|
| 1-19 | In the Properties window, next to the IE Enhanced Security Configuration, click **On**.<br>  |
| 1-20 | Select **Off** for both the Administrator and User, and click **OK**.<br>  |
| 1-21 | Click the Internet Explorer icon and verify HTTP access by entering the URL https://cloud.netapp.com.<br>  |

| Step | Action |
| --- | --- |
| 1-22 | Verify that the NetApp Cloud Central page appears.<br>  |
| 1-23 | Minimize but do not close the Remote Desktop Protocol (RDP) session. |

# Azure Diagram

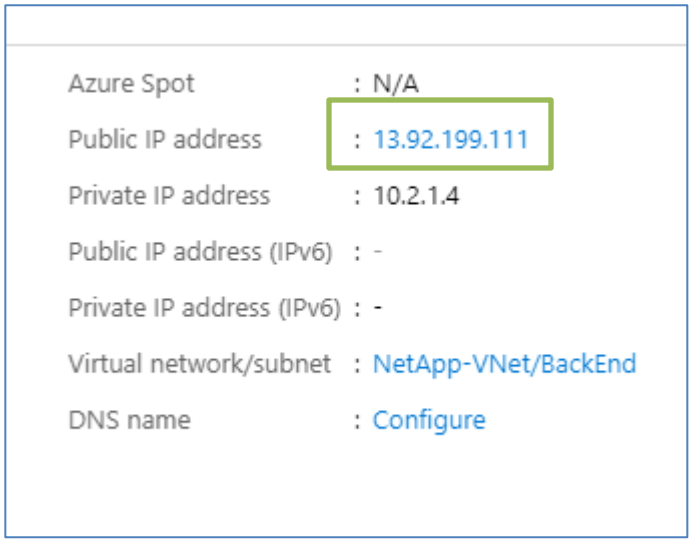
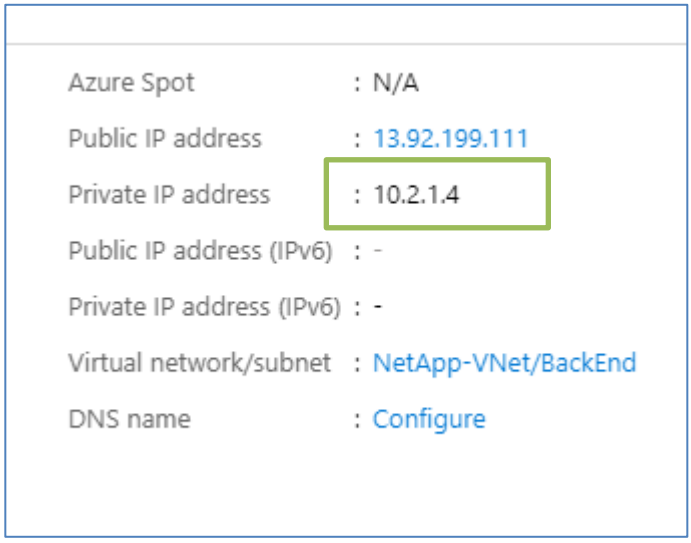
The figure shows the configuration of the Azure network after you complete Task 1: Verify That the Front End Network Is Publicly Accessible.

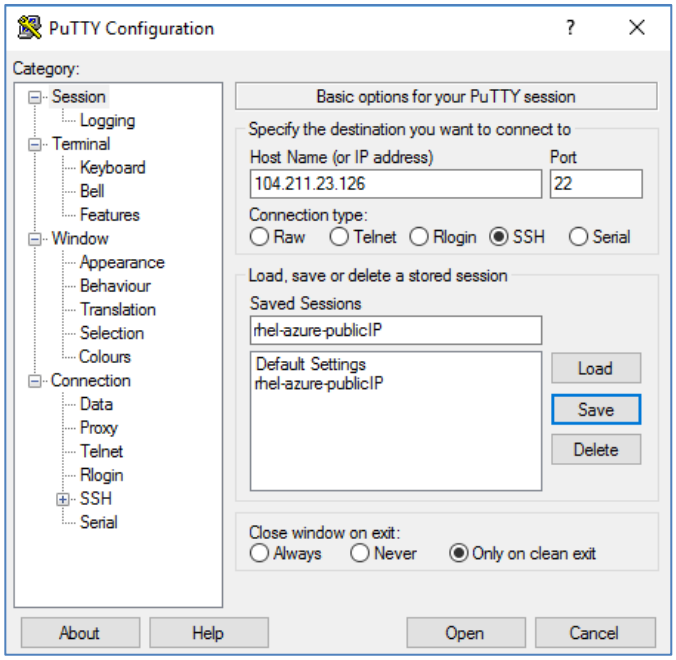
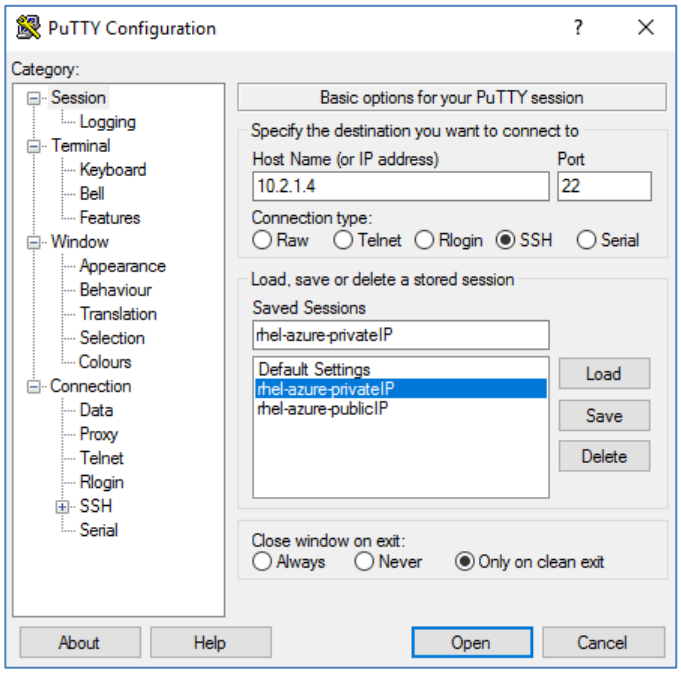


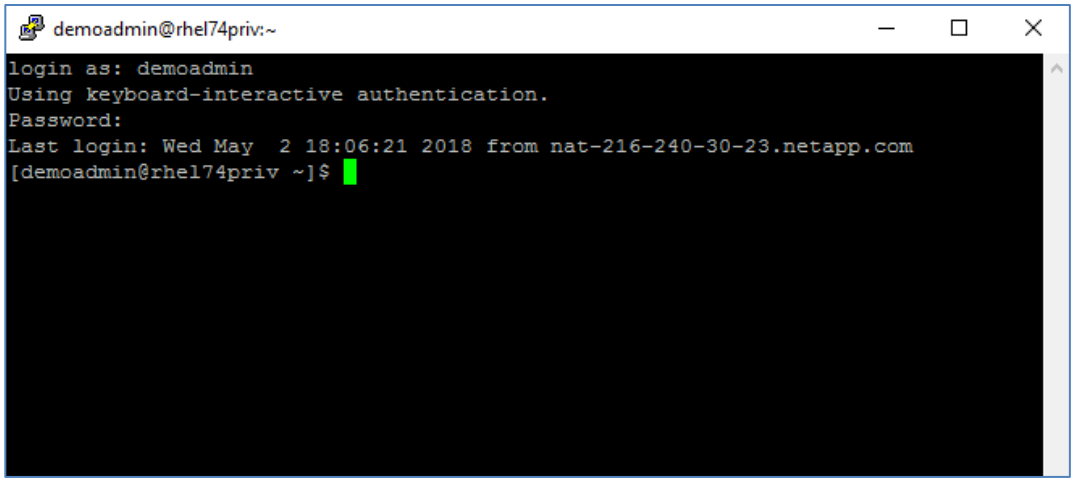
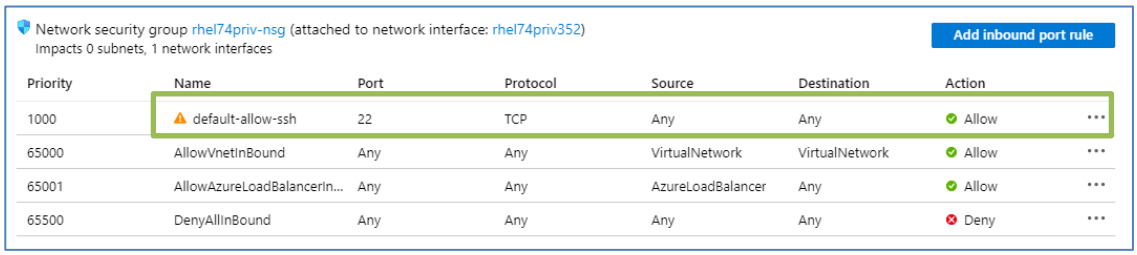
## Task 2: Verify That the Back-End Network Is Not Publicly Accessible

In this task, you create a Linux virtual machine and verify that it is not publicly accessible but that it does have outbound internet access.

| Step | Action |
|---|---|
| **2-1** | Return to the Azure portal, and in the favorites panel, click **Virtual machines**. |
| **2-2** | In the Virtual machines blade, click **+ Add**. |
| **2-3** | In the Create virtual machine page, under Basics do the following:<br>a) For the subscription, ensure your subscription is selected.<br>b) For the Resource group, click the drop-down menu and select **NetApp-RG**.<br>c) For the Virtual machine name, enter **rhel77priv**.<br>d) For the Region select **(US) East**.<br>e) For the Image, click the drop-down menu and select **Red Hat Enterprise Linux 7.7**.<br>f) For the Size, click Change size and select **A0 Basic**, then click **Select**.<br>g) For the Authentication type, select **Password**.<br>h) For the Username, enter **demoadmin**.<br>i) For the Password and Confirm password, enter **HappyCloud123**.<br>j) For the Public inbound ports, select **SSH**. (default)<br>k) Click **Next: Disks** at the bottom of the page. |
| **2-4** | In the Create virtual machine page under Disks, click the drop-down menu and select **Standard HDD**. |
| **2-5** | Click **Next: Networking** at the bottom of the page. |
| **2-6** | In the Create virtual machine page under Networking, do the following:<br>a) For the Virtual network, click the drop-down menu and select **NetApp-VNet**.<br>b) For the Subnet, click the drop-down menu and select **BackEnd (10.2.1.0/24)**.<br>c) For the NIC network security group, select **Advanced**.<br>d) For the Configure network security group, click Create new then select **(new) rhel77priv-nsg**.<br>e) Leave all other defaults.<br>f) Click **Review + create** at the bottom of the bottom of the page. |
| **2-7** | After Validation passed is displayed, click **Create** at the bottom of the page. (you may need to put in a telephone number, enter 9195551212) |
| **2-8** | Click the Notifications icon and wait for the VM to deploy, when it does click **Go to resource**. |

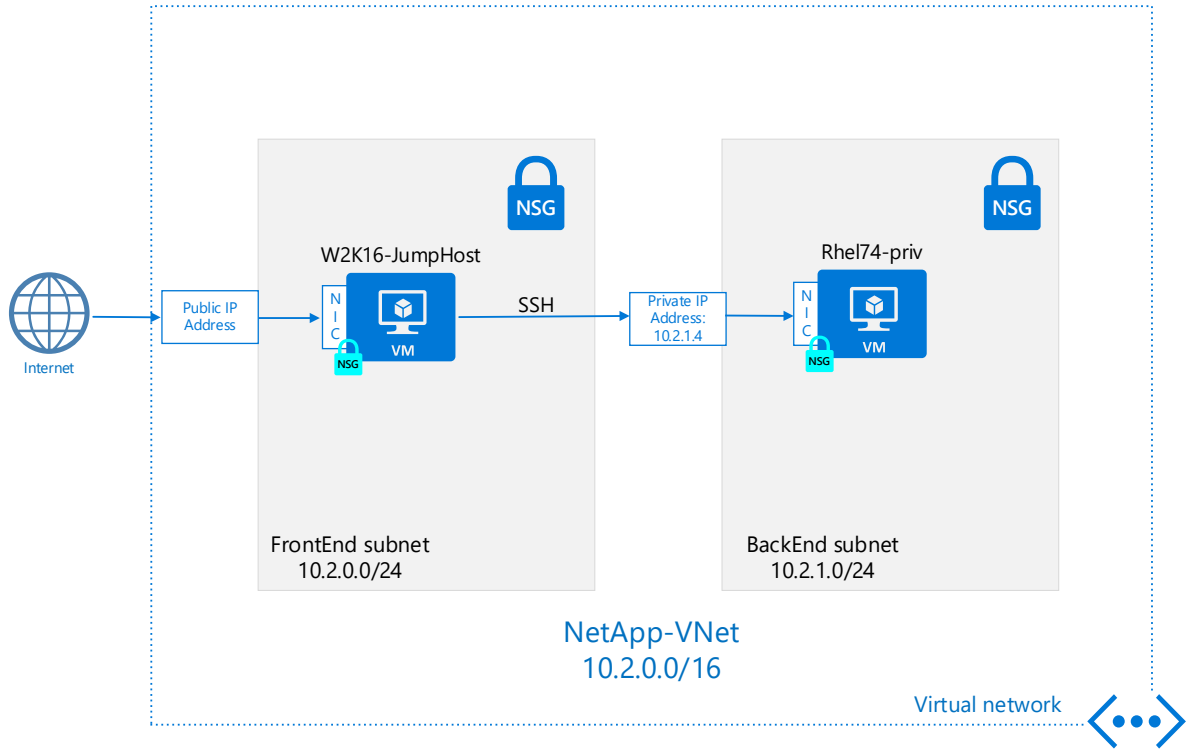
| Step | Action |
|---|---|
| 2-9 | From the rhel77priv blade, record the Public IP address: _____<br>  |
| 2-10 | Record the Private IP: _____<br>  |
| 2-11 | Return to the RDP session of the W2K16-JumpHost. |
| 2-12 | Download and install the Secure Shell (SSH) tool of your choice. This document uses PuTTY.<br>https://www.putty.org |

| Step | Action |
|---|---|
| **2-13** | Connect to the Linux virtual machine (VM) using the public IP address that you recorded and the user name **demoadmin** and password **HappyCloud123**.<br>  |
| **2-14** | Verify that the connection times out and that you never are prompted for the user name and password. |
| **2-15** | Repeat these steps, but this time, use the private IP address that you recorded.<br>  |
| **2-16** | If a Security Alert appears, click **Yes**. |

| Step | Action |
|---|---|
| 2-17 | Verify that you are able to log in with the user name and password (**demoadmin** and **HappyCloud123**).<br>  |
| 2-18 | Issue a curl command to verify that you have outbound internet connectivity.<br>$ **curl www.google.com**<br><br>Example truncated output:<br>`<!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="en-IN"><head><meta content="text/html; charset=UTF-8" http-equiv="Content-Type"><meta content="/images/branding/googleg/1x/googleg_standard_color_128dp.png" itemprop="image"><title>Google</title><script nonce="xmC9tKaQmtfmo5H5xUuqbA==">(function(){window.google={kEI:'egnqWtjeGKq9ggf2h57QCw',kEXPI:` |
| 2-19 | In the Azure portal, select **Virtual Machines** > **rhel77priv**, and click **Networking**. |
| 2-20 | The rhel74priv setting allows SSH from any source, but the public IP is prevented at the subnet level, so the traffic never reaches this rule, which is applied at the VM NIC level.<br>  |

# Azure Diagram

The figure shows the configuration of the Azure network after you complete Task 2: Verify That the Back-End Network Is Not Publicly Accessible.




**End of Exercise**