**What is DevOps?**



**DevOps** is a combination of two terms **Dev** and **Ops** where Dev refers to the software inventors (dev) and operations (ops). Basically, DevOps is a collection of methods, technologies, and a mindset that automates and integrates software development and IT teams' processes.

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**DevOps Lifecycle**

DevOps lifecycle consist of several phases as shown in the below diagram

1. **Planning & Build** – This phase involves the planning and coding of the software. The teams following DevOps would need to adapt to the latest agile practices. This would mean breaking the software development lifecycle into smaller incremental chunks.
2. **Continuous Integration** – New functionality is introduced and integrated with the existing developed product. Jenkins is a widely utilized tool in this phase. Jenkins prepares a jar file, whenever there is a change in the Git repository. The build is then sent to the testing or production server for further testing.
3. **Testing** – The Main purpose of this phase is to identify the bugs present in the developed application. Automation testing tools like TestNG, JUnit, and Selenium are used for testing.
4. **Monitor & Alert** – A DevOps team is quick to identify and resolve any issues related to the product. Nagios is the most popular tool for this. Any and all feedback can be taken back to the planning phase from here in the form of documentation files.
5. **Continuous feedback** – The DevOps team will evaluate themselves with each release. Theses feedback will be put into a report so the team’s performance can be analysed and any processes can be streamlined. It is essential to incorporate customer / end-user feedback for this step.
6. **Deployment** – This phase ensures the deployment of code onto the production servers. some popular tools are: Chef, Puppet, and SaltStack.
7. **Operation** - All DevOps operations are built on a foundation of consistency and total automation of the release process, allowing the company to continually reduce its overall time to market.

**Benefits of DevOps**

|  |  |
| --- | --- |
|  | * Foster greater collaboration and trust within the team as well as outside because the team has shared responsibility for the product(s) they develop and maintain. |
|  | * With increased collaboration, the development cycles are shorter and more efficient. The quality/quantity of releases is much higher and more time can be dedicated to exploratory work. |
|  | * Static and dynamic tests, unit testing, integration testing, and dependency scanning are all used by DevOps to see if the product has any vulnerabilities. |
|  | * The teams are able to cope with customer demands and focus on delivering a competent product. |
|  | * Streamlines the development process as a whole |
|  | * DevOps teams improve products quickly by boosting the frequency. Quick deployment of new features and fixing bugs might give a competitive advantage. |

**Artificial Intelligence /Machine Learning for DevOps**

There are many places where Machine Learning and Artificial Intelligence can be used in DevOps:

* Automating reliably repetitive tasks that the team may be engaging too many resources into with not enough results live minor code reviews
* Test automation can be cleared up from the team’s workload by the way of self-healing tests
* This is a good way to visualize and document trends across platforms apps and tools
* Performance and fail cases can be reported and prioritized based on which cases affect the product cycle the most
* Past performances can be quantized to understand gaps and a consistent approach may be developed.

**Top 5 Companies using DevOps in 2021**

|  |  |
| --- | --- |
|  | **Amazon** |
|  | **HP** |
|  | **Netflix** |
|  | **Adobe** |
|  | **Etsy** |

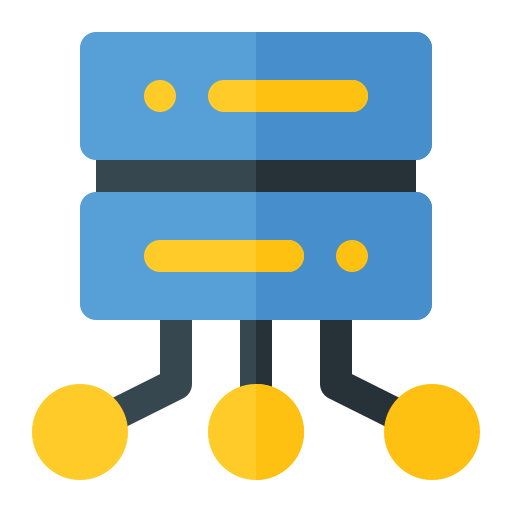
**Real-time Use Case of DevOps**



As we all know Amazon is an American Multi-National Company. It provides a variety of streaming and downloadable content throughout the world using applications like Amazon Prime Video, Amazon Music, Twitch, Audible units, etc.

**Problem**

* Amazon follows monolithic architecture which causes a problem in 2001
* Maintenance, and handling vast amount of data programs on physical servers became an issue.



Threads

Users

Threads

**Solution**

* Solution for monolithic architecture was Amazon Web Services (AWS) cloud platform.
* AWS follows Microservices architecture
* AWS uses CodeDeploy, to keeps track of deployments and streamlines the software processes
* Apollo, a one-click internal deployment tool, is used by Amazon.

**Conclusion**

DevOps establishes a smooth path for Continuous Development and Continuous Integration by bridging the gap between developer team and operational team. So, this was all about the DevOps and use cases of DevOps in the real world.

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