

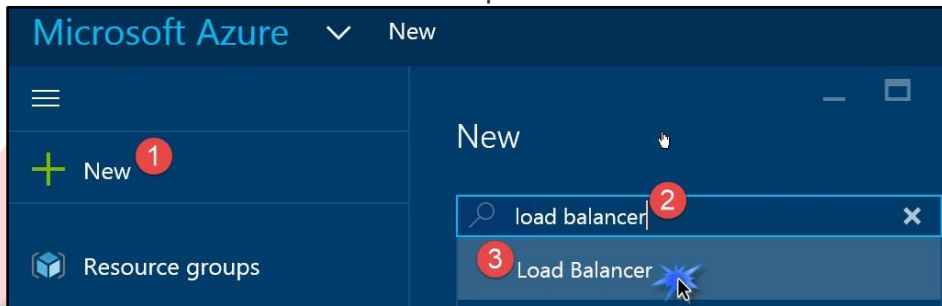
Configuring the Load Balancer

Lab Overview

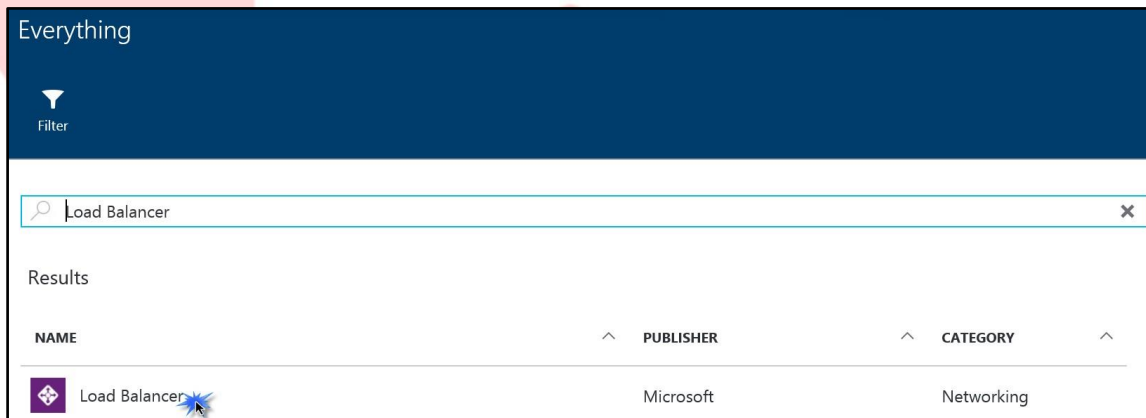
In this lab, you will create a new load balancer resource and a public static IP address. The web virtual machines created earlier will be added to the back end pool of the load balancer.

Exercise 1: Create the Load Balancer

1. While logged into **LABVM**, open the Azure portal (<https://portal.azure.com>). Click **New** in the upper left hand corner. In the search menu type **Load Balancer**. Click to select the first option.



2. In the chooser dialog that opens, choose the **Load Balancer** with Microsoft listed as the Publisher.



3. In the dialog that opens, click **Create** at the bottom.
4. In the Create load balancer dialog, enter **OPSLB** for the name. Leave the **Scheme** set to **Public**.

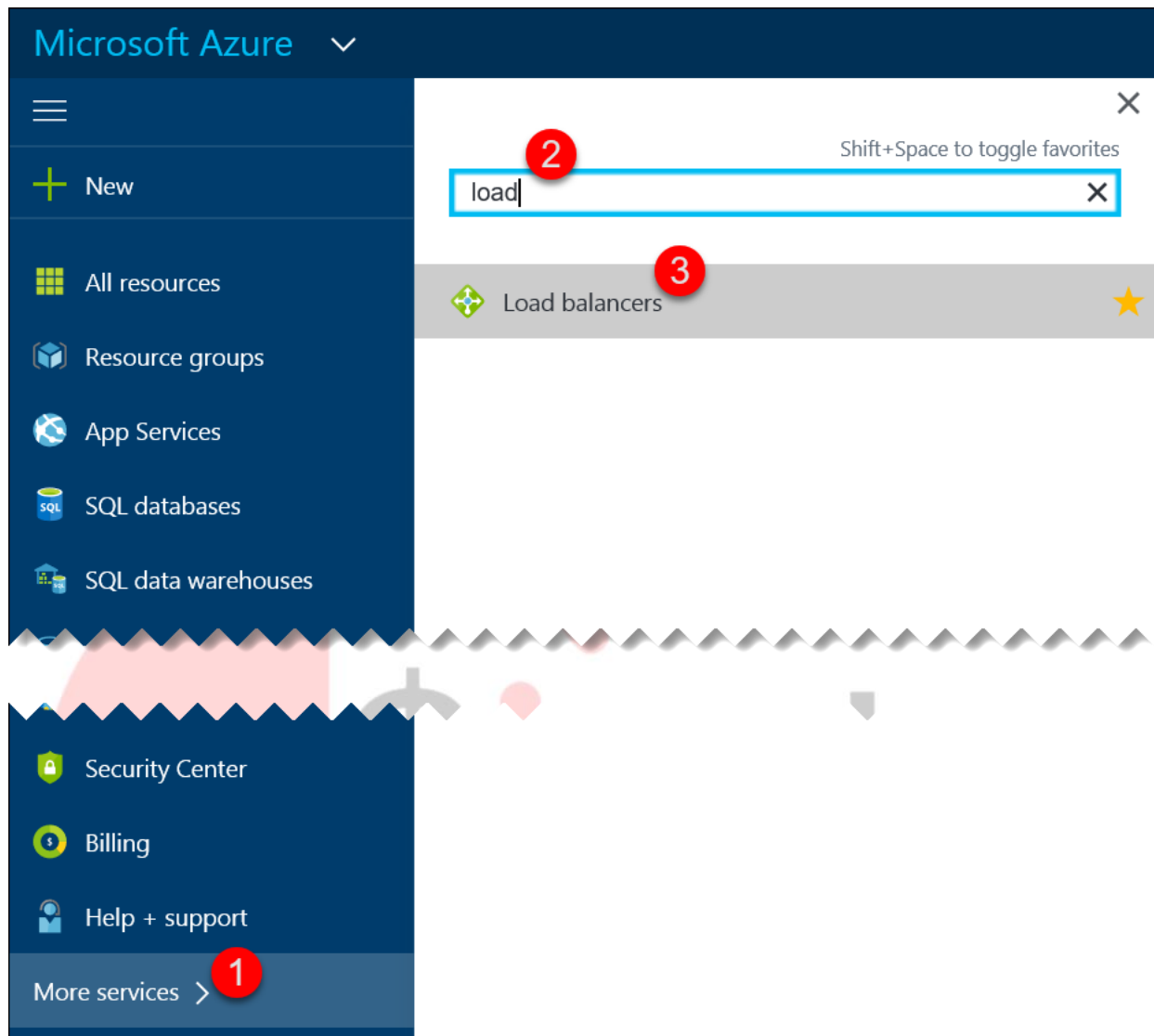
- Click **Choose a public IP address** then click **Create new**.
- Enter the name **opsstaticip** for the public IP name and leave the **Assignment** set to **Static**. Then click **OK**.

Create load balancer	Choose public IP address	Create public IP address
<p>* Name OPSLB ✓</p> <p>* Scheme Public Internal</p> <p>* Public IP address Choose a public IP address ></p> <p>Subscription Test ▼</p> <p>* Resource group <input type="text"/> Select existing</p> <p>Location West US ▼</p>	<p>+ Create new</p> <p>spr-iaaS-v2 (104.40.50.109) iaaS-V2</p> <p>WebVM-1 (13.91.252.179) OpsVMRmRG</p> <p>webVM-2 (13.93.149.16) OpsVMRmRG</p>	<p>* Name opsstaticip ✓</p> <p>Assignment Dynamic Static</p>

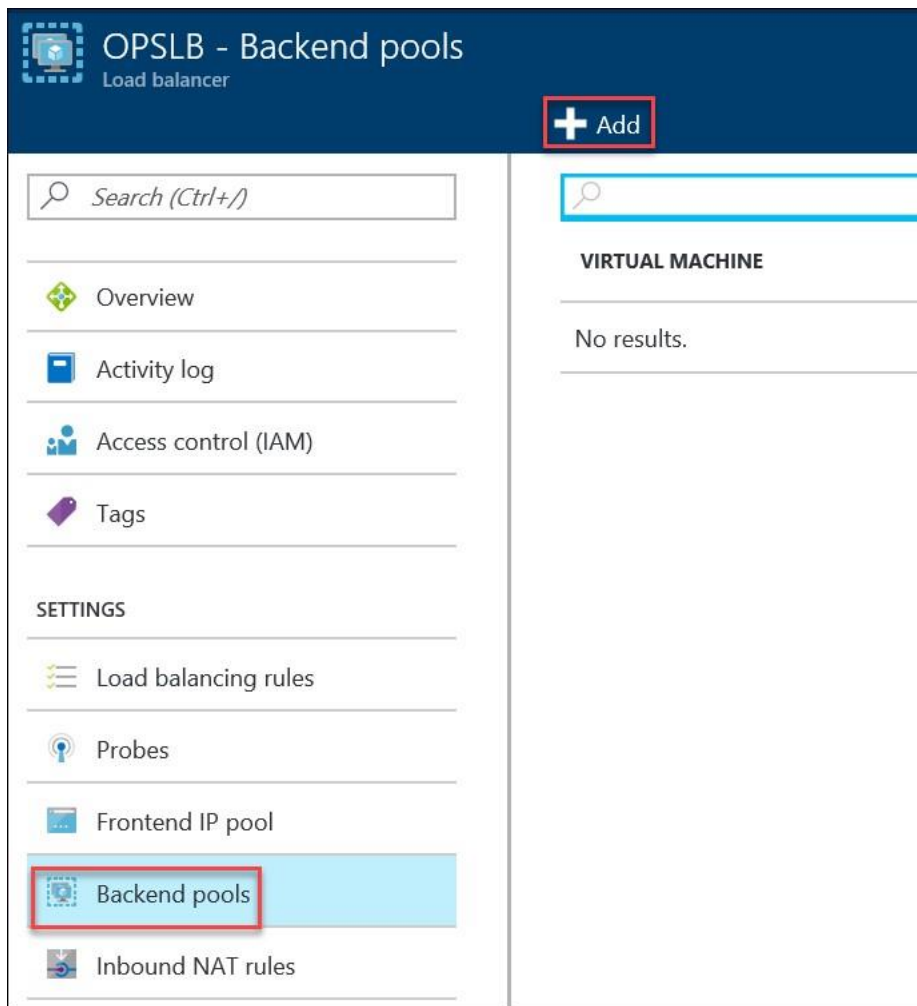
- Ensure the correct subscription is selected. Under Resource group click the drop down list and choose **OpsVMRmRG** from the listing of Resource Groups to choose from.
- Ensure the **Location** is set to the same location used throughout this lab, then click **Create**.

Exercise 2: Configure the Load Balancer

- While logged into **LABVM**, open the Azure portal. Click on **More Services**.
- In the **filter** box at the top type in **Load**. The list will filter and only display **Load Balancers**.
- Click **Load Balancers**.



4. In the Load balancers dialog click on **OPSLB**. The settings for **OPSLB** are displayed. Click **Backend pools** and then click **Add** at the top.



5. Enter **LBBE** for the pool name.
6. Click **Add a virtual machine**.
7. Click **Choose an availability set**.
8. Click **WebAVSet**. This is the availability set that was created when the Web servers were created earlier in the lab.

Add backend pool OPSLB	Choose virtual machines OPSLB	Choose an availability set
<p>Add a backend pool to use one or more virtual machines with a load balancing or outbound NAT rule.</p> <p>* Name LBBE 5</p> <p>Virtual machines i + Add a virtual machine 6</p>	<p>Availability set Choose an availability set 7</p> <p>Virtual machines Choose the virtual machines</p>	<p>For the first backend pool, you must choose the availability set before choosing the virtual machines.</p> <p>WebAVSet 8 OpsVMRmRG</p>

9. Back on the **Choose virtual machines** blade, click **Choose the virtual machines**. Select both web VMs and click **Select** at the bottom.

Add backend pool OPSLB	Choose virtual machines OPSLB	Choose virtual machines						
<p>Add a backend pool to use one or more virtual machines with a load balancing or outbound NAT rule.</p> <p>* Name LBBE ✓</p> <p>Availability set -</p> <p>Virtual machines i No virtual machines. + Add a virtual machine</p>	<p>Availability set WebAVSet</p> <p>Virtual machines Choose the virtual machines</p>	<p>Only virtual machines in the same availability set and virtual network can be added to this backend pool.</p> <p>i These are the virtual machines in the selected subscription and location 'North Central US'.</p> <table border="1"> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>WebVM-1 OpsVMRmRG</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>WebVM-2 OpsVMRmRG</td> </tr> <tr> <td><input type="checkbox"/></td> <td>SQLVM-1 OpsVMRmRG i</td> </tr> </tbody> </table>	<input checked="" type="checkbox"/>	WebVM-1 OpsVMRmRG	<input checked="" type="checkbox"/>	WebVM-2 OpsVMRmRG	<input type="checkbox"/>	SQLVM-1 OpsVMRmRG i
<input checked="" type="checkbox"/>	WebVM-1 OpsVMRmRG							
<input checked="" type="checkbox"/>	WebVM-2 OpsVMRmRG							
<input type="checkbox"/>	SQLVM-1 OpsVMRmRG i							

10. Click **OK** on the **Choose virtual machines** blade and **OK** on the **Add backend pool** blade.

After a few minutes you should see a success status.

🔍 Search resources ✕

i Saved load balancer backend pool 3:31 PM
 Successfully saved load balancer backend pool 'LBBE'.

11. Back on the **Settings** blade for the load balancer click **Inbound NAT rules**.

12. On the **Inbound NAT rules** blade click **Add**. Configure the **Add inbound NAT rule** blade like below.

Add inbound NAT rule

OPSLB

Create an inbound NAT rule to route incoming traffic to a virtual machine in your virtual network.

*

Name

RDP-WebVM-1

✓

Frontend IP address ⓘ

157.56.9.159 (LoadBalancerFrontEnd)

▼

Service

Custom

▼

Protocol

TCP

UDP

*

Port

3441

✓

Target ⓘ

WebVM-1

>

Port mapping ⓘ

Default

Custom

Floating IP (direct server return) ⓘ

Disabled

Enabled

*

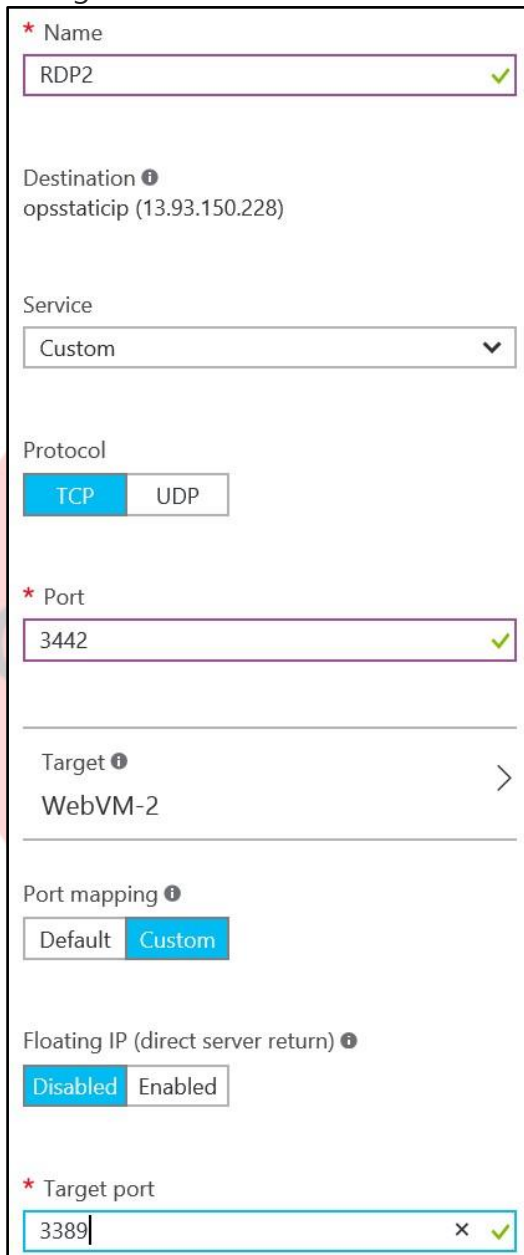
Target port

3389

✓

OK

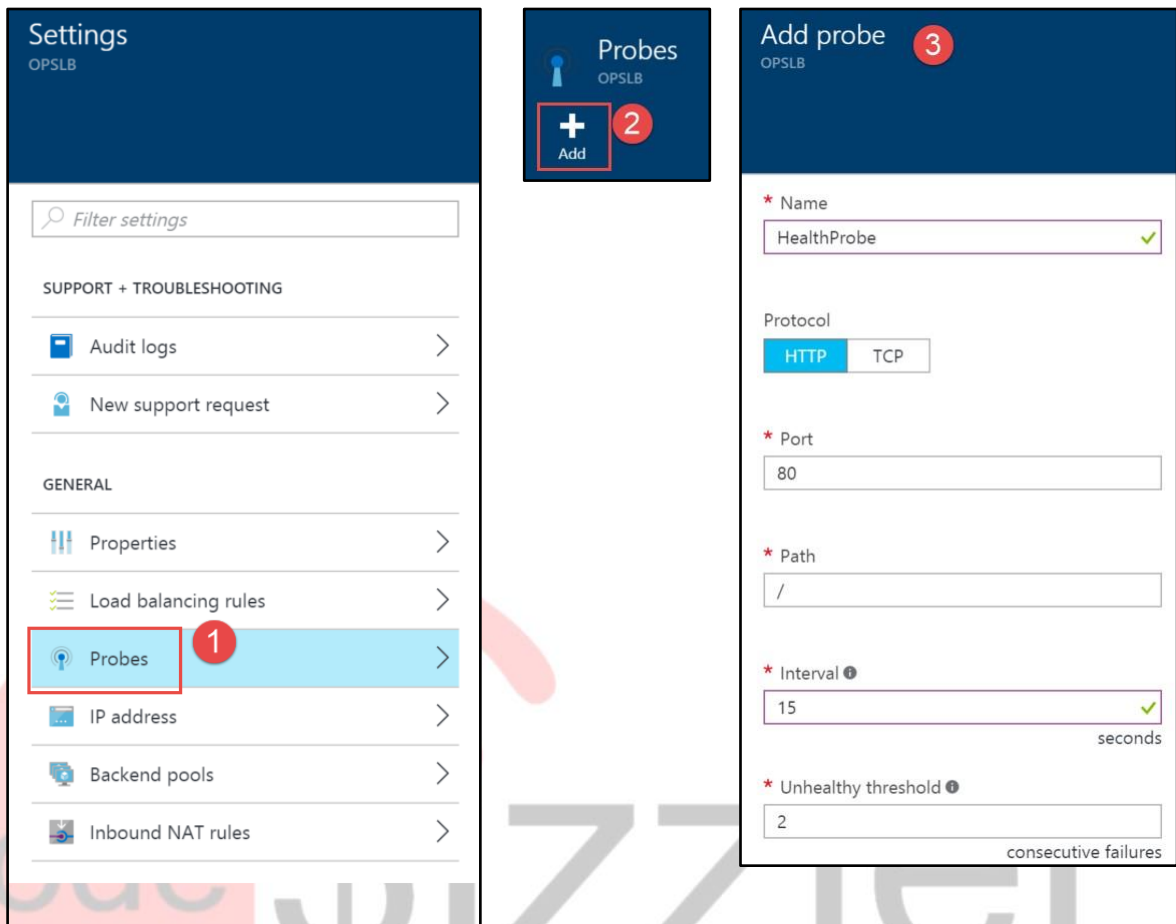
13. Click **OK** to create the rule. After a couple of minutes, this operation will complete. Then proceed to the next step.
14. Click **Add** once more. Create another **inbound NAT rule** with the below configuration and click **OK** to save it.



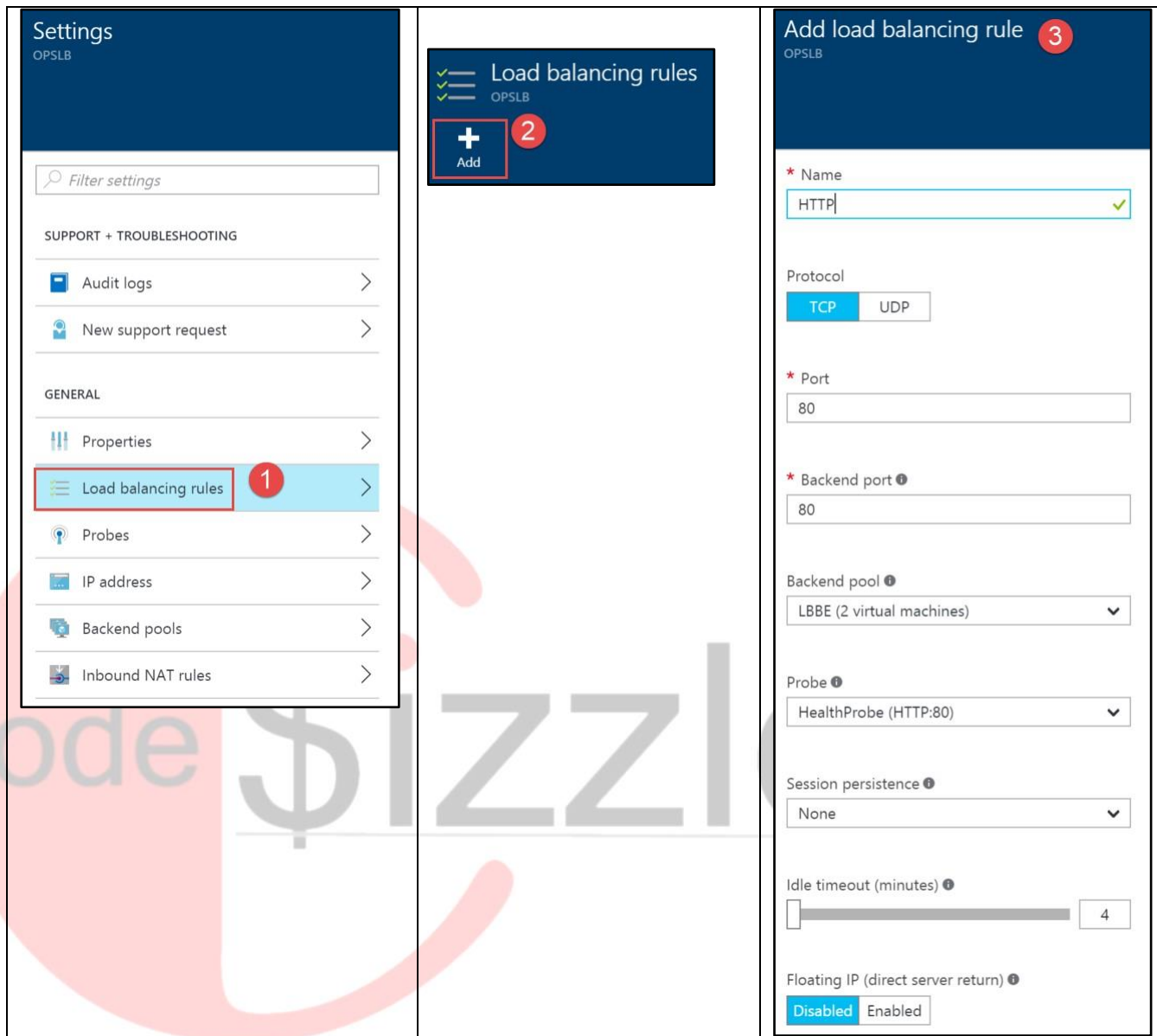
The screenshot shows a configuration window for an inbound NAT rule. The fields are as follows:

- Name:** RDP2 (with a green checkmark icon)
- Destination:** opsstaticip (13.93.150.228)
- Service:** Custom (selected from a dropdown menu)
- Protocol:** TCP (selected from buttons, with UDP also visible)
- Port:** 3442 (with a green checkmark icon)
- Target:** WebVM-2 (with a right arrow icon)
- Port mapping:** Custom (selected from buttons, with Default also visible)
- Floating IP (direct server return):** Disabled (selected from buttons, with Enabled also visible)
- Target port:** 3389 (with a close 'x' icon and a green checkmark icon)

15. Next, in the **Settings** tab click on **Probes**. Click **Add**, use the below information to create a health probe, then click **OK** to create the probe.



16. Back on the **Settings** blade click **Load balancing rules**. Click **Add** at the top of the **Load balancing rules** blade, complete the configuration as shown below, and then click **OK**.



17. Close the **Load balancing rules** and **Settings** blade. The essentials panel shows you a high level view of how many virtual machines are in the backend pool, the public IP address associated with it as well as the number of NAT rules. Note the IP address as you will use it shortly to validate the load balancer.
18. Validate the load balancer is working by launching a browser instance and navigating to the public IP address of the load balancer. **Refresh** the page several times until you see a response from **WebVM-1** and **WebVM-2**.

OPSLB
Load balancer

Delete

Overview

Activity log

Access control (IAM)

Tags

SETTINGS

Essentials

Resource group
OpsVMRmRG

Location
North Central US

Subscription name
Azure Pass

Subscription ID
[REDACTED]

Backend pool
LBBE (2 virtual machines)

Probe
HealthProbe (HTTP:80)

Load balancing rule
HTTP (TCP/80)

NAT rules
2 inbound

Public IP address
[REDACTED] (opsstaticip)

CloudShop Demo - Products - running on WEBVM-1

CloudShop Demo - Products - running on WEBVM-2

Exercise 3: Configure Diagnostics for the Azure Load Balancer

1. In the Azure Management Portal, click **Browse, Load balancers**, and then click the **OPSLB** load balancer.

NAME	RESOURCE GROUP
OPSLB	OpsVMRmRG

2. On the Settings Pane, click **Diagnostics**.

MONITORING

Diagnostics

Diagnostics logs

SUPPORT + TROUBLESHOOTING

New support request

3. Enable Diagnostics on the load balancer by changing the Status to **On**, selecting a **Storage Account** (use the same one as your virtual machines for

this lab), and then enable logging for the **LoadBalancerAlertEvent** and **LoadBalancerProbeHealthStatus** diagnostic sources. Click **Save** to continue.

Diagnostics

Save **Discard**

Status

☐ Off ☒ On

☐ Export to Event Hubs

☒ Export to Storage Account

Storage Account
opsvmmrgdiag272

LOGS

Diagnostic Source	Retention (days)
<input checked="" type="checkbox"/> LoadBalancerAlertEvent	0
<input checked="" type="checkbox"/> LoadBalancerProbeHealthStatus	0

i Existing diagnostics will not appear in the portal if you change the storage account.

i You'll be charged normal data rates for storage and transactions when you send diagnostics to a storage account.

i The storage account must be in the same region as the resource.

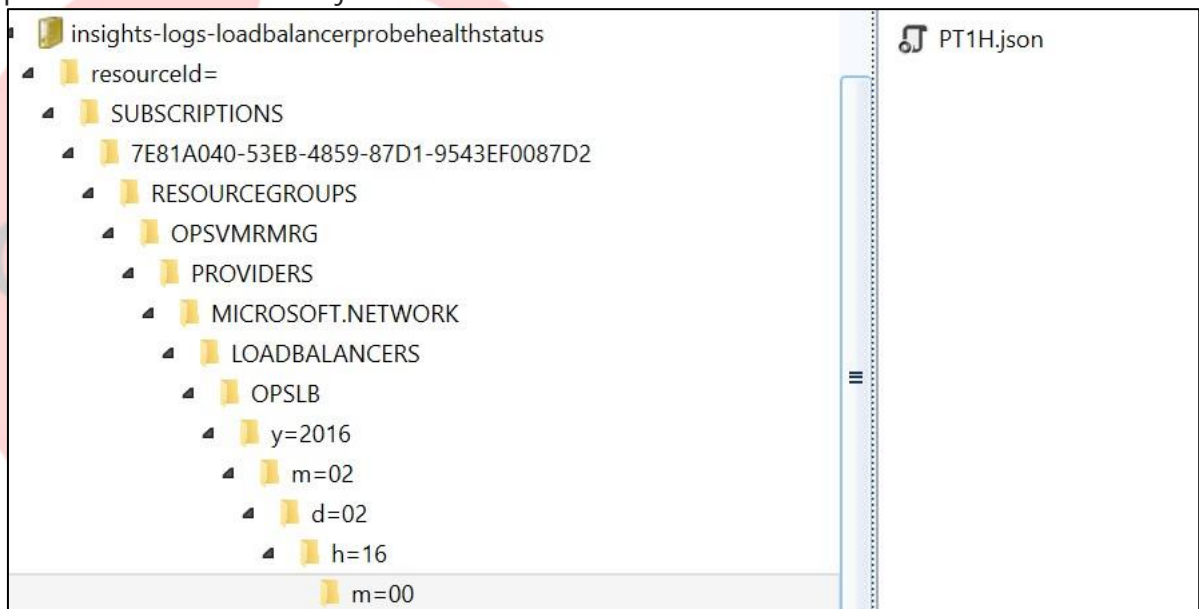
Note 1: Similar to virtual machine diagnostics, load balancer diagnostic data is store in Azure Storage Tables and is accessible using tools like Visual Studio or 3rd party management tools like Azure Management Studio. It may take up to an hour for any data to appear.

Note 2: At the time of this writing (2/2/2016) diagnostics logs are only applicable to load balancers listening on a public IP address.

4. Verify the load balancer alert works by stopping **WebVM-2**. Click **Browse**, **Virtual Machines, WebVM-2**, and click **Stop**.



5. Come back to this exercise in at least 1 hour so the diagnostics agent can synchronize the failure to Azure Storage. From Storage Explorer or Azure Management Studio navigate to the diagnostics storage account -> Blob Containers \ insights-logs-loadbalancerprobehealthstatus and expand the path down to the PT1H.json file.



The record will show that the "dipDownCount" is set to 1 (meaning that the private port is not responding to the load balancer health probes).

```
"records":
[
  {
    "time": "2016-02-02T15:57:27.3024834Z",
    "systemId": "0595857a-7c48-4b56-a563-e2a15bcc1cad",
    "category": "LoadBalancerProbeHealthStatus",
    "resourceId": "/SUBSCRIPTIONS/7E81A040-53EB-4859-87D1-9543EF0087D2/RESOURCEGROUPS/OPSVMRMRG/PROVIDERS/MICROSOFT.NETWORK/LOADBALANCERS/OPSLB",
    "operationName": "LoadBalancerProbeHealthStatus",
    "properties": { "publicIpAddress": "104.40.27.233", "port": 80, "totalDipCount": 1, "dipDownCount": 1, "healthPercentage": 0.000000 }
  }
]
```

Lab Summary

In this lab, you created a new load balancer resource and a public static IP address. The web virtual machines created earlier were added to the back end pool of the load balancer.

