



OPCITO TECHNOLOGIES

DevOps Tooling from AWS

What is DevOps?

DevOps is a set of cultural philosophies, tools, and practices that allow an organization to deliver software more reliably and faster with fewer defects than an organization using traditional software development and infrastructure management processes. A DevOps-optimized organization is highly agile and can respond to its customer feedback faster and more effectively.

Under a DevOps model, there are no longer any silos between the development and infrastructure management teams. These teams work together and as a single team with engineers developing a range of skills that are not limited to a single function. The team works together across the entire application lifecycle. The primary aim of this combined team is to build and deliver software faster and they rely heavily on automating manual processes to achieve the high velocity of software delivery they aim for.

Benefits of DevOps

- **Speed** - Innovate faster and more reliably due to increased automation of manual processes. Ship code faster via CI/CD pipelines that automate the deployment and testing of your software. Moving to Microservices enables teams to own their entire lifecycle and release updates faster and independently.
- **Rapid Delivery** - release software faster and respond to customer feedback quicker by relying on automation that builds and delivers your software with minimal manual intervention.
- **Reliability** - Build reliability by adding automation around the testing of application software to ensure that each update is functional and safe. Common monitoring and logging across deployed infrastructure help stay on top of performance metrics in real-time.
- **Scale** - Leverage Infrastructure as Code to automate and ensure consistency in deployed infrastructure across multiple environments.



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- **Improved Collaboration** - the dropping of silos between teams allows greater collaboration and understanding of how the application is built and deployed. This allows the teams to combine workflows and share responsibilities, which in turn reduces inefficiencies and saves time.
- **Security** - Infrastructure as Code allows for fine-grained control and automated configuration management of deployed infrastructure.

Why choose AWS as your DevOps Partner?

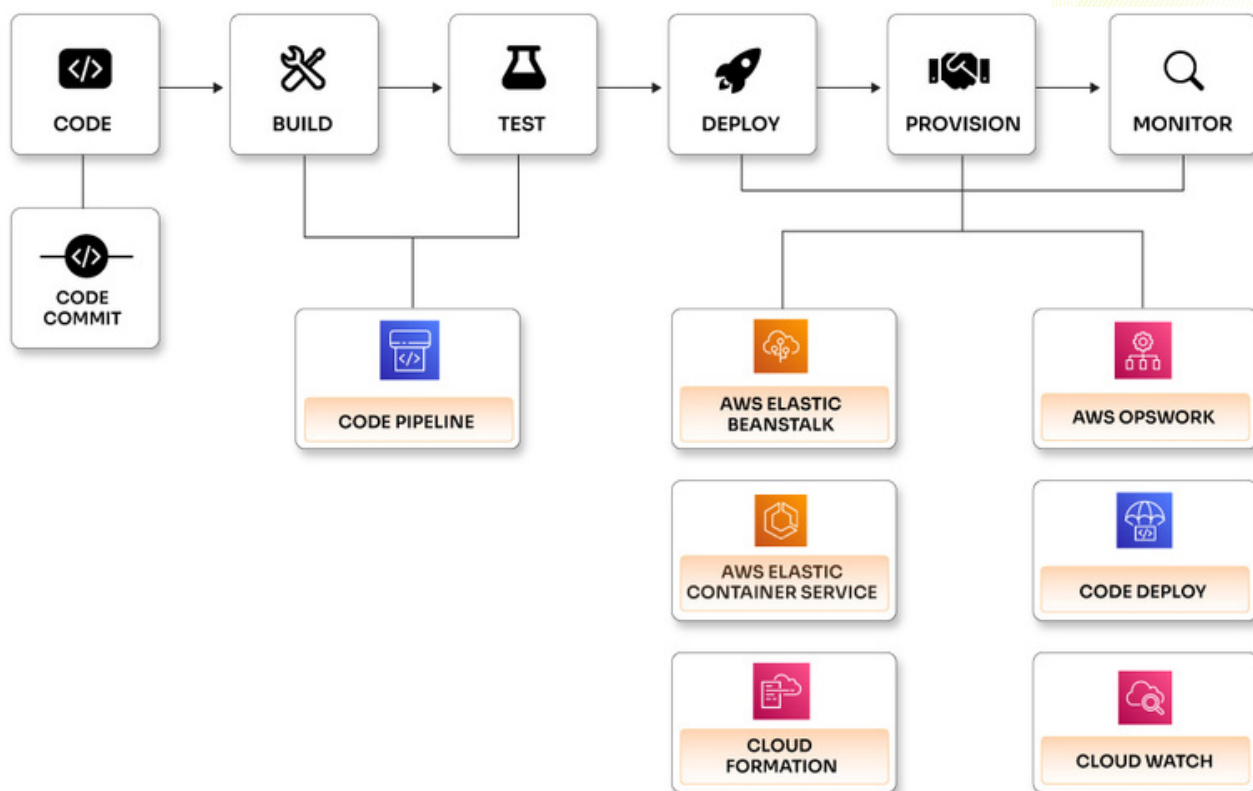
- **Get Started Fast** - All that is needed to use an AWS service is an AWS account. There is no need to install any software or setup that is required.
- **Fully Managed Services** - AWS handles the setting up, installation, and operating infrastructure so you can focus on your core product.
- **Built for Scale** - AWS is built to handle scale. With flexible computing resources, you can scale up or down on demand with little to no configuration.
- **Programmable** - AWS offers multiple ways of interacting with AWS services. These include APIs, SDKs for most popular languages, and a CLI interface for most operating systems. CloudFormation templates allow you to model and provision resources and infrastructure within AWS declaratively.
- **Automation** - AWS helps you use automation so you can build faster and more efficiently. Using AWS services, you can automate manual tasks or processes such as deployments, development & test workflows, container management, and configuration management.
- **Secure** - Use AWS Identity and Access Management (IAM) to set user permissions and policies. This gives you granular control over who can access your resources and how they access those resources.
- **Large Partner Ecosystem** - AWS supports a large ecosystem of partners that integrate with and extend AWS services. Use your preferred third-party and open-source tools with AWS to build an end-to-end solution.
- **Pay-As-You-Go** - With AWS, purchase services as you need them and only for the period when you plan to use them. AWS pricing has no upfront fees, termination penalties, or long-term contracts.

AWS DevOps Services

AWS provides multiple services that allow your organization to leverage them to make your DevOps transition successful. AWS provides services that span the entire application development lifecycle, including deployment. AWS provides a secure git-based SCM, code building and deployment, and support for microservice architectures via ECS and Lambda. It also provides services that allow you to manage configuration and monitor your infrastructure within AWS. Let's take a look at each of these services.

Version Control

AWS CodeCommit - AWS CodeCommit is a fully-managed source control service that allows companies to host secure and highly scalable private Git repositories. You can use CodeCommit to securely store anything from source code to binaries, and it works seamlessly with your existing Git tools.



Continuous Integration and Continuous Delivery

AWS provides developer tools to help you securely store and version. The AWS Developer Tools help you securely store and version your application's source code and automatically build, test, and deploy your application to AWS or your on-premises environment.

AWS CodePipeline - AWS CodePipeline is a continuous integration and continuous delivery

service for fast and reliable application and infrastructure updates. CodePipeline builds, tests, and deploys your code every time there is a code change based on the release process models you define. This enables you to rapidly and reliably deliver features and updates.

AWS CodeBuild - AWS CodeBuild is a fully managed build service that compiles source code, runs tests, and produces software packages ready to deploy. With CodeBuild, you don't need to provision, manage, and scale your own build servers. CodeBuild scales continuously and processes multiple builds concurrently, so your builds are not left waiting in a queue.

AWS CodeDeploy - AWS CodeDeploy automates code deployments to any instance, including Amazon EC2 instances and on-premises servers. AWS CodeDeploy makes it easier to rapidly release new features, helps you avoid downtime during application deployment, and handles the complexity of updating your applications.

Microservices - These services support building distributed applications based on a microservice architecture by providing environments that let you deploy and manage containers or get rid of all infrastructure management and run your code on the serverless platform Lambda.

Amazon EC2 Container Service

Production Docker Platform - Amazon EC2 Container Service (ECS) is a highly scalable, high-performance container management service that supports Docker containers and allows you to easily run applications on a managed cluster of Amazon EC2 instances.

AWS Lambda

Serverless Computing - AWS Lambda lets you run code without provisioning or managing servers. With Lambda, you can run code for virtually any application or backend service with zero administration. Just upload your code, and Lambda takes care of everything required to run and scale your code with high availability.

Infrastructure as Code - These services allow your teams to provision, configure, and manage your AWS infrastructure resources using code and templates. This allows your team to monitor and enforce the compliance you define. Say goodbye to configuration drift!

AWS CloudFormation

Templated Infrastructure Provisioning - AWS CloudFormation gives developers and systems administrators an easy way to create and manage a collection of related AWS resources, provisioning and updating them orderly and predictable. You can use AWS CloudFormation's sample templates or create your own templates.



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AWS OpsWorks

Chef Configuration Management - AWS OpsWorks is a configuration management service that uses Chef, an automation platform that treats server configurations as code. OpsWorks uses Chef to automate how servers are configured, deployed and managed across your Amazon Elastic Compute Cloud (Amazon EC2) instances or on-premises compute environments. OpsWorks has two offerings, AWS Opsworks for Chef Automate and AWS OpsWorks Stacks.

Amazon EC2 Systems Manager

Configuration Management - Amazon EC2 Systems Manager is a management service that helps you automatically collect software inventory, apply OS patches, create system images, and configure Windows and Linux operating systems. These capabilities help you define and track system configurations, prevent drift, and maintain software compliance with your EC2 and on-premises configurations.

AWS Config

Policy as Code - AWS Config is a fully managed service that provides you with an AWS resource inventory, configuration history, and configuration change notifications to enable security and governance. Config Rules enable you to create rules that automatically check the configuration of AWS resources recorded by AWS Config.

Monitoring and Logging

These services let you monitor your application and infrastructure in near real-time and make decisions on auto-scaling your infrastructure automatically. They also let you centralize your log collection, letting your developers debug and analyze your application performance and errors from one source.

Amazon CloudWatch

Cloud and Network Monitoring - Amazon CloudWatch is a monitoring service for AWS cloud resources and the applications you run on AWS. You can use Amazon CloudWatch to collect and track metrics, collect and monitor log files, set alarms, and automatically react to changes in your AWS resources.

AWS X-Ray

Distributed Tracing - AWS X-Ray helps developers analyze and debug production, distributed applications, such as those built using a microservices architecture. With X-Ray, you can understand how your application and its underlying services are performing to identify and troubleshoot the root cause of performance issues and errors.

Platform as a Service - AWS provides Elastic Beanstalk as a PaaS to deploy your applications without deploying or managing infrastructure yourself. If you want, you can access these resources used to run your application.



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AWS Elastic Beanstalk

Run and Manage Web Apps - AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

You can simply upload your code, and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, and auto-scaling to application health monitoring. At the same time, you retain full control over the AWS resources powering your application and can access the underlying resources at any time.