

# #\_ Becoming a DevOps Engineer RoadMap

## 🎓 1. Fundamentals

- └─ 🖥️ Basics of Computers & How They Work
- └─ 🌐 Networking Fundamentals
- └─ 🐧 Linux Basics and Command Line
- └─ 🔧 Scripting (Bash, Python, or Ruby)

## 📦 2. Version Control System (Manage and track changes to your code)


- └─ 📖 Git
  - └─ 📝 Basic commands
  - └─ 🌿 Branching & Merging
  - └─ 🧑🤝🧑 Conflict Resolution
  - └─ 🌐 Git Workflows (e.g., GitFlow)

## 🌍 3. Infrastructure as Code (Automate infrastructure provisioning)










- └─ ☁️ Cloud Computing Concepts
- └─ 📄 Infrastructure Configuration with YAML or JSON
- └─ ⚙️ Infrastructure Provisioning Tools (Terraform, AWS CloudFormation)
- └─ 🧩 Infrastructure Orchestration (AWS CloudFormation, Azure Resource Manager)
- └─ 🚀 Configuration Management (Ansible, Chef, Puppet)
- └─ 🌐 Cloud Providers (AWS, Azure, GCP)

## 🐳 4. Containers and Containerization (Package applications and dependencies)








- └─ 🐳 Docker
  - └─ 📦 Docker CLI and Dockerfile
  - └─ 📦 Docker Compose (Multi-container Applications)
  - └─ 🌐 Docker Registry (Docker Hub, AWS ECR)
- └─ 🚀 Container Orchestration (Kubernetes, Docker Swarm)
  - └─ 📖 Kubernetes Concepts
  - └─ 📦 kubectl (Kubernetes CLI)
  - └─ ⚙️ Kubernetes Deployments and Services

- └─  Kubernetes Operators and Helm







## 5. Configuration Management and Infrastructure as Code Tools

- └─  Ansible
  - └─  Ansible Playbooks and Roles
  - └─  Ansible Tower or AWX
- └─  Chef
  - └─  Chef Cookbooks and Recipes
  - └─  Chef Infra Server or Chef Automate
- └─  Puppet
  - └─  Puppet Manifests and Modules
  - └─  Puppet Enterprise






## 6. Continuous Integration and Continuous Delivery (CI/CD)

- └─  Continuous Integration (CI) Concepts
  - └─  CI Principles and Best Practices
  - └─  CI Tools (Jenkins, GitLab CI/CD, CircleCI)
- └─  Continuous Delivery (CD) Concepts
  - └─  Testing Automation (Unit, Integration, and End-to-End Testing)
  - └─  CD Tools (Jenkins, GitLab CI/CD, Spinnaker)
  - └─  Artifact Repositories (Nexus, JFrog Artifactory)







## 7. Security and Compliance

- └─  Infrastructure Security Best Practices
- └─  Secure Configuration Management
- └─  Security Testing and Scanning
- └─  Identity and Access Management (IAM)
- └─  Compliance and Auditing (SOC 2, PCI-DSS, GDPR)
- └─  Infrastructure Hardening Techniques









## 8. Monitoring, Logging, and Observability

- |—  Monitoring Concepts and Best Practices
- |—  Log Management (ELK Stack, Splunk)
- |—  Metrics and Alerting (Prometheus, Grafana)
- |—  Tracing and Distributed Monitoring (Jaeger, Zipkin)
- |—  Application Performance Monitoring (APM) (New Relic, Dynatrace)







## 9. Infrastructure Orchestration and Automation

- |—  Infrastructure Automation Scripts (Shell, Python, or Ruby)
- |—  Infrastructure Orchestration (HashiCorp Terraform, AWS CloudFormation)
- |—  Service Mesh (Istio, Linkerd)
- |—  Infrastructure Provisioning (HashiCorp Packer)
- |—  Infrastructure Testing (Serverspec, Testinfra)
- |—  Infrastructure Provisioning and Configuration Tools (HashiCorp Vagrant)






## 10. Cloud Native Architecture

- |—  Cloud-Native Concepts and Principles
- |—  Microservices Architecture
- |—  Service Discovery (Consul, etcd)
- |—  Service Mesh (Istio, Linkerd)
- |—  Serverless Computing (AWS Lambda, Azure Functions)
- |—  Event-Driven Architecture (Apache Kafka, AWS Kinesis)
- |—  Scalability and High Availability (Auto Scaling, Load Balancing)
- |—  Infrastructure as Code for Cloud-Native Applications







## 11. High Availability and Disaster Recovery

- └─  Scalability Strategies (Vertical and Horizontal Scaling)
- └─  Load Balancing (AWS ELB, NGINX)
- └─  Data Replication and Sharding (MySQL Replication, Redis Cluster)
- └─  Disaster Recovery Planning (Backup and Restore, Multi-Region Deployment)
- └─  Continuous Data Protection
- └─  Security and Compliance for High Availability





## 12. Testing and Test Automation

- └─  Testing Strategies (Unit, Integration, System, and Performance)
- └─  Test Automation Frameworks (Selenium, JUnit, PyTest)
- └─  Test Orchestration (TestNG, Cucumber)
- └─  Test Coverage and Code Quality Analysis
- └─  Testing in Production (A/B Testing, Canary Deployments)

## 13. Networking and Security in the Cloud

- └─  Virtual Private Cloud (VPC) Networking
- └─  Network Security Groups (NSGs) and Firewalls
- └─  VPN and Direct Connect (Hybrid Cloud Networking)
- └─  Content Delivery Networks (CDN) (CloudFront, Akamai)
- └─  Secure Remote Access (Bastion Hosts, VPNs)
- └─  Network Monitoring and Security Tools (Nmap, Wireshark)


## 14. Continuous Learning and Collaboration

- └─  Stay Updated with the Latest DevOps Practices and Tools
- └─  Collaboration and Communication Tools (Slack, Jira, Confluence)
- └─  DevOps Culture and Collaboration Principles
- └─  Community Involvement (Meetups, Conferences, Online Forums)


## 15. Recommended Resources

### └─ Udemy Courses:


└─  "Docker Mastery: The Complete Toolset From a Docker Captain" by Bret Fisher: (<https://www.udemy.com/course/docker-mastery/>)

└─  "Kubernetes for the Absolute Beginners - Hands-on" by Mumshad Mannambeth: (<https://www.udemy.com/course/learn-kubernetes/>)

└─  "Ansible for the Absolute Beginner - Hands-On" by Mumshad Mannambeth: [Link](<https://www.udemy.com/course/learn-ansible/>)

└─  "Jenkins, From Zero To Hero: Become a DevOps Jenkins Master" by Ricardo Andre Gonzalez Gomez:  
(<https://www.udemy.com/course/jenkins-from-zero-to-hero/>)

### └─ YouTube Channels:

└─  "Techworld with Nana" - Covers various DevOps tools and technologies: (<https://www.youtube.com/c/TechworldwithNana>)

└─  "Fireship" - Focuses on modern web development and cloud technologies: (<https://www.youtube.com/c/Fireship>)

└─  "DevOps Directive" - Provides in-depth tutorials on DevOps practices and tools: (<https://www.youtube.com/c/DevOpsDirective>)