DevOps

What is DevOps? 2

How DevOps Would Benefit 3

Best Known Tools/Skills for DevOps 4

# What is DevOps?

There are lots of definition of DevOps in different organizations. You will get a new definition each day. Most of the definitions are right in their context. Some organizations treats DevOps as practice to be followed, some consider DevOps as automation, some says continuous integration & continuous deployment are DevOps, some says working agile is DevOps and many more.

I will try to explain what DevOps is for me based on my experience. For me DevOps is combination of technical skills, tools, standard practices, standard processes. The team/engineers who is responsible for setting up the DevOps practices for an organization is supposed to has most of these skills. DevOps takes care of from the build to deployment in different environments, setting up CI/CD pipeline, setting up provisioning of the different environments, setting up monitoring, setting up agile processes, setting up processes and strategy for release, backup, rollback.

DevOps are there so that developer can only focus on development and QA can focus on testing. Rest all (from setup till deployment) will be done DevOps.

# How DevOps Would Benefit

There are lots of benefits which DevOps brings and it has proven it already in the industry hence every company is moving towards DevOps to achieve those benefits. The most common benefits which DevOps brings in the organization are:

1. DevOps helps developers to speed up the process. Developers do the development and their code get compiled, packaged and tested automatically. If something fails then they can fix that immediately.
2. It improved customer satisfaction because main aim of DevOps is to provide quality products and provide at faster pace. It increases customer base and revenue
3. It speeds up the whole process with the help of agility and automation. It also provides early feedback from customer to make the product as desired by the customer.
4. It reduces operation costs and less number of people can do more work.
5. It creates better relationship between developer and operations team.
6. It puts standard practices which controls the quality of the product and followed by the whole organization.
7. DevOps created CI/CD pipeline so that software can be delivered continuously with less complexity and problems can be resolved in much speedy way.
8. It makes team more productive and keep employee engaged.
9. It keeps the operational environment more stable and whole environment can be provisioned, upgraded very easily.
10. To solve a problem teams (Business / Dev / Ops / QA) sit together in war room and solve the problem.
11. Early detection and faster correction of defects that helps provide the best service.
12. Continuous Build, Continuous Testing, Continuous Release & Deployment and Continuous Monitoring are the biggest advantage of DevOps.

# Best Known Tools/Skills for DevOps

As I said DevOps needs technical skills and tools, so I will cover most common skills/tools required for a DevOps engineer. I am not covering Windows here.

|  |  |
| --- | --- |
| **Area** | **Skill / tool required** |
| Scripting | Bash (essential), Python/Ruby/Perl  **Purpose**: For automation and tool creation. As a DevOps your main responsibility is to automate the tasks, create the tools for others, create utilities which can be done only with the help of these languages |
| System Admin | RHEL or Ubuntu based system admin skills  **Purpose**: OS administration, software installation. DevOps guy need to have system admin knowledge which included knowledge about installation different Linux distributions i.e. Ubuntu, centos, RHEL, suse etc. KNowsledge of package managers like Apt, Yum, RPM is required. |
| Provisioning tools | Ansible/Chef/Puppet/SaltStack  **Purpose:** To provision machine/s (bare metal server, VMs, containers). Knowledge of any of these tools is necessary. DevOps are supposed to write scripts (called playbook/cookbooks/module etc) to automate the provisioning of the servers. So whenever you want to create a new server or want to upgrade a software on existing server then you any of these tool can be used. |
| CI Tools | Jenkins/Bamboo  **Purpose:** To setup CI/CD, automate and integrate things. DevOps are supposed to create jobs in Jenkins which can take care automated builds whenever developer commits his/her code (or can be scheduled builds), automated testing, report generation, automated deployment. Other than that, you can automate a task using your choice of language/tool and create a job to integrate that into Jenkins. |
| Version Controlling tool | Git (mostly used with GUI GitHub, GitLab, BitBucket)/SVN/Perforce/CVS  **Purpose**: For version controlling of files (source code, scripts etc). DevOps creates repository and do the required setting i.e. provide permission, branch creation etc. |
| Cloud | AWS (mostly used)/Digital Ocean  **Purpose**: Instead of in house servers most of the companies moving towards cloud and DevOps are responsible for cloud operations which includes creation of VMs, monitoring, auto scaling, networking, stogare over cloud. |
| Container | Docker  **Purpose**: Instead of using the whole machine we can use a container which works as separate machine and very fast to bring up and test something. DevOps create scripts (DockerFile) to automatically create docker containers. |
| Virtual Machines | VBoxManage/VMWare  Vagrant (for automated provisioning of VMs)  **Purpose**: VMs are created by DevOps and used by developers, used for different environments as well. |
| Monitoring | Splunk, NewRelic/Zabbix  **Purpose**: for monitoring different resources like memory, DiskSpace, CPU usage, I/O availability, processes on machine/s. |
| Agililty | Jira  **Purpose:** To work in agile format and keep track of the work, decide priority. Sprint planning is done and work is planned for that sprint |
| Build Tools | Java: Maven/ANT/Gradle  C: Make  **Purpose:** These are used to build artifacts from source code |
| Artifact Storage | Nexus/Artifactory  **Purpose:** To store the artifacts generated after compilation to remote location so these can be used by other projects also |
| WebServers | Nginx/Apache2  **Purpose**: For webpages. Installation, configuration and monitoring is done by DevOps. |
| Networking | Different protocols, IPv4, Subnet and other networking concepts are also required |
| Databases | MySQL/Oracle/MsSQL  Purpose: Little bit knowledge of DBs is also required |

So, these are the main tools/technologies which are most commonly used. It is not always expected that a single person will have all these skills but DevOps team should have these skills and it is always good to have all these skills to grow in the industry.