

Connecting Clouds in a Multicloud Strategy

Reflection Document

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Table Of Contents

1. CONTENT REFLECTION: THE PROJECT	5
1.1. What did I accomplish?	5
1.2. Status and recommendations	5
1.3. Value for Cegeka	5
2. PERSONAL REFLECTION: MY GROWTH	6
2.1. What the internship meant to me	6
2.2. Skills, competences, and growth	6
2.3. Problems faced	6

Introduction

This document presents a structured reflection on my internship at Cegeka, where I was part of the Network & Security team within global operations. Over the course of several months, I worked on a technically and strategically relevant project focused on developing a multicloud architecture. The internship offered me the opportunity to apply my academic background in a real-world context, to work hands-on with different technologies, and to contribute to the internal knowledge of Cegeka.

This reflection is divided into two main parts. The first part discusses the content of the project: what I achieved, what recommendations I have for further development, and what the outcome means for Cegeka. The second part focuses on my personal growth, what I learned during the internship, which skills I developed, and how I dealt with challenges along the way, both technical and non-technical.

1. Content Reflection: The Project

1.1. What did I accomplish?

During my internship, I worked on a technical and strategic research project around multicloud. The main objective was to investigate how a multicloud environment could be built using Azure and Oracle Cloud Infrastructure (OCI), and to evaluate when such an approach is justified.

I successfully designed and implemented a proof of concept (PoC) showing secure and functional connectivity between Azure, OCI, and an on-premises datacenter. The design included VPN tunnels, hub-and-spoke architectures, firewall clusters, routing rules, and NAT to resolve IP conflicts. In addition to the technical implementation, I conducted in-depth research on the benefits, such as flexibility vendor independence, workload specialization, as well as the challenges, including complexity, operational overhead, costs, and identity management across platforms.

Part of my research included a detailed cost analysis between multicloud and single cloud deployments. Using real pricing data from AWS, Azure, and OCI, I simulated a SaaS workload under different configurations. The finding showed that although a multicloud can offer technical advantages, it is almost always more expensive in practice, especially when considering indirect costs like training, staff knowledge, and integration overhead.

The conclusion was clear: multicloud should not be adopted by default. It must be a deliberate and well-justified decision, based on technical needs, client demands, or compliance requirements. But for IT service providers, such as Cegeka, such strategies can have a large competitive advantage.

1.2. Status and recommendations

The multicloud environment developed during this internship successfully demonstrated the technical feasibility of securely connecting multiple cloud platforms using VPN tunnels, firewall clusters, and routing. Although the PoC was technically operational and validated through connectivity tests, it remains a prototype. For full production readiness, additional work is required:

- Advanced security policy rules on the firewalls, depending on the workload
- Adding logging and monitoring for cross cloud traffic
- Scaling out the architecture to support high availability
- Evaluating actual workloads under real performance and cost metrics
- Looking into automated deployments with, for example, Terraform

Future work could also include integrating AWS to complete the multicloud architecture.

1.3. Value for Cegeka

The project and research contributes directly to Cegeka's internal knowledge. The PoC and the associated cost and strategy research can be reused to guide future multicloud implementations or advise clients or other departments in the decision making process. The documentation also provides strategic insights for Cegeka on how to build a multicloud environment. Also, having the information of how to deploy such an architecture, can give Cegeka a competitive advantage which can increase the customer base.

2. Personal Reflection: My Growth

2.1. What the internship meant to me

The internship was much more than just a required component for my studies. It was a unique opportunity to prove myself in a professional environment at Cegeka, within a technically challenging team. It gave me confidence and helped me understand my strengths and how to translate theoretical knowledge into practice. For me, this internship marked the transition from student to a beginning IT professional.

2.2. Skills, competences, and growth

Throughout this project, I deepened my technical understanding of cloud infrastructures. I learned how to work with Azure and OCI, configured Fortigate firewall clusters, VPN tunnels, routing rules, and designed a full network architecture at a company level. In addition, I developed several important competencies, such as analytical and problem solving, independent work and technical documentation, communication and translating complex information clearly, and careful planning of multiple phases and tasks.

The biggest growth for me was learning how to deal with unfamiliar technologies. At the beginning of my internship, I had no hands-on experience with Oracle Cloud, and only limited experience with Azure, let alone setting up a multicloud architecture. By doing focused research, trial and error, and asking questions where needed, I learned how to efficiently adopt new tools and platforms. I also matured in my professional mindset: I became better at structuring my work, efficiently documenting my work, and communicating with team members where needed.

2.3. Problems faced

Technically, some of the main challenges were overlapping IP ranges, VPN tunnel setup, routing configuration, and firewall policy configuration. These problems were tackled by searching for useful documentation from good sources, such as the Microsoft documentation, or the documentation from Oracle. Also, asking for help when getting seriously stuck with a problem, and actually getting that help was helpful. More than that was the lack of experience with the platforms and tools used, such as Oracle, Azure, and mainly the Fortigate firewalls. Here I had to use my knowledge from school and apply the basics again to learn those environments and tools.

On a non-technical level, I initially struggled with keeping a clear overview of all the steps in the project. So much needed to be done, with limited time. Although it was hard to actually keep myself to it, I created a Trello board with a step-by-step plan which I continuously refined and used as my guideline. I also learned the importance of proactive communication with my mentor to align expectations and corrected myself when needed.



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