Overview of DevOps: Tools and Tech

DevOps Training | Day 2

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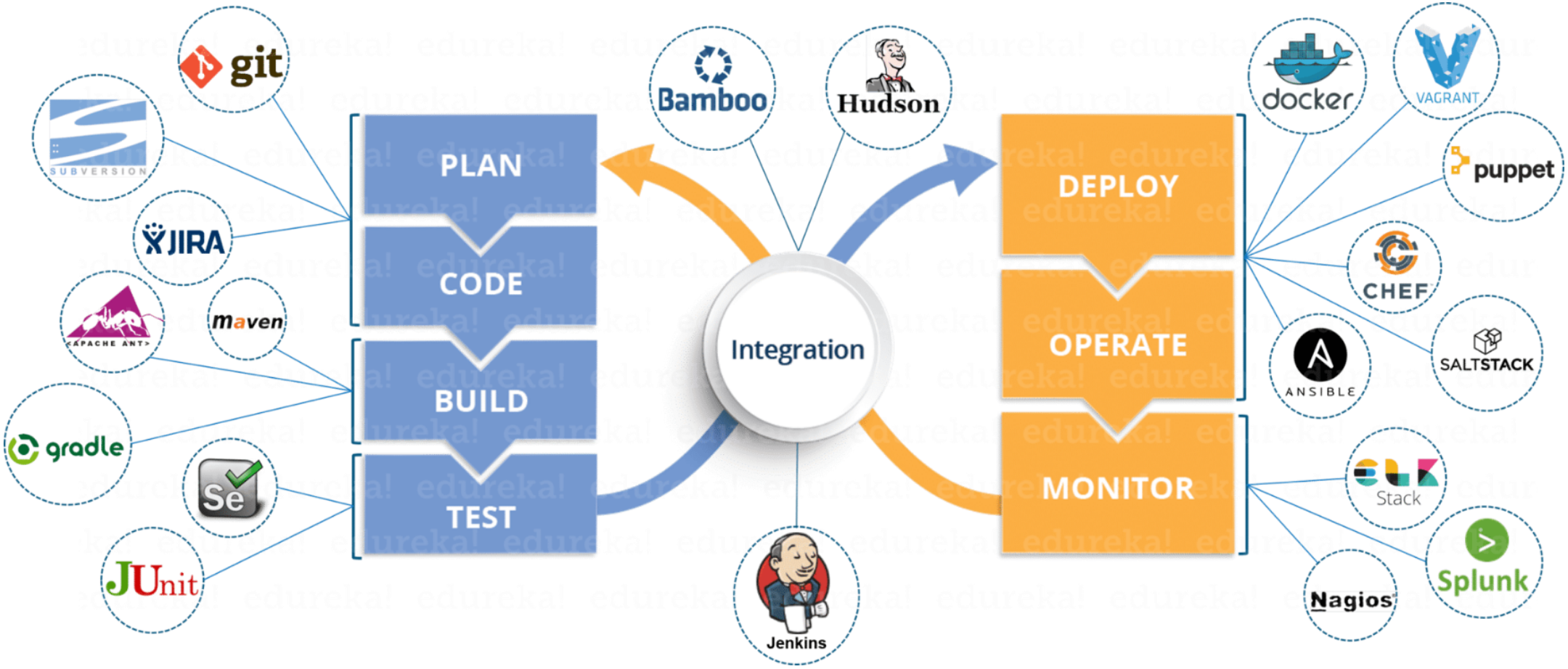
Agenda

- Quick Recap
- Tools & Technologies Overview
- Choosing Tools
- Emerging Trends
- Important Links

Quick Recap



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Tools & Technologies Overview

Plan

Key Activities

Capturing Requirements, Project Planning and Tracking

Platforms and Tools

- Jira
- Azure Boards
- Confluence

Core Use Cases

Sprint planning, backlog tracking, release roadmaps.



Programming Language

Automation

Scripts and automation are fundamental to DevOps.

Key Languages

- Python
- Bash
- Go
- Groovy

Core Use Cases

Writing CI/CD pipelines, creating automation scripts, and provisioning infrastructure.

Operating System

Core Platforms

While much of the infrastructure runs on Linux distributions like **Ubuntu and CentOS, Windows Server** remains a vital component for specific enterprise environments.

Key System Areas

Memory management, process scheduling, file system management, and device control.

Essential Tools

Proficiency with the command line (**Terminal**), **text editors**, and various shell environments (**Bash, PowerShell**) is crucial for daily operations.

Critical Use Cases

Managing applications, handling file permissions, shell scripting, and automating package installations.

Networking & Protocols

Core Protocols & Concepts

Fundamental knowledge of protocols like **HTTP/HTTPS, TCP/IP, DNS, SSH, FTP, SMTP**, and the OSI model is essential for data flow.

Security & Infrastructure

Understanding **SSL/TLS** for secure communication and Load Balancers for traffic distribution and high availability is key.

Key Use Cases

Debugging connectivity, configuring reverse proxies, ensuring secure communication

Version Control Systems and Platforms

git

GitHub

GitLab

Bitbucket

Servers

Key Server Software

- Apache
- Nginx
- Tomcat
- IIS

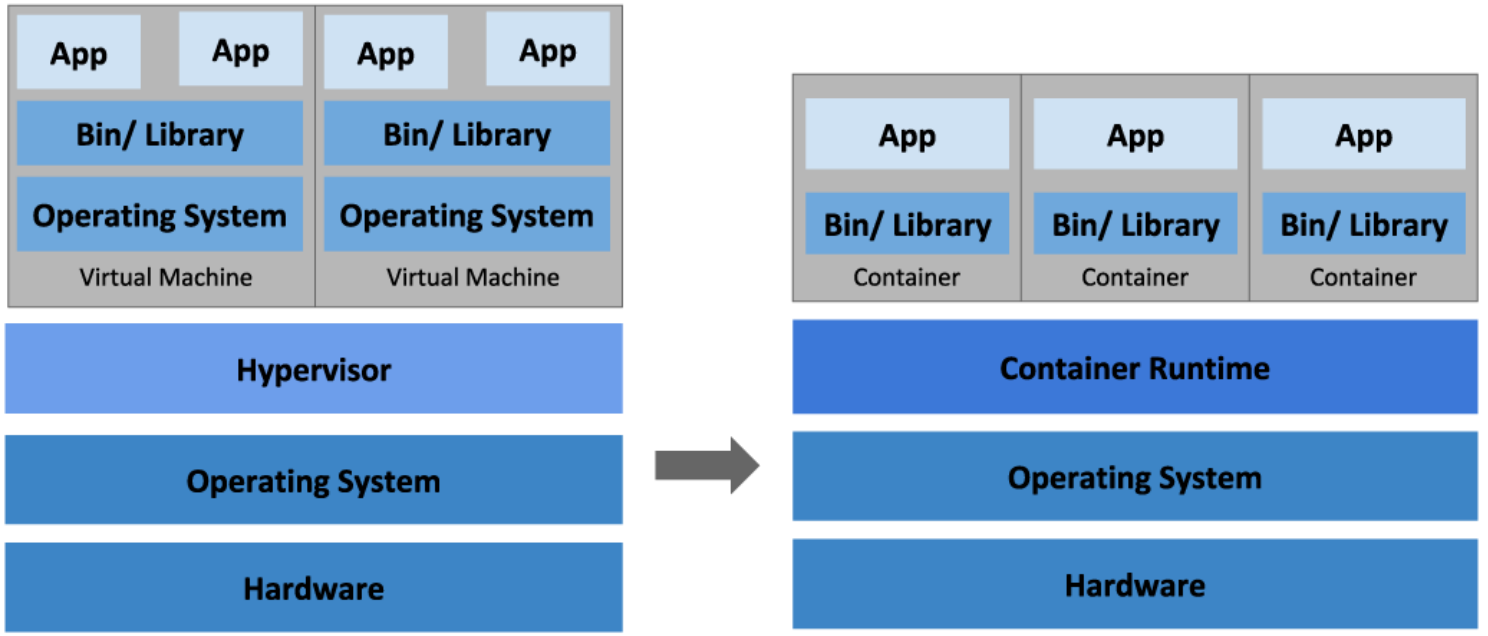
Essential Server Concepts

- Caching
- Proxy
- Load Balancer
- Firewall

Common Server Use Cases

- Serving Web Apps
- Reverse Proxying
- API Hosting

Containers & Orchestration



Cloud Providers

Cloud Services			
Virtual Servers	Instances	VM Instances	VMs
Platform-as-a-Service	Elastic Beanstalk	App Engine	Cloud Services
Serverless Computing	Lambda	Cloud Functions	Azure Functions
Docker Management	ECS	Container Engine	Container Service
Kubernetes Management	EKS	Kubernetes Engine	Kubernetes Service
Object Storage	S3	Cloud Storage	Block Blob
Archive Storage	Glacier	Coldline	Archive Storage
File Storage	EFS	ZFS / Avere	Azure Files
Global Content Delivery	CloudFront	Cloud CDN	Delivery Network
Canaged Data Warehouse	Redshift	Big Query	SQL Warehouse

Configuration Management and Infrastructure as Code

Core Principles

Automating infrastructure setup, ensuring consistency, and eliminating manual errors through declarative definitions.

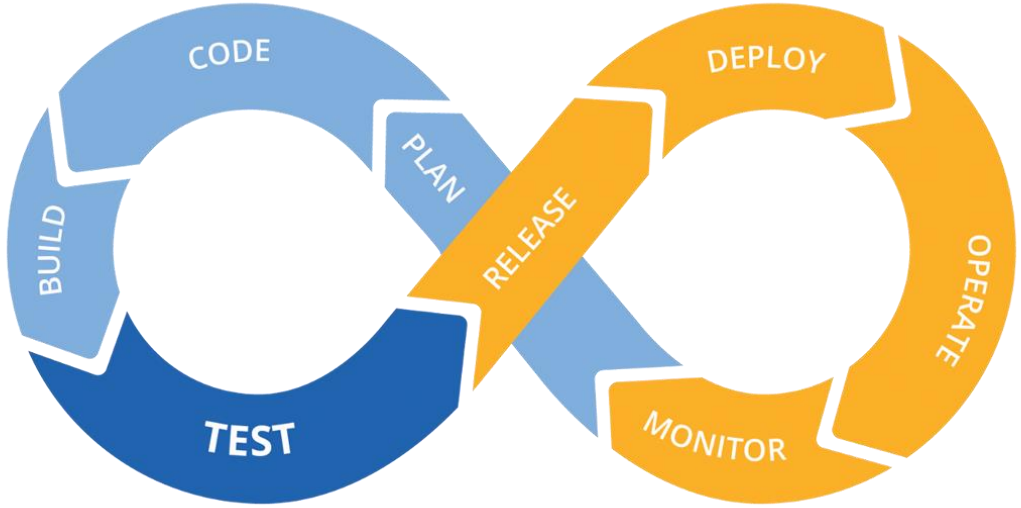
Key Platforms & Tools

- Ansible
- Puppet
- Chef
- Terraform
- CloudFormation
- ARM Templates
- Bicep
- Pulumi

Common Use Cases

- Provisioning servers
- Managing cloud infrastructure
- Maintaining consistent environments
- Automating application deployment

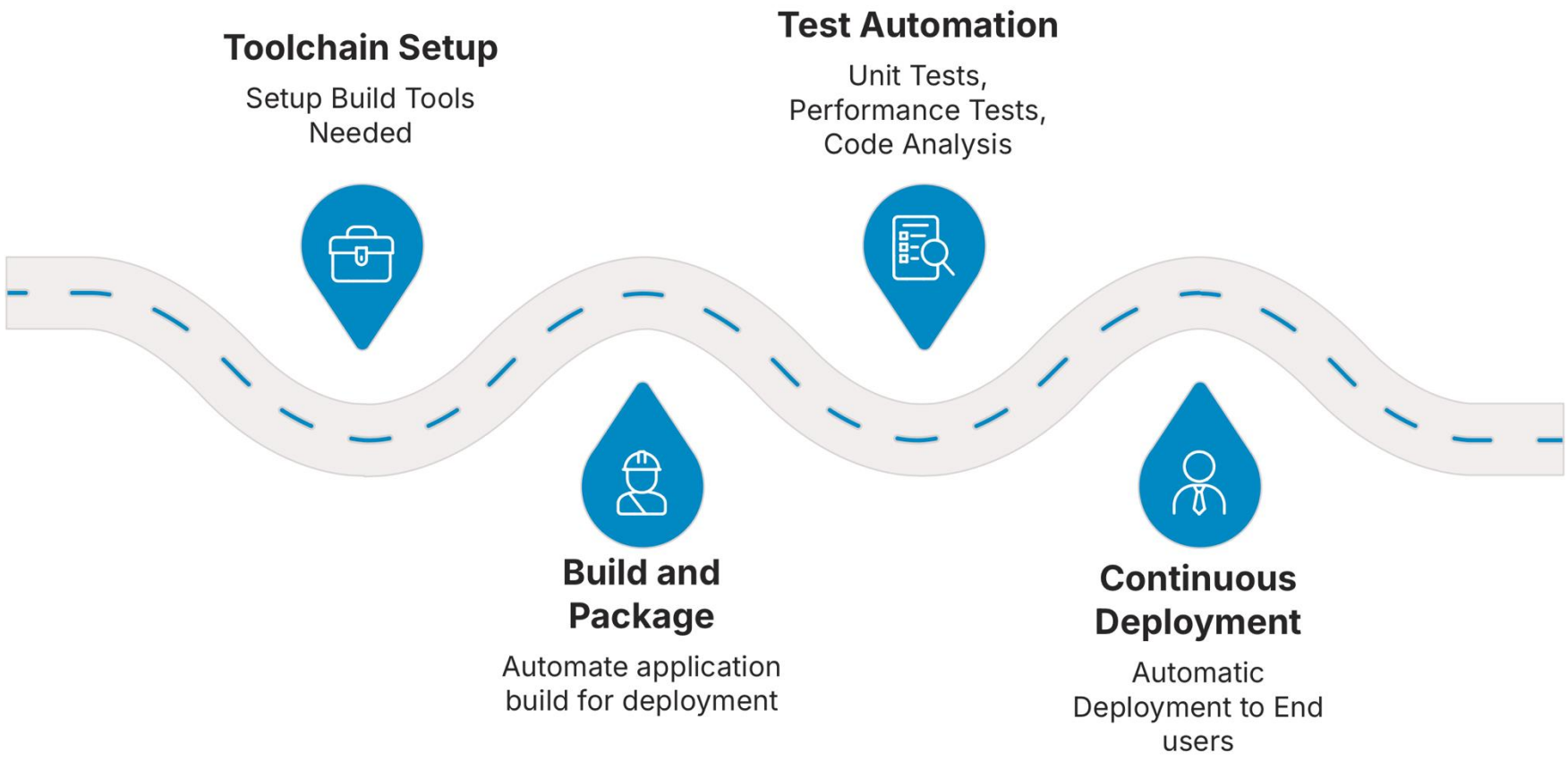
CI/CD



Jenkins

CI/CD

Build & Test Automation (part of CI/CD)



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Monitoring & Logging

Core Purpose

Observing system health, troubleshooting issues

Key Tools & Platforms

- Prometheus & Grafana
- ELK Stack (Elasticsearch, Logstash, Kibana)
- DataDog
- New Relic
- Splunk

Critical Use Cases

- Detecting downtime
- Performance monitoring
- Log analysis

Security in DevOps (DevSecOps)

Observability

Monitor system health across environments

Logging & Analytics

Aggregate logs for analysis and root cause

Incident Response

Proactively identify and troubleshoot issues

Shift-Left Security

Embed security early and manage secrets

sonarqube

checkov

snyk

Choosing Tools

Choosing Tools

Don’t chase tools. Choose based on your needs.

Team

Sizing and Expertise

Infrastructure

Cloud, Hybrid, On-prem

Licensing

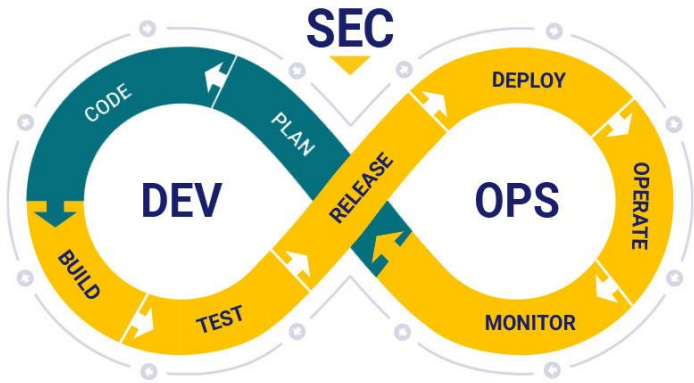
Open Source vs Enterprise

Budget

Cost and Time

Emerging Trends

Emerging Trends



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Important Links

Topic	Links
Roadmap	https://roadmap.sh/devops https://roadmap.sh/devops?r=devops-beginner
DevOps Content	https://devops.com/ https://www.reddit.com/r/devops/
Open-Source and Contributions	https://opensource.com/ https://clotributor.dev
Opinionated guides	https://www.thoughtworks.com/en-in/radar/tools
Hands-on Practice	https://learngitbranching.js.org/ https://sadservers.com/
Others	https://fediverse.party
DevOps Tools	https://www.atlassian.com/devops/devops-tools https://landscape.cncf.io

Q & A

Thank You