Load Balancing For Clustered Barracuda CloudGen WAF Instances in the New Microsoft Azure Management Portal

https://campus.barracuda.com/doc/49057819/

This guide will walk you through the steps to load balance traffic across multiple instances of the Barracuda CloudGen WAF deployed in the new Microsoft Azure Management Portal.

In Microsoft Azure, you can create services using the **WAN IP Address** of the Barracuda CloudGen WAF.

### Configuring a Load-Balanced Set Using the Azure Resource Manager Model

Follow the steps below to configure a load-balanced set using the Resource Manager model in the new Microsoft Azure Management Portal:

- **Step 1. Create a Resource Group**
- **Step 2. Create a Load Balancer for the Resource Group**
- **Step 3. Create an Availability Set for the Resource Group**
- **Step 4. Deploy and Provision the Barracuda Web Application Firewall VM(s) Using the Resource Manager**
- **Step 5. Configure the Barracuda Web Application Firewall VMs and Add them to the Cluster Setup**
- **Step 6. Add the Clustered Barracuda Web Application Firewall Instances to the Load Balance Set**

### Step 1. Create a Resource Group

2. Click **Resource groups** on the left panel.
3. In the **Resource groups** page, click **Add** and specify values for the following:
   - **Resource group name**: Enter a name for the resource group.
   - **Subscription**: Select the subscription from the drop-down list.
   - **Resource group location**: Select the location for the resource group.
   - Click **Create**.
4. The created resource group gets displayed in the Resource groups list.

Step 2. Create a Load Balancer for the Resource Group

1. In the Microsoft Azure Management Portal, click Resource groups on the left panel.
2. In the **Resource group** list, locate and click on the resource group created in [Step 1. Create a Resource Group](#).

3. Click **Add** in the **Resource group** page, and enter **Load Balancer** in the search field.

4. In the search results, select the Microsoft **Load Balancer**.

5. Click **Create**.

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**Azure load balancer** is a layer 4 load balancer that distributes incoming traffic among healthy virtual machine instances. Load balancers use a hash-based distribution algorithm. By default, it uses a 5-tuple (source IP, source port, destination IP, destination port, protocol type) hash to map traffic to available servers. Load balancers can either be internet-facing where it is accessible via public IP addresses, or internal where it is only accessible from a virtual network. Azure load balancers also support Network Address Translation (NAT) to route traffic between public and private IP addresses.

You can configure the load balancer to:

- Load balance incoming traffic across your virtual machines.
- Forward traffic to and from a specific virtual machine using NAT rules.

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6. On the **Create load balancer** page, specify values for the following:

   - **Name**: Enter a name for the load balancer.
   - **Scheme**: Select **Public**.
   - **Public IP address**: Assign a new public IP address, or select a public IP address from the existing list.
- **Subscription**: Select the subscription where you want to deploy the load balancer.
- **Resource group**: Select the resource group created in Step 1. Create a Resource Group.
- **Location**: Select a location for the load balancer. Note: Ensure that the location of the resource group and the load balancer is same.

7. Click **Create**.

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**Step 3. Create an Availability Set for the Resource Group**
1. In the **Microsoft Azure Management Portal**, click **Resource groups** on the left panel.
2. In the **Resource group** list, locate and click on the resource group created in **Step 1. Create a Resource Group** from the existing **Resource group** list.
3. Click **Add** in the **Resource group** page, and enter **Availability Set** in the search field.
4. In the search results, select the Microsoft **Availability Set**.
5. Click **Create**.

6. In the **Create availability set** page, specify values for the following:
   - **Name**: Enter a name for the availability set.
- **Fault domains**: Use the default value.
- **Update domains**: Use the default value.

The availability set should contain at least two "Fault" and "Update" domains; otherwise, both WAFs may be impacted by maintenance at the same time. Also, ensure that this is left at Microsoft defaults.

To learn more about the availability zone in an Azure region, see https://docs.microsoft.com/en-us/azure/virtual-machines/windows/tutorial-availability-sets and https://docs.microsoft.com/en-us/azure/virtual-machines/linux/manage-availability

- **Subscription**: Select the subscription where you want to deploy the availability set.
- **Resource group**: Select the resource group created in Step 1. Create a Resource Group from the existing Resource group list.
- **Location**: Select a location for the availability set. Note: Ensure that the location of the resource group and the availability set is same.

7. Click Create.
Step 4. Deploy and Provision the Barracuda CloudGen WAF VM(s) Using the Resource Manager

To load balance the traffic between the Barracuda CloudGen WAF virtual machines (VMs), deploy and provision the Barracuda CloudGen WAF instances in the resource group created in Step 1. Create a Resource Group (which includes load balancer and availability set created in Step 2. Create a Load Balancer for the Resource Group and Step 3. Create an Availability Set for the Resource Group respectively). Perform the following steps to deploy and provision the Barracuda CloudGen WAF VMs:
The Barracuda CloudGen WAF instances deployed in Microsoft Azure are assigned with a public IP address through which they can be accessed. If the deployed instances are configured behind an Azure Load Balancer, the public IP addresses assigned to the instances before being associated with the Azure Load Balancer will continue to work as earlier.

1. In the Microsoft Azure Management Portal, click Resource groups on the left panel.
2. In the Resource group list, locate and click on the resource group created in Step 1. Create a Resource Group.
3. Click Add in the Resource group page, and enter Barracuda CloudGen WAF for Azure in the search field.
4. In the search results, select Barracuda CloudGen WAF for Azure (BYOL or Hourly as per your requirement).

5. Follow the steps mentioned in the Deploying and Provisioning the Barracuda Web Application Firewall Using Resource Manager in the New Microsoft Azure Portal article to deploy the Barracuda CloudGen WAF VM. When deploying the Barracuda CloudGen WAF VM, ensure that you do the following:
   1. Select the resource group created in Step 1. Create a Resource Group from the existing resource group list.
   2. Select the same location as that of the resource group created in Step 1. Create a Resource Group.
   3. Select the availability set created in Step 3. Add an Availability Set to the Resource Group from the existing Availability set list.
6. Repeat Step 5 to deploy multiple Barracuda CloudGen WAF VMs into the same load balance set.

If you have deployed the Barracuda CloudGen WAF VM(s) with the “Bring Your Own License (BYOL)” option, license the VM(s) by following the steps mentioned under “Licensing the Barracuda CloudGen WAF on Microsoft Azure" in the Barracuda Web Application Firewall Quick Start Guide – Microsoft Azure article.

If the Barracuda CloudGen WAF VM(s) is deployed with the “Hourly” option, the VM(s) is licensed automatically.
Step 5. Configure the Barracuda CloudGen WAF VMs and Add Them to the Cluster Setup

1. Log into the Barracuda CloudGen WAF web interface using the public IP address of the VM with port 8000 (for HTTP), or using only the public IP address (for HTTPS).
2. Verify the configuration on the BASIC > IP Configuration page, and change the system password on the BASIC > Administration page. For more information, see the "Verify Configuration and Change the Password" section in the Barracuda Web Application Firewall Quick Start Guide - Microsoft Azure.
3. Perform the cluster by following the steps mentioned under "Step 2. Set Up a High Availability Environment with the Barracuda CloudGen WAF" in the Configuring a Load-Balanced Set Using the Classic Model section.
4. Repeat Step 3 to add the remaining Barracuda CloudGen WAF VMs into the cluster setup.

Ensure the endpoints are opened on all the Barracuda CloudGen WAFs for the applications/services created.

Step 6 - Add the Clustered Barracuda CloudGen WAF Instances to the Load Balance Set

1. In the Microsoft Azure Management Portal, click Browse at the bottom of the screen on the left panel and select Load Balancers.
2. On the **Load balancers** page, select the load balancer created in [Step 2. Add a Load Balancer to the Resource Group](#).
3. On the **Settings** page, select **Probes**.

4. On the **Probes** page, click **Add** and specify values for the following in the **Add probe** page:
   - **Name**: Enter a name for the probe.
   - **Protocol**: Select **HTTP**.
   - **Port**: Enter **8000**.
   - **Interval**: Enter the interval time (in seconds) between probes sent by the Microsoft Azure to the Barracuda CloudGen WAF virtual machine to determine the health status. **Note**: It
is recommended to keep the default values.
- **Unhealthy threshold**: Enter the number of probe failures that are allowed before marking the virtual machine as unhealthy. Note: It is recommended to keep the default values.

5. Click **OK**.

6. On the **Settings** page, click **Backend pools**.
7. On the **Backend address pools** page, click **Add**.
8. On the **Add backend pool** page:
   1. **Name**: Enter a name for the backend pool.
   2. **Virtual machines**: Click **Add a virtual machine**.
9. On the **Choose virtual machines** page:
   1. Click **Availability set** and select the availability set created in **Step 3. Create an Availability Set for the Resource Group**.
   2. Click **Virtual machines**, select the Barracuda CloudGen WAF VMs you added in **Step 5. Configure the Barracuda Web Application Firewall VMs and Add them to the Cluster Setup** on the **Choose virtual machines** page, and click **Select**.
10. Click **OK** on the Choose virtual machines page, and on the Add backend pool page.
11. On the Settings page, click **Load balancing rules**.
12. On the Load balancing rules page, click **Add** and specify values for the following in the Add load balancing rule page:
   - **Name**: Enter a name for the load balancing rule.
   - **Protocol**: Select TCP.
   - **Port**: Enter the port on which you want to receive the traffic on the Load Balancer to load balance the traffic between the Barracuda CloudGen WAF.
   - **Backend port**: Enter the port on the Barracuda CloudGen WAF to which you want to distribute the traffic.
   - **Backend pool**: Select the backend pool created in Step 7 in the Step 6. Add the Clustered Barracuda Web Application Firewall Instances to the Load Balance Set section.
   - **Probe**: Select the probe created in Step 4 in the Step 6. Add the Clustered Barracuda Web Application Firewall Instances to the Load Balance Set section.
   - **Session persistence**: Select the persistence as per your requirement.
   - **Idle timeout (minutes)**: Keep the default value.
   - **Floating IP (direct server return)**: Select **Disabled**.
13. Click **OK**.

Now, any requests coming to the load balancer public IP address/DNS configured in Step 6.c in the Step 2. Create a Load Balancer for the Resource Group section will be distributed between the specified Barracuda CloudGen WAFs.

### Configuring a Load-Balanced Set Using the Classic Model

Follow the steps below to configure a load-balanced set using the Classic model in the new Microsoft Azure Management Portal:
Step 1. Deploy the Barracuda CloudGen WAF Instances in Microsoft Azure

1. Follow the steps in Deploying and Provisioning the Barracuda Web Application Firewall in the New Microsoft Azure Management Portal. To license and configure your virtual machine, continue with Barracuda CloudGen WAF Quick Start Guide - Microsoft Azure. In these instructions, the newly configured virtual machine is called Barracuda-WAF1.

2. Verify that Barracuda-WAF1 is accessible through port 8000 (for HTTP) and port 8443 (for HTTPS).

3. Add new ports for HTTP and HTTPS to Barracuda-WAF1 in ENDPOINTS (for example, port 8001 for HTTP and port 8444 for HTTPS).

4. In the web interface of Barracuda-WAF1, do the following:
   1. Enter the HTTP port number you configured in Step 3 into Web Interface HTTP Port under Web Interface Settings on the BASIC > Administration page.
   2. Enter the HTTPS port number you configured in Step 3 into Web Interface HTTPS/SSL Port on the ADVANCED > Secure Administration page.

5. Verify that you can access Barracuda-WAF1 using the HTTP and HTTPS ports specified in Step 4a. and 4b.

6. In Microsoft Azure, delete port 8000 and port 8443 from the listed ENDPOINTS for Barracuda-WAF1.

7. To deploy another Barracuda CloudGen WAF (called Barracuda-WAF2) in Microsoft Azure, follow the instructions in the Deploying and Provisioning the Barracuda Web Application Firewall in the New Microsoft Azure Management Portal article.

   When you configure the CLOUD SERVICE DNS NAME, choose the CLOUD SERVICE DNS NAME of Barracuda-WAF1 from the CLOUD SERVICE list.

   When the second Barracuda CloudGen WAF instance is added to the same CLOUD SERVICE to set up load balancing between clustered Barracuda CloudGen WAF, Microsoft Azure may add a random high port as ENDPOINTS for Public Port instead of adding 8000 and 8443 ports. In this case, do the following:
   - Access the second Barracuda CloudGen WAF web interface using the random high port, as the high port ENDPOINTS added in Public Port are NATed with the configured Private Port’s ENDPOINTS.
   OR
   - Edit the high port and configure desired ports (i.e. port 8000 and 8443) in the ENDPOINTS for the deployed VM before accessing.


9. By default, the Barracuda-WAF2 is configured with port 8000 (for HTTP) and port 8443 (for HTTPS).
Now, Barracuda-WAF1 is accessible through port 8001 for HTTP and port 8444 for HTTPS, and Barracuda-WAF2 is accessible through port 8000 for HTTP and port 8443 for HTTPS.

**Step 2. Set Up a High Availability Environment With the Barracuda CloudGen WAF**

Follow these steps to cluster your Barracuda CloudGen WAF virtual machines in Microsoft Azure:

1. Install each system and ensure that each Barracuda CloudGen WAF is running the same firmware version. Each Barracuda CloudGen WAF in a cluster must have the same model number and firmware version.
2. Make a backup of each Barracuda CloudGen WAF configuration.
3. No processes should be running on any virtual machine when you link them together. To be sure, go to the **ADVANCED > Task Manager** page of each Barracuda CloudGen WAF and verify that no processes are running.
4. From the **ADVANCED > High Availability** page of Barracuda-WAF1, enter a **Cluster Shared Secret** password, and click **Save**.
5. From the **ADVANCED > High Availability** page of Barracuda-WAF2, do the following:
   1. Enter the same **Cluster Shared Secret** password, and click **Save**. Both units in a cluster must have the same Cluster Shared Secret to communicate with each other.
   2. In the **Clustered Systems** section, enter the WAN IP address of Barracuda-WAF1, and click **Join Cluster**. Make sure that the join cluster task is not cancelled when the join is in progress.
6. On each Barracuda CloudGen WAF, refresh the **ADVANCED > High Availability** page, and verify the following:
   1. Each system's Hostname, serial number and WAN IP address appears in the **Clustered Systems** list.
   2. The identity of the system (Self or Peer) displays in the **Type** field.
   3. The **Status** is green for all virtual machines in the cluster.
7. View the **Cluster Status** from the **BASIC > Dashboard** page, under **Performance Statistics**.

To add more units to the existing cluster, repeat Steps 1 to 5.a. and then do the following:

- From the **ADVANCED > High Availability** page of the Barracuda CloudGen WAF you are adding to the cluster, enter the WAN IP address of any system in the cluster in the **Peer IP Address** field and click **Join Cluster**. Verify that the following occurs:
  - The configuration of the cluster automatically propagates to the newly added system.
  - The new unit information propagates to all other units in the cluster.
Step 3. Set Up Load Balancing on the First Barracuda CloudGen WAF Instance

1. Log into the Microsoft Azure Management Portal.
2. On the Microsoft Azure Home page, select Virtual machines (classic) on the left panel.
4. In the Essentials section, click All Settings, and select Load balanced sets.
5. On the Load balanced sets page, click Join and specify values for the following fields in the Join a load balanced set page:
   - Set the Load balanced set type to Public
   - Endpoint Name: Enter a name for the endpoint. Example: HTTP
   - Private Port: Enter the internal port that should listen to traffic on the endpoint. Example: 80.
   - Click Load balanced set Configure required settings, and select Create a load balanced set.
6. On the Create a load balanced set page, specify values for the following fields:
   - Name: Enter a name for the load-balanced set. Example: WAF-LB-80
   - Protocol: Select TCP from the list.
   - Public Port: Enter the port number of the service you are load balancing. Example: Port 80 for HTTP traffic.
   - Set Floating IP to Disabled.
   - Select the Protocol to be used for probing, enter values for Port, Interval (seconds)
7. Now, click **OK** under **Join a load balanced set**. This will create the load balanced set and join it to **Barracuda-WAF1**.

8. Click **OK** to set up the load-balanced set.

9. Repeat the process to add more ports to the load-balanced set.

**Step 4. Add Other Barracuda CloudGen WAF Instances to the Load-Balanced Set**

After you create the load-balanced set for Barracuda-WAF1, add other Barracuda CloudGen WAF virtual machines to the set. Example: Barracuda-WAF2

1. Log into the [Microsoft Azure Management Portal](https://microsoft.com/).
2. On the [Microsoft Azure Home](https://microsoft.com/) page, select **Virtual machines (classic)** on the left panel.
3. On the **Virtual machines (classic)** page, select **Barracuda-WAF2**.
4. In the **Essentials** section, click **All Settings**, and select **Load balanced sets**.
5. On the **Load balanced sets** page, click **Join** and specify values for the following fields in the **Join a load balanced set** page:
   - Set the **Load balanced set type** to **Public**.
   - Click **Load balanced set Configure required settings**.

6. On the **Choose a load balanced set** page, select the load-balanced set you created in Step 6 under **Step 3. Set Up Load Balancing on the First Barracuda Web Application Firewall Instance**.

7. On the **Join a load balanced set** page, you will see the load-balanced set associated with the **Barracuda-WAF2** instance.
8. Click **OK** to add the *Barracuda-WAF2* instance to the load-balanced set.
9. Repeat the process to add more Barracuda CloudGen WAF virtual machines to the load-balanced set.
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