DevOps Disruption

EC601

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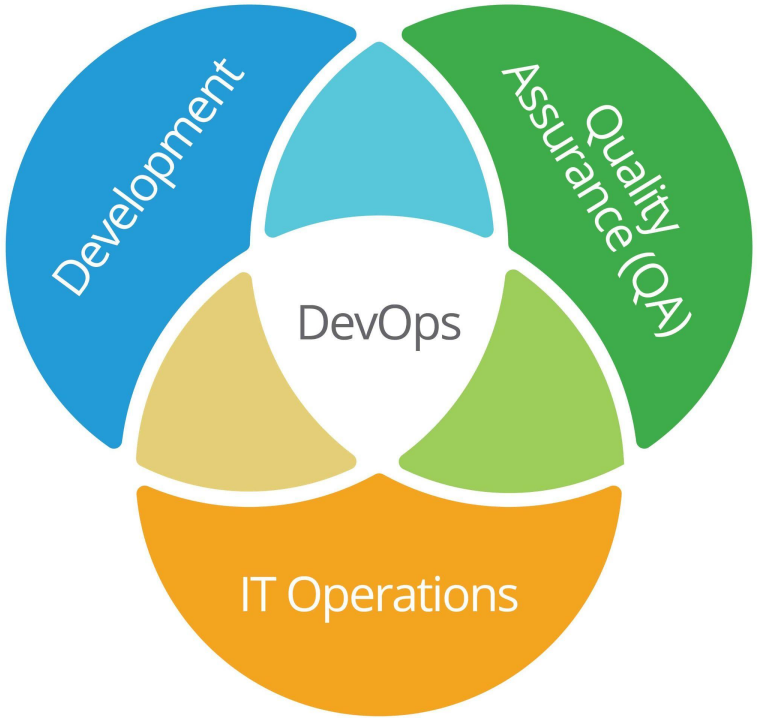
What is DevOps

Development team (Dev) and IT Operations team(Ops) are no longer separated in software development.

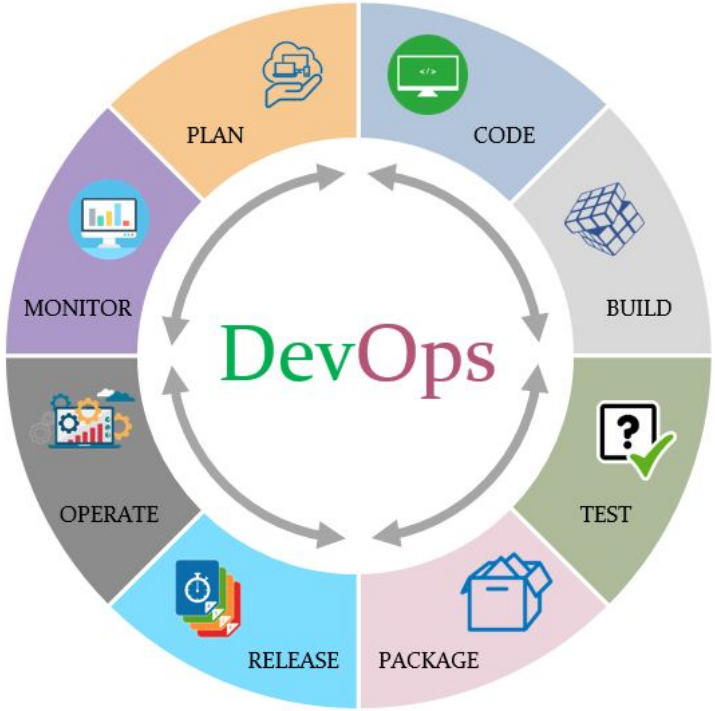
The two teams combine together to deliver applications or services. This approach is DevOps.



https://www.smartsheet.com/devop

Why DevOps is important

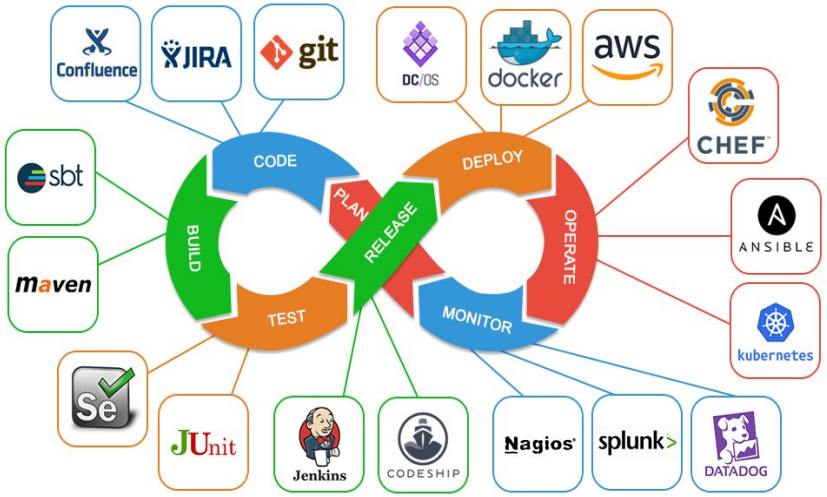
- Speed: shortens the timeline of software development, make it faster to deliver products to customers
- Reliability: improves the ability of system that could function seamlessly in its environmental constraints
- Security: offers more speed and agility to security teams, minimize project's vulnerabilities



https://medium.com/@raycad.seedotech/devops-methodology-and-process-dde388eb65bd

DevOps Applications

- DevOps is a wide range of tools that each team or project chooses depending on their needs
- Amazon's case: turning to cloud and selling services to others
- Netflix and Amazon case: Netflix one of the first successful migration to microservices
- Other fields for DevOps: car manufacturers and financial sector



Credit: https://www.edureka.co/blog/companies-using-devops/

Traditional Cybersecurity Approach VS DevOps Cybersecurity Approach

In traditional way, cybersecurity team will provide 30 pages recommendations about how to secure the project. (Recommendations were written in a cybersecurity vernacular).

In DevOps approach, cybersecurity team will work with DevOps teams to create the project together. It is necessary for Cybersecurity professionals to participate in the process, communicate with other developers, and provide test cases on the same level as the coding and deployment part.

DevOps security approach bring many benefits, but there are also some challenges need to overcome.

Security Threats in DevOps

Security threats in DevOps refers to the ability of attackers to exploit unsecured credentials in DevOps environments.

DevOps Security Challenges:

- Privileged credentials used in DevOps are targeted by cyber attacks
- Most times developers are focused on velocity - not security
- Serverless Computing
- The interconnectedness of the DevOps process

Credit: https://www.skillcast.com/blog/10-worst-cyber-crimes-analysed

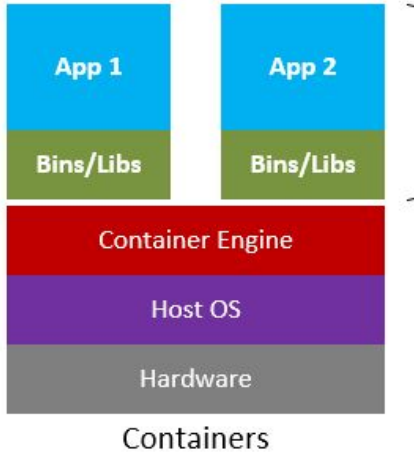
Container Security

Securing container includes:

1. Choosing the right base image from a trusted source and keeping it small
2. Using multi-stage builds
3. Rebuilding images
4. Scanning images during development
5. Scanning images during production

Testing tools:

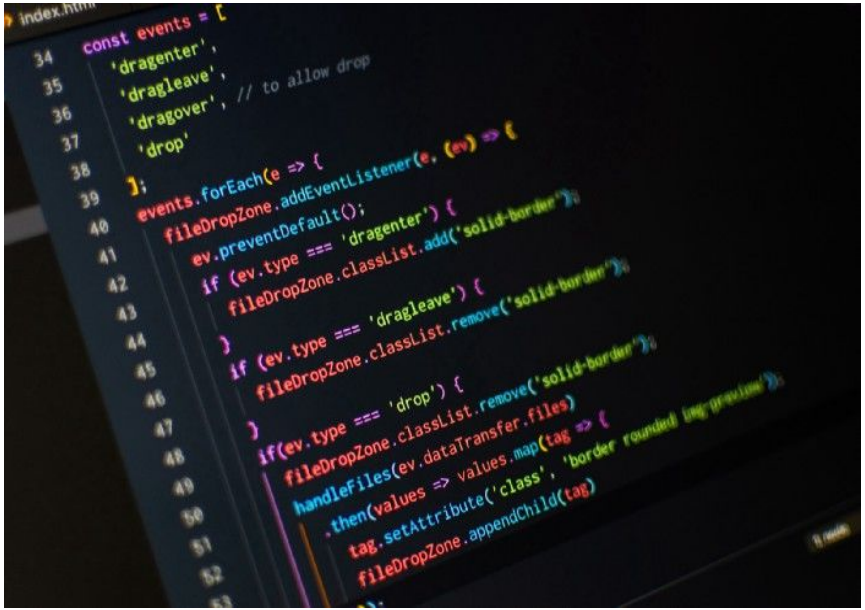
1. **Dependabot** - Automated dependency tester
2. **Nagios** - Web logging
3. **ELK** - Logging engine



Credit: https://snyk.io/blog/10-docker-image-security-best-practices/

Preventing Threats in DevOps

- Implementing security in continuous integration/continuous deployment (CI/CD)
- Implementing threat modeling
- Implementing secure coding practice/using secure encryptions
- Leverage containerization - individual container building blocks offer increased security



Credit: https://medium.com/swlh/10-clean-coding-practices-e37ac283184d

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