DevOps Interview Questions :-

Questions from GIT, Jenkins, Ansible, Dockers & Containers, Kubernetes,OpenShift, AWS, CI/CD, Scripting(Shell/Python), Linux (RHEL),Monitoring.

**GIT**

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\* What is GIT ?

- GIT is a distributed version control system which helps us to track changes in our code.It also supported branching stratergy.

\* What is difference between GIT & Github ?

- Git is a distributed version control tool which we use to track our source code bt github is a repo where our source code are chekin and from where our code can be accessed globally.

\* Why we use GIT ?

- GIT is a distributed version control system which helps us to track changes in our code.It also supported branching stratergy.

\* What is SCM & VCS ?

- Version Control System (VCS), also known as Source Control Management (SCM), is a way to manage and document changes developers make to software code. The SCM methodology stores IT resources, gives access to all versions of the software as long as these states are saved and offers a comparison between all different versions, making development more efficient and more agile.

\* What are the process of pushing the code to Github Repository ?

- $ git add <filename>

$ git commit -m “description”

$ git push -u brach

\* Why do we commit ?

- commit means save the changes.

\* What are the commands of GIT to push the code ?

- $ git push

\* How you can merge a git repository with another ?

Create a new empty repository New.

1. Make an initial commit because we need one before we do a merge.
2. Add a remote to old repository OldA.
3. Merge OldA/master to New/master.
4. Make a subdirectory OldA.
5. Move all files into subdirectory OldA.
6. Commit all of the file moves.

\* What is branching in git ?

- GIT is the way to keep developing our coding new feature or software so branching is the way to working on same code in another layer without tampering main source code. We can also say that branches create another line of development in the project.

\* Different types of branching in GIT ?

- Like Feature Branch, Release Branch, Develop Branch, Master Branch

\* What is merge conflict in git ?

- Merge conflict is nothing but when git is unable to resolve between two code commits. Git can merge automatically when changes are between separate lines or branch.

\* How you can resolve merge conflict if you are merging same

project and in the same branch ?

- Then open the code and change it what you need then add and commit.

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**Jenkins**

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\* What is Jenkins ?

- Jenkins is a automation tools, which work is to build, test,deploy as per our request and it depends on plugin.

\* Why we use Jenkins ?

- For Continous Intigration means build the code when ever the code push to repository and doing other things like test the code and continous delivery and continous deployment.

\* What are the other tools/technologies present in market other than

Jenkins for CI/CD ?

- Bamboo, Codeship

\* How to move Jenkins from one server to another ?

- 1st of all let the server for finsh its job then stop jenkins, archive its home directory and extract it in fresh jenkins instance home directory

\* How to create Jenkins backup ?

- We can use backup plugins for that then got to manage jenkins and take the backup of jenkins.

\* What are plugins in Jenkins ?

- git,pipeline,sonarqube,check-style,maven,timestamp

\* What are the default plugins installed in Jenkins ?

- Git, credential, email extention,pipeline

\* How to schedule builds in Jenkins ?

- with build periodically with min,hour,dom,month, week

\* Difference between Ant, Maven, Gradle ?

\* Difference between Jenkins, Teamcity and Bamboo ?

\* How to configure a cloud access in Jenkins ?

\* What is Jenkins slaves ?

- Slave will be the nodes where the tasks are executed which given by the master. It is variety of os

\* How to run a groovy script in Jenkins ?

- Go to nodes in Manage Nodes and on the left side script console is there. Inside it you can run your script

\* What is Jenkins Pipeline ?

- Pipeline is a process where we can do our continous intigration and continous delivery in automated way.

\* What are different types of Jenkins Pipeline ?

- Declarative pipeline and Scripted Pipeline

\* What is Declarative pipeline in Jenkins ?

- In Jenkinsfile we store our steps to build test and depoly.And it can be checkin into our repository

\* Is Jenkins a CI tool or both CI/CD ?

- Yes jenkins is a CICD tools.

\* How to install Jenkins with non root access in Linux ?

\* If you have 200 employees in your company, how you can assign Jenkins

access to these employee how you can give permission in Jenkins ?

- Goto “Manage Jenkins”, in that “Create User” , then add role strtergy plugins and give the permission.

**Jenkins Task**

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Task 1

:Write the Jenkins pipeline code for Java & Php application

Task 2

Write the Jenkinsfile code to build a Java application with Maven with error handling

Task 3

Complete the following

tasks:

1. Jenkins setup on linux

2. Setup app server with apache to deploy an app.

3. create three jobs on jenkins

4. Pull the code from git repo

5. Build the application

6. deploy an app on apache using ansible.

7. app deploy should work with single trigger hit(git pull job -> build app -> deploy on apache server)

8. job should get triggered on git push on git repo.

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Ansible

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\* What is Ansible ?

- Ansible is an automation engine that automates provisioning, configuration and Application Deployment.

Manage Infrastructure whether its on premises or cloud.

Its Computing environment has some of the attributes, like

Information is versionable

Infrastructure is repeatable & testableInfrastructure is testable

\* What is Configuration Management ?

- Configuration Management is a process for system ,server, and application in desired and consisten state. Like server configuration , and building and maintain those system. CM uses configure to updates, reconfigure , patches.

\* Is Ansible only a tool for Configuration Management ?

- No with that it is a deployment and orchestration tool.

\* What are the components of Ansible ?

- Inventory , playbooks, Modules, Variables, Ansible facts, Configuration Files, Templates, handlers, Roles, Ansible-Vault.

\*How Ansible works ?

- Write Code that state of the server in yml file.

- Then Ansible will connect that node through ssh/winrm.

- Then ansible gathering the facts and compare state what you have described.

- Whenever you run Ansible it connect and check the information dynamically based on that it will do the update. So this kind of method you checked against the state whether is it same or not is call Covergence.

\* What are the other tools in market other than Ansible ?

- Chef, Puppet

\*How Ansible is different from Chef & Puppet ?

- Agentless Tool

- Relies on ssh

- Uses python

- Push Mechanism

\* What is Inventory in Ansible ?

- /*etc*/ansible/hosts

\* What are the types of Inventories ?

- Dynamic And Static

\* What is play & playbook ?

- Ansible-playbook is an organized group of scipts that defines work for a server configuration managed by the automation tool. Playbooks contains one or multiple plays.

- Play is define the work to be done for configuration on a managed server

\* Difference between hosts & groups ?

- A hostis simply a remote machine that ansible manages. They can have individual variables assign to them

- Groups consists of several hosts that conveinently targetd together,as wll as given variables that they share in common.

\* What is Roles ?

- Assign a role to a group or host implies that they should implement a specific behavior. The role may be applying certain variables value, tasks, and certain handlers.

\* How to install a Role ?

- In environment variables define your role path and inside your role directroy specify some tasks some vars handler.

\* How to install multiple roles ?

- Add mutiple roles in playbook

\* How to create roles ?

- Create a role and inside it create ansible tasks, vars, handlers, templates

\* What is Dynamic Inventory & when we use it & for what ?

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\* Where is the Ansible Configuration file located ?

- /*etc*/ansible/ansible.cfg

\* What are the different ways other than SSH by which Ansible

can connect to remote hosts ?

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\*What is variable in Ansible ?

- Ansible uses variables to manage difference between systems. With ansible we can execute tasks and playbooks on multiple different system with a single command.

- And we can pass variables while executing the tasks.

\* What are different types of variables ?

- Host variables

- Group variables

\* How to assign variables in group vars & hosts vars ?

- Goto touch etc/ansible/groups\_vars/<GroupName> ---- for group vars

- Goto touch etc/ansible/hosts\_vars/Node01 ---- for hosts vars

\* Difference between File & Template directory in Roles ?

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\*Difference between default & vars directory in Roles ?

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\* What is Jinja 2 template ?

- A template is a file which contains all your configurations parameter, but the dynamic values are given as variables.

- Duringing the task execution the variables will be replaced with the relevent values. The template files are in .j2 extantsion.

- Ansible uses jinja template engine, we can have conditional statement, loop, filters for transforming the data, do arithmatic calculation etc.

\* What is modules in Ansible ?

- It is built on python modules, every action or state we have to maintain we use modules. Like apt,user,command,shell,ping setup,cp,mv,service,debug

\* Difference between COPY & FILE modules ?

- Copy means copy a file to src to dest bt File module is for creating/removing file. It is also used for change ownership,group, and user.

\* Difference between SHELL & COMMAND modules ?

- Shell and Command modules are very similar bt the difference is additionaly supports redirection(><), pipe, boolean operator.

\* What is Setup module ? what it does ?

- setup module is automatically called by playbook to gather useful variables about remote hosts that can be used in playbooks. It can also be executed directly by *usr*/bin/ansible to check what variables are avaliable ti a host.

\* What is register & debug in Ansible ?

- Ansible register captures the output from a task and store it in variables and debug will print the output in console.

\* What is changed\_when in Ansible ?

- An important line there is the changed\_when: false line. Typically ansible assumes that a command changes the state of the host, but changed\_when lets you set a Jinja2 conditional to specify a different condition.

\* Can we disable automatic facts gathering in Ansible ?

- yes, with gather\_facts: no

\* How error handling can be done in Ansible ?

- --force-handlers: true

\* How to ignore failed commands in Ansible ?

- ignore\_errors: yes

\* What is handlers ?

- handlers are just like normal tasks, but it run only when task contain ‘notify’ is change something.

\* Why we use Handlers in Ansible ?

- handlers are executing task when something change on the machine.

\* What is Privilege Escalation in Ansible ?

- Ansible allows you to ‘become’ another user, different from the user that logged into the machine (remote user). This is done using existing privilege escalation tools such as sudo, su,others.

\* Task to connect(SSH) Ansible to remote host using another user &

run the playbook to the remote host using with another user ?

- First generate ssh key in Ansible host machine then copy pub key to remote host and run $ ansible-playbook -i <host ip>, playbook.yml .

\* What is Ansible vault ?

- Ansible Vault allows to keep sensitive data such as password or key in encrypted files.

\* How to decrypt a vault file ?

- $ ansible-vault decrypt playbook.yml

\* How to encrypt a string in Ansible using Ansible Vault ?

- ansible-vault ecncrypt\_string playbook.yml .

\* If a string is encrypted in a file with a password then how to pass

the password using parameter while decrypting ?

- $ ansible-playbook –vault-id @prompt playbook.yml

\* If a file is encrypted using password & password is stored in a file

how to pass the file to decrypt the file ?

- $ ansible-valult decrypt - -vault-password-file <passwd\_file> playbook.yml

\* If a file is encrypted using password & password is also encrypted

then how to provide the password while decrypting the file ?

- $ ansible-playbook

\* What is Ansible galaxy ?

- Ansible Galaxy is a repository for Ansible Roles that are available to drop directly into your Playbooks to streamline your automation projects. ... It is easy to get up and running with Ansible

\* What is Tags in Ansible ?

- Tags help Ansible tasks to be selected from a play or play-book. If you need to play(execute) only certain specific tasks you can specify the tags needed while executing the ansible-playbook command.

- On the command line, with the**-tags** or **-skip-tags** options.In Ansible configuration settings, with the **TAGS\_RUN** and **TAGS\_SKIP** options.

\* Why it is used ?

- If we nedd to execute some certain tasks in large playbook then we can pass the tag while executing the play-book.

\* What is lookup in Ansible playbook ?

- Lookup plugins are an Ansible-specific extension to the Jinja2 templating language. You can use lookup plugins to access data from outside sources (files, databases, key/value stores, APIs, and other services) within your playbooks. Like all [templating](https://docs.ansible.com/ansible/latest/user_guide/playbooks_templating.html" \l "playbooks-templating), lookups execute and are evaluated on the Ansible control machine. Ansible makes the data returned by a lookup plugin available using the standard templating system. You can use lookup plugins to load variables or templates with information from external sources.

\* How to control the command failure in Ansible ?

- by adding force-handlers: true

\* How to debug your playbook ?

- under some task or play we capture the task as ‘register: output’

- under ‘register’ we define – debug: output.stdout or rc

\* What is diff mode ?

- - diff compares between two strings or variables , commands or templates

\* What is Dry Run in Ansible & how to do that ?

- Dry run is check mode feature, It doesnt not actually change your server bt you can see if the host is changing or not.

\* What is pre task & post task ?

- pre\_task is before executing any task we define some pretask ex: before copy your application and get started we have to confifigure the server and prerequsite software.

- post\_task is exactly opposite of it.

\* How you can run your all tasks at once ?

- asynchronous mode or async

\* What is block in Ansible ?

- Blocks allow for logical grouping of tasks and in play error handling. Most of what you can apply to a single task (with the exception of loops) can be applied at the block level

\* What are different variable scopes ?

-

\* How variable precedence takes place ?

-

\* Difference between include & import ?

- All import\* statements are pre-processed at the time playbooks are parsed.  
All include\* statements are processed as they encountered during the execution of the playbook.  
So import is static, include is dynamic.

\* How to include custom modules in Ansible ?

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\* Describe the role directory structure ?

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**Ansible Task**

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Task 1:

Part1. Write Ansible playbook to automate Jenkins deployment

Part 2. Write Ansible role to install Docker & setup Kubernetes cluster

Automate the pipeline creation in Jenkins to create docker container & deploy on Kubernetes cluster

Task 2

Write ansible playbook for below

tasks:

1. Install apache server and deploy sample html application

2. Create /var/www/example.com

3. deploy a sample application to the above directory

4. create a virtual host for deploy application and set it as default virtualhost

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**Dockers & Containers**

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\* Whats is docker ?

- Docker is a platform for devloping, shipping & running application using an open source container based technology.

- OS level virtualization

- Run everywhere on physical,virtual, and cloud.

- Run anything ---- if it is on host it can run in the container

\* Difference between container & VMs ?

- Virtual machines and containers differ in several ways, but the primary difference is that containers provide a way to virtualize an OS so that multiple workloads can run on a single OS instance. With VMs, the hardware is being virtualized to run multiple OS instances.

\* Difference between Docker & Virtualization ?

- Virtualization enables you to run multiple operating systems on the hardware of a single physical server, while containerization enables you to deploy multiple applications using the same operating system on a single virtual machine or server.

\* Difference between container and image ?

- Images can exist without containers, whereas a container needs to run an image to exist. Therefore, containers are dependent on images and use them to construct a run-time environment and run an application.

\* How image builds ?

- Create a Dockerfile with specific details like FROM,RUN,CMD,ENTRYPOINT,ENV,USER

- $ docker build -t <Location of Dockerfile>

\* What are image layers ?

- RUN, COPY, ADD .

\* How image layers work ?

- Docker containers are building blocks for applications. Each container is an image with a readable/writeable layer on top of a bunch of read-only layers. These layers (also called intermediate images) are generated when the commands in the Dockerfile are executed during the Docker image build.

\* What is overlayfs ?

- Overlay filesystem allow creating two or more directories. One lower and one higher, Lower directories are only read-only bt higher can be used for both read and write.

\* Where the image layes can be found in which directory ?

- *var*/lib/docker/aufs

\* How can we check the content of each layer ?

-

\* How to check the layers stacked with image ?

-

\* What is Union Mount & AUFS ?

- Another Union Filesystem takes an existing filesystem and transparently overlays it on a newer filesystem. It allows files and directories of separate filesystem to co-exist under a single roof. AuFS can merge several directories and provide a single merged view of it.

\* Why use Union mount system for Docker ?

- It allows files and directories of separate file systems, known as branches, to be transparently overlaid, forming a single coherent file system. Contents of directories which have the same path within the merged branches will be seen together in a single merged directory, within the new, virtual filesystem.

\* What are the 3 different directories in /var/lib/docker/aufs ?

- diff , layers, mount

\* How to run an image ?

- docker run –name <Myimg> -it <imagename> /docker run - -name <Myimg> -d -p 80: 80 <img name>

\* How to tag an image ?

- $ docker tag <localimage>:<tag> <registry>/<repository>/<image>:<tag>

- $ docker tag mypache:build1 debasis4/myapache:build1

\* How to Link one container with another ?

- $ docker network connect --ip 10.10.36.122 multi-host-network container2

\* How do you sequence the containers?

- wait-for-it script

\* A first then B should execute after that ?

- wait-for-it script

\* How to create a volume in docker container to store data ?

- $ docker run -v <hostdir>:<contdir> IMAGE

\* How to mount a local directory into a container ?

- $ docker run -v <hostdir>:<contdir> IMAGE

\* How to expose a port no to access container ?

- $ docker run –name myimage -d -p 81:80 IMAGE

\* What is ENTRYPOINT in docker ?

- ENTRYPOINT defines command what executing while creating a container.

\* What is Dockerfile ?

- A Dockerfile is a text document that contains all the commands a user could call on the command line to assemble an image.

\* Difference between ADD & COPY parameters in dockerfile ?

- ADD & COPY are partially same bt copy only take the source to Destination and add also can do that bt apart from that ADD can extract tar files and handles remote url.

\* How to create a bridge in container ?

- docker network create --driver bridge <Set NameOf New Network>

\* How a container gets an internal IP ?

- By default, the container is assigned an IP address for every Docker network it connects to.Each network is created with a default subnet mask, using it as a pool later on to give away the IP addresses.

\* Can we check the process of a container inside as well as outside the container ?

- yes

\* Can we check the container process on docker host ?

- $ docker top

\* How kernel isolates to run the container and how resources managed by the kernel ?

-

\* What is namespace and cgroups ?

- cgroups limits the resources which a process or set of processes can use these resources could be CPU,Memory,Network I/O or access to filesystem while namespace restrict the visibility of group of processes to the rest of the system.When you run a container, Docker creates a set of namespaces for that container. These namespaces provide a layer of isolation.

\* What is docker-compose and docker-swarm ?

- Docker Compose is used for configuring and starting multiple Docker containers on the same host--so you don't have to start each container separately.

- Docker swarm is a container orchestration tool that allows you to run and connect containers on multiple hosts.

\* How you can give different network IP to the container ?

- - docker network create --driver bridge <Set NameOf New Network>

- docker network create --driver=bridge --subnet=192.168.2.0/24 --gateway =192.168.2.10 new\_subnet

- $ docker run --network=isolated -itd --name=mynginx nginx

\* What are the parameters of dockerfile ?

- FROM,RUN,CMD,ENTRYPOINT,ENV,USER,WORKDIR,COPY,ADD,EXPOSE

\* Is there any windows container also available ?

-

\* How to stop a container ?

-

\* How to run a container in background ?

- In detach mode

\* How to go inside a container if container is running in background ?

- $ docker exec -it <CNAME> <CMD>

\* How to check running containers ?

- $ docker ps

\* How to remove an image ?

- $ docker rmi <Img Name>

\* How to run an image which is in tar format ?

- If it in some URL file then:- $ docker import <URL>

- $ docker load < Img.tar.gz

\* Command to check the process of a container ?

- $ docker top

\* How to check resource utilisation of a container ?

- $ docker stats <CNAME>

\* How to create an image ?

- $ docker build <pathof Dockerfile>

\* How to save changes of a container ?

- $ docker commit <CID/CNAME> <NewName>

\* What are registries ?

- Registry is a storage and content delivery system which stores image with tag.

\* Difference between docker commands: up, run & start ?

- $ docker start – starting of stopped container

- $ docker run – Create and start a container from image.

-The docker-compose up command aggregates the output of each container (essentially running docker-compose logs --follow ). When the command exits, all containers are stopped. Running docker-compose up --detach starts the containers in the background and leaves them running.

\* Can we run more than one process in a container ?

- It's ok to have multiple processes, but to get the most benefit out of Docker, avoid one container being responsible for multiple aspects of your overall application. You can connect multiple containers using user-defined networks and shared volumes.

\* Save Docker Image in tar.gz file ?

- $ docker save -o <path/name.tar.gz> <ImageName>

**Docker Task**

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Part 1. Write a Docker file to create a Docker image which should have Wordpress installed

Part 2. Write a Docker file to create a Docker image for database

Now, use Docker compose to bring up the above Docker images as containers. Database container should mount the local host's “/etc/mysql” volume into it's (containers) /etc/mysql directory.

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**Kubernetes**

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\* What is Kubernetes ?

- It is a open- source container orchestration tool for automating deployment, scaling, and management of containerized application across cluster of host.

- It takes multiple containers running on different hosts and lets you use them together.

- Running container every where on cluster of physical, virtual, and cloud.

\* What are Kubernetes Components ?

- Kube-Api Server

- etcd

- Kube-controller Manager

- Kube- Scheduler

\* What is etcd ?

- Etcd stores Kubernetes cluster configuration and state data such as the number of pods, their state, namespace, etc. It also stores Kubernetes API objects and service discovery details.

\* What is master & minion ?

- Kubernetes cluster is a collection of machines, each machine has a dedicated role. They can be master or worker. The master is our API point of contact and holds the information about what's going on in the cluster in terms of apps, pods, developments, etc. The workers are in charge of running the app in the pod, in the container.

\* How to make quorum of cluster?

-

\* What is Replication controller & what it does ?

- RC creates the no of replicas and maintain this

\* What is ingress ?

- Kubernetes ingress is an API object that provides routing rules to manage external uers access to the service in Kubernetes cluster via https/http.

- Ingress allows you to configure and mange these capabilities inside the cluster.

- Ingress is made up of an Ingress API object and the Ingress Controller.

\* Difference between Kubernetes & Docker Swarm ?

- Kubernetes is ment to run across acluster while Dockerswarm run on a single node.

- kubernete is more extensive than Dockerswarm and is meant to cooridinate cluster of node at scale in production in an efficient mannaer

\* How can you rollbck the previous version of application in Kuberntes?

- $ kubectl rollout undo deploy/deployment

\* Scenario: There are 2 tables, emp, empsal if there schema changes,

How does that deployment happens into containers/POD automatically?

-

\* How does container know that application is getting failure ?

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\* Difference between nodeport, clusterIP, load balancer & ingress ?

- **ClusterIp**- Exposes the service on a cluster-internal IP. Choosing this value makes the service only reachable from within the cluster. This is the default ServiceType

- **NodePort**: Exposes the service on each Node’s IP at a static port (the NodePort). A ClusterIP service, to which the NodePort service will route, is automatically created. You’ll be able to contact the NodePort service, from outside the cluster

- **LoadBalancer**: Exposes the service externally using a cloud provider’s load balancer. NodePort and ClusterIP services, to which the external load balancer will route, are automatically created.

\* What is kubectl & kubelet ?

- **Kubelet** is primary node agent which runs on each node and ineracts with apiserver and register the node with cluster.Updates the workload invoked by the master

- **Kubectl** iskubernetes command line tool which allows to run commands against Kubernetes cluster.Use for deploy application, inspect, manage cluster resources.

\* What is the use of Kube-controller manager ?

- Basically, a Kube controller watches the state of the cluster through the API Server watch feature and, when it gets notified, it makes the necessary changes attempting to move the current state towards the desired state.

\* What is pod ?

- Pods are the smallest, most basic deployable objects in Kubernetes. A Pod represents a single instance of a running process in your cluster. Pods contain one or more containers, such as Docker containers. When a Pod runs multiple containers, the containers are managed as a single entity and share the Pod's resources.

\* How many containers can run in a pod ?

- 1 or More than 1.

\* How many containers can be launched in a node ?

- As per the resources

\* What is the role of Kube-Scheduler ?

- Every pod that needs to be scheduled is added to a queue

When new pods are created, they are also added to the queue

The scheduler continuously takes pods off that queue and schedules them

\* How the 2 pods communicate with each other ?

- Containers in a Pod share same name space

\* How 2 containers inside a pod communicate with each other ?

-

\* What is Flannel & why we use it ?

- Flannel is an open-source virtual network project managed by CoreOS network designed for Kubernetes. Each host in a flannel cluster runs an agent called flanneld . It assigns each host a subnet, which acts as the IP address pool for containers running on the host.

\* Difference between Flannel & Calico ?

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**OpenShift**

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\* What is Openshift ?

- OpenShift is a commercial orchestration tool

\* Difference between Openshift & Kubernetes ?

- - OpenShift is a commercial product, while Kubernetes is an open-source project. An OpenShift subscription enables users to get paid support.

- OpenShift has stronger security policies than Kubernetes. The security policies of OpenShift restrict you from running simple container images as well as many official images. OpenShift requires specific privileges to maintain a minimum security level.

- You have to install the Kubernetes dashboard separately and use the kube-proxy to forward a port of your local machine to the cluster’s admin server.OpenShift’s web console has a login page. You can easily access the console and create or change most resources through a form. You can also visualize servers, projects, and cluster roles.

- This process is easier in OpenShift because it offers a certified Jenkins container that you can use for the CI server. Plain Kubernetes does not offer an official CI/CD integration solution.

\* What is Services Layer ?

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\* How to expose a service in Openshift ?

-

\* What are the 3 components of any created project ?

-

\* What is router in default or in any project while creating project ?

-

\* What do you mean by identity provider in Openshift?

-

\* How do you create a New user identity ?

-

\* Where is the user identity located ?

-

\* What is project in Openshift ?

-

\* What are the types of permissions/role bindings in Openshift ?

-

\* How to check the permission of user ?

-

\* How to describe anything in Openshift ?

-

\* How to check no of projects ?

-

\* How to assign a role/permission to a user ?

-

\* What is clusterrolebinding in openshift ?

-

\* What is the process/working of POD creation ?

-

\* What is Builder POD ?

-

\* What is deployer POD ?

-

\* How to create a New application POD ?

-

\* How to check logs of POD ?

-

\* What is Deployment Configuration & why we need DC ?

-

\* What is SVC & why we need SVC ?

-

\* What is RC (Replication Controller) ?

-

\* How to check DC of POD & how to edit DC ?

-

\* How to create route ?

-

\* How to expose svc ?

-

\* How to do rollout ?

-

\* How to increase replica ?

-

\* What is Source to Image in Openshift ?

-

\* What is builder image ?

-

\* What are the process to create source to image ?

-

\* How to give the Cluster role/permission to the user ?

-

\* How to create secure route ?

-

\* What is PV & PVC ?

-

\* What are access modes in PV ?

-

\* What is node selector ?

-

\* What are the two regions in projects ?

-

\* Difference between template & Deployment Configuration ?

-

\* How to migrate whole cluster to another ?

-

\* How to manually migrate container ?

-

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**AWS**

**---**

\* What is Amazon RDS ?

- The purpose of a database is to store large quantities of information in an organized fashion. You can classify databases depending on how they structure and process this information.

- Providers contrast relational databases with non-relational databases (also known as NoSQL databases), which use a different model. Some common types of non-relational databases are key-value stores, document stores, and graph databases.

\* What is EC2, S3, EBS ?

- **Amazon S3** is a simple storage service offered by Amazon and it is useful for hosting website images and videos, data analytics, etc. S3 is an object-level data storage that distributes the data objects across several machines and allows the users to access the storage via the internet from any corner of the world.

- **Amazon EBS** is a block-level data storage offered by Amazon. Block storage stores files in multiple volumes called blocks, which act as separate hard drives, and this storage is not accessible via the internet. Use cases include business continuity, transactional and NO SQL database, software testing, etc.

- **EC2** also allows users to build apps to automate scaling according to changing needs and peak periods, and makes it simple to deploy virtual servers and manage storage, lessening the need to invest in hardware and helping streamline development processes.

\* What is VPC & why we require to create VPC ?

- Each VPC creates an isolated virtual network environment in the AWS cloud, dedicated to your AWS account. Other AWS resources and services operate inside of VPC networks to provide cloud services.

\* Is it possible to scale an Ec2 Instance vertically ?

- Vertical scaling means that you scale by adding more power (CPU, RAM) to an existing machine. AWS provides instances up to 488 GB of RAM or 128 virtual cores.

\* How is Amazon RDS, Redshift & DynamoDB different ?

- Amazon Relational Database Service or Amazon RDS makes the task of setting up, scaling, and operating a relational database in the cloud. A lot of repetitive work occurs in managing a running database, which obviously becomes a bottleneck in staying ahead of your organizational growth.

- Amazon Redshift can handle any amount of data that your service requirements. As this was the fastest-growing service initially so it was considered as it can handle any amount of data so that Amazon customers can easily adapt and implement Redshift.

- Amazon had developed and designed DynamoDb specifically for the most demanding applications that would require reliable & scalable data storage.Several solid-state tools and frameworks are being utilized to provide low-latency as well as the constant update of items. It can easily manage large data volumes. Not only this, but it can also maintain, and improve the performance of the system.

\* How is a spot Instance different from an On-demand Instance ?

-

\* How Infrastructure As Code processed & executes in AWS ?

-

\* If your Linux-build server getting slow down, what will you do to check ?

-

\* Types of EBS storage ?

-

\* How to backup a running instance ?

-

\* How to secure s3 bucket ?

-

\* What are the security available for users to access S3 ?

-

\* How to create AMI ?

- While the instance is running, connect to it. You can perform any of the following actions on your instance to customize it for your needs:

- Install software and applications

- Copy data

- Reduce start time by deleting temporary files, defragmenting your hard drive, and zeroing out free space

- Attach additional EBS volumes

(Optional) Create snapshots of all the volumes attached to your instance.

In the navigation pane, choose Instances, select your instance, and then choose Actions, Image and templates, Create image.

\* What are the main components of CloudFormation ?

- Description, Parameters, Mappings, Conditions, Resources and Outputs.

\* What is mapping in cloudformation template ?

- A mapping of keys and associated values that you can use to specify conditional parameter values, similar to a lookup table. You can match a key to a corresponding value by using the Fn::FindInMap intrinsic function in the Resources and Outputs sections.

\* How is YAML different from JSON ?

- YAML, depending on how you use it, can be more readable than JSON

JSON is often faster and is probably still interoperable with more systems

It's possible to write a "good enough" JSON parser very quickly

Duplicate keys, which are potentially valid JSON, are definitely invalid YAML.

YAML has a ton of features, including comments and relational anchors. YAML syntax is accordingly quite complex, and can be hard to understand.

Because there are no references, it is impossible to serialize complex structures with object references in JSON. YAML serialization can therefore be more efficient.

\* Different types of ELB ?

- Application Load Balancer

- Network Load Balancer

- Classic Load Balancer

\* What is autoscaling group ?

- We building scalining plan which automates how groups of differnet resources respond to changes in demand. We can optimize availabilty and cost.

\* Which type of ELB is good for application load ?

- Application Load Balancer

\* What is difference between application load balancer & classic load balancer ?

- The AWS Classic Load Balancer (CLB) operates at Layer 4 of the OSI model. What this means is that the load balancer routes traffic between clients and backend servers based on IP address and TCP port.

- AWS Application Load Balancer (ALB) operates at Layer 7 of the OSI model. At Layer 7, the ELB has the ability to inspect application-level content, not just IP and port. This lets it route based on more complex rules than with the Classic Load Balancer.

\* What is metrics in cloudwatch ?

- A metric represents a time-ordered set of data points that are published to CloudWatch. Think of a metric as a variable to monitor, and the data points as representing the values of that variable over time.

\* Is it possible to recover your lost private key ?

- No not possible.

\* How can you connect your EC2 Instance if you lost your key ?

- Stop the instance.

- Create a new key pair

- Make note about the intace ami, volume id

- Create new instance from that key pair and detach root volume from main instance and attach in new.

- Then copy new key to the authorize\_key then detach from new and in main instance.

\* While connecting to your EC2 instances, what are the possible connection issues one might face ?

- Connection time out: Connection may time out due to long running processes or low network speed.

- Permission denied: You may be denied permission to connect to EC2 instance if the host key is not found.

\* What is Subnet & how many subnets are there in a VPC ?

- A subnet, or subnetwork, is a network inside a network. Subnets make networks more efficient. Through subnetting, network traffic can travel a shorter distance without passing through unnecessary routers to reach its destination.

- 200 subnet per vpc

\* Why do we make subnets ?

- Subnetting adds order and increased performance by splitting up traffic in larger networks. When you subnet your network, you ensure that traffic destined for a particular device within that subnet stays within the subnet.

\* What is routing table ?

- In computer networking, a routing table, or routing information base, is a data table stored in a router or a network host that lists the routes to particular network destinations, and in some cases,

\* How you can connect a private subnet with a public subnet ?

- The Nat gateway must be deployed in the public subnet with an Elastic IP.

\* Can VPC peering possible in two different region ?

- AWS uses the existing infrastructure of a VPC to create a VPC peering connection; it is neither a gateway nor a VPN connection, and does not rely on a separate piece of physical hardware.

**AWS Task**

**--------**

Task 1

:Write a script which will based on “Number of requests” metric of the ALB/ELB scale up webapp EC2 instances under the Load Balancer, increase AWS Elasticsearch Nodes count, and change the instance size of a MongoDB EC2 instance from m4.large to m4.xlarge. (without using ASG).

Task 2:

Architecture Diagram for a PHP/JAVA/Python based application to be hosted on AWS with all mentions like VPC, AWS/any other cloud platform services, well defined network segregation.

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**Scripting (SHELL/Python)**

**------------------------**

**Shell Task**

**----------**

Task1:

Bash script to setup a whole LAMP stack, PHP app can be Wordpress and DB can be MySQL. This script should install all components needed for a Wordpress website.

We should be able to run this script on a local machine or server and after execution of the script it should have Wordpress Running via Nginx/Apache.

DB user for Wordpress should also be made automatically from within the script and same should be set in Wordpress conf file.

Task 2:

Bash script to setup a whole JAVA application stack on a server.

This script should install all components needed for a Java/Grails application.

Once the script is run it should have the java application running and being served via Nginx on local machine or server. Sample java application can be simply a tomcat war etc

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**CI/CD**

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\* What is CI & CD ?

- Continous Build of an application and Continous delivery.

\* What is CI/CD pipeline ?

- Creating chain jobs in Jenkins is the process of automatically starting the sequential job after one job is executed successsfully.

This approch lets the user build multi-step build pipelines or triggered the rebuild of a project if one of the project dependencies is updated.

\* Difference between Continuous Delivery & Deployment ?

- Delivery means when ever we build a artifact it will upload to our artifactory repository but when

\* List the important tools & technologies used in Devops ?

-

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**Linux (RHEL)**

**------------**

\* What is Linux ?

- Linux is a open-source operation system based on linux-kernel

\* What are Linux OS Flavors ?

- Debian, fedora, centos, ubuntu

\* Difference between Debian & RPM based OS ?

- .deb files are for debian and rpm are for redhat ent lim.

For debian we use package manager as apt or dpkg but for RHEl we used yum and rpm. For RPM its need more dependencies than apt or dpkg.

\* What is Kernel ?

- Kernel is the Brain of the Linux which loads first and remains in the main memory and it connects the system hardware to the application through cmd or shell.

\* Explain the boot process of Linux OS ?

- BIOS (Basic Input/Output System) loads and executes MBR boot loader.

MBR is responsible for loading and executing the GRUB boot loader.

\* How is RHEL different from CentOS ?

- Redhat is the enterprise version, comes with support and chargeable

but CentOS is community version of Redhat bt it is free and support comes from the community as opposed to Redhat itself.

\* What is the Latest version of RHEL ?

- RHEL 8

\* What is Grub ?

- GRUB is the default boot loader in many linux distribution.

\* Difference between Grub & Grub2 ?

- GRUB2 is default boot loader of ubuntu whereas GRUB is generally used in RHEL older version.GRUB2 is generally transfer control to our os kernel. And it is designed for flexibility and performance to todays os.

In Grub, it is really hard for the normal user to modify the configuration. But Grub2 is more user-friendly, Grub-mkconfig will automatically changes the configuration.In Grub, partition number starts from 0, whereas in Grub2 it starts with 1.

\* What is boot loader ?

- A boot loader, also called a boot manager, is a small program that places the operating system (OS) of a computer into memory.

\* Do you think the boot process in RHEL 7 is faster than RHEL 6 ? If yes, How ?

- RHEL7 boots faster than its predecessors. This is achieved by simultaneously starting services that are not dependent on each other. In older versions, services used to start one after another.

\* What is .rpm & .deb ?

- .rpm is package manager of Redhat Distribution and .deb is for Debian Distribution.

\* What is RPM ?

- RPM is The Redhat default package manager

\* What is YUM ?

- YUM stands for Yellowdog Updater Modified and is a front end for Linux distributions that utilize the RPM package format.

\* Different methods to install the rpm based packages ?

-

\* What is Bash ?

- BASH is nothing Bourne-Again-Shell and a shell interpreter aof GNU OS.

And is compatible with .sh and It is more secure than Bourne-Shell.

\* What is Shell ?

- The shell is an interactive interface that allows users to execute other commands and utilities in Linux and other UNIX-based operating systems. When you login to the operating system, the standard shell is displayed and allows you to perform common operations such as copy files or restart the system.

\* How many types of SHells are there ?

- Bourne-Shell, Bourne-Again-Shell, C-Shell,Posix-Shell

\* Explain the daily used basic commands like cp, mv, rm ?

- touch, ls, pwd, mkdir, rmdir, rm … etc

\* What is the significance of touch command ?

- To create a file.

\* In how many ways you can create a file ?

- touch, cat, echo, vi editor, nano editor, printf ...

\* How to delete the content from a file ?

- $ sed -i “lineNo” <FileName>

\* Explain the process/work behind hitting the google.com ? how you access google.com ?

-

\* How many types of permissions are there ? What is chmod ?

- Read, Write, And Execute. Chmod is for file and folder permission

\* What is sticky bit ?

- It is used on folder to avoaid deletion and its content. It is used by chmod command. $ chmod +t <filename>

its only delete by owner or root.

\* What is ACLs ?

- ACL is for Access Control List means permission for access file for User Groups and Others.

\* What is SetGID, SetUID & Stickybit ?

- setuid means file permission to users as execute as a sudo user $ chmod u+s <file>

set gid means file permisiion to groups $ chgrp <Xgroup> <filename> then

chmod g+s < filename > --- for owner is Xgroup

The final special permission is the ‘sticky bit.’ When this is set on a directory, the files in that directory can only be removed by the owner or root.

$ chmod +t <dirname> = drwxrwxr-t , $ ls -ld <dirname>

\* Location where all the user information are stored ?

- cat /*etc/*passwd

\* File where user password are stored ?

- cat /*etc*/shadow

\* What is the default permission of a file ?

- 664 (rw-rw-r)

\* What is the significance of -rvf ?

-

\* What is PV, VG & LV ?

- Physical Volume, Volume Group, Logical Volume

\* What are the types of file system ?

-

\* What is XFS ?

-

\* Can we reduce XFS file system ?

-

\* How can we extend LV ?

-

\* Command to check running process ?

- ps -aux

\* Command to check RAM usage ?

- cat /*proc*/meminfo -in details

free, top

\* Command to check Disk usage ?

- du -h

\* Difference between ps -aux & top command ?

-

\* What are the ways to check CPU usage ?

- ps -aux , top

\* How to check CPU details ?

- cat *proc*cpuinfo , top

\* Explain the steps to create a partition & how to format with file system ?

-

\* Explain the steps to create LV ?

-

\* Explain steps to reduce XFS & EXT files systems ?

-

\* Significance of .bashrc file ?

- As a user, if there is an alias or variables that you use regularly, then instead of defining it every time you open the terminal, you can save it in the .bashrc file.

\* How you check the kernel version ?

- uname -r , cat /*proc*/version

\* How you check the Red hat release version ?

- cat /*etc*/redhat-release

\* Significance of resolv.conf file ?

- Type "less /etc/resolv.conf" into the terminal. This will display the configuration for the DNS servers on your system. Write down the IP addresses listed after "Nameserver."

\* What is DNS ? How you resolve DNS ? Types of DNS records ?

- DNS (Domain Name System and NOT Domain Name Server) is the system through which domain names are translated into IP addresses.

Type "less /etc/resolv.conf" into the terminal. This will display the configuration for the DNS servers on your system. Write down the IP addresses listed after "Nameserver."

Type "Ping" followed by one of the IP addresses you wrote down. If it responds "64 bytes from 128.200.1.4," then the DNS is available but not resolving names correctly.

\* Difference between Nginx & HTTP Server ?

- Let's see the difference between Apache and NGINX: Apache is an open-source HTTP server whereas Nginx is an open-source, high-performance asynchronous web server and reverse proxy server. ... In Apache, single thread is associated with only one connection, whereas a single thread in Nginx can handle multiple connections.

\* Port no of HTTP, FTP, SSH, HTTPS ?

- http: 80, ftp: 21, ssh: 22 , https: 443

\* What is SSH ? How you generate SSH-keys ?

- SSH is a secured encrypted conntion between two host over an insucure network. It can used for terminal access ,file transfer, and tunelling for other applications.

$ ssh-keygen -t rsa

\* What is Private & public key ? How they authenticate ?

- Private key stays with the user (and only there), while the public key is sent to the server. Typically with the ssh-copy-id utility. Server stores the public key (and "marks" it as authorized). Server will now allow access to anyone who can prove they have the corresponding private key.

\* Configuration file of SSH ?

- config, id-rsa, id-rsa.pub

\* Configuration file of HTTP ?

- /*etc/httpd/conf/httpd*

\* What is Virtual Hosting ? How you configure virtual hosting ?

- Multiple hosting in a single server.

\* Explain ifconfig command ?

- Interface Configuration is used to configure the kernel netwok interface. It uses the boot time to setup the interface as necessary.It is used to assign the ip address and netmask to an interface or to enable or disable a give interface.

\* Difference between IPv4 & IPv6 ?

- IPV4: IPv4 has 32-bit address length.

It Supports Manual and DHCP address configuration.

In IPv4 Encryption and Authentication facility not provided.

Ipv6: IPv6 has 128-bit address length

It supports Auto and renumbering address configuration.

In IPv6 Encryption and Authentication are provided .

\* What is MAC address ? can we change the physical address ?

- MAC address is the physical address, which uniquely identifies each device on a given network. To make communication between two networked devices, we need two addresses:IP address and MAC address. It is assigned to the NIC (Network Interface card) of each device that can be connected to the internet.

It stands for Media Access Control, and also known as Physical address.

No it cannot be changed because it hard coded into a network card.

\* How to check system uptime ?

- $ uptime

\* How to check memory information ?

- cat /*proc*/meminfo, top

\* What is SWAP ?

- **Swap space** in Linux is used when the amount of physical memory (RAM) is full. If the system needs more memory resources and the RAM is full, inactive pages in memory are moved to the swap space. … Swap space can be a dedicated swap partition (recommended), a swap file, or a combination of swap partitions and swap files.

\* What is the exact memory free in your system ?

- $ free

\* What is cache memory ?

- The purpose of cache memory is to act as a buffer between the very limited, very high-speed CPU registers and the relatively slower and much larger main system memory -- usually referred to as RAM. Cache memory has an operating speed similar to the CPU itself so, when the CPU accesses data in cache, the CPU is not kept waiting for the data.

\* What if you can do rm -rvf / ?

- -r means recursively, -f means forcefully (readonly files), -v means verbose mode.

\* Kinds of permission in Linux ?

- Read, Write , and Execute.

\* What is vim & vi ?

- Vi (Visual Ediditor) is a file editor. And Vim is Improved version of VI.

\* What is pipe | ?

- Pipe is a redirection in Linux which means out of 1st command used as input in 2nd.

\* What is grep command ?

- Find text

\* What Find command does ?

- Find Files , directory

\* How to redirect commands output ?

- Through bash output “>” to a file

\* What is systemd in Linux ?

- systemd is a system and service manager for Linux operating systems. When run as first process on boot (as PID 1), it acts as init system that brings up and maintains userspace services.

\* What does systemctl do ?

- systemctl is used to examine and control the state of service manager.

\* If you run a command like nautilus in terminal, whether it will block your terminal or not ?

-

\* If yes, whats the solution of this to not to unblock the terminal without closing the command application?

-

\* What is rsyslog ?

- Rsyslog is an open-source software utility used on UNIX and Unix-like computer systems for forwarding log messages in an IP network.

\* What is SSH-tunnel ?

- SSH tunnels allow connections made to a local port (that is, to a port on your own desktop) to be forwarded to a remote machine via a secure channel.

\* How to set history size ?

- increase HITFILESIZE

\* How to extend VG ?

-

\* What are logical & extended partitions ?

-

\* Explain the steps to reset root password at boot time ?

- **Step** 1: **Boot** to Recovery Mode.

1. **Step** 2: Drop Out to **Root** Shell.
2. **Step** 3: Remount the File System with Write-Permissions.
3. **Step** 4: **Change** the **Password**.

\* What are run-levels ? How many types of run levels are there ?

- A runlevel can simply be thought of as the state your system enters like if a system is in a single-user mode it will have a runlevel 1 while if the system is in a multi-user mode it will have a runlevel 5.

0 – System halt *i.e* the system can be safely powered off with no activity.

* 1 – Single user mode.
* 2 – Multiple user mode with no NFS(network file system).
* 3 – Multiple user mode under the command line interface and not under the graphical user interface.
* 4 – User-definable.
* 5 – Multiple user mode under GUI (graphical user interface) and this is the standard runlevel for most of the LINUX based systems.
* 6 – Reboot which is used to restart the system.

\* How we change the run level ?

- $ init 1 or 2 or 3 ---7

\* How to check the logs ?

- cd var/log

\* Difference between Journalctl & tail command ?

- $ journalctl to print all the sys log. TAIL the system logs to watch the system live as it operates

\* What does the subscription-manager do ?

- Subscription Manager is a local client which connects a system with the entitlement service.

\* How to archive a file ?

- tar -cvf <filename.tar> <foldername>

\* What is umask ?

- unix determine the file permission to newly created files.

\* How to kill a process ?

- kill PID

\* How to assign IP address manually ?

- **Set** Your **IP Address**. ifconfig eth0 192.168.1.5 netmask 255.255.255.0 up. Related. Masscan Examples: From Installation to Everyday Use.

**Set** Your Default Gateway. Route **add** default gw 192.168.1.1.

\* How to assign static IP address to a system ?

- **Set** Your **IP Address**. ifconfig eth0 192.168.1.5 netmask 255.255.255.0 up. Related. Masscan Examples: From Installation to Everyday Use.

**Set** Your Default Gateway. Route **add** default gw 192.168.1.1.

\* Explain the different types of Linux process states ?

-

\* What is a Zombie process ?

-

\* What is KVM ?

- Kernel-based Virtual Machine is a virtualization module in the Linux kernel that allows the kernel to function as a hypervisor.

\* What is hypervisor ?

- A hypervisor is a kind of emulator; it is computer software, firmware or hardware that creates and runs virtual machines.

\* Difference between MBR & GPT ?

- On an MBR disk, the partitioning and boot data is stored in one place. ... In contrast, GPT stores multiple copies of this data across the disk.

\* How you can mount a file system permanently ?

-

\* What is cron ? How to setup a cron job ?

- Log into your server via SSH using the Shell user you wish to **create** the **cron job** under.

1. You are then asked to choose an editor to view this file. #6 uses the program nano which is the easiest option. ...
2. A blank **crontab** file opens. Add the code for your **cron job**. ...
3. Save the file.

\* What is Kickstart ?

-

\* How to create a network bridge in Linux ?

-

\* Difference between iptables & firewalld

- Iptables is a program that allows a user to configure the security or firewall security tables provided by the Linux kernel firewall and the chains so that a user can add/remove firewall rules to it accordingly to meet their security requirements.

Firewalld provides a dynamically managed firewall with support for network/firewall zones that defines the trust level of network connections.

\* What is SElinux ?

- Security-Enhanced Linux is a Linux kernel security module that provides a mechanism for supporting access control security policies,

\* What is ISCSI & targetcli ?

-

\* Difference between NFS & SAMBA ?

-

\* What is nfsnobody ?

-

\* What is SSHFS ?

-

\* What is Kerberos ?

-

\* How to secure NFS with Kerberos ?

-

\* What is the difference between telnet & SSH ?

-

\* What is DHCP ?

-

\* What is Kickstart file ?

-

\* What is NTP Server ? How to configure NTP ?

-

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**Monitoring**

**------------**

\* Why we use monitoring ?

- Monitoring allows for proactive response, data security and data gathering and the overall good health of a application and program.

\* What are the different tools & technologies for monitoring ?

- Prometheus, nagios, splunk

\* How we monitor our applications & servers differently ?

-

\* What is Prometheus ? How is different from other monitoring tools ?

- It is a monitoring tool. Prometheus on the applicative aspect of the application and its infrastructure. Prometheus collects data from applications that push metrics to their api endpoints.

\* What is ELK stack ?

- The ELK stack is a collection of three open source products- Elasticsearch,logstash,Kibana.

Elasticsearch- storing Logs

Logstash- Collects logs and evnt data and transform data also.

Kibana uses ElasticSearch DB to explore, visualize and share.

\* Why we use Grafana ?

- Grafana is a multi-platform open source analytics and interactive visualization web application. It provides charts, graphs, and alerts for the web when connected to supported data sources.

\* How we query different outputs in Prometheus ?

- The console tab allows you to evaluate a query expression at the current time.

After running the query a table will show the current value of each result time series.

\* What type of graph can be implemented in Grafana ?

-