Cloud Computing

whoami

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- Github
- Twitter
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About course

Learning Objectives:

- Understand “Cloud” landscape and building blocks
- A toolset to work with clouds
- *Mappings* between cloud providers
- Try it out

About course

- Lectures:
  - Presentation
  - Demo
- Homework:
  - Exercises
  - Capstone Project

Course plan

Learning session 1

Intro

What is cloud

Course plan

Learning session 1

What is cloud

- What do we need to run a product?
- Pitfalls of on-premise solutions
- What is Cloud?
- Cloud types
- Cloud pros/cons
- Cloud Resource Management

Course plan

Learning session 2

Core Services

Course plan

Learning session 2

Core Services

- Compute
- Storage
- Network
- Databases
- Events and Messaging

Course plan

Learning session 3

Security

Identity and Access Management (IAM)

Course plan

Learning session 3

Security

- What is security in cloud
- Security areas
- Breach scenarios
- Security levels: infrastructure, application, data, user
- Case studies: Public Key Infrastructure (PKI), Secrets management, Configuration management, Disaster recovery, Custom policies, Expect security services to fail

Course plan

Learning session 3

Identity and Access Management (IAM)

- Identity
- Authentication
- Authorization
- OAuth, OpenID, SAML Protocols
- Role-based Access Control (RBAC)
- Clouds: AWS/GCP IAM, AAD

Course plan

Learning session 4

Monitoring and Observability

Pricing

Course plan

Learning session 4

Monitoring and Observability

- What is Monitoring and Observability
- Logs
- Metrics
- Traces
- Audit logs/events
- Alerts
- Available solutions

Course plan

Learning session 4

Pricing

- Snowflake pricing
- Pay-as-you-go vs pre-paid vs spot instances
- Consumption pricing
- Storage pricing
- Traffic pricing
- Cloud bill calculator
- Cost analysis

Course plan

Learning session 5

Capstone projects presentations

Course Summary

Grading

- 200 points overall
- 120 points to pass

[Homework summary]

Session	Task Name	Mandatory	Points
1	Terraform intro	X	20
2	FaaS sample	X	20
	Project description	X	20
3	Proof of concept (PoC)	X	50
	Terraform config for PoC		20
	Disaster recovery		15
	Security analysis		10
4	Pricing calculator	X	20
	Observability		15
	Autoscaling		10
			200

Course materials

All materials are available as git-repo

[Github/cloud_computing_course]

Prerequisites

Used tools:

- git and GitHub
- Bash
- terraform
- [optional] VSCode
- [optional] docker
- [optional] diagrams.net (former draw.io)