Project Plan

Case Study: Cloud infrastructure orchestration

Group: RDEnvi

Group members:

* Robert Asvicas
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# Project background

We are a group of 2 students that specializes on making infrastructure solutions for software developers. In this case we will be teaming up with 2 software developing groups with a purpose of helping them host their products on our infrastructure. Working on AWS allows us to be very flexible which means that we will be able to satisfy their needs.

# Project Goal

Our main goal is to build an infrastructure which will be suitable for hosting certain software products created by developers in an advanced and automotive way. The infrastructure is going to be mainly based on AWS which will work in correlation with local Fontys servers which are planned to be used as a database. As foretold, our infrastructure will be automated and orchestrated via an advanced tool called Ansible. Lastly, our environment will follow the most progressive and advanced security innovations due to the implementation of stable logging mechanism, Software Defined Networking (SDN), Software Defined Wide Area Network (SD-WAN) and several monitoring tools similar to or Nagios itself.

# Milestones

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| --- | --- |
| Deliverables | Expected delivery time |
| Project Plan | Week 3 |
| Design Document | Week 3 |
| Project Report | Week 3 |
| Amazon Web Services   * EC2 Web/App Servers * Control node (Ansible) * Main VPC for Servers   + Elastic Load Balancers for App and Web Servers   + Nat Instances   + 3 Availability zones   + Public and private subnets * Secure VPC for Databases * Transit gateway * S3 bucket for logs | Week 5  Week 4  Week 7-9  Week 7  Week 6  Week 6  Week 7  Week 8  Week 9  Week 9 |
| Fontys server   * Private database for storing keys | Week 9 |
| Playbooks for Ansible | Week 3-9 |
| Terraform code | Week 3-9 |

# Deliverables

* Configured infrastructure
  + Terraform code
    - AWS Policies
    - EC2 Instances
  + Ansible playbooks
  + Virtual Private Cloud (Main)
    - Public Subnets
    - Private Subnets
  + Virtual Private Cloud (Database)
  + Database instances
* Documentation

# Expected results

After finishing project we expect to have scalable infrastructure on AWS which allows software team to deploy their product in fast and efficient way. We expect most of the tasks to be automated via Ansible and Terraform, however, we are mostly focused on security and efficiency of network infrastructure.

# Way of working

We are working in a team of 2 people, therefore most of the work is done together, however, because of the certain limitations there is some work done separately and later the discoveries are shared between us. Some work simply can not be done together, because while one person is doing work, the other person is just watching and tries not to zone out. We try to split our work also because of the time limitations, especially in the last few weeks.

# Risk Assessment

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| --- | --- | --- | --- |
| Risks | Impact | Possibility | Solution/Workaround |
| Team members can start arguing with each other about something they do not agree. | Postponing deliverables | Low | Team members will discuss what is better for them and if there will be no solution for their argue problem, mentor will get involved. |
| Team member can get sick in such way that he will be incapable to work even from home. | All work will be transferred to only one team member, which can lead to postponed and decreased quality of deliverables | Low | One team member will try to work on everything, and sick team member will try his best to work and to get better. |
| Internet failure of team members | Inability of a team member to work on a daily basis, postponing deliverables | Moderate/High | Notifying a mentor and a team member and contacting an internet provider for them to solve a problem. |
| Bad budget planning | AWS resources will be constrained | Moderate | Monitoring the budget. |

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