**ASSIGNMENT COVER SHEET**

|  |  |  |
| --- | --- | --- |
| Student’s name | Joshua | Morton |
| Module name | Cloud Solutions and Architectures |  |
| Title of assignment | Cloud Computing with Software Consultancy |  |
| Complete Word Count in my assignment |  |  |
| Date submitted |  |  |

All work must be submitted by the due date. If an extension of time to submit work is required, a [Mitigating Circumstances Extension Form](https://canvas.qa.com/courses/1041/files/660514?module_item_id=143660) must be submitted.

Has an extension been approved? Yes X No   
  
If yes, please give the new submission date ….…/..…./…….

|  |
| --- |
| **IMPORTANT: THIS STATEMENT MUST BE READ AND SIGNED**  Academic Integrity Statement  Academic integrity and honesty are fundamental to the academic work you produce at the University of Roehampton. You are expected to complete coursework which is your own and which is referenced appropriately. The university has in place measures to detect academic dishonesty in all its forms. If you are found to be cheating or attempting to gain an unfair advantage over other students in any way, this is considered academic misconduct, and you will be penalised accordingly. We declare that the work we are submitting is our own work, is properly referenced and has not been submitted elsewhere. |
| Student signature (to include student’s full name):    Date: |

**QA LIMITED and University of Roehampton**

**Business Process Change Management for Propel Tech**

**Analysing and implementing change to Propel Tech’s Service Delivery process**

**Joshua Morton**

**Business Systems and Processes – QAC020N225K**

**25/06/2024**

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# Task 1 - The core principles and concepts of cloud computing infrastructure technologies

500 Words

In this task you should:

* define and explain the fundamental principles and concepts of cloud computing.
* describe the various models and deployment types of cloud computing.
* discuss the key characteristics and benefits of cloud computing infrastructure technologies.
* provide examples and use cases to illustrate the application of cloud computing in your organisation (unless discussed otherwise with your tutor).

**Notes:**

**Seems like apply stage activity, pasted below, trim the fat, provide references, structure it, provide diagrams**

**Read QA Module for the “fundamentals”**

**Revisit the models in QA, public private hybird:**

**https://canvas.qa.com/courses/3065/pages/2-dot-2-3-what-are-cloud-service-models**

**Discuss public private and hybrid cloud**

[**https://canvas.qa.com/courses/3065/pages/2-dot-2-4-what-are-cloud-deployment-models?module\_item\_id=348565**](https://canvas.qa.com/courses/3065/pages/2-dot-2-4-what-are-cloud-deployment-models?module_item_id=348565)

**Look into “infrastructure technologies” for bullet point three.**

**https://canvas.qa.com/courses/3065/pages/3-dot-2-2-identifying-the-infrastructure-and-availability-of-cloud-providers?module\_item\_id=348582**

Fundamentally, cloud computing allows you to rent compute power, infrastructure, development environments and services to match your system or businesses requirements and capacity. This allows a business to replace or entirely forgo physical infrastructure in favour of virtualisation and enable Software Engineers to build applications more efficiently by taking advantage of pre-built software services.

When discussing to cloud computing, there are 3 service models that are most discussed: Infrastructure, Platform & Software as a service (IaaS, PaaS, SaaS).

IaaS is arguably the most powerful aspect, it encompasses renting virtual servers, networking capabilities and data storage. The largest benefit to consumers is the on-demand flexibility and scalability. On a macro scale, this allows a business to grow their infrastructure along-side their business whilst on a micro scale, increase and decrease capacity during periods of higher traffic. With physical infrastructure, you will always need capacity available for periods of maximum demand, which is inherently very expensive. This model enables the success of businesses that experience large fluctuations in service, such as streaming platforms and online auctioneers.

PaaS offer a higher level of abstraction to IaaS, these are typically services that offer higher level infrastructure. To compare the two, IaaS provides a virtual machine that you can install a Postgres database server on, whereas PaaS provides the Postgres database server while managing and configuring the infrastructure for you. At an even higher level, they offer tools that allow you to create configurations for your infrastructure to allow them to be automatically managed, according to your configuration. AWS Elastic Beanstalk is a great example of this, as it allows you to orchestrate rules for load-balancing, auto-scaling, alerting & reporting as well as automated deployment, including blue-green deployment patterns.

Another model is Software as a Service (Saas), provided by most mainstream cloud computing providers, like Amazon Web Services (AWS), Microsoft’s Azure, or Google Cloud Platform (GCP). Common SaaS used in many industries are project management tools like Jira and Trello, helpdesk services such as Manage Engine. Adoption of these SaaS enables easier co-ordination within larger organisations to increase operational efficiency. Additionally, the major providers offer services that allow easy integration for application developers to abstract away challenging features like authentication and authorization, with AWS’s Cognito or Azure’s Active Directory (AAD). These allow businesses to take advantage of powerful functions and utilities for a reasonable price, which would otherwise be significantly more time consuming and expensive to be implemented by an in-house Software Engineer.

My organization, Propel Tech, is a Software Consultancy, we build, deploy, and manage software applications for clients at a premium. Propel aim to provide cheaper and more efficient solutions for their clients, they employ in-house Cloud Engineers to design, deliver and support systems that are built for the clients.

AWS is their preferred cloud platform, the infrastructure for a typical client system involves all 3 of the cloud models provided. Using Infrastructure-as-Code (IaC) to automate the construction and teardown of infrastructure with configuration level flexibility.

They use IaaS such as Elastic Compute Service (ECS) paired with Elastic Container Repository (ECR) to build, test and host software applications, as well as Simple Storage Service (S3) to host static files and images.

Additionally, PaaS such as Elastic Beanstalk to configure their ECS Containers. A wide variety of SaaS are used, Cognito for authentication, Relational Database Service (RDS) for a managed database, Simple Email Service (SES) to provide an email server and Cloudwatch to monitor and diagnose performance issues with infrastructure.

Other services used include Fargate to automate the creation of ECS Containers, Route 53 to provide DNS and routing configurations between deployed services and Cloudfront’s Content Delivery Network (CDN) to cache static assets across international data centres, increasing application speed.

Altogether, utilising these services provided by AWS, Propel Tech can ship more efficient and secure applications in a fraction of the time, they also increase their marketability to clients seeking a reduction of infrastructural costs. Internally, efficiency is increased as it allows Software Engineers to focus on fulfilling client requirements of business logic and functionality without being concerned with infrastructure concerns.

# Task 2 - The role and function of Cloud Computing in supporting operational goals and business processes

1000 Words

In this task you should:

* analyse the impact of cloud computing on operational goals and business processes within your organisation (unless discussed otherwise with your tutor).
* explore the role of cloud computing in enhancing scalability, flexibility, and cost-efficiency.
* evaluate the benefits and challenges of migrating business processes to the cloud.

provide case studies or examples to illustrate the successful implementation of cloud computing in real-world scenarios. Focus on your organisation unless discussed otherwise with your tutor.

# Task 3 – The strategies employed to orchestrate designs for implementation of Cloud and Hybrid infrastructures

500 Words

In this task you should:

* explain the concept of cloud orchestration and its importance in designing cloud and hybrid Infrastructures.
* discuss the strategies and best practices for implementing Cloud and Hybrid Infrastructures. Reflect upon own organisation unless discussed otherwise with your tutor.
* analyse the considerations for selecting the appropriate cloud service provider (CSP) and designing the infrastructure architecture, reflect upon your own organisation (or organisation of choice if agreed with tutor).
* illustrate the steps involved in the migration process from traditional infrastructure to cloud or hybrid infrastructures.

# Task 4 - The range of risks associated with employing Cloud Computing

1000 Words

In this task you should:

* identify and explain the potential risks and security concerns associated with cloud computing. Reflect upon your own organisation unless discussed otherwise with your tutor.
* evaluate the measures and strategies for mitigating the identified risks.
* discuss the legal and regulatory considerations related to data privacy and compliance in cloud computing.
* analyse real-world cases of security breaches or data leaks in the cloud and the lessons learned from them. Use your own organisation unless discussed otherwise with your tutor.

# Appendix A

### Figure 1

# References

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