

Seneca

CLO800 – Project 1

Project Scenario

You are a Cloud administrator for your company. You are tasked with deploying and publishing of company's primary Application on the Microsoft Azure.

The Application should be available in two regions, West US, and West Europe

Each region needs to have two VMs running the same Application for redundancy and load balancing.

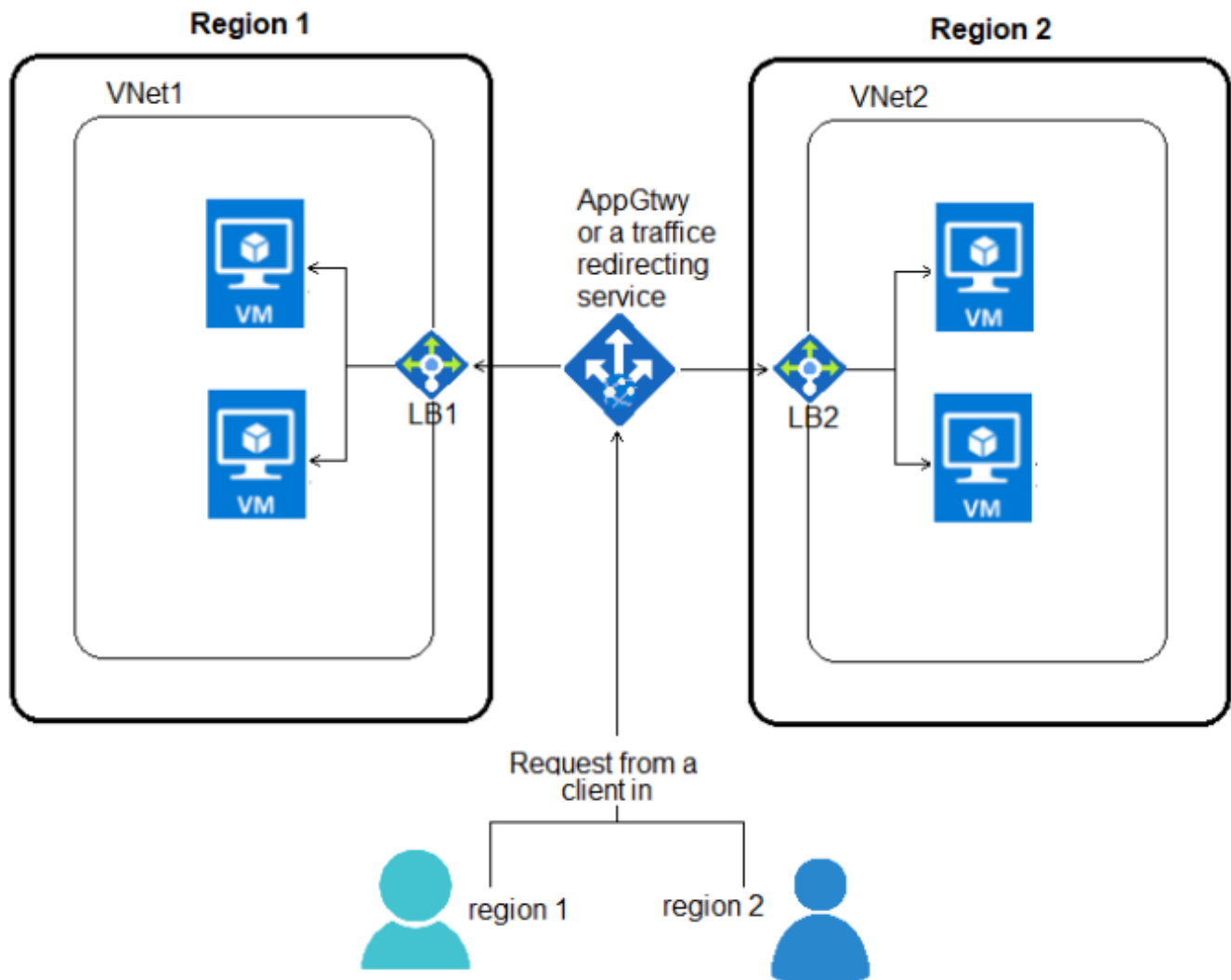
Project Outcome:

Based on a user's location, the traffic must be re-directed to the **closest region** to the client to access the Application. For example, requests from users located in Canada must be directed to the West US region and from users in UK must be directed to the region in West Europe.

Each region must have a **load balancer** implemented to distribute multiple requests to each VM in a round robin fashion.

Complete explanation and expectations will be discussed in class.

Architecture diagram



Requirements

I'm looking primarily for a solution to satisfy the project's expected outcome. You are free to explore various methods for the required traffic management and choose the best one for your case.

But just as a starter and a guideline, you will **need** to start by creating the following resources. (Not a complete list of resources).

- Create a resource group named **<StudentID>-s24-RG** (ex. sm548-s24-RG)
- Create required Virtual Networks for each region
- Deploy four Virtual Machines
 - **<StudentID>-R1-VM1** in region1 (to be deployed in region West US)
 - **<StudentID>-R1-VM2** in region1 (to be deployed in region West US)
 - **<StudentID>-R2-VM3** in region2 (to be deployed in region West Europe)
 - **<StudentID>-R2-VM4** in region2 (to be deployed in region West Europe)
- **Create required Virtual Networks for each region**
 - Vnet 1 in Region 1 (West US)
 - Vnet 2 in Region 2 (West Europe)
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- **Deploy a client Virtual Machine in each region**
 - Client_vm_R1 in Region 1
 - Client_vm_R1 in Region 2
- Create a **layer-4 load balancer** in each region for load distribution to VMs in that region
- Deploy an Azure service of your choice to redirect clients' requests to a VM in the region closest in proximity.
- **Public IP** should only be used on the front-end of your traffic redirector
- You must use your **assigned personal IP** from Blackboard for all subnets defined.
- Use **DNS** to create an FQDN name to be used for the Application connections.
- Apply an **Azure Policy** to enforce Tags across the subscription and resource groups. The tag values are:
 - Project: Project1
 - Course: CLO800
- Apply Not-Delete **locks** to the VMs
- See project rubric for details of each deployment component expected

Project expectation and rubric

The project will be graded based on showing a complete configuration and the successful functioning of each of the following components:

Part I: Doing the project

1. Creation and configuration of all required resources in regions 1, 2 and 3. For example;
 - Resource groups
 - VMs
 - VNets
 - Subnets using **assigned personal IP** range
 - The default **IIS Webpage** on each VM modified to show location and VMs name
 - Use of **DNS and FQDN** for the default Web Page
2. Load Balancing (LB)
 - Provisioning of load balancers for regions 1 and 2 based on the Round Robin algorithm.
 - Each additional connection or refresh must connect to a new VM in the **appropriate region**.
 - Validate the load balancing by opening the web
 1. Accessing website using FQDN on client-vm browser in location 1. Forced multiple refreshes should connect to VM1 and VM2 in region 1
 2. Accessing website using FQDN on client-vm browser in location 2. Forced multiple refreshes should connect to VM1 and VM2 in region 2
3. Traffic redirector solution
 - Study and select an Azure service to manage and redirect traffic based on project requirements.
 - Provision and test your solution
 - When presenting, show all details of your configurations.
4. Apply Security Locks and Azure policies as described above

Part II: Present and Demo your project

5. Record your presentation with your **camera** and **microphone on** (very important). If you have technical issues or limitations on your device to use AV, talk to me so we can arrange for a one-to-one presentation of your work.
 - Start by Introducing yourself and confirm that it's your work.
 - **(30)** Show the general setup, and the resources created, including LB, DNS, Policies.
Please don't spend too much time explaining the project itself.
 - **(30)** Explain your complete solution (traffic redirector) and why you selected it.
Show every setup and configuration related to the traffic redirector.

- **(30)** Demo your work
 - Show the following tasks :
 - a. Open a browser and connect to the application by an FQDN name. It should show the proper VM name and region
 - b. Connect from a new browser, or in incognito mode, to the application using FQDN. It should show the other VM in the same region without many page refreshing.
 - c. Show the Azure Policy set up and tags
- **(5)** Finish your presentation within the time allowed (**5 -7 minutes**)
- **(5)** Organization and order of presenting items. Make sure the quality of your audio and video is good. No background noise or talking.
- Always check your recording before deleting your resources.

Part III: Points and Penalties, if applicable

The project will have a total of **100 points**, allocated as shown above in **red**.

The following penalties will apply to the total, if applicable.

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|---|---|
| • Not using your ODL- account | (Will not be graded) |
| • Not using your assigned IP address | -50% |
| • Resource names not showing student id or name | -50% |
| • Late Submission | -10% per day after the due date. After the 3 day, your grade will be 0 (zero) |
| • No audio/video on presentation | (talk to me to make an arrangement, otherwise, will not be graded) |

Project Submission

1. The project submission will be in a video format uploaded to Microsoft Stream. Make it a private video and give access only to your professor.
2. Use screen capturing software to demonstrate the different project components as outlined in the project rubric. Describe your work as you record the screen.
3. Submit a link to your video demonstration through Blackboard.

Resources:

- Microsoft Stream: <https://www.microsoft.com/en-us/microsoft-365/microsoft-stream>
- Microsoft Stream screen capture: [Create a screen recording from your desktop](#)
- Video link: [Obtain direct link to a video](#)

Clean up resources

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