

# DevOps

## *Software Architecture*

Brae Webb

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*Question*

Who has heard of *DevOps*?

*Question*

Who has used *DevOps*?

# The larger story

Server Config    Config Management

Application Config    Config Files

Provisioning    Infrastructure Code

Building    Continuous Integration

Deployment    Continuous Deployment

Testing    Automated Tests

Database Administration    Schema Migration

Specifications    Behaviour Driven Development

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What is *DevOps*?



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- A combination of *software development* and *IT operations* skills

What is *DevOps*? [Senapathi et al., 2018]

- A combination of *software development* and *IT operations* skills
- A *cultural movement* that enables rapid development with four defining characteristics: open communication, incentive and responsibility alignment, respect, and trust



*Important*

Continuous \*

*Also Important*

If it hurts, do it more often



## *Tooling*

1. Continuous *development*
2. Continuous *integration*
3. Continuous *testing*
4. Continuous *deployment*
5. Continuous *operations*
6. Continuous *monitoring*
7. Continuous *feedback*

*Small Group Discussion*

Describe the tools you have identified for the Continuous \* practices.

### *Class Discussion*

Summarise the tools identified by each group and the practices they support.



*Today*

Design a DevOps pipeline for *Sahara*









## *Sahara Pipeline*

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### *Sahara Pipeline*

1. What *types of tools* would be required?
2. Which *specific tools* would you choose?
3. On which type of *computing infrastructure* would you deliver the system?
4. What parts of the deployment and operations processes could be *automated*?

### *Discussion*

Present the DevOps pipelines that you have developed to the rest of the class.



*Challenge 1: DevOps in Practice*

Do the seven necessary *DevOps practices* map perfectly to the *enablers* in the article by Senapathi et al <sup>[Senapathi et al., 2018]</sup>?

### *Technological Enablers*

- *Build* automation
- *Test* automation
- *Deployment* automation
- *Monitoring* automation
- *Recovery* automation
- *Infrastructure* automation
- *Configuration* management for code and infrastructure
- *Metrics* automation

## References

- [Senapathi et al., 2018] Senapathi, M., Buchan, J., and Osman, H. (2018).  
DevOps capabilities, practices, and challenges: Insights from a case study.  
In *Proceedings of the 22nd International Conference on evaluation and  
assessment in software engineering 2018*, volume 137700 of *EASE'18*, pages  
57–67. ACM.