

Module 2: Azure Networking

Exercise 2: Verify Azure Networking

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

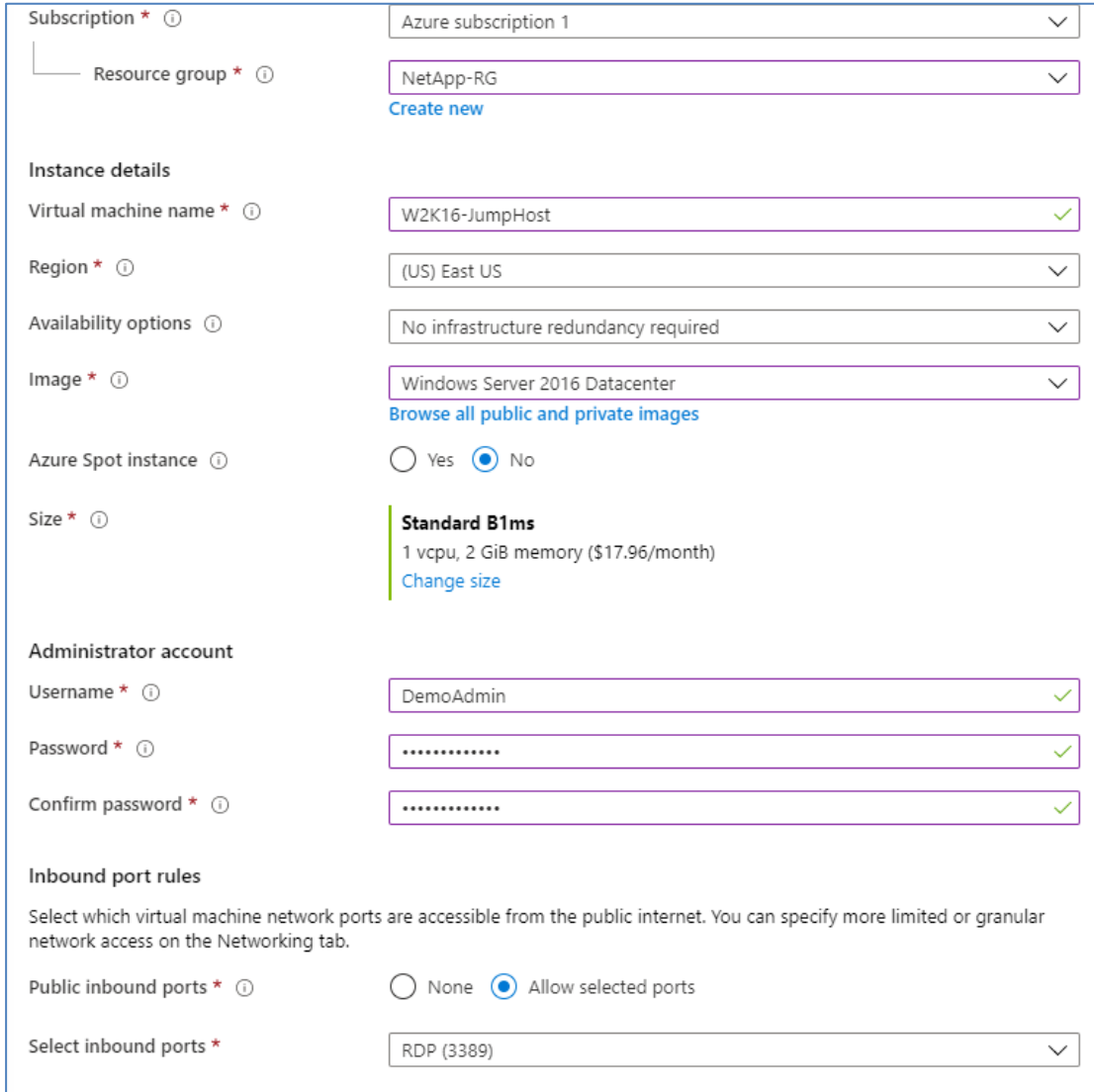
Objectives

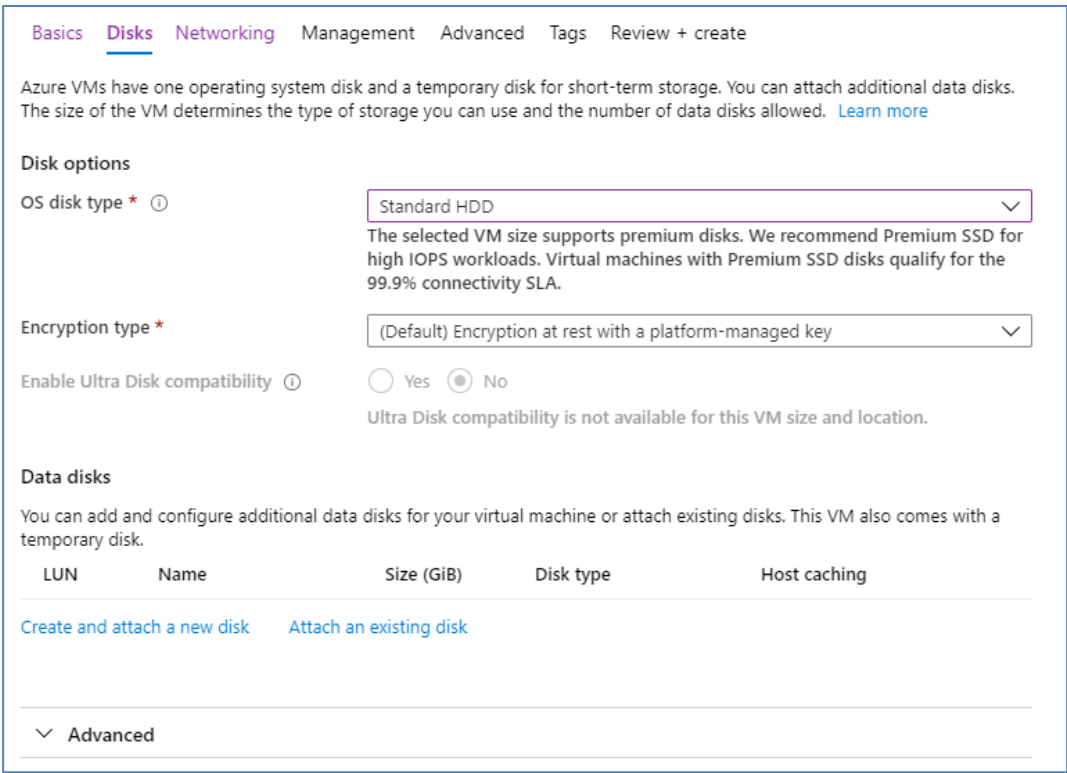
This exercise focuses on enabling you to do the following:

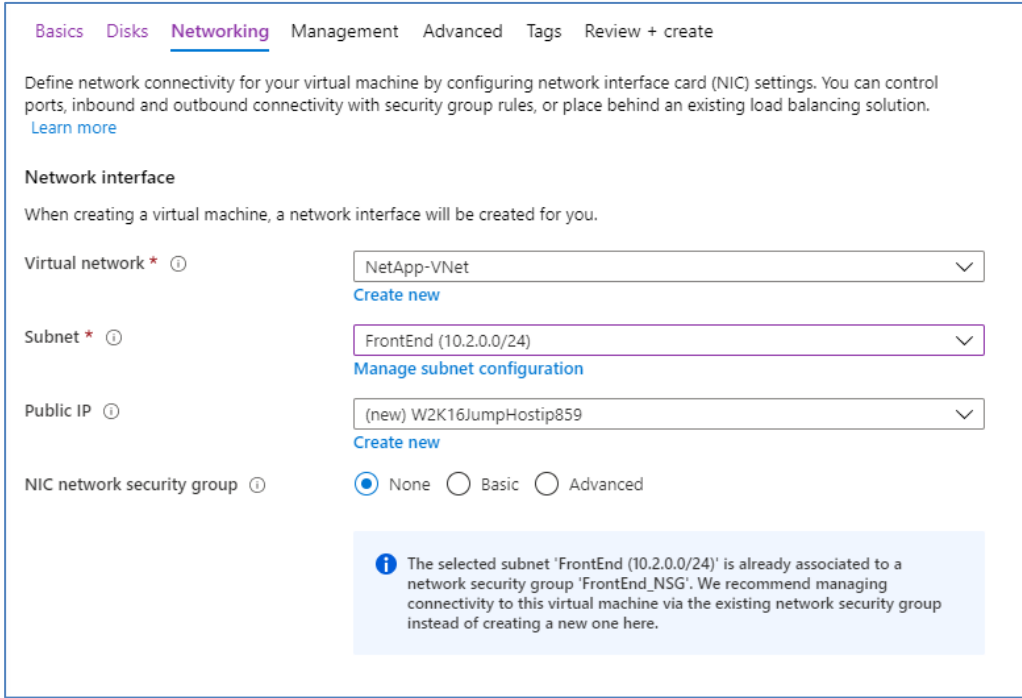
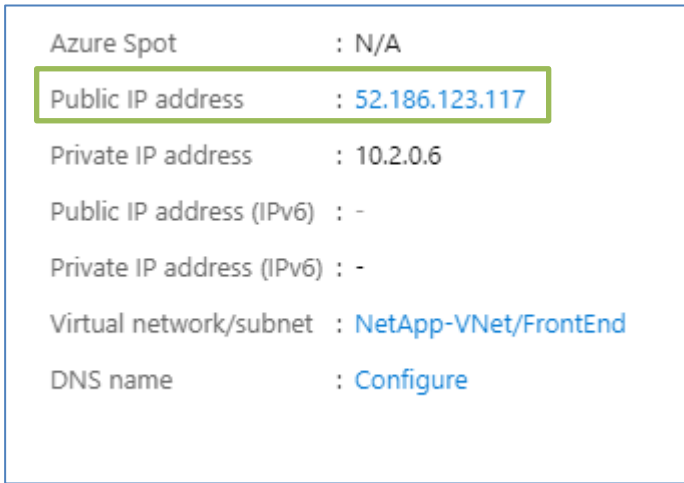
- Verify that the front-end network is publicly accessible.
- Verify that the front-end network where Cloud Manager will be installed can communicate with the back-end network where Cloud Volumes ONTAP will be deployed.
- Verify that the back-end network has outbound internet access but cannot be connected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

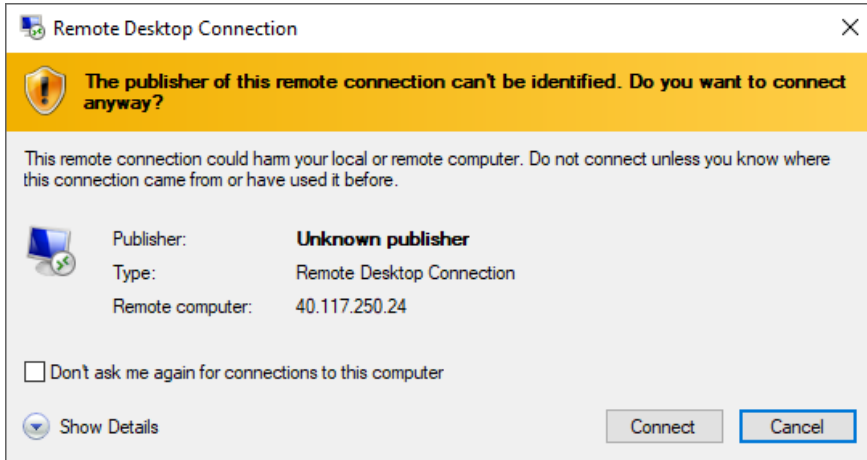
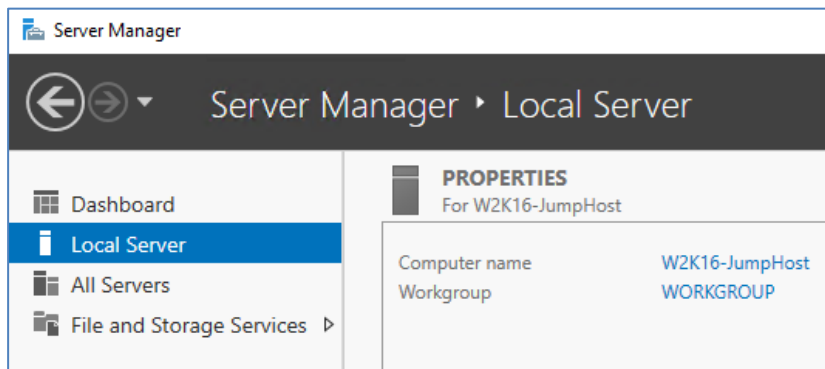
Task 1: Verify That the Front-End Network Is Publicly Accessible

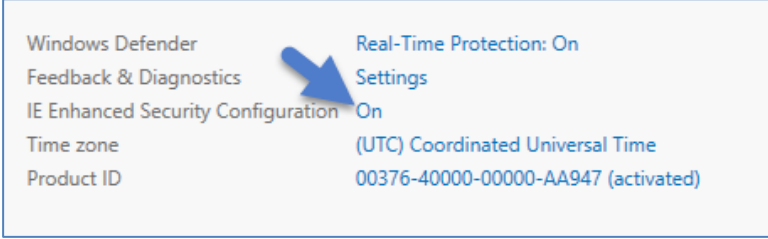
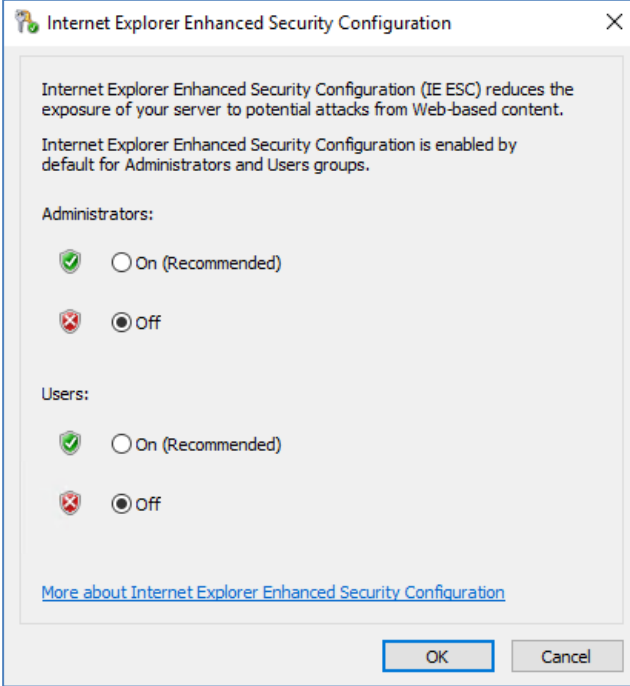

Step	Action
1-1	Open a web browser, and enter the URL https://portal.azure.com .
1-2	In the favorites panel, click Virtual machines .
1-3	In the Virtual machines page, click + Add .

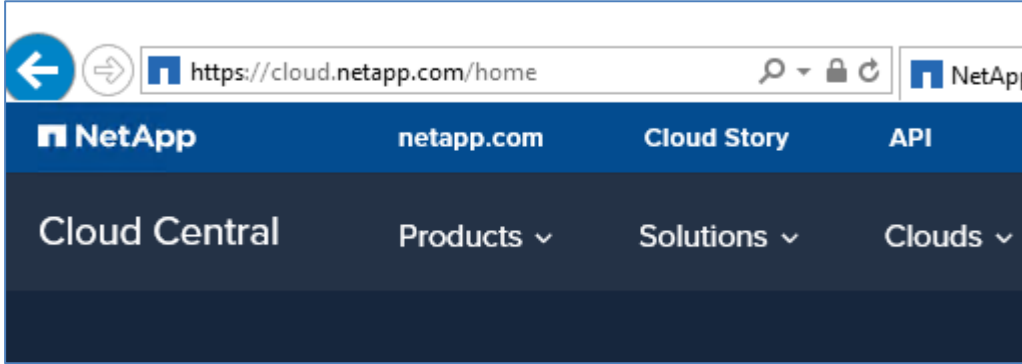
Step	Action
1-4	<p>In the Create virtual machine page, under Basics do the following:</p> <ol style="list-style-type: none"> For the subscription, ensure your subscription is selected. For the Resource group, click the drop-down menu and select NetApp-RG. For the Virtual machine name, enter W2K16-JumpHost. For the Region select (US) East. For the Image, click the drop-down menu and select Windows Server 2016 Datacenter. For the Size, click Change size and select B1ms Standard, then click Select. For the Username, enter DemoAdmin. For the Password and Confirm password, enter HappyCloud123. For the Public inbound ports, select Allow selected port, then choose RDP(3389). (default) Click Next: Disks at the bottom of the page. 

Step	Action
1-5	<p>In the Create virtual machine page under Disks, click the drop-down menu and select Standard HDD.</p>  <p>The screenshot shows the 'Disks' tab in the Azure portal. At the top, there are tabs for Basics, Disks (selected), Networking, Management, Advanced, Tags, and Review + create. Below the tabs, a message states: 'Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. Learn more'. Under 'Disk options', 'OS disk type' is set to 'Standard HDD' (highlighted with a red box). A note below says: 'The selected VM size supports premium disks. We recommend Premium SSD for high IOPS workloads. Virtual machines with Premium SSD disks qualify for the 99.9% connectivity SLA.' 'Encryption type' is set to '(Default) Encryption at rest with a platform-managed key'. 'Enable Ultra Disk compatibility' has radio buttons for 'Yes' and 'No' (selected), with a note: 'Ultra Disk compatibility is not available for this VM size and location.' Under 'Data disks', a message says: 'You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.' Below this is a table with columns: LUN, Name, Size (GiB), Disk type, and Host caching. At the bottom of the table are two links: 'Create and attach a new disk' and 'Attach an existing disk'. The 'Advanced' section is expanded, showing a 'Data disks' section with a 'Create and attach a new disk' link and an 'Attach an existing disk' link.</p>
1-6	Click Next: Networking at the bottom of the page.

Step	Action
1-7	<p>In the Create virtual machine page under Networking, do the following:</p> <ol style="list-style-type: none"> For the Virtual network, click the drop-down menu and select NetApp-VNet. For the Subnet, click the drop-down menu and select FrontEnd (10.2.0.0/24). For the Configure network security group, select None. Leave all other defaults. Click Review + create at the bottom of the bottom of the page. 
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	<p>In the W2K16-JumpHost blade, verify that a Public IP address is assigned.</p> 
1-11	Click Connect > RDP > Download RDP File .

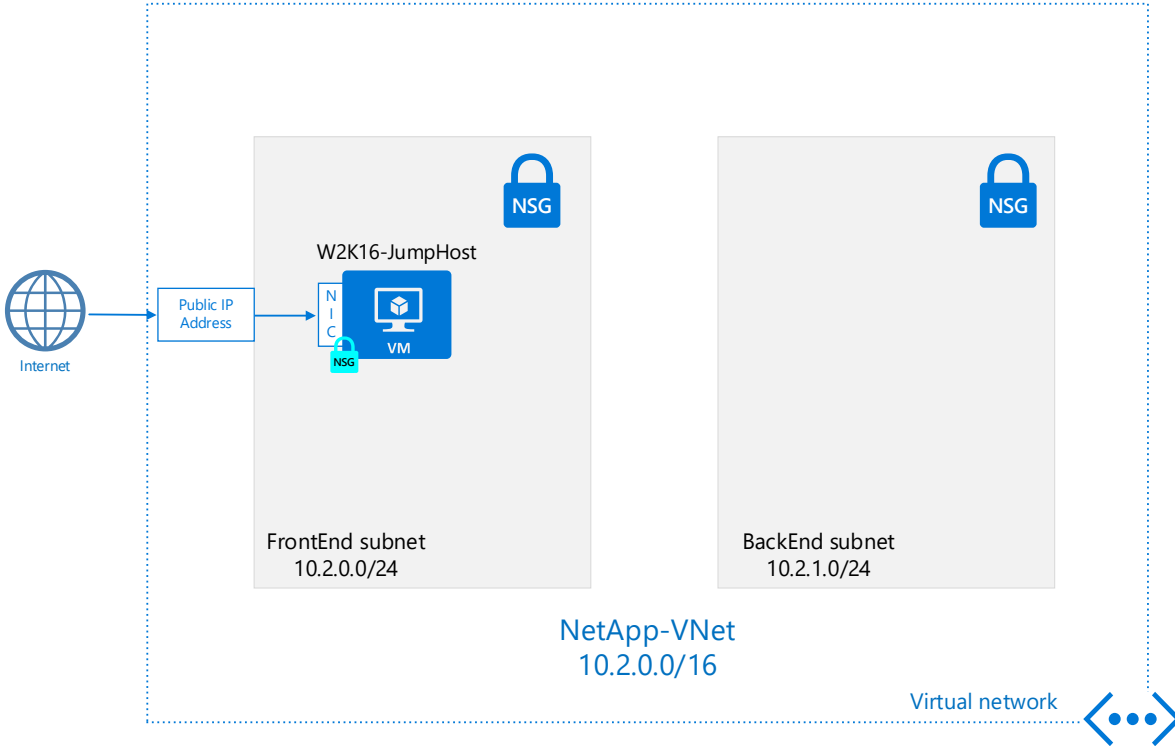
Step	Action
1-12	Verify that a W2K16-JumpHost.rdp file is downloaded to your computer.
1-13	Open the file.
1-14	<p>In the Remote Desktop Connection dialog box, click Connect.</p> <p>The Remote computer is the Public IP address for the W2K16VM.</p> 
1-15	<p>In the Windows Security dialog box, enter the following:</p> <ul style="list-style-type: none"> • More Choices • Use a different account • Username: DemoAdmin • 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	<p>On the Windows Server 2016 Datacenter virtual machine (VM), in the Server Manager dashboard, click Local Server.</p> 

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

Step	Action
1-22	<p>Verify that the NetApp Cloud Central page appears.</p> 
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.

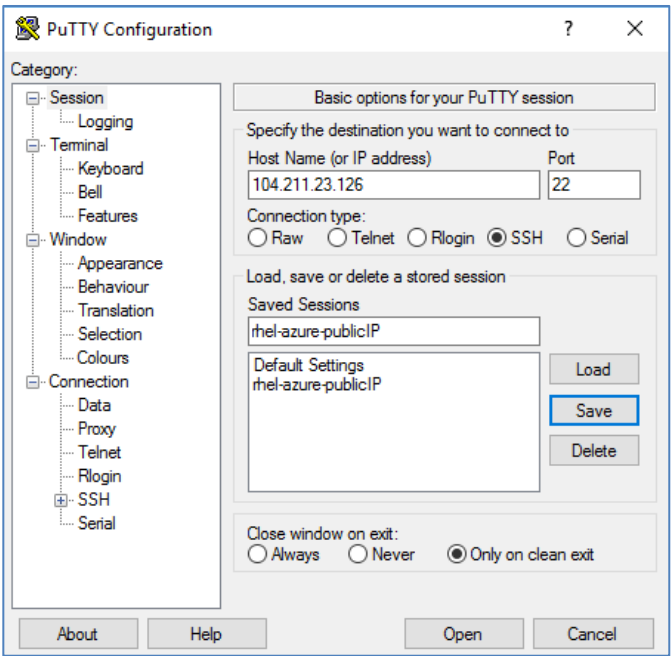
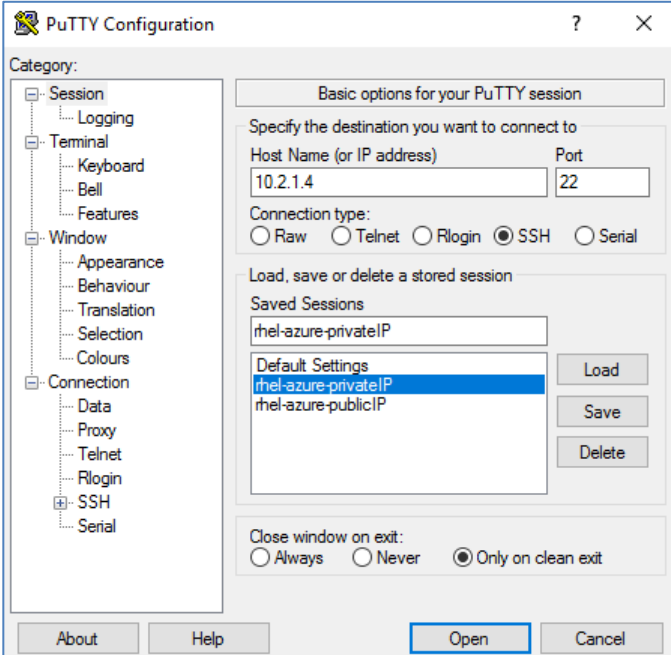


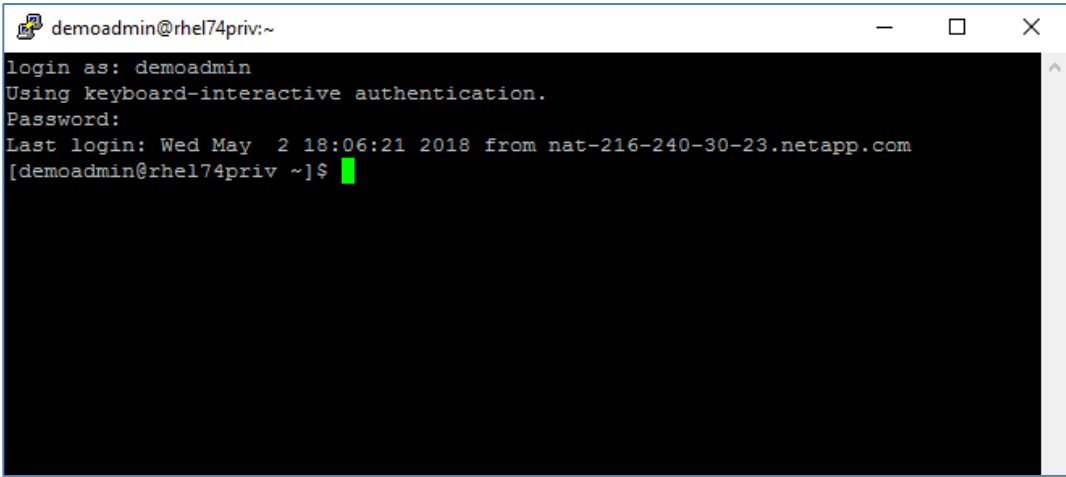

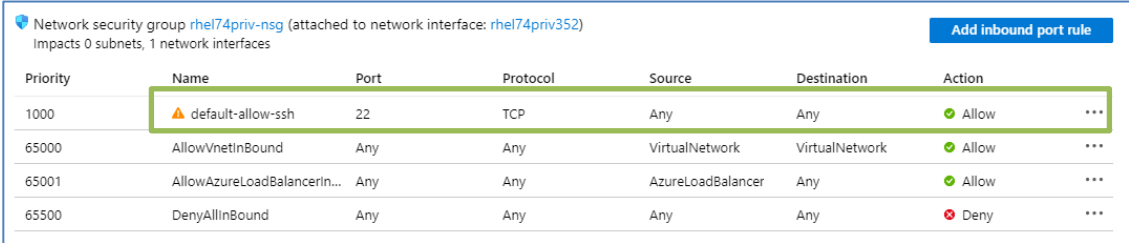
Task 2: Verify That the Back-End Network Is Not Publicly Accessible

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: <ul style="list-style-type: none">a) For the subscription, ensure your subscription is selected.b) For the Resource group, click the drop-down menu and select NetApp-RG.c) For the Virtual machine name, enter rhel77priv.d) For the Region select (US) East.e) For the Image, click the drop-down menu and select Red Hat Enterprise Linux 7.7.f) For the Size, click Change size and select A0 Basic, then click Select.g) For the Authentication type, select Password.h) For the Username, enter demoadmin.i) For the Password and Confirm password, enter HappyCloud123.j) For the Public inbound ports, select SSH. (default)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: <ul style="list-style-type: none">a) For the Virtual network, click the drop-down menu and select NetApp-VNet.b) For the Subnet, click the drop-down menu and select BackEnd (10.2.1.0/24).c) For the NIC network security group, select Advanced.d) For the Configure network security group, click Create new then select (new) rhel77priv-nsg.e) Leave all other defaults.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 .

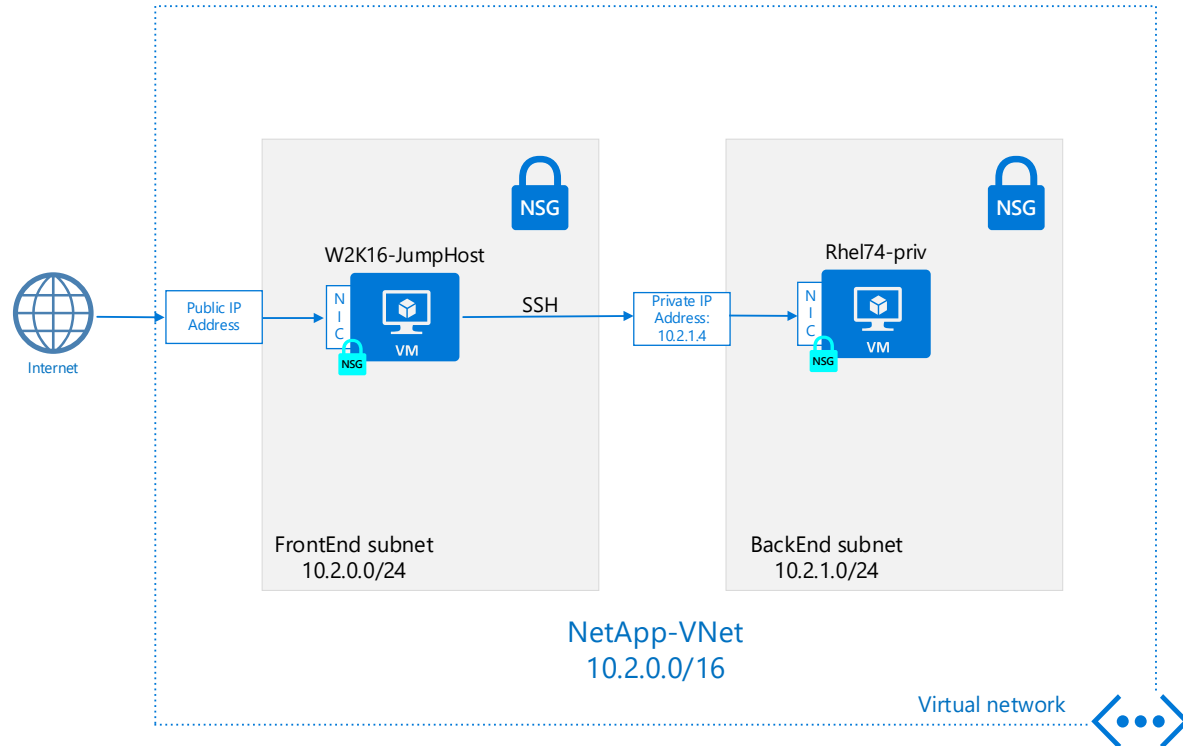
Step	Action
2-9	<p>From the rhel77priv blade, record the Public IP address: _____</p> <div> <p>Azure Spot : N/A</p> <p>Public IP address : 13.92.199.111</p> <p>Private IP address : 10.2.1.4</p> <p>Public IP address (IPv6) : -</p> <p>Private IP address (IPv6) : -</p> <p>Virtual network/subnet : NetApp-VNet/BackEnd</p> <p>DNS name : Configure</p> </div>
2-10	<p>Record the Private IP: _____</p> <div> <p>Azure Spot : N/A</p> <p>Public IP address : 13.92.199.111</p> <p>Private IP address : 10.2.1.4</p> <p>Public IP address (IPv6) : -</p> <p>Private IP address (IPv6) : -</p> <p>Virtual network/subnet : NetApp-VNet/BackEnd</p> <p>DNS name : Configure</p> </div>
2-11	Return to the RDP session of the W2K16-JumpHost.
2-12	<p>Download and install the Secure Shell (SSH) tool of your choice. This document uses PuTTY.</p> <p>https://www.putty.org</p>

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

Step	Action
2-17	<p>Verify that you are able to log in with the user name and password (demoadmin and HappyCloud123).</p> 
2-18	<p>Issue a curl command to verify that you have outbound internet connectivity.</p> <p>\$ curl www.google.com</p> <p>Example truncated output:</p> <pre><!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_128d p.png" itemprop="image"><title>Google</title><script nonce="xmC9tKaQmtfmo5H5xUuqbA==">(function(){window.google={kEI: 'egnqWtjeGKq9ggf2h57QCw', kEXPI:</pre>
2-19	In the Azure portal, select Virtual Machines > rhel77priv , and click Networking .
2-20	<p> 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.</p> 

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