

# ONLINE LAB: Setting up your first Virtual Machine Scale Set

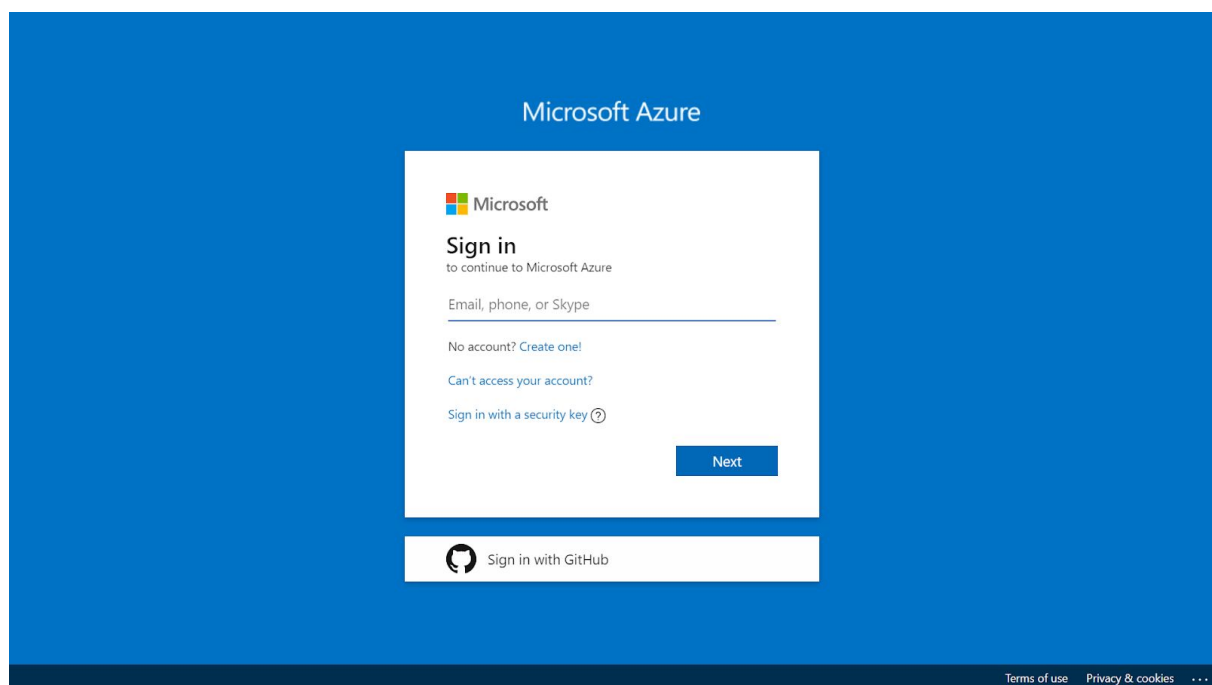
## Your Challenge

- Create a resource group named **VMScale-Set-ResourceGroup**.
- Create a new virtual machine
- Create an image
- Create a new virtual machine scale set
- Configure VM's inbound port rules to RDP access
- Connect to a VM in the scale set
- Clean up all of your resources created after you're done

## Solution

### Step 1 Sign Into Azure

Sign into Azure at <https://portal.azure.com/>



## Step 2 Create a resource group

Home > New > Resource group > Create a resource group

### Create a resource group

[Basics](#) [Tags](#) [Review + create](#)

**Resource group** - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

**Project details**

\* Subscription ⓘ

\* Resource group ⓘ

**Resource details**

\* Region ⓘ

[Review + create](#) [< Previous](#) [Next : Tags >](#)

1. In the navigation list, click **Resource groups**.
2. Click **Add** to open the **Resource group** blade.
3. For **Resource group** name, enter **VMScale-Set-ResourceGroup**.
4. Select a subscription and a location.
5. Click **Review + Create** to proceed to the last step.
6. Click **Create** to create the resource group.
7. Click **Refresh** to refresh the list of resource groups.

The new resource group appears in your resource groups list.

## Step 3 Create a new virtual machine

The screenshot shows the 'Create a virtual machine' wizard in the Azure portal, specifically the 'Basics' tab. The breadcrumb navigation at the top reads 'Home > Virtual machines > Create a virtual machine'. The left sidebar contains various Azure service icons. The main content area has a title 'Create a virtual machine' and a sub-header with tabs: 'Basics' (selected), 'Disks', 'Networking', 'Management', 'Advanced', 'Tags', and 'Review + create'. Below the tabs, there is instructional text: 'Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Looking for classic VMs? [Create VM from Azure Marketplace](#)'. The 'Project details' section asks to 'Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.' It contains two dropdown menus: 'Subscription' (set to 'Microsoft Partner Network') and 'Resource group' (set to 'VMScale-Set-ResourceGroup', with a 'Create new' link below it). The 'Instance details' section contains four fields: 'Virtual machine name' (set to 'myvm' with a green checkmark), 'Region' (set to '(US) East US 2'), 'Availability options' (set to 'No infrastructure redundancy required'), and 'Image' (set to 'Windows Server 2016 Datacenter', with a link 'Browse all public and private images' below it). At the bottom, there are three buttons: 'Review + create' (blue), '< Previous' (disabled), and 'Next : Disks >' (disabled).

Home > Virtual machines > Create a virtual machine

### Create a virtual machine

[Basics](#) [Disks](#) [Networking](#) [Management](#) [Advanced](#) [Tags](#) [Review + create](#)

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Looking for classic VMs? [Create VM from Azure Marketplace](#)

#### 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

\* Virtual machine name ⓘ  ✓

\* Region ⓘ

Availability options ⓘ

\* Image ⓘ  [Browse all public and private images](#)

[Review + create](#) [< Previous](#) [Next : Disks >](#)

1. In the list of **virtual machines**, click create a virtual machine.
2. Choose the same subscription and location as the resource group.
3. Choose a name for the virtual machine, such as “**myvm**”
4. Choose your desired Operating System, Such as “**Windows Server 2016 Datacenter**”

Home > Virtual machines > Create a virtual machine

## Create a virtual machine

\* Size ⓘ **Standard DS1 v2**  
1 vcpu, 3.5 GiB memory  
[Change size](#)

**Administrator account**

\* Username ⓘ  ✓

\* Password ⓘ  ✓

\* Confirm password ⓘ  ✓

**Inbound port rules**

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

\* Public inbound ports ⓘ ☐ None ☒ Allow selected ports

\* Select inbound ports  ▼

⚠ These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.

[Review + create](#) [< Previous](#) [Next : Disks >](#)

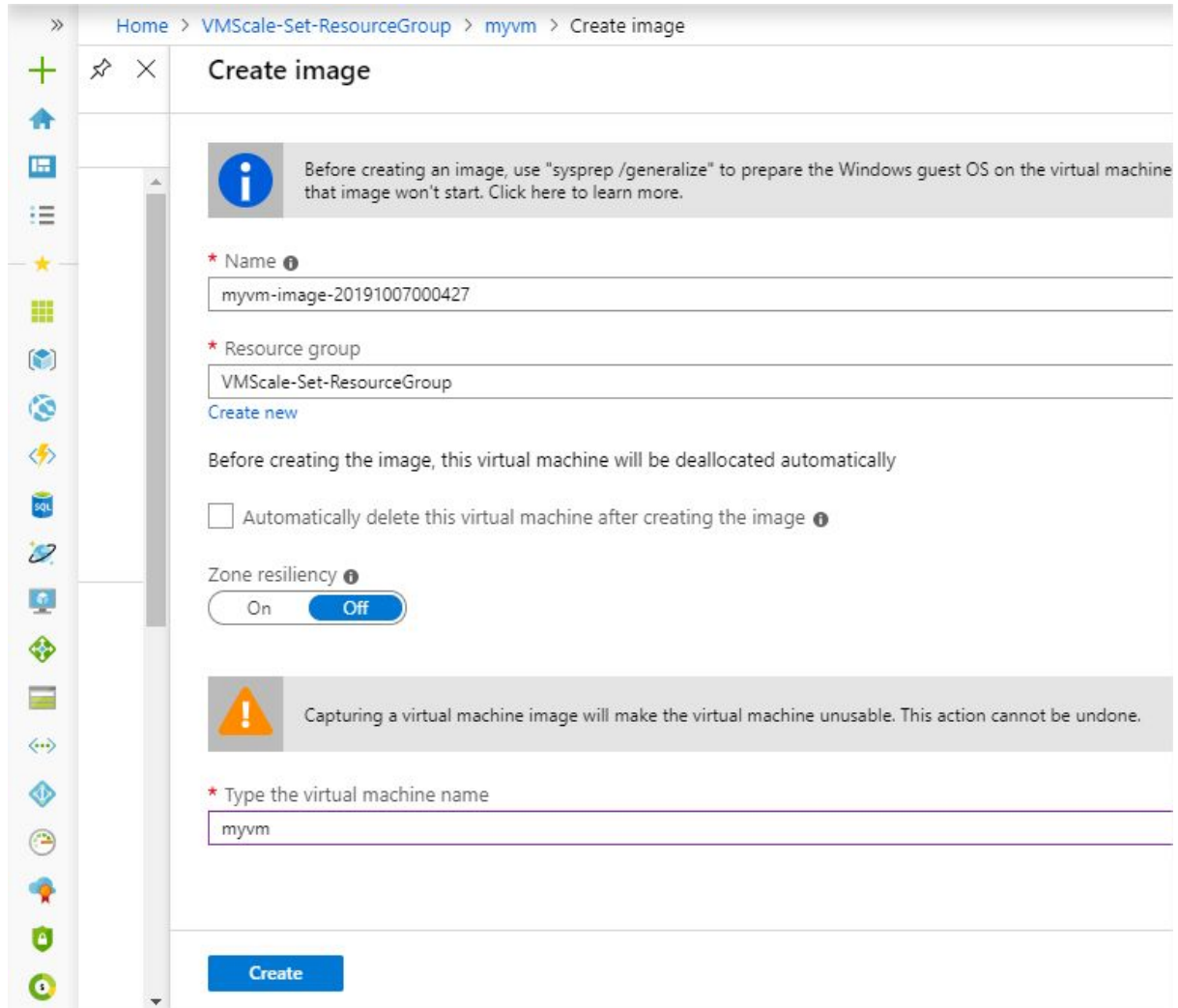
5. Enter your desired virtual machine size such as “**Standard DS1 v2**”.
6. Enter your desired username and password.
7. Optional to access your virtual machine using RDP, you have to enable inbound ports for RDP.
8. Click **Review + Create** to proceed to the last step.
9. Click **Create** to create the virtual machine.
10. Wait for the deployment to complete. It should take 3 minutes 40 seconds or so.

## **\*NEW\*** Step 3B Generalize the VM with Sysprep

*\*Note that running **sysprep** with **generalize** on an Azure VM makes it unusable after. Do not generalize a VM that you want to keep. Instead, make a copy and generalize the copy.\**

1. Use RDP to connect to the new VM
2. If this was a real example, you'd want to set up any applications, code, files, etc that you want this image to contain
3. Run **%windir%\system32\sysprep\sysprep.exe**
4. Select **OBOE** and **generalize**
5. Select **Shutdown after running**
6. Click **OK** and disconnect from the VM
7. Wait for the machine to shut down

## Step 4 Create an image for virtual machine



The screenshot shows the 'Create image' page in the Azure portal. The breadcrumb navigation at the top reads: Home > VMScale-Set-ResourceGroup > myvm > Create image. On the left is a sidebar with various Azure service icons. The main content area has a title 'Create image' and an information icon with a note: 'Before creating an image, use "/>

1. In the list of Resource groups, click the **VMScale-Set-ResourceGroup** resource group.
2. Click on your virtual machine, overview.
3. On the top-side click **capture**.
4. Write the name of your virtual machine.
5. Click **Create** to create the image virtual machine.

## Step 5 Create a new virtual machine scale set

Home > VMScale-Set-ResourceGroup > Marketplace > Virtual machine scale set > Create virtual machine scale set

### Create virtual machine scale set

**BASICS**

- \* Virtual machine scale set name: vmss1 ✓
- \* Operating system disk image: Windows Server 2016 Datacenter ✓  
[Browse all public and private images](#)
- \* Subscription: Microsoft Partner Network ✓
- \* Resource group: VMScale-Set-ResourceGroup ✓  
[Create new](#)
- \* Location: (US) East US 2 ✓
- Availability zone: None ✓
- \* Username: vmss ✓
- \* Password: ..... ✓
- \* Confirm password: ..... ✓

**INSTANCES**

- \* Instance count: 2

[Create](#) [Automation options](#)

1. In the list of Resource groups, click the **VMScale-Set-ResourceGroup** resource group.
2. Click **Add** to open the Azure Marketplace.
3. Enter “**Virtual machine scale set**” in the search box and choose **Virtual machine scale set** as a result.
4. Click **Create**.
5. Give the virtual machine scale set name a **unique name**.
6. Choose your desired Operating System, such as “**Windows Server 2016 Datacenter**”. Or you can use one of your private images. Click on **Browse all public and private images**.
7. Choose the same subscription and location as the resource group.
8. Choose the **VMScale-Set-ResourceGroup** from the resource group dropdown.

9. Enter your desired username and password.

» Home > VMSSet-ResourceGroup > Marketplace > Virtual machine scale set > Create virtual machine scale set

## Create virtual machine scale set

---

### INSTANCES

\* Instance count ⓘ

\* Instance size ⓘ **Standard DS1 v2**  
1 vcpu, 3.5 GiB memory  
[Change size](#)

Deploy as low priority (preview) ⓘ ☒ No ☐ Yes

Use managed disks ⓘ ☐ No ☒ Yes

Use ephemeral OS disk ⓘ ☒ No ☐ Yes

**i** The selected image is too large for the OS cache of the selected instance.

[+ Show advanced settings](#)

### AUTOSCALE

Autoscale ⓘ ☒ Disabled ☐ Enabled

### NETWORKING

[Create](#) [Automation options](#)



Home > VMSSet-ResourceGroup > Marketplace > Virtual machine scale set > Create virtual machine scale set

## Create virtual machine scale set

### NETWORKING

Microsoft Azure Application Gateway is a dedicated virtual appliance providing application delivery controller (ADC) as a service. Azure Load Balancer allows you to scale your applications and create high availability for your services.  
[Learn more about load balancer differences](#)

RESOURCES	OPTIMAL FOR	SUPPORTED PROTOCOLS	SSL OFFLOADING	RDP TO INSTANCE
Application Gateway	Web-based traffic	HTTP/HTTPS/WebSoc...	Supported	Not supported
Load balancer	Stream-based traffic	Any	Not supported	Supported

Choose Load balancing options ☐ Application Gateway ☒ Load balancer ☐ None

\* Public IP address name ⓘ  ✓

\* Domain name label ⓘ  ✓  
 .eastus2.cloudapp.azure.com

### Configure virtual networks

\* Virtual network ⓘ  ✓  
[Create new](#)

Public IP address per instance ⓘ ☐ On ☒ Off

[Create](#) [Automation options](#)

10. Select load balance options such as “**Load balancer**” from Choose Load balancing options.
11. Give the Public IP address name a **unique name**.
12. Give the Domain name label a **unique name**.
13. Create a new Virtual network

Create virtual network

The Microsoft Azure Virtual Network service enables Azure resources to securely communicate with each other in a virtual network which is a logical isolation of the Azure cloud dedicated to your subscription. You can connect virtual networks to other virtual networks, or your on-premises network. [Learn more](#)

\*

Name

myvn

Address space

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

<input checked="" type="checkbox"/>	ADDRESS RANGE	ADDRESSES	OVERLAP	
<input checked="" type="checkbox"/>	10.0.0.0/16	10.0.0.0 - 10.0.255.255 (65536 addresses)	None	<div></div> ...
		(0 Addresses)	None	

Subnets

The subnet's address range in CIDR notation. It must be contained by the address space of the virtual network.

<input checked="" type="checkbox"/>	SUBNET NAME	ADDRESS RANGE	ADDRESSES	
<input checked="" type="checkbox"/>	default	10.0.0.0/24	10.0.0.0 - 10.0.0.255 (256 addresses)	<div></div> ...
			(0 Addresses)	

OK

Discard

14. Give the new virtual network a **name**, and a new subnet, default.

15. Click **OK**.

» Home > VMSScale-Set-ResourceGroup > Marketplace > Virtual machine scale set > Create virtual machine scale set

### Create virtual machine scale set

**Configure virtual networks**

\* Virtual network ⓘ (new) myvn [Create new](#)

\* Subnet (new) default (10.0.0.0/24)

Public IP address per instance ⓘ ☐ On ☒ Off

Accelerated networking ⓘ ☐ On ☒ Off

**i** The selected VM size does not support accelerated networking.

NIC network security group ⓘ ☐ None ☒ Basic ☐ Advanced

\* Public inbound ports ⓘ ☒ None ☐ Allow selected ports

Select inbound ports

Select one or more ports

**i** All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

**Create** [Automation options](#)

16. Click **Create** to create the virtual machine scale set.

17. Wait for the deployment to complete. It should take 3 minutes or so.

The new virtual machine scale set appears in your resource group.

## Step 6 Configure VM's inbound port rules to RDP access

1. In the list of Resource groups, click the **VMSScale-Set-ResourceGroup** resource group.
2. Select your **network security group** vmss1nsg

The screenshot displays the Azure portal interface for configuring a network security group (NSG) rule. The left-hand navigation pane shows the 'Inbound security rules' section selected under the 'Settings' category. The main area is divided into two panes: the left pane shows a table of existing rules, and the right pane shows the 'Add inbound security rule' configuration form.

PRIORITY	NAME	PORT
65000	AllowVnetInBound	Any
65001	AllowAzureLoadBalancerInBound	Any
65500	DenyAllInBound	Any

The 'Add inbound security rule' form on the right includes the following fields:

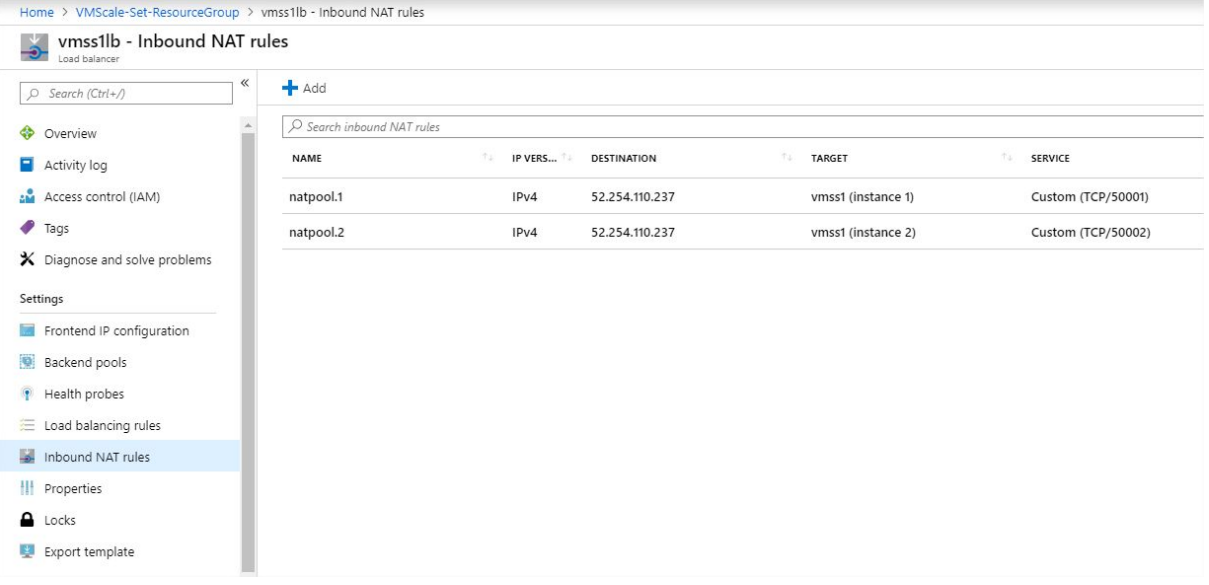
- Source:** Any
- Source port ranges:** \*
- Destination:** Any
- Destination port ranges:** 3389
- Protocol:** Any (selected), TCP, UDP, ICMP
- Action:** Allow (selected), Deny
- Priority:** 100
- Name:** Port\_3389
- Description:** (empty)

An 'Add' button is located at the bottom of the form.

3. From the left-hand menu, Choose **Inbound security rules**, click Add.
4. For **Destination port ranges** 3389, give this rule name such as Port\_3389.
5. Click **Add**.

## Step 7 Connect to a VM in the scale set

1. In the list of Resource groups, click the **VMSScale-Set-ResourceGroup** resource group.
2. Select your Load balancer, click the **vmss1lb**.

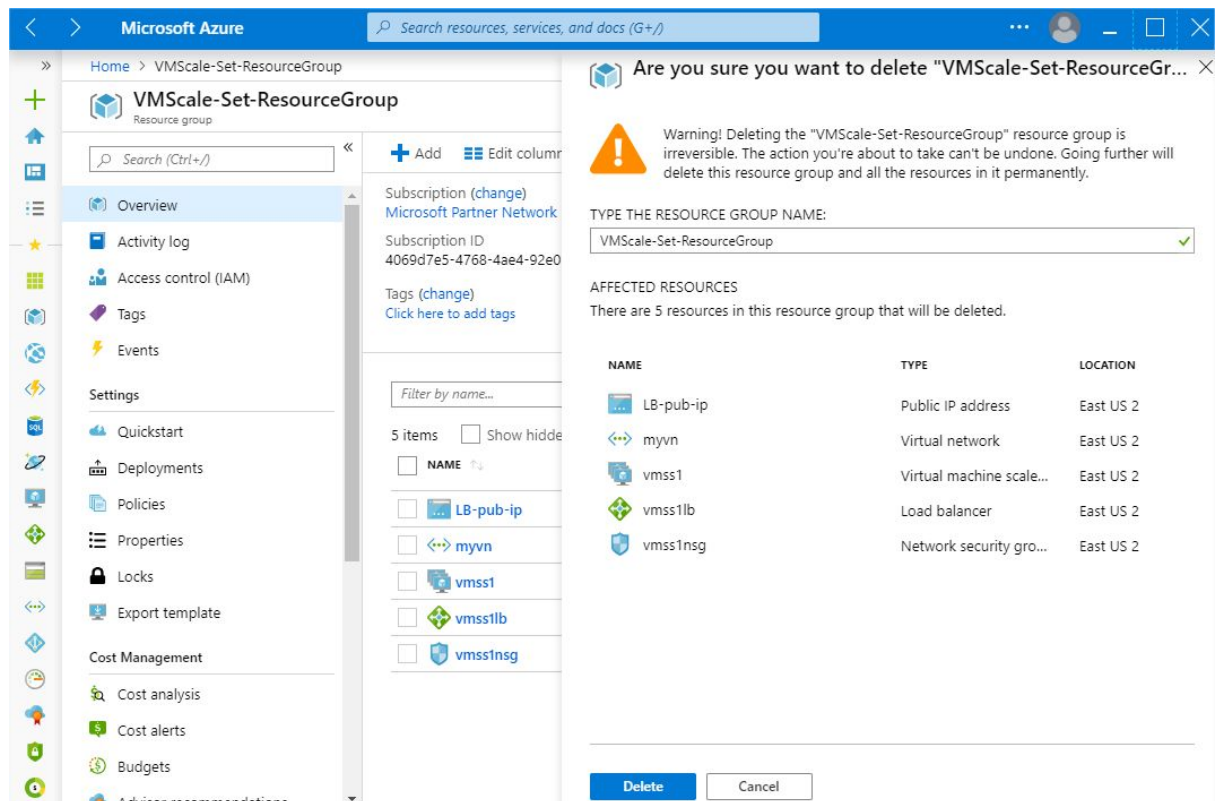


The screenshot shows the Azure portal interface for the 'vmss1lb - Inbound NAT rules' page. The breadcrumb navigation at the top reads 'Home > VMSScale-Set-ResourceGroup > vmss1lb - Inbound NAT rules'. The left-hand navigation pane includes sections for 'Overview' (with links to Activity log, Access control (IAM), Tags, and Diagnose and solve problems), 'Settings' (with links to Frontend IP configuration, Backend pools, Health probes, Load balancing rules, and Inbound NAT rules), 'Properties', 'Locks', and 'Export template'. The 'Inbound NAT rules' section is currently selected. The main content area features a search bar and a table of NAT rules.

NAME	IP VERS...	DESTINATION	TARGET	SERVICE
natpool.1	IPv4	52.254.110.237	vmss1 (instance 1)	Custom (TCP/50001)
natpool.2	IPv4	52.254.110.237	vmss1 (instance 2)	Custom (TCP/50002)

3. From the left-hand menu, Choose **Inbound NAT rules**.
4. Using these NAT rules you can connect to your VMs using RDP to 52.254.110.237:50001 or 52.254.110.237:50002
5. Using your credentials on the prompt screen.

## Step 8 Clean up



1. In the navigation list, click **Resource groups**.
2. Click **VMscale-Set-ResourceGroup** to open the resource group.
3. Click **Delete resource group** to delete the resource group.
4. On the **Are you sure you want to delete** blade, type the resource group name: **VMscale-Set-ResourceGroup**.
5. Click **Delete** to delete the resource group.