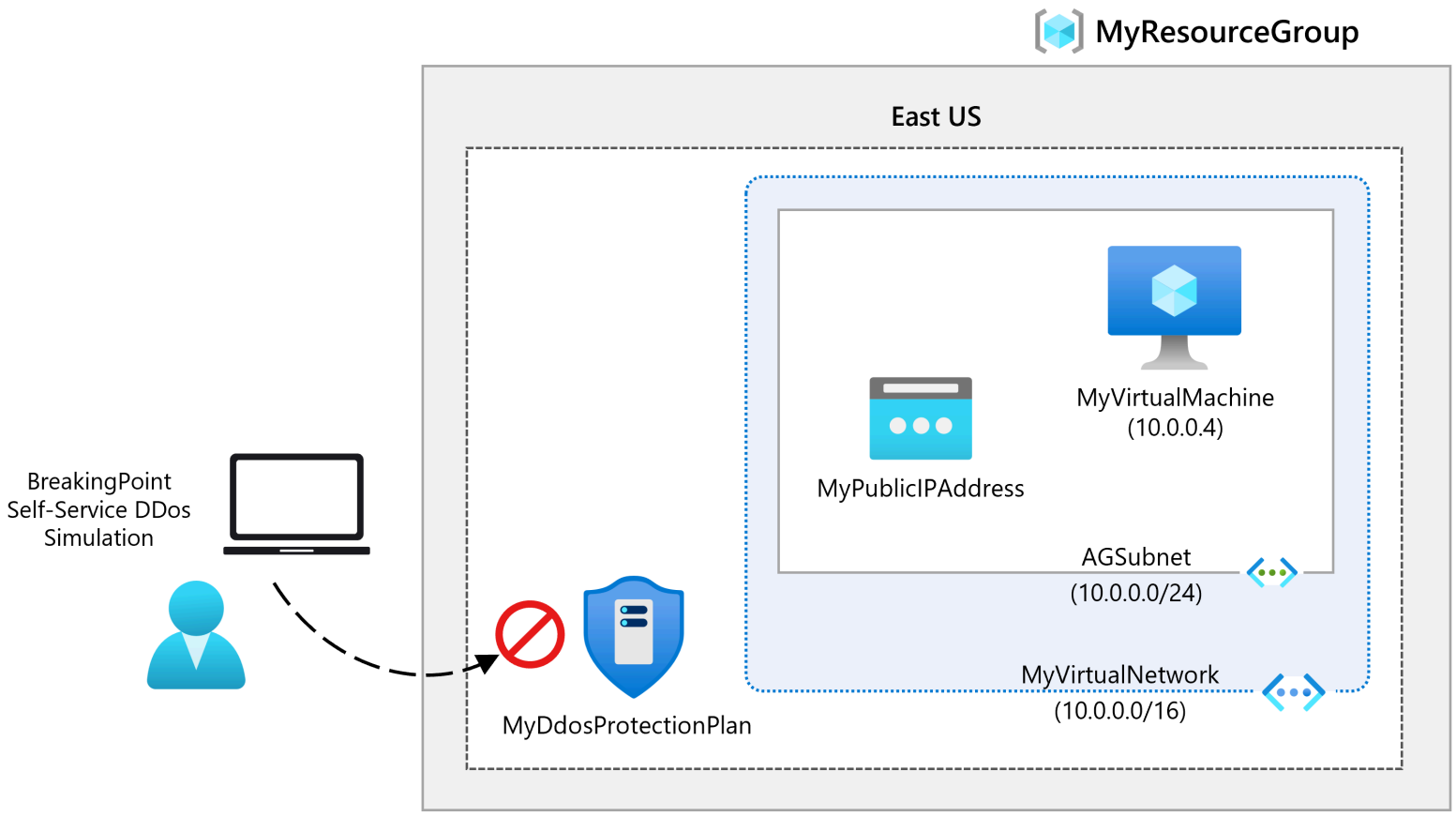
M06-Unit 4 Configure DDoS Protection on a virtual network using the Azure portal

Exercise scenario

Being responsible for Contoso's Network Security team, you are going to run a mock DDoS attack on the virtual network. The following steps walk you through creating a virtual network, configuring DDoS Protection, and creating an attack which you can observe and monitor with the help of telemetry and metrics.



In this exercise, you will:

- Task 1: Create a resource group
- Task 2: Create a DDoS Protection plan
- Task 3: Enable DDoS Protection on a new virtual network
- Task 4: Configure DDoS telemetry
- Task 5: Configure DDoS diagnostic logs
- Task 6: Configure DDoS alerts

- Task 7: Test with simulation partners

> **Note**: An **interactive lab simulation** is available that allows you to click through this lab at your own pace. You may find slight differences between the interactive simulation and the hosted lab, but the core concepts and ideas being demonstrated are the same.

Estimated time: 40 minutes

Task 1: Create a resource group

1. Log in to your Azure account.
2. On the Azure portal home page, select **Resource groups**.
3. Select **Create**.
4. On the **Basics** tab, in **Resource group**, enter **MyResourceGroup**.
5. On **Region**, select East US.

6. Select **Review + create**.
7. Select **Create**.

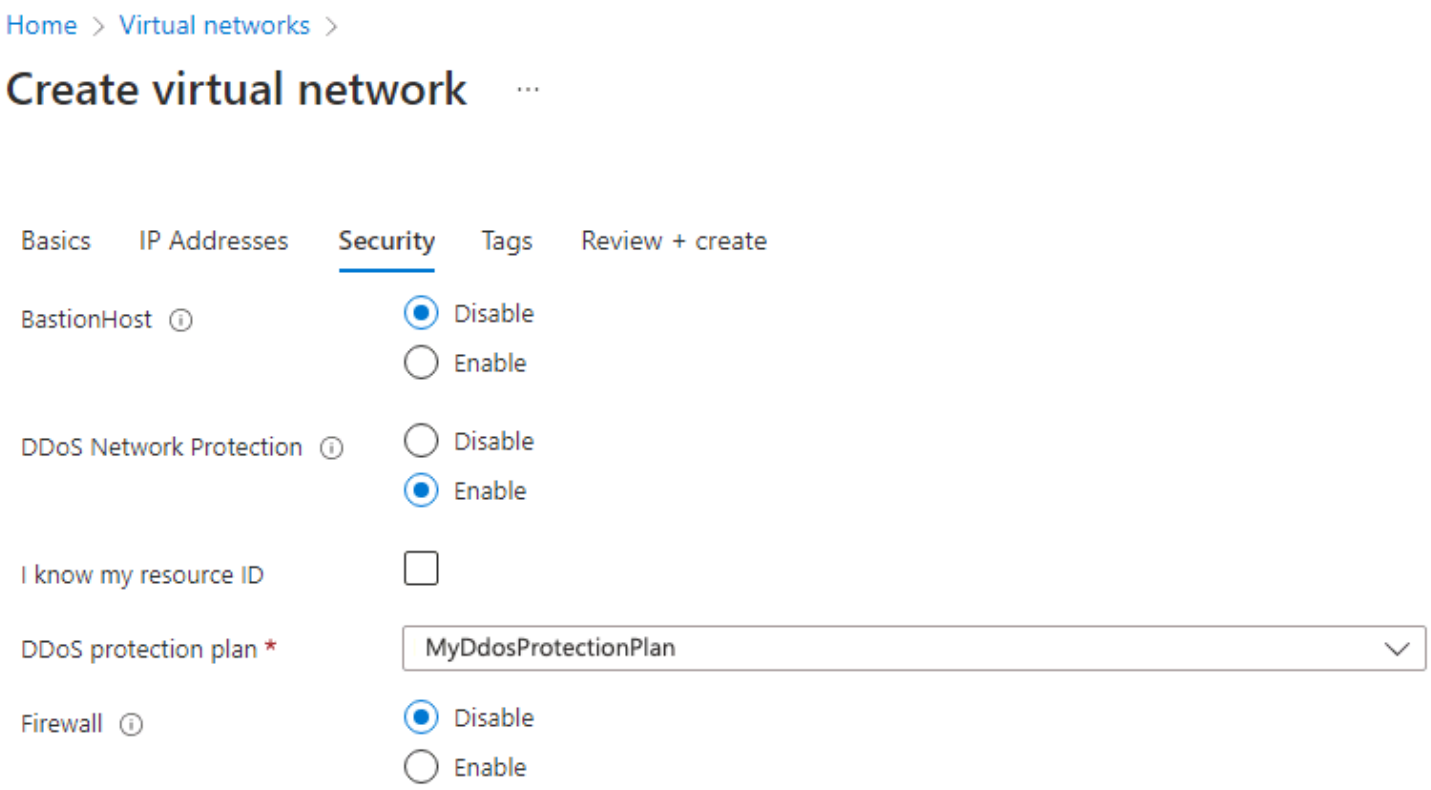
Task 2: Create a DDoS Protection plan

1. On the Azure portal home page, in the search box enter **DDoS** and select **DDoS protection plan** when it appears.
2. Select **+ Create**.
3. On the **Basics** tab, in the **Resource group** list, select the resource group you just created.
4. On the **Instance name** box, enter **MyDdoSProtectionPlan**, then select **Review + create**.
5. Select **Create**.

Task 3: Enable DDoS Protection on a new virtual network

Here you will enable DDoS on a new virtual network rather than on an existing one, so first you need to create the new virtual network, then enable DDoS protection on it using the plan you created previously.

1. On the Azure portal home page, select **Create a resource**, then in the search box, enter **Virtual Network**, then select **Virtual Network** when it appears.
2. On the **Virtual Network** page, select **Create**.
3. On the **Basics** tab, select the resource group you created previously.
4. On the **Name** box, enter **MyVirtualNetwork**, then select the **Security** tab.
5. On the **Security** tab, next to **DDoS Network Protection**, select **Enable**.
6. On the **DDoS protection plan** drop-down list, select **MyDdosProtectionPlan**.

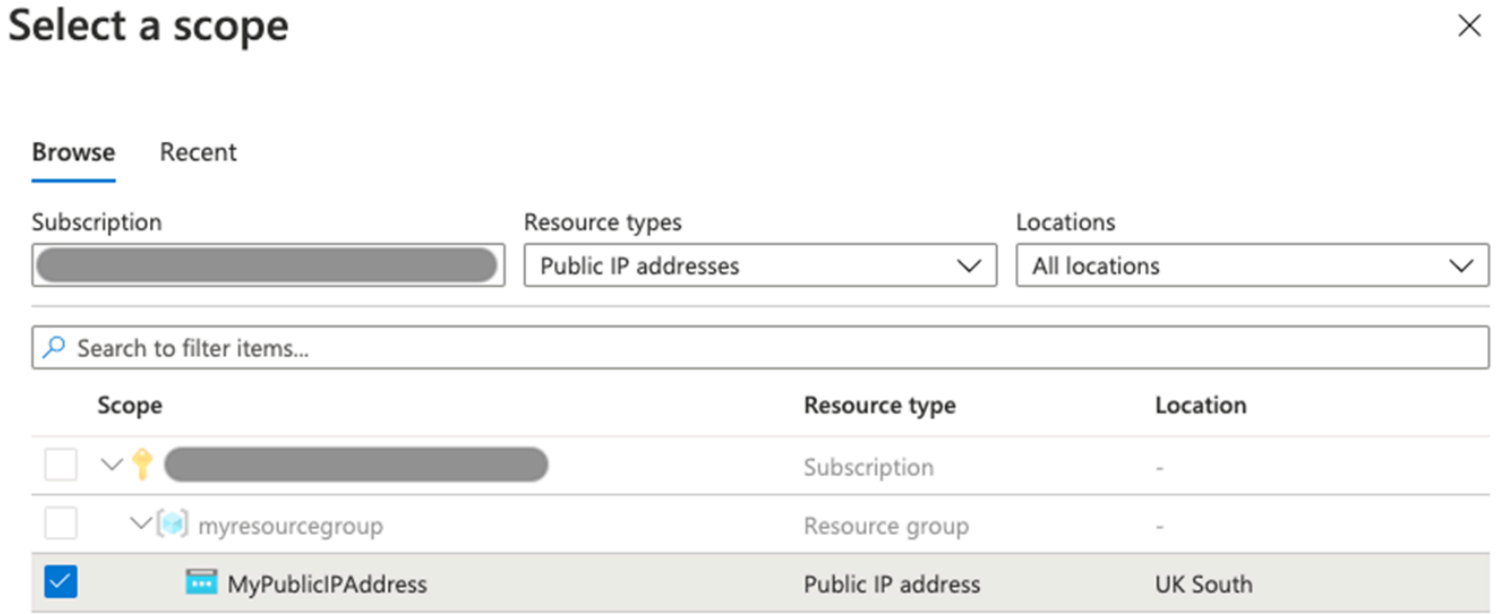


7. Select **Review + create**.
8. Select **Create**.

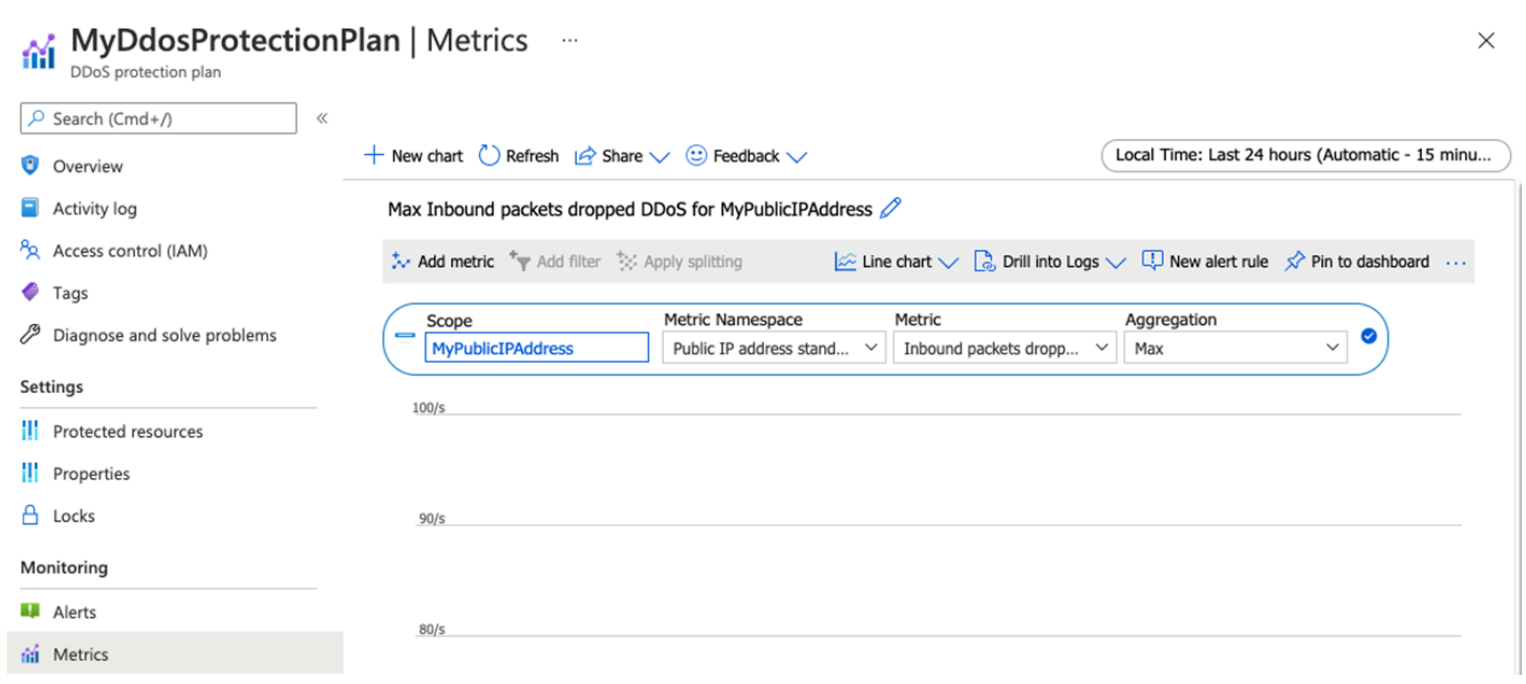
Task 4: Configure DDoS telemetry

You create a Public IP address, and then set up telemetry in the next steps.

1. On the Azure portal home page, select **Create a resource**, then in the search box, enter **public ip**, then select **Public IP address** when it appears.
2. On the **Public IP address** page, select **Create**.
3. On the **Create public IP address** page, under **SKU**, select **Standard**.
4. On the **Name** box, enter **MyPublicIPAddress**.
5. Under **IP address assignment**, select **Static**.
6. On **DNS name label**, enter **mypublicdnsxx** (where xx is your initials to make this unique).
7. Select **Create**.
8. To set up telemetry, navigate to the Azure home page, select **All resources**.
9. On the list of your resources, select **MyDdosProtectionPlan**.
10. Under **Monitoring**, select **Metrics**.
11. Select the **Scope** box, then select the checkbox next to **MyPublicIPAddress**.



12. Select **Apply**.
13. On the **Metrics** box, select **Inbound packets dropped DDoS**.
14. On the **Aggregation** box, select **Max**.



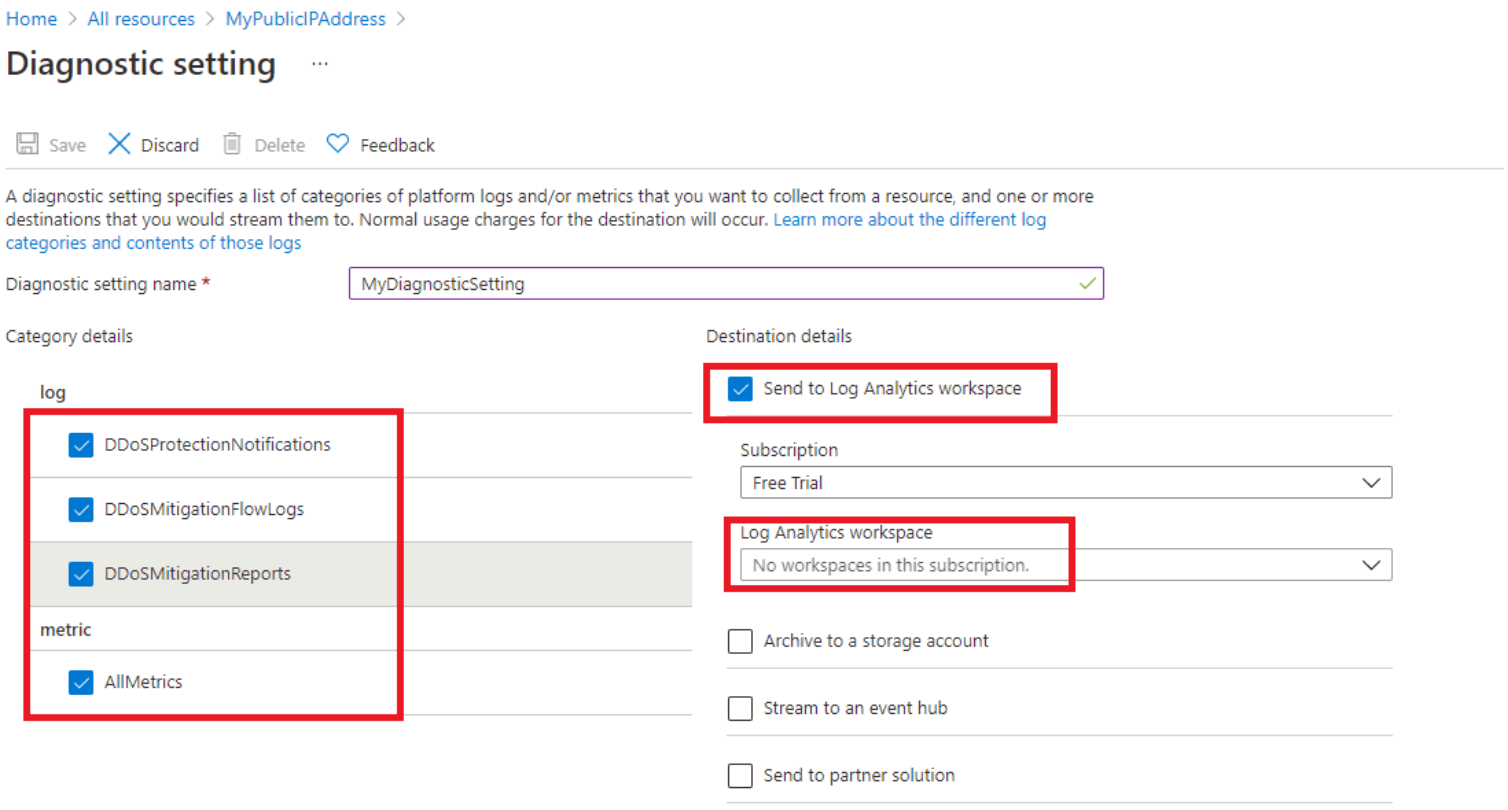
Task 5: Configure DDoS diagnostic logs

1. On the Azure home page, select **All resources**.
2. On the list of your resources, select **MyPublicIPAddress**.
3. Under **Monitoring**, select **Diagnostic settings**.
4. Select **Add diagnostic setting**.

5. On the **Diagnostic setting** page, in the **Diagnostic setting name** box, enter **MyDiagnosticSetting**.

6. Under **Category details**, select all 3 **log** checkboxes and the **AllMetrics** checkbox.

7. Under **Destination details**, select the **Send to Log Analytics workspace** checkbox. Here, you could select a pre-existing Log Analytics workspace, but as you haven't set up a destination for the diagnostic logs yet, you will just enter the settings, but then discard them in the next step in this exercise.



8. Normally you would now select **Save** to save your diagnostic settings. Note that this option is still grayed out as we cannot complete the setting configuration yet.

9. Select **Discard**, then select **Yes**.

Task 6: Configure DDoS alerts

In this step you will create a virtual machine, assign a public IP address to it, and then configure DDoS alerts.

Create the VM

1. On the Azure portal home page, select **Create a resource**, then in the search box, enter **virtual machine**, then select **Virtual machine** when it appears.

2. On the **Virtual machine** page, select **Create**.

3. On the **Basics** tab, create a new VM using the information in the table below.

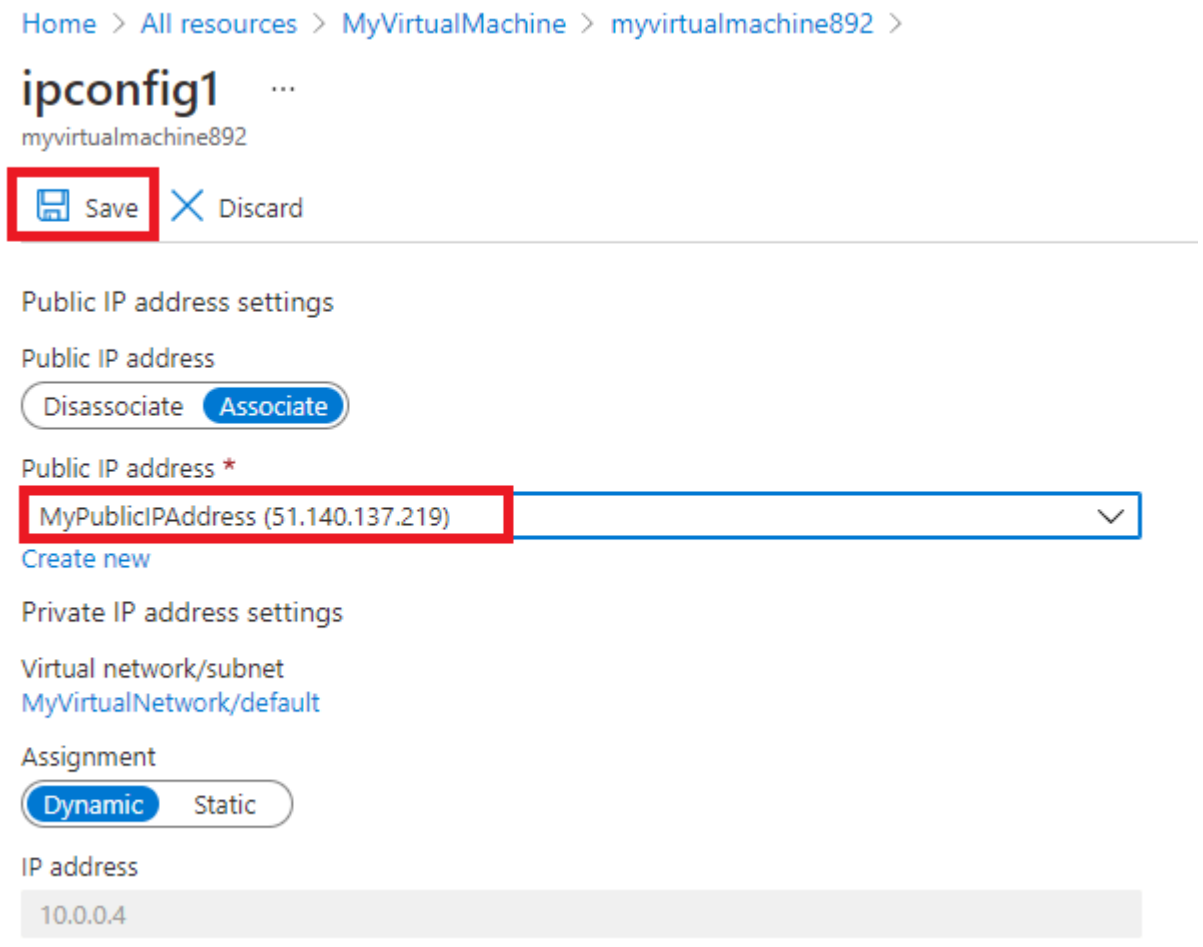
Setting	Value
Subscription	Select your subscription
Resource group	**MyResourceGroup**
Virtual machine name	**MyVirtualMachine**
Region	Your region
Availability options	**No infrastructure redundancy required**
Image	**Ubuntu Server 20.04 LTS - Gen 2** (Select Configure VM Generation link if needed)
Size	Select **See all sizes**, then choose **B1ls** in the list and choose **Select (Standard_B1ls - 1 vcpu, 0.5 GiB memory**
Authentication type	**SSH public key**

Setting	Value
Username	**azureuser**
SSH public key source	**Generate new key pair**
Key pair name	**myvirtualmachine-ssh-key**
Public inbound ports	Select None

4. Select **Review + create**.
5. Select **Create**.
6. On the **Generate new key pair** dialog box, select **Download private key and create resource**.
7. Save the private key.
8. When deployment is complete, select **Go to resource**.

Assign the Public IP address

1. On the **Overview** page of the new virtual machine, under **Settings**, select **Networking**.
2. Next to **Network Interface**, select **myvirtualmachine-nic**. The name of the nic may differ.
3. Under **Settings**, select **IP configurations**.
4. Select **ipconfig1**.
5. On the **Public IP address** list, select **MyPublicIPAddress**.
6. Select **Save**.



Configure DDoS alerts

1. On the Azure home page, select **All resources**.
2. On the list of your resources, select **MyPublicIPAddress**.
3. Under **Monitoring**, select **Alerts**.

4. Select **Create alert rule**.

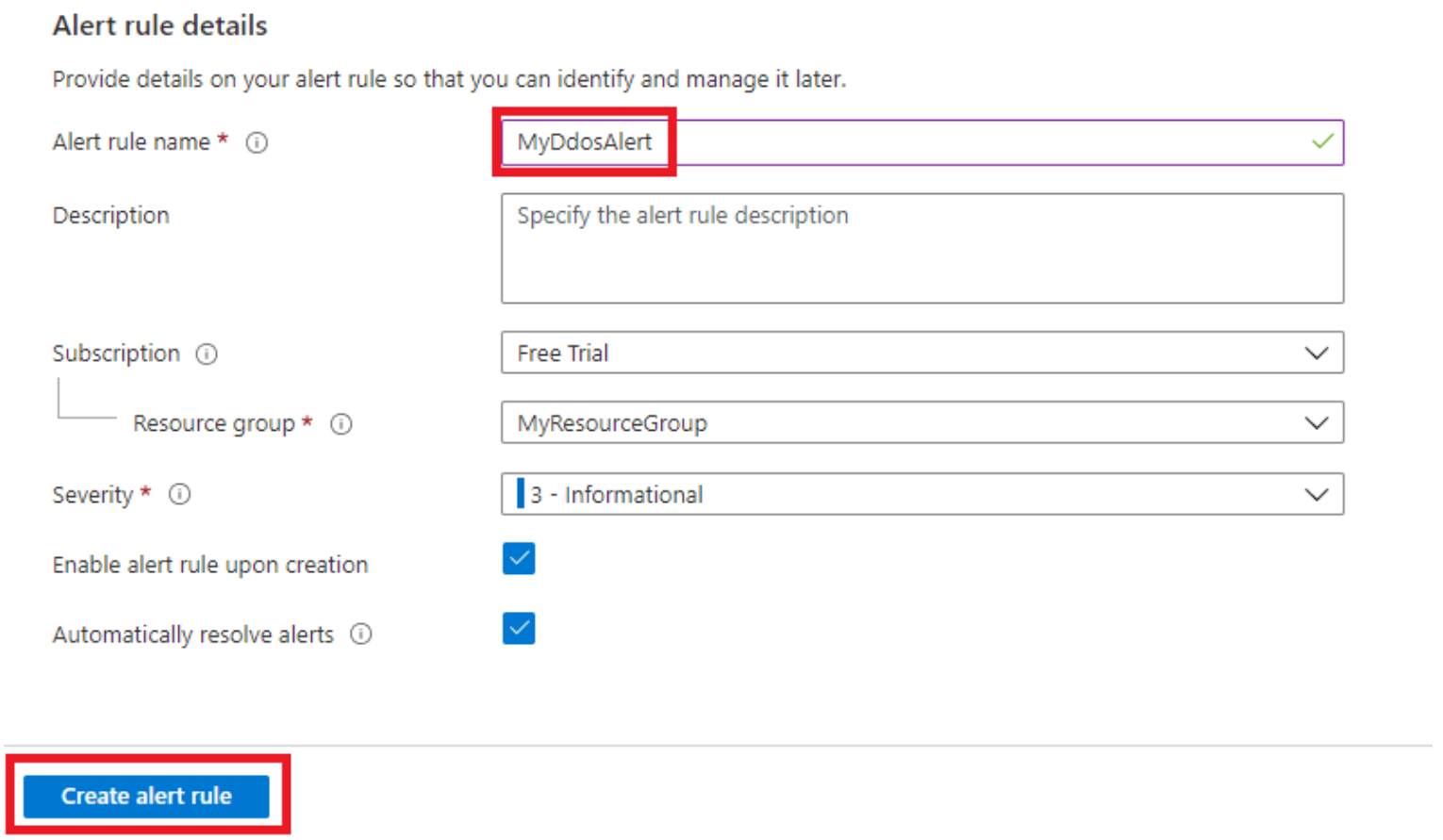
5. On the **Create alert rule** page, under **Scope**, select **Edit resource**.

6. Select **Under DDoS attack or not** for the signal name.

7. Under Alert logic find the **Operator** setting and select **Greater than or equal to**.

8. On **Threshold value**, enter **1** (means under attack).

9. Navigate to the details tab and select **Alert rule name**, enter **MyDdosAlert**.

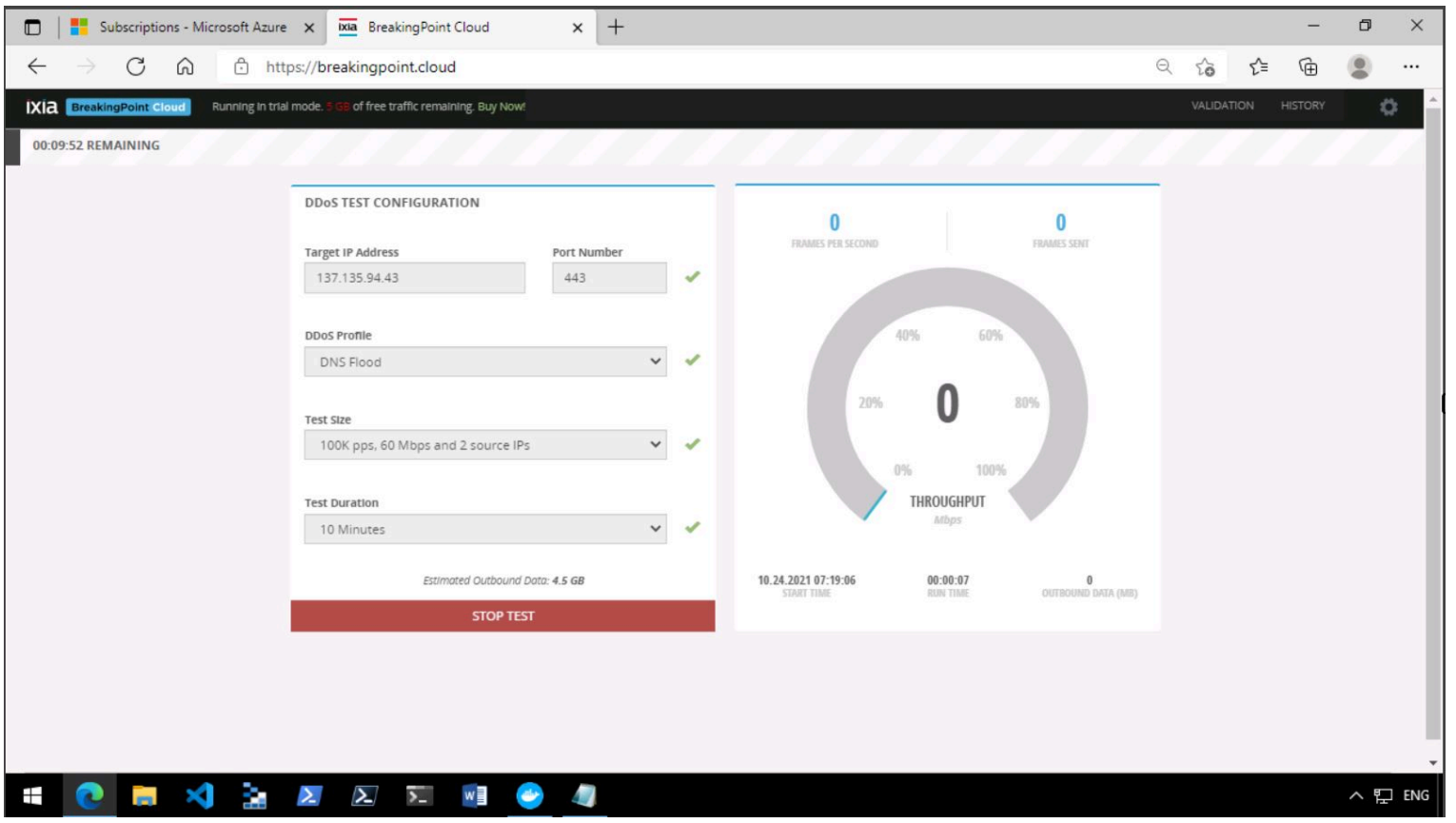


10. Select **Create alert rule**.

Task 7: Test with simulation partners

1. Review [Azure DDoS simulation testing policy]

2. Configure a DDoS test attack using an approved testing partner. If using BreakingPoint Cloud to test use the settings in the screenshot below (you may need to select the 100k pps test size with the trial account), but specifying the IP address of your own **MyPublicIPAddress** resource in the **Target IP Address** box (e.g., **51.140.137.219**)

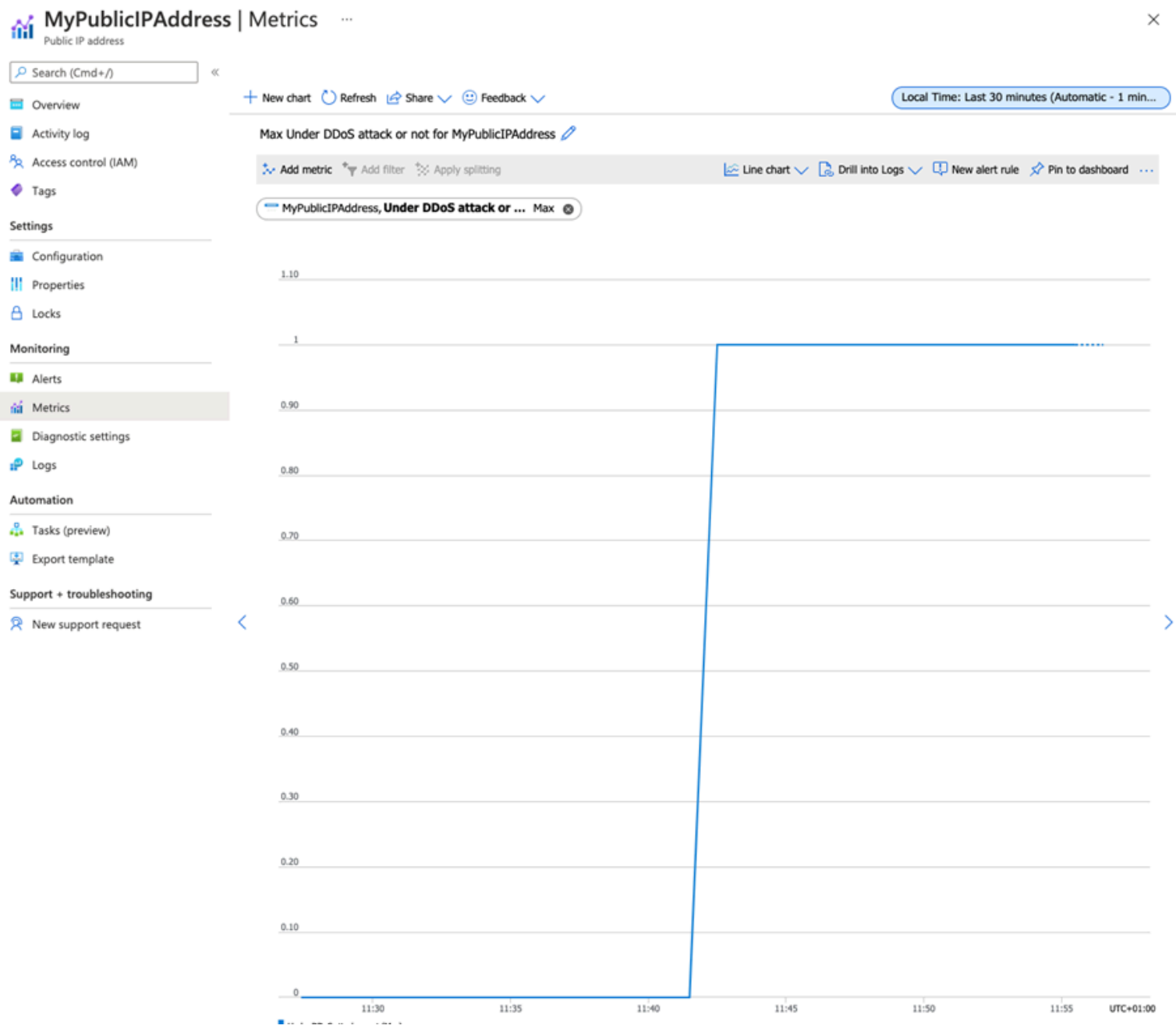


3. On the Azure portal home page, select **All resources**.

4. In the resources list, select your **MyPublicIPAddress** resource, then under **Monitoring**, select **Metrics**.

5. In the **Metric** box, select **Under DDoS attack or not** from the list.

6. Now you can see the DDoS attack as it happened. Note it may take the full 10 minutes before you see the results.



Clean up resources

> **Note**: Remember to remove any newly created Azure resources that you no longer use. Removing unused resources ensures you will not see unexpected charges.

1. On the Azure portal, open the **PowerShell** session within the **Cloud Shell** pane.

2. Delete all resource groups you created throughout the labs of this module by running the following command:

Code

```
Remove-AzResourceGroup -Name 'MyResourceGroup' -Force -AsJob
```

> **Note**: The command executes asynchronously (as determined by the -AsJob parameter), so while you will be able to run another PowerShell command immediately afterwards within the same PowerShell session, it will take a few minutes before the resource groups are actually removed.

Extend your learning with Copilot

Copilot can assist you in learning how to use the Azure scripting tools. Copilot can also assist in areas not covered in the lab or where you need more information. Open an Edge browser and choose Copilot (top right) or navigate to *copilot.microsoft.com*. Take a few minutes to try these prompts.

- What are DDoS attacks? How are DDoS attacks categorized and are there mitigation strategies?

- Provide a table summarizing the two different Azure DDoS Protection tiers.
- What Azure resources can be protected by DDoS Protection?

Learn more with self-paced training

- Introduction to Azure DDoS Protection. In this module, you evaluate Azure DDoS Protection, its features, and architecture options.
- Design and implement network security. In this module, you learn about and deploy Azure DDoS Protection.

Key takeaways

Congratulations on completing the lab. Here are the main takeaways for this lab.

- A DDoS attack is a malicious attempt to overwhelm an application's resources, making the application unavailable to legitimate users.
- Azure DDoS Protection defends against DDoS attacks. It's automatically tuned to help protect your specific Azure resources in a virtual network.
- Azure DDoS Proectection features include: always on traffic monitoring, adaptive real time tuning, and telemetry and alerting.
- Azure DDoS Protection supports two tier types, DDoS IP Protection and DDoS Network Protection.