**BAIT3273 Tutorial 8**

**Core Cloud Services - Azure networking options**

• N-tier architecture, Azure region

• Virtual Network, Network Security Group

• Resiliency, Load balancer, latency vs bandwidth

**Instructions**

• Please use this document to answer all the questions in this tutorial.

• Rename the file with your student code and tutorial group number. For example, 1909846-BAIT3273-S1-2020-Tut1-RDSG01 with RDSG01 as your respective programme and group number. Besides, replace *XXXXXXXX* at the header with your student code.

• Every student must submit this doc individually at the end of the tutorial to google classroom.

**Task 1: Azure Networking**

You just started working at a startup that's fundamentally disrupting the vitamin industry with simple customization and affordable monthly subscriptions. While business is booming on the e-commerce site, your data center is starting to struggle to keep up with user demand. Your service fails when too many users sign in at the same time, and you're facing more scheduled and unscheduled maintenance windows than you'd like.

Your site is based in Silicon Valley, so you also find that a network delay is especially bad for users who are located in other regions, such as Europe and Asia. Therefore, you convince your team to move the site to the cloud to help save costs.

Your first step will likely be to re-create your on-premises configuration in the cloud. Larger enterprise systems are often composed of multiple inter-connected applications and services that work together. You might have a front-end web system that displays inventory and allows customers to create an order. That might talk to a variety of web services to provide the inventory data, manage user profiles, process credit cards, and request fulfillment of processed orders.

Three-tier refers to an n-tier application that has three tiers. Your e-commerce web application follows this three-tier architecture:

The **web tier** provides the web interface to your users through a browser.

The **application tier** runs business logic.

The **data tier** includes databases and other storage that hold product information and

customer orders.

1.a

• Draw a diagram to illustrate the flow of a request from the user to the data tier based on the above scenario. Explain your answer in detail.

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| --- |
| Answer: |

• What's an Azure region? Give an example of region.

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| Answer: |

• What's a network security group?

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| Answer:  A network security group contains security rules that allow or deny inbound network traffic to, or outbound network traffic from, several types of Azure resources. For each rule, you can specify source and destination, port, and protocol. |

**Task 2: Scale with Azure Load Balancer**

2.

You now have your site up and running on Azure. But how can you help ensure your site is running 24/7?

For instance, what happens when you need to do weekly maintenance? Your service will still be unavailable during your maintenance window. And because your site reaches users all over the world, there's no good time to take down your systems for maintenance. You may also run into performance issues if too many users connect at the same time.

• Compare the different between **availability** and **high availability**.

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| Answer:  “Availability” includes two periods of time: how much time a service is accessible, and how much time the system needs to respond to user requests. High availability refers to those systems that offer a high level of operational performance and quality over a relevant time period. |

• **Resiliency** refers to a system's ability to stay operational during abnormal conditions. Give four abnormal conditions may happen to your site.

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| Answer: |

• What is a load balancer?

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| Answer:  Load balancing is defined as the methodical and efficient distribution of network or application traffic across multiple servers in a server farm. Each load balancer sits between client devices and backend servers, receiving and then distributing incoming requests to any available server capable of fulfilling them. |

• Using a diagram to illustrate and explain how a load balancer work.

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| Answer: |