

The background of the slide is a close-up of a glowing incandescent lightbulb. The bulb is oriented vertically, with its base at the bottom and its glowing filament at the top. The light from the bulb creates a warm, yellowish glow. The background is a solid blue color, overlaid with faint, white, stylized circuit board traces that meander across the frame. A dark, semi-transparent rectangular box is positioned in the center, containing the text.

L1 MODULE 3

DEVOPS & LINUX

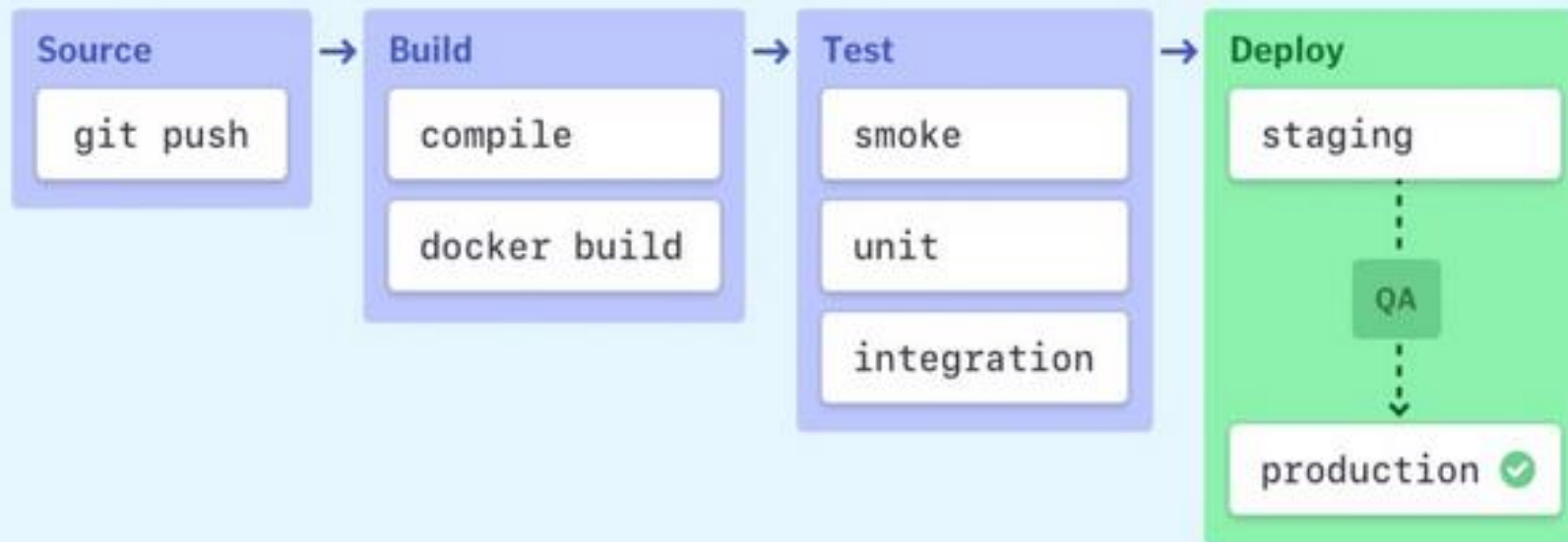
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CI/CD: WHAT IT IS?

- An automated process allowing to develop, test and deploy applications quickly.
- Integrates **Continuous Integration** with **Continuous Delivery**.
- **Continuous Integration:** Developers frequently merge and test code changes in a central repository.
- **Continuous Delivery:** Automates the deployment of those changes to production or other environments.

ELEMENTS OF CI/CD PIPELINE



BENEFITS OF CI/CD PIPELINE



QUALITY OF LIFE
FOR DEVELOPERS



IMPROVED
SOFTWARE QUALITY



FASTER RELEASES



REDUCED COSTS

AWS MONITORING

- The process of collecting, analysing and using data to track various systems.
- AWS monitoring scans your AWS resources and applications, collecting data to ensure everything is operating smoothly and securely.

Monitoring Vs Observability:

Monitoring is capturing and displaying data, whereas observability is ability to understand system's internal state by analyzing the data generated such as logs, metrics and traces.



• CloudTrail:

- Used to track user activity and API usage across the AWS infrastructure.
- Log files generated include info such as date and time, identity and the IP address of the user.

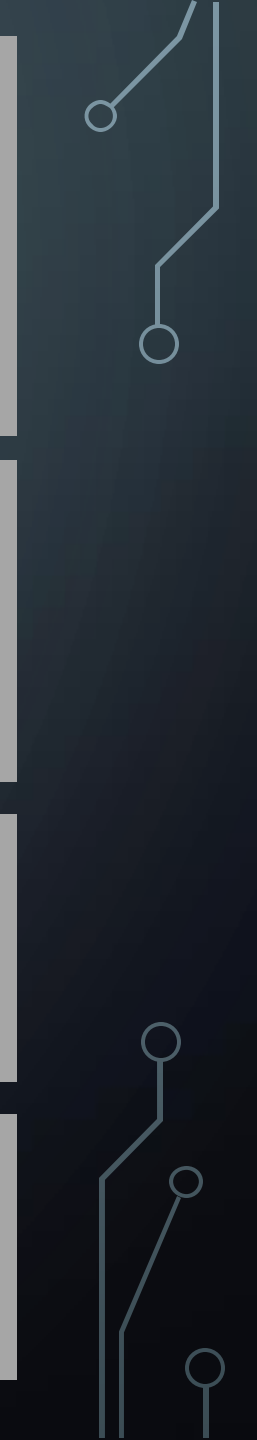
• CloudWatch:

- Specifically engineered to meet the requirements of DevOps engineers.
- Offers many versatile monitoring capabilities such as anomaly detection , troubleshooting, metric visualization, etc.

• Certificate Manager:

- Tool for simplifying the process of provisioning, managing and deploying SSL/TLS certificates for AWS services.

• CloudHSM:

- Provides AWS users control over encryption keys and cryptographic operations to codify sensitive data.
- 

- **EKS (ELASTIC KUBERNETES SERVICE):**

- Managed Container as a service to simplify Kubernetes deployment on AWS.

- **ECS (ELASTIC CONTAINER SERVICE):**

- powerful and flexible service provided by AWS for running containerized applications at scale, providing a range of features

- **EC2:**

- Elastic Compute Cloud known for its capability for elastic load balancing automatically distributing application traffic among several instances.

- **AWS S3(Simple Storage Service):**

- A highly scalable, fast and durable solution for object-level storage allowing to upload files, videos and documents.

- **DYNAMO DB:**

- DynamoDB is a NoSQL database.
- DynamoDB offers high availability and fault tolerance and can be accessed from around the globe as needed.

CONFIGURATION MANAGEMENT

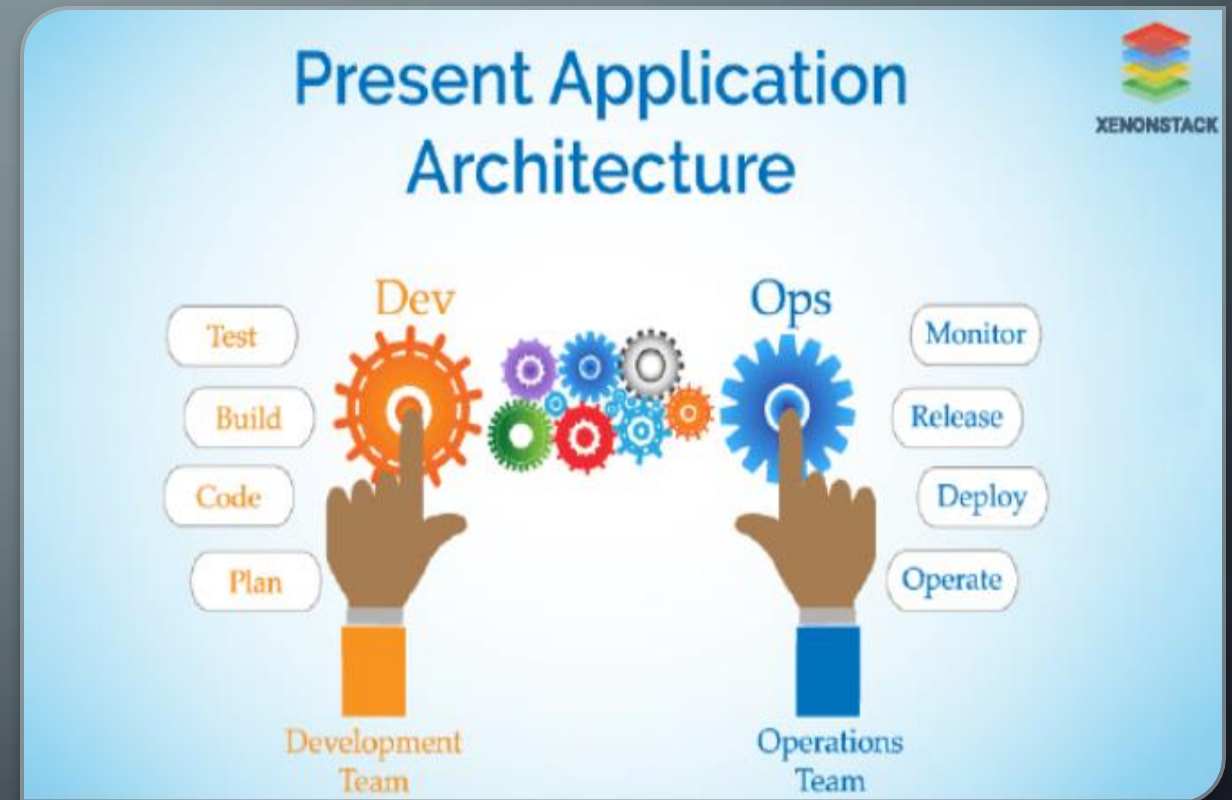
- Automated method for maintaining computer systems and software in a known, consistent state.
- It enables the ability to scale infrastructure and software systems without having to correspondingly scale administrative staff to manage those systems.
- Targets of Configuration management:
 - Maintain System such as servers, storage, networking, and software in known determined states.
 - To provide description of the desired state for the systems.
 - To provide an automation software for making sure that the target systems and software are in desired state.

DEPLOYMENT STRATEGIES:

- **Recreate:** Version A is terminated then version B is rolled out.
- **Ramped** (also known as rolling-update or incremental): Version B is slowly rolled out and replacing version A.
- **Blue/Green:** Version B is released alongside version A, then the traffic is switched to version B.
- **Canary:** Version B is released to a subset of users, then proceed to a full rollout.
- **A/B testing:** Version B is released to a subset of users under specific condition.
- **Shadow:** Version B receives real-world traffic alongside version A and doesn't impact the response.

DEVOPS:

- Dev(Development) & Ops(Operations) is a process in which Modern Software Engineering Culture and Practices develop software where the development and operation teams work hand in hand as one unit.



6C'S OF DEVOPS



BENEFITS

- Maximize the speed of product delivery.
- Enhanced customer experience.
- Increased time to value.
- Enables fast flow of planned work into production.
- Use Automated tools at each level.
- More Stable Operating Environment.
- Improved communication and collaboration.
- More time to innovate.

INFRASTRUCTURE AS CODE

- Infrastructure as Code (IaC) allows IT operations teams to manage and provision IT infrastructure automatically through code, removing the reliance on manual processes.
- **Approaches to IaC:**
 - **DECLARATIVE:** It is a functional approach in which we specify the desired state of our infrastructure
 - **IMPERATIVE:** It is a procedural approach requiring to define specific steps in the form of automation scripts which will guide the creation and configuration of the necessary infrastructure.



TASK LINK

THANK YOU

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