

Tools: Ecosystem

1. Tools: Ecosystem

00:00 - 00:15

As software products get more complicated, they require more specialized tools to optimize their operations. There are numerous tools used in each phase of the DevOps cycle. Let's take a look at the most important ones in each phase.

2. Requirements

00:15 - 00:42

The requirements phase is where engineering and business interact the most. The tools here are used in other stages of the DevOps cycle because they are mainly communication and product management software. Common examples of software associated with the Requirements phase are JIRA for product management and Slack and Discord for communication.

1. ¹ <https://atlassian.design/foundations/logos>
2. ² <https://slack.com/media-kit>
3. ³ <https://discord.com/branding>

3. Design, Development & Testing - 1

00:42 - 01:06

There are endless technologies and tooling options used for Software Change Management. However, the primary technology used for change management is git. Git is used for the version control of software. Thanks to git, many developers can work on the same software. Many companies use Git for their version control, and the most common platforms that let us manage with Git are GitLab and GitHub.

1. ¹ <https://git-scm.com/downloads/logos>
2. ² <https://github.com/logos>
3. ³ <https://about.gitlab.com/press/press-kit/>

4. Design, Development & Testing - 2

01:06 - 01:19

Source code needs to be built to become executable, and we need executable files to start serving customers. Build systems and tools take care of this. The most common build systems are Maven and Gradle.

1. ¹ <https://maven.apache.org/>
2. ² <https://gradle.com/brand/>

5. Design, Development & Testing - 3

01:19 - 01:38

Continuous Integration and Continuous Delivery are the main principles of DevOps. It refers to the automated building, testing, and safe deployment of software. The main tools used for the CI/CD pipelines are Jenkins and Circle CI.

1. ¹ <https://www.jenkins.io/press/>
2. ² <https://circleci.com/legal/trademark-guidelines/>

6. Deployment

01:38 - 02:37

In the microservices architecture, the microservices are developed and deployed independently. Microservices use the power of containerization to achieve independence from each other. Containers are software applications that imitate an independent machine that can run the applications. Each container has all the necessary components to power microservices. There can be hundreds or thousands of containers in a server, each acting as a separate machine. Think of containers as gifted cooks who use the same ingredients but produce different dishes from each other. Microservices are hosted on their own container, independent from each other. Kubernetes and Docker are also a big part of Data Engineer's life, as most data projects are deployed on containers. The leading technologies used for containers are Docker and Podman. Kubernetes is used to manage many Docker containers.

1. ¹ <https://www.docker.com/company/newsroom/media-resources/>
2. ² <https://podman.io/>
3. ³ <https://kubernetes.io/>

7. Monitoring Tools

02:37 - 03:01

After a product is deployed and released to the market, it must be closely monitored. Monitoring is the only way to know what is going on with our product. We must know whether our product has any quality issues and if our DevOps Change Management setup is working as expected. The main tools used for monitoring and observability are SignalFx and App Dynamics.

1. ¹ https://www.splunk.com/en_us/products/observability.html?301=/en_us/devops.html

8. Data management tools: Kafka

03:01 - 03:31

Also, let's look at the leading technologies and tools used for Data Management. Apache Kafka is the primary tool used for data management in a microservices architecture. Kafka is used heavily in microservices systems. It is a message publishing system. Microservices publish the

log of the work they do in Kafka. Other services listen to Kafka; if they are interested in a particular event, they speak with the service published on Kafka.

1. ¹ <https://kafka.apache.org/trademark>

9. Data pipeline management tools

03:31 - 03:50

Lastly, let's look at the data pipeline management tools—most data pipeline management software is used for both streaming and batch processing. The main tools used for data pipeline management are Apache Airflow, Hevo Data, and Prefect.

1. ¹ <https://cwiki.apache.org/confluence/display/AIRFLOW/Airflow+logos>
2. ² <https://design.hevodata.com/>
3. ³ <https://www.prefect.io/newsroom/logos/>

10. Recap

03:50 - 04:14

DevOps leverages the power of many tools. Jira and Slack is shown under requirements, although they are used in all stages. Git, Maven, and Jenkins are under Design, Development, and Testing stages. Kubernetes and Docker are under Deploy, along with Kafka, their favorite database. SignalFX and AppDynamics are shown under Launch, Operate, & Monitor.

11. Let's practice!

04:14 - 04:27

We have gone through a lot of different tools. Knowing about them will help you navigate even the most complex software environments. Let's go into the exercises and practice what we have learned.