Cloud DevOps & CI/CD

By Garvit Singh

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Cloud DevOps and CI/CD are practices that help organizations streamline software development, testing, and deployment processes.

DevOps Principles in the Cloud
DevOps is a set of practices and principles that aim to bridge the gap between development and operations teams, fostering collaboration and automation to deliver high-quality software faster.

In a cloud context, DevOps principles are applied to cloud-based infrastructure, platforms, and applications. Some key principles include:

1. **Automation**
   Using cloud services and infrastructure-as-code (IaC) tools to

automate provisioning, configuration, and deployment processes. This allows for consistency, reduces manual errors, and accelerates development and deployment.

2. **Collaboration**
   Promoting collaboration between development, operations, and other teams. Teams work together to align goals, streamline processes, and share responsibilities.
3. **Monitoring and Feedback**
   Continuously monitoring applications and infrastructure in the cloud, gathering metrics, and using feedback to improve performance, reliability, and user experience.
4. **Scalability and Elasticity**
   Leveraging cloud capabilities to scale resources up or down based on demand, ensuring high availability and cost-efficiency.
5. **Security**
   Integrating security into the DevOps process, with a focus on

automation, monitoring, and rapid response to security incidents.

6. **Continuous Improvement**
   Embracing a culture of continuous improvement through iterative development and frequent updates.

Continuous Integration &Continuous Deployment (CI/CD)

CI/CD is a set of practices that automate and streamline the software development and release process, enabling frequent and reliable software delivery.

1. **Continuous Integration (CI)**
   - CI involves automating the integration of code changes from multiple contributors into a shared repository on a regular basis. Includes the following steps:
     - Developers commit their code changes to a version control system (e.g., Git).

        - An automated build and testing process is triggered for every code commit.
        - Tests are run to ensure that the new code doesn't introduce errors or break existing functionality.
        - If the tests pass, the code is integrated into the shared repository.
    - CI helps identify and fix issues early in the development process, ensuring that the codebase remains in a working state.
2. **Continuous Deployment (CD)**
    - CD takes CI a step further by automating the deployment of code changes to production or staging environments. CD includes:
        - Automating the deployment process, including infrastructure provisioning and application deployment.

    - Performing automated tests in staging environments to verify that the new code works correctly and doesn't negatively impact production systems.
    - If tests are successful, automatically promoting the code changes to production, making new features or bug fixes immediately available to end-users.
- CD accelerates the release process, reduces manual errors, and provides a mechanism for delivering new features and updates quickly and reliably.

Thanks For Reading! 💙

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