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
  - Video
  - Demo

- Homework:
  - Exercises
  - Capstone Project

Course plan

Learning session 1 (June 17-19)

Intro

What is cloud

Course plan

Learning session 1 (June 17-19)

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 (July 1-3)

Core Services

Course plan

Learning session 2 (July 1-3)

Core Services

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

Course plan

Learning session 3 (July 15-17)

Security

Identity and Access Management (IAM)

Course plan

Learning session 3 (July 15-17)

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 (July 15-17)

Identity and Access Management (IAM)

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

Course plan

Learning session 4 (July 29-31)

Monitoring and Observability

Pricing

Course plan

Learning session 4 (July 29-31)

Monitoring and Observability

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

Course plan

Learning session 4 (July 29-31)

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 (August 12-14)

Capstone projects presentations

Course Summary

Grading

- 200 Points overall
- 120 Points to pass

[Homework summary]

List of tasks

Day	Task Name	Mandatory	Points
1	Create team	X	5
	Register cloud account	X	5
	Terraform intro	X	20
2	Project description	X	20
	FaaS sample	X	20
3	Proof of concept (PoC)	X	30
	Terraform config for PoC		20
	Security		15
	Disaster recovery		15
4	Pricing calculator	X	20
	Observability		20
	Autoscaling		10
			200

Course materials

All materials are available as git-repo Github/cloud_computing_course

Each learning session has a corresponding git branch: *session/1 .. session/4*

To get needed session milestone do `git checkout session/1`

Prerequisites

Used tools:

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