# Lab Answer Key:  Module 5: Virtual Networking

## Lab 3: Deploying a Geo-Redundant Solution with Traffic Manager

Azure Traffic Manager allows you to control the distribution of user traffic to your specified endpoints, which can include Azure hosted web sites, Azure web apps, and any location accessible via Internet. It is configured using a collection of settings called a Traffic Manager profile. In ARM, each Traffic Manager profile is represented by an ARM resource, of type ‘TrafficManagerProfiles’, managed by the ‘Microsoft.Network’ resource provider. Azure Traffic Manager gives you three traffic routing methods to choose from: failover, performance, or weighted round robin. In this lab, we will implement the ‘Priority’ method (formerly known as failover).

Estimated time for completion: 45 Minutes

### Exercise 1: Deploying a Geo-Redundant Solution with Traffic Manager

The main tasks for this exercise are as follows: 1. Provision web servers in two regions 2. Add IIS role to the Windows Servers. 3. Configure DNS Labs on the Web Server Public IPs 4. Configure Traffic Manager 5. Test the failover 6. Reset the lab environment (optional)

#### Task 1: Provision Web Servers in Two Regions

1. Create a new Windows Server 2012 R2 virtual machine using the **Resource Manager** deployment model with the following settings:

* Name: **WebApp1**
* VM disk type: **HDD**
* User name: **demouser**
* Password: **DemoPa$$w0rd**
* Subscription: choose your Azure subscription.
* Resource Group: create a new resource group called **WebApp1RG**
* Location: choose the closest region to you
* For the size of the virtual machine select **D1\_V2 Standard**
* On the **Settings** blade, click **Network Security Group**, and then click **Add an inbound rule**
* Add an inbound rule with the following settings:
  + Name: **InternetRule**
  + Priority: **200**
  + Source: **Tag**
  + Source tag: **Internet**
  + Service: **HTTP**
  + Action: **Allow**

1. Repeat the previous steps to create the second Windows Server 2012 R2 virtual machine using the **Resource Manager** deployment model with the following settings:

* Name: **WebApp2**
* VM disk type: **HDD**
* User name: **demouser**
* Password: **DemoPa$$w0rd**
* Subscription: choose your Azure subscription.
* Resource Group: create a new resource group called **WebApp2RG**
* Location: specify a different region from the first
* For the size of the virtual machine select **D1\_V2 Standard**
* On the **Settings** blade, click **Network Security Group**, and then click **Add an inbound rule**
* Add an inbound rule with the following settings:
  + Name: **InternetRule**
  + Priority: **200**
  + Source: **Tag**
  + Source tag: **Internet**
  + Service: **HTTP**
  + Action: **Allow**

Note: Once the deployments complete, you should have two Windows 2012 R2 Server VMs in two different regions.

#### Task 2: Add the IIS Role to the Windows Servers

1. After the first virtual machine is provisioned, connect to it via Remote Desktop by clicking the **Connect** button on the virtual machine configuration blade and sign in with the administrative credentials.
2. Once inside the VM, click the **PowerShell** icon on the task bar.
3. In the PowerShell console execute Add-WindowsFeature -Name "Web-Server" to install IIS
4. Repeat the first three steps for the second virtual machine.
5. After Once IIS has completed installation open the file C:.htm in Notepad on each server.　 Below the div element with the id of container add the region name the server is in and an HTML break (example below). Save both files.

* </style>  
   </head>  
   <body>  
   <div id="container">  
   Central US  
   <br />  
   <a href="http://go.microsoft.com/fwlink/?linkid=66138&amp;clcid=0x409"><img src="iis-85.png" alt="IIS" width="960" height="600" /></a>  
   </div>  
   </body>  
   </html>

#### Task 3: Configure DNS Labs on the Web Server Public IPs

1. In the Azure Management Portal click **More services -> Resource Groups** and click **WebApp1RG**
2. Click the Public IP resource **WebApp1-ip**
3. Click **Configuration**, specify a unique DNS name label, and click **Save** on the toolbar.
4. Repeat the same steps for **WebApp2RG** in order to set a unique DNS name for the WebApp2 public IP.

#### Task 4: Configure Traffic Manager

1. In the Azure Management Portal click **More services -> Traffic Manager profiles**
2. Click the **+Add** button from the toolbar and create a new profile with the following settings:

* Name: A unique name for the Traffic Manager profile
* Routing method: **Priority** (this is formerly failover)
* Resource Group: **ARMTMRG**
* Location: Choose the region closest to you

1. On the traffic manager profile blade, click **Configuration** and, on the configuration blade, change the Traffic Manager DNS TTL to 30 seconds. This will shorten the time required to perform a failover, which you will test in the next task.
2. Click the **Endpoints** tile.
3. Click **Add**
4. Add an endpoint to the Traffic Manager profile for the first virtual machine.

* Type: **Azure endpoint**
* Name: **WebApp1**
* Target resource type: **Public IP Address**
* Target resource: **WebApp1-ip**
* Priority: **1**

1. Add another endpoint for the second virtual machine.

* Type: **Azure endpoint**
* Name: **WebApp2**
* Target resource type: **Public IP Address**
* Target resource: **WebApp2-ip**
* Priority: **2**

#### Task 5: Test the failover

1. In the Azure portal, on the **Overview** page of the Traffic Manager blade, note the DNS name you assigned to the traffic manager profile (this is the unique name you chose in the previous task followed by the **trafficmanager.net** suffix).
2. Open a new Internet Explorer window, type in the DNS name of the Traffic Manager profile in the address bar, and press Enter.
3. The Traffic Manager will redirect you to the web site associated with the endpoint with the priority 1 (WebApp1). Traffic Manager will redirect incoming traffic to the other web site only if this web site becomes unreachable for 30 seconds or longer.
4. Switch to the Azure portal and stop the WebApp1 virtual machine.
5. Go back to the browser, close and reopen the browser window. type in the DNS name of the Traffic Manager profile in the address bar, and press Enter. You will be presented with the error message "This page can’t be displayed".
6. Wait for a couple of minutes. You must account for the TTL of 30 seconds and a couple of failed health probes that the Traffic Manager uses to determine that the first of its endpoints is no longer available.
7. Open a new, **InPrivate** Internet Explorer window (to eliminate any dependency on browser caching).
8. In the address bar, type in the DNS name of the Traffic Manager profile and press Enter. Traffic Manager will display the webpage hosted on the Web server in the second region.

#### Task 6: Reset the lab environment (optional)

Note: To minimize charges associated with running the lab environment, you should consider removing its resources. This is the purpose of this task.

Note: If you want to keep your lab environment in place, then you might want to consider stopping both virtual machines. This will eliminate compute charges associated with keeping these virtual machines online. To ensure that these charges do not accrue, stop the virtual machines from the Azure portal and ensure that they are listed on the Virtual machines blade with the Stopped (deallocated) state (rather than Stopped).

1. In the Azure portal, in the hub menu, click **Resource groups**
2. On the Resource groups blade, click **ARMTMRG**
3. On the **ARMTMRG** blade, click **Delete**
4. On the **Are you sure you want to delete "ARMTMRG"?** blade, type **ARMTMRG** in the **TYPE THE RESOURCE GROUP NAME** text box, and click **Delete**
5. On the Resource groups blade, click **WebApp1RG**
6. On the **WebApp1RG** blade, click **Delete**
7. On the **Are you sure you want to delete "WebApp1RG"?** blade, type **VNet2RG** in the **TYPE THE RESOURCE GROUP NAME** text box, and click **Delete**
8. On the Resource groups blade, click **WebApp2RG**
9. On the **WebApp2RG** blade, click **Delete**
10. On the **Are you sure you want to delete "WebApp2RG"?** blade, type **VNet2RG** in the **TYPE THE RESOURCE GROUP NAME** text box, and click **Delete**