

DevOps

Software Architecture

Brae Webb

March 13, 2023

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 |

Question

What is *DevOps*?



R. STACK

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

- 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 *

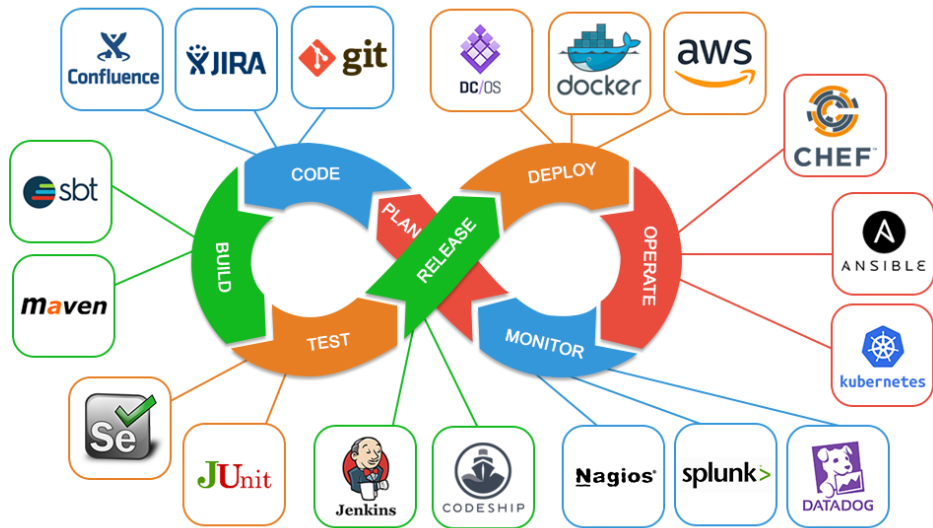
Also Important

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*



Discussion

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

Technological Enablers

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

Today

Design a DevOps pipeline for *Sahara*



[System Context] On-line Store

Friday, 18 March 2022, 23:38 Australian Eastern Standard Time



[Component] On-line Store - Product Browsing

Sunday, 20 March 2022, 21:51 Australian Eastern Standard Time



Sahara Pipeline

1. What *types of tools* would be required?

Sahara Pipeline

1. What *types of tools* would be required?
2. Which *specific tools* would you choose?

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?

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*?

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.