

DevOps and AWS Interview Questions

1) What is DevOps?

DevOps is Combination of Development and Operations, which is nothing but a practice that emphasizes the collaboration and communication of both software developers and other information-technology professionals. It focuses on delivering software product faster and lowering the failure rate of releases.

2) How do you define DevOps?

DevOps is a clipped compound term which combines “Development” and “Operations” practices of IT software development, having originated in the mid 2000s among IT professionals looking for efficient and innovative ways to automate and speed up the process of software delivery. As a change agent, DevOps promotes a culture of collaboration and information sharing across the organization, a radical departure from the ‘silos’ of the past.

3) Development and operations ?

Some organizations have moved to a “you build it, you own it” approach. This forces teams to own operations. Some organizations have explicitly identified a DevOps org or including it within the Scrum Team to acquiesce the effort into a single individual. Organizations that don’t prescribe to either are aware of the challenges of how long software takes to get deployed, updated, and enhanced. Use of tooling helps increase communication and awareness of what is working and not.

4) List the essential DevOps tools.

- Git
- SVN
- Jenkins
- Vagrant
- GitLab
- Nexus
- Puppet
- Chef
- Ansible
- Nagios
- Docker
- GitHub

5) What is Amazon EC2 service?

Ans: EC2 uses Xen virtualization. Each virtual machine, called an “instance”. You can use Amazon EC2 to launch as many or as couple of virtual servers as you need, design security and networking, and manage storage. Amazon EC2 empowers you to scale up or down to handle changes in requirements.

6) Mention what are the key components of AWS?

The key components of AWS are

Route 53: A DNS web service

Simple E-mail Service: It allows sending e-mail using RESTFUL API call or via regular SMTP

Identity and Access Management: It provides enhanced security and identity management for your AWS account

Simple Storage Device or (S3): It is a storage device and the most widely used AWS service

Elastic Compute Cloud (EC2): It provides on-demand computing resources for hosting applications. It is very useful in case of unpredictable workloads

Elastic Block Store (EBS): It provides persistent storage volumes that attach to EC2 to allow you to persist data past the lifespan of a single EC2

CloudWatch: To monitor AWS resources, It allows administrators to view and collect key Also, one can set a notification alarm in case of trouble.

7) How often should development talk about impacts with operations?

Dev and Operations should be in the same standups and same scrum team arriving at production quality solutions. Effectively they should always be talking.

8) Explain what is S3?

S3 stands for Simple Storage Service. You can use S3 interface to store and retrieve any amount of data, at any time and from anywhere on the web. For S3, the payment model is “pay as you go”.

9) What are the core roles of DevOps Engineers in terms of development and Infrastructure?

The core job roles of DevOps Engineer

- Application development
- Code developing
- Code coverage
- Unit testing
- Packaging
- Deployment With infrastructure
- Continuous Integration
- Continuous Testing
- Continuous Deployment
- Provisioning (making something available / providing)
- Configuration
- Orchestration (controlling multiple nodes from central location)
- Deployment

10) What usually goes wrong in a DevOps rollout?

Nothing usually goes wrong. DevOps rollout should be automated and based on tried and true deployments. So, if something goes wrong the CD code is not properly defined. People are reducing the level of effort by incorporating orchestration / infrastructure management tooling that helps reduce the likelihood of issues (e.g. Kubernetes, Ansible, Cloud Formation).

11) Explain what is AMI?

AMI stands for Amazon Machine Image. It's a template that provides the information (an operating system, an application server and applications) required to launch an instance, which is a copy of the AMI running as a virtual server in the cloud. You can launch instances from as many different AMIs as you need.

12) In which industries can you find DevOps organizations?

DevOps has been a great disruptor in practically every industry that depends on software delivery, and other application delivery endpoints including diverse devices, web, and mobile services.

DevOps with AWS & Linux by Mr.SATISH @ Sathya Technologies , Hyd.

Some of the industries where elinfochips has direct, proven experience in enabling DevOps services include:

- Home automation
- Industrial automation
- Medical devices
- Video surveillance
- Networking

13) What are the core operations of DevOps with application development and with infrastructure?

The core operations of DevOps with

Application development

- Code building
- Code coverage
- Unit testing
- Packaging
- Deployment

With infrastructure

- Provisioning
- Configuration
- Orchestration
- Deployment

14) Mention what is the relation between an instance and AMI?

From a single AMI, you can launch multiple types of instances. An instance type defines the hardware of the host computer used for your instance. Each instance type provides different compute and memory capabilities. Once you launch an instance, it looks like a traditional host, and we can interact with it as we would with any computer.

15) Do developers get control over servers in DevOps?

For DEV environment, absolutely. As they progress into QA, UAT, Staging and Production, those environments should be automated and controlled by the DevOps individual or team.

16) Mention what are the key aspects or principle behind DevOps?

The key aspects or principle behind DevOps is

- Infrastructure as code
- Continuous deployment
- Automation
- Monitoring
- Security

17) What are the issues facing development teams in DevOps?

Development teams adopting DevOps have to overcome challenges mainly due to their existing business environments comprising organizational silos which are a major impediment to the success of DevOps. The biggest problem lies in prioritizing the importance of the products, projects and applications for which monitoring and deployment has to be performed at multiple ends. In order to tackle these issues, DevOps streamlines automation processes to achieve business agility. This helps in delivering a product with total commitment and achieve better quality standards.

18) What does an AMI include?

An AMI includes the following things. A template for the root volume for the instance, Launch permissions decide which AWS accounts can avail the AMI to launch instances, A block device mapping that determines the volumes to attach to the instance when it is launched

19) What are the advantages of DevOps with respect to Technical and Business perspective?

Technical benefits:

Software delivery is continuous.

Reduces Complexity in problems.

Faster approach to resolve problems

Manpower is reduced.

Business benefits:

High rate of delivering its features

Stable operating environments

More time gained to Add values.

Enabling faster feature time to market

Learn more about DevOps advantages from this informative blog.

20) What is DevOps Scrum methodology ?

DevOps scrum methodology is a method of scrum which uses standard DevOps techniques to improve overall agility in a given business. It's a more thoughtful approach which focuses on monitoring operational teams, QA and product teams in a cycle. It's an agile development framework which includes multiple scrum features like product owner, web, mobile and QA which forming a scrum of scrum to deliver a product feature to customer.

21) How can you send request to Amazon S3?

Amazon S3 is a REST service, you can send request by using the REST API or the AWS SDK wrapper libraries that wrap the underlying Amazon S3 REST API.

22) The scope for SSH?

SSH is a Secure Shell which provides users with a secure, encrypted mechanism to log into systems and transfer files.

To log out a remote machine and work on command line.

To secure encrypted communications between two hosts over an insecure network.

22) What are the various components in DevOps implementation?

A typical DevOps workflow will include:

- **Continuous integration:**
 - Integration of multiple pipelines (Device, Web and mobile) and prepare main and customized builds.
 - Configuration and Automation of the environment setup
 - Auto triggering of alerts and reports

- **Continuous testing:**
 - Virtualization/Simulation
 - Developing and triggering test script automation with simulation and physical devices
- **Continuous delivery:**
 - Auto Build Deployment on devices and sensors
 - Rollback management on the live environment, and generating automated alerts and reports on failure scenarios and performance issues.
- **Continuous monitoring:**
 - It includes monitoring and automated troubleshooting of production and test environment, including device health.
 - An automated alert mechanism

23) Explain what is T2 instances?

T2 instances are designed to provide moderate baseline performance and the capability to burst to higher performance as required by workload.

24) Which are the areas where DevOps are implemented?

Production Development

Creation of the production feedback and its development

IT Operations development

25) Explain how DevOps is helpful to developers?

DevOps can be helpful to developers to fix the bug and implement new features quickly. It also helps for clearer communication between the team members.

26) What is Amazon Machine Image (AMI)?

Ans: An Amazon Machine Image (AMI) is a template that contains a software configuration (for example, an operating system, an application server, and applications). From an AMI, we launch an instance, which is a copy of the AMI running as a virtual server in the cloud. We can launch multiple instances of an AMI.

27) List the agile methodology of DevOps.

DevOps is a process

Agile is same as DevOps.

Separate group for are framed.

It is problem solving.

Developers managing production

DevOps is development-driven release management

28) List the major difference between the Agile and DevOps.

Agile:

Agile is about software development

Devops:

DevOps is about software deployment and management.

DevOps does not replace Agile or Lean. It does this by killing waste, removing handovers, and streamlining deployments to allow faster and more continuous deployments to PRODUCTION.

29) What is the relation between Instance and AMI?

Ans: We can launch different types of instances from a single AMI. An instance type essentially determines the hardware of the host computer used for your instance.

Each instance type offers different compute and memory capabilities.

After we launch an instance, it looks like a traditional host, and we can interact with it as we would any computer. We have complete control of our instances; we can use sudo to run commands that require root privileges.

30) Name the popular scripting language of DevOps.

Python

RUBY

DSL (Declarative Domain Specific Language)

31) What are the benefits that an organization can get with Devops transformation?

Key benefits for an organization moving to DevOps are:

1. Reduced time-to-value / Faster time-to-market: Improved agility in product development

2. Collaboration: Overcoming from Silos culture and opting for more collaboration and efficiency with different working departments.
3. Customer Delight: Faster releases, improved agility & quality, and customized builds enables quicker resolution of customer requests.
4. Operational Efficiency: The ability to scale faster helps in Opex/Capex optimization
5. Cost Savings: High-scale automation enables to control remotely, reduce the outages, and eliminates product recalls.

32) How DevOps is helpful to developers?

To fix the bug and implement new features quickly.

It provides the clarity of communication among team members.

33) What are the Security Best Practices for Amazon EC2?

Ans: There are several best practices for secure Amazon EC2. Following are few of them.

Use AWS Identity and Access Management (IAM) to control access to your AWS resources.

Restrict access by only allowing trusted hosts or networks to access ports on your instance.

Review the rules in your security groups regularly, and ensure that you apply the principle of least

Privilege — only open up permissions that you require.

Disable password-based logins for instances launched from your AMI. Passwords can be found or cracked, and are a security risk.

34) What are the benefits of automation testing?

Following are the advantages of automation testing:

1. Supports execution of repeated test cases
2. Aids in testing a large test matrix
3. Enables parallel execution
4. Encourages unattended execution
5. Improves accuracy by reducing human errors

35) What are Vagrant and its uses.

Vagrant used virtual box as the hypervisor for virtual environments and in current scenario it is also supporting the KVM. Kernel-based Virtual Machine
Vagrant is a tool that can create and manage environments for testing and developing software.

36) How does cloud computing provides on-demand functionality?

Ans: Cloud computing is a metaphor used for internet. It provides on-demand access to virtualized IT resources that can be shared by others or subscribed by you. It provides an easy way to provide configurable resources by taking it from a shared pool. The pool consists of networks, servers, storage, applications and services.

37) What are the major difference between the Linux and Unix operating systems?

Unix:

It belongs to the family of multitasking, multiuser operating systems.

These are mostly used in internet servers and workstations.

It is originally derived from AT&T Unix, developed starting in the 1970s at the Bell Labs research center by Ken Thompson, Dennis Ritchie, and others.

Both the operating systems are open source but UNIX is relatively similar one as compared to LINUX.

Linux:

Linux has probably been home to every programming language known to humankind.

These are used for personal computers.

The LINUX is based on the kernel of UNIX operating system.

38) How does continuous delivery fit in product development methodologies?

Continuous delivery means that when a developer makes any changes, the build and code fixing will happen simultaneously. It comes under the environment where automatic testing has to be achieved. It includes a development environment, a test environment, and a staging environment. These environments have three different teams of people performing product deployment and testing, also known as deployment pipeline.

39) What is the difference between scalability and elasticity?

Ans: Scalability is a characteristic of cloud computing through which increasing workload can be handled by increasing in proportion the amount of resource capacity. It allows the architecture to provide on demand resources if the requirement is being raised by the traffic. Whereas, elasticity is being one of the characteristic provide the concept of commissioning and decommissioning of large amount of resource capacity dynamically. It is measured by the speed by which the resources are coming on demand and the usage of the resources.

40) Explain what is Dogpile effect? How can you prevent this effect?

Dogpile effect is referred to the event when cache expires, and websites are hit by the multiple requests made by the client at the same time. This effect can be prevented by using semaphore lock. In this system when value expires, first process acquires the lock and starts generating new value.

41) How we can make sure new service is ready for the products launched?

- Backup System
- Recovery plans
- Load Balancing
- Monitoring
- Centralized logging

42) How are fixes delivered for a CD release?

Continuous integration is an s/w development practice which helps reduce fixes wherein a code is checked very frequently and delivered for a Continuous delivery (CD) release. CI is a very useful component in which making CD process successful

43) What is meant by CI?

CI stands for continuous integration. It's a software engineering practice of integrating changes from different developers in a frequent interval of time which will be done several times per day. This process helps developers to make sure the code of individual developer working on will not divert other team members and maintain the time consuming process throughout.

44) What are the benefits of CI?

The list below outlines continuous integration benefits:

1. Fixing the bugs early
2. Reducing risks greatly
3. Reducing manual tests for successful continuous delivery
4. Increasing transparency between QA and developer teams

45) What are the different layers of cloud computing?

Ans: Cloud computing consists of 3 layers in the hierarchy and these are as follows:

1. Infrastructure as a Service (IaaS) provides cloud infrastructure in terms of hardware like memory, processor speed etc.
2. Platform as a Service (PaaS) provides cloud application platform for the developers.
3. Software as a Service (SaaS) provides cloud applications which are used by the user directly without installing anything on the system. The application remains on the cloud and it can be saved and edited in there only.

46) Explain what is AWS?

AWS stands for Amazon Web Service; it is a collection of remote computing services also known as cloud computing platform. This new realm of cloud computing is also known as IaaS or Infrastructure as a Service.

47) What are the benefits of the NoSQL?

Non-relational and schema-less data model
Low latency and high performance
Highly scalable

48) Does DevOps automate people out of their jobs?

It does to some extent as tools are providing solutions that can support and perform repetitive actions and standardize the build, test, and release process. Teams like Release Engineering, Quality Assurance and Operations are impacted. Those roles are now formally being referred to as DevOps and the work they perform around build automation, test automation, and release automation is the work products they create.

49) What is the use of Jenkins in DevOps?

Jenkins is a continuous integration tool for software development. It has become the open source standard in the development side of DevOps methodology from source code management to deliver the code to the operations team. It helps in making development faster and improves the quality at the same time.

50) What are adoptions of DevOps in industry?

Use of agile and other development processes and methods .
Demand for an increased rate of production releases from application and business.
Wide availability of virtual and cloud infrastructure from both internal and external providers;
Increased usage of data center ,automation and configuration management tools;
Increased focus on test automation and continuous integration methods;
Best practices on critical issues.

51) In VPC with private and public subnets, database servers should ideally be launched into which subnet?

With private and public subnets in VPC, database servers should ideally launch into private subnets.

52) What are the advantages of NoSQL database over RDBMS?

The advantages are:

- There is very less scope of ETL
- Support is given for unstructured text
- Changes are handle over period of time
- Main objectives are functionality.
- It has the ability to scale horizontally
- Multiple data structures are given support.
- Vendors can be chosen.

53) How can you run DevOps in the Public Cloud?

Too many ways to count...primarily you use the CLI / APIs of the Cloud and whatever tools you like to automate / simplify that effort. Can also install tooling into the cloud and manage that way as well (Jenkins, BitBucket etc.).

54) The top 10 skills the person should be having for the DevOp's position?

- Excellent in System Admin
- Virtualization Experience
- Good Technical Skills
- Excellent Scripting
- Good Developing skills
- Chef in Automation Tool Experience
- People Management
- Customer Service
- Real time Cloud operations
- Who care about someone

55) What is the use of Chef in DevOps?

Chef is configuration management tool for handling physical servers and virtual machines in the cloud. Chef solves the query by treating infrastructure as a code. This gives rise to continuous delivery and automation testing. 'Know about environment as a code in DevOps methodology.

56) Explain how the implementation of “Infrastructure as code” is processed or executed in terms of AWS.

In AWS,

The code will be in the simple JSON format.

This JSON code is well organized into files called templates.

This templates are deployed on AWS and then further managed as stacks

Cloud Formation service will help in doing the Creating, deleting, updating, etc. operation in the stack.

57) What is the Role of Docker in DevOps?

Docker is a software container management platform / environment that works with the same capacity as real domain without adding overheads of virtual machines. It is essential for continuous integration and continuous deployment workflows since it streamlines the entire Software Development Lifecycle (SDLC) process.

Docker in DevOps helps by providing Dev and Ops team facilities to run and manage code in an isolated container, imparting collaborative capabilities and role-based access to codes and apps. The Docker CaaS (Container as a Service) platform helps to secure and isolate software from the external dependencies as well as transfer content to the another environment without delays, creating transparency in between Dev and Ops team

58) Explain how the buffer is used in Amazon web services?

The buffer is used to make the system more robust to manage traffic or load by synchronizing different component. Usually, components receive and process the requests in an unbalanced way, With the help of buffer, the components will be balanced and will work at the same speed to provide faster services.

59) Do SysAdmins need to learn to code?

SysAdmins are being pushed into command line interfaces (CLIs), APIs and infrastructure automation technologies that use configuration and code to coordinate infrastructure resources (networking, storage, security etc.) Things can still be done manually within a GUI, however, this is not scalable, is error prone, and cannot be versioned controlled like code and configuration.

60) What measures we have taken to handle revision (version) control?

To handle revision control, post your code on SourceForge or GitHub so everyone can view it and ask the viewers to give suggestions for the better improvement of it.

61) Explain how “Infrastructure of code” is processed or executed in AWS?

In AWS,

- The code for infrastructure will be in simple JSON format
- This JSON code will be organized into files called templates
- These templates can be deployed on AWS and then managed as stacks
- Later the CloudFormation service will do the Creating, deleting, updating, etc. operation in the stack

62) Explain how would you handle revision (version) control?

My approach to handle revision control would be to post the code on SourceForge or GitHub so everyone can view it. Also, I will post the checklist from the last revision to make sure that any unsolved issues are resolved.

63) Mention what are the security best practices for Amazon EC2?

For secure Amazon EC2 best practices, follow the following steps

Use AWS identity and access management to control access to your AWS resources

Restrict access by allowing only trusted hosts or networks to access ports on your instance

Review the rules in your security groups regularly

Only open up permissions that you require

Disable password-based login, for instance, launched from your AMI