# **DEV-OPS Preparation**

1. **What are some ways to increase client-side performances?**
2. **Can you explain the significance of a primary/replica database architecture?**

**Ans:** Replication is the process of copying and maintaining database objects in multiple databases that make up a distributed database system. Replication can improve the performance and protect the availability of applications because alternate data access options exist. For example, an application might normally access a local database rather than a remote server to minimize network traffic and achieve maximum performance. Furthermore, the application can continue to function if the local server experiences a failure, but other servers with replicated data remain accessible. Oracle supports two different forms of replication: basic and advanced replication.

1. **What are some caching strategies you can implement to increase performances?**
2. **What are the advantages and disadvantages of implementing a Micro-Services Architecture?**
3. **What are the differences between vertical and horizontal scalability?**
4. **What languages are you most comfortable with?**
5. **What are the differences between a relational and non-relational database?**
6. **When do we optimize the database?**
7. **Can you give some way to optimize the performance of a database?**
8. **What does A.C.I.D mean?**
9. **How can you customize the query plan to increase throughput?**
10. **Explain how you would do Database continuous delivery?**
11. **How to view running processes in Linux?**
12. **How do you check server uptime?**
13. **How do you Start/Stop Services?**
14. **How do you display shell’s environment variables?**
15. **What adding #!/bin/bash at the top of a script do?**
16. **What does a& after a command do?**
17. **What does piping command mean?**
18. **What distributions have you used on server?**
19. **What is the importance of SSL?**
20. **What is a SQL injection?**
21. **What is cross-site scripting(XSS)?**
22. **Why shouldn’t you roll your own crypto?**
23. **How are passwords stored on databases?**
24. **What is a man-in-the-middle attack?**
25. **How do you safely manage environment variables in cloud environment?**
26. **Which cloud providers are you familiar with?**
27. **What are the benefits of using a cloud provider?**
28. **Have you managed production systems in the past?**
29. **Which Configuration Management tools are you most comfortable with? Examples include Puppet, Chef, Ansible and Salt.**
30. **How does Docker improve scalability, distributed computing, and efficiency vs traditional cloud virtual machines?**
31. **List some Docker use cases?**
32. **What is vagrant?**
33. **How Vagrant helps making development environment easy?**
34. **Can you name some hypervisors on which Vagrant provides wrapper over?**
35. **Does Vagrant also provide wrapper of dev-ops tools?**
36. **Does Vagrant supports Docker containers also?**
37. **Which server environments Vagrant provides support?**
38. **What all steps required to configure Vagrant?**
39. **What are the commands for making Vagrant up and running?**
40. **What are the benefits of using Vagrant?**
41. **What is the difference between Linux and Unix?**
42. **what's a KVM?**
43. **How would you make sure a service starts on an OS of your choice?**
44. **Here's a terminal, what flavor of Linux is running?**
45. **write a command to delete all empty files in a directory?**
46. **Kill the process by a particular user without using pkill.**
47. **What is active directory? How would you make a server join a demine?**
48. **what is the difference between TCP and UDP?**
49. **What is ICMP? Why should you block it?**
50. **What is Ipv6? Why should we care?**
51. **In a corporate environment user from London can ping a particular server but users from New York cannot, what steps will you take to troubleshoot the problem?**
52. **what steps are needed to change Hostname on Linux machine?**
53. **Where is the hostname file on Windows server?**
54. **How is host name resolved on a Linux machine?**
55. **What's s SSL tunnel?**
56. **What's a SDN?**
57. **What is your favorite scripting language? Why?**
58. **What are design patterns?**
59. **Describe some scripts you have written/automation you have done/programs you have written. Justify your choice of scripting language and design patterns?**
60. **Can you port the same script to another language? On another OS?**
61. **How long it would take you to learn another language?**
62. **How would you trace a binary deployment back to the source code? How would you structure such a build?**
63. **How do you manage dependencies?**
64. **CI can only be used to find compile time errors quickly. True/False. Explain.**
65. **How would you structure CD for an app that depends on 3 other apps?**
66. **How would you plan capacity for your CI/CD servers?**
67. **All your built binaries should be checked into your git/svn for quick deployment and posteriority. True/False. Explain.**

## **Software Delivery**

1. What is Continuous Integration?
2. What CI tools have you used? Example: Travis-CI.
3. What is Continuous Delivery and why is it important?
4. What is Continuous Deployment?
5. Explain the importance of A/B testing and how it relates to software delivery? o What are your favorite deployment techniques and why? Examples include: [0 downtime](http://www.ebaytechblog.com/2013/11/21/zero-downtime-instant-deployment-and-rollback/), [Canary](http://martinfowler.com/bliki/CanaryRelease.html), or [Blue/Green](http://martinfowler.com/bliki/BlueGreenDeployment.html)deployments.
6. Explain a time when a software release has gone poorly
7. How can you reduce the time to test and Deploy code?

## **Source Control**

1. What types of source control programs are you comfortable with?
2. What are the benefits of using source control?
3. Describe some branching strategies that you have used?
4. Give an example of a good commit message?

## **Testing**

1. Talk about different types of automated testing you have implemented?
2. What is the importance of software testing?
3. What testing paradigms do you use, if any?
4. Explain the difference between unit and end to end testing?
5. Have you used any testing frameworks? If so, which ones?

## **Architecture**

1. Explain what a RESTful architecture is?
2. How would you scale a slow website?
3. Your application just got millions of users overnight, what do you do?
4. What are some ways to increase client-side performance?
5. Can you explain the significance of a primary/replica database architecture?
6. What are some caching strategies you can implement to increase performance?
7. What are the advantages and disadvantages of implementing a Microservices architecture?
8. What is the difference between vertical and horizontal scalability?

## **Database**

1. What is the difference between a relational and non-relational database?
2. When do we optimize the database?
3. Can you give some ways to optimize the performance of a database?
4. What does A.C.I.D mean?
5. How can you customize the query plan to increase throughput?
6. Explain how you would do Database Continuous Delivery?

## **Linux**

1. How can you view running processes?
2. How do you check server uptime?
3. How do you start/stop services?
4. How do you display the shell’s environment variables?
5. What does #!/bin/bash at the top of a script do?
6. What does "&" after a command do?
7. What does piping commands mean?
8. What distributions have you used on servers? Why?

## **Security**

1. What is the importance of SSL?
2. What is a SQL injection?
3. What is cross-site scripting (XSS)?
4. Why shouldn’t you roll your own crypto?
5. How are passwords stored on databases?
6. What is a Man-in-the-middle attack?
7. How do you safely manage environment variables in a cloud environment?
8. How do you manage security updates?
9. How do you keep encryption keys and credentials secure but make them available to machines that need them?

## **Cloud**

1. Which cloud providers are you familiar with?
2. What are the benefits of using a cloud provider?
3. Have you managed production systems in the past?

## **Configuration Management**

1. Which Configuration Management tools are you most comfortable with? Examples include: Chef, Salt, Puppet, or Ansible?

## **Container**

1. How does Docker improve scalability, distributed computing, and efficiency vs. traditional cloud virtual machines?
2. List some Docker use cases

## **Networking**

1. What is the difference between a vlan and subnet?
2. What is a broadcast domain?
3. What is the difference between icmp, tcp and udp?
4. Explain how a tcp session is set up?
5. How are tcp options negotiated and selected?
6. How would you use tcpdump to determine if one remote host was making a connection to your server?
7. What is the difference between TCP and UDP ?
8. What is ICMP ? Why should you block it ?
9. What is IPv6 ? Why should we care ?
10. In a corporate environment users from London can ping a particular server but users from New York cannot, what steps will you take to troubleshoot the problem ?
11. What steps are needed to change the hostname on a Linux machine ?
12. Where is the hostname file on a Windows server ?
13. How is a hostname resolved on a Linux machine ?
14. What's a SSL tunnel ?
15. What's a SDN ?

## **General**

1. Which Software Stack do you use and why?
2. Describe your worst Fear?
3. What new technology would you like to learn?
4. Have you worked on any side projects?
5. Do you contribute to any open source projects?

**OS**  
  
1) What is the difference between Linux and Unix ?  
  
2) What's a KVM ?  
  
3) How would you make sure a service starts on an OS of your choice ?  
  
4) Here's a terminal. What flavor of Linux is running ?  
  
5) Write a command to delete all empty file under a directory.  
  
6) Kill all the procs by a particular user without using pkill  
  
7) What is Active Directory ? How do you make a server join a domain ?  
  
Networking

**Scripting (questions here vary on rating and depend pretty much on telling the person to write a short script)**

1. What is your favorite scripting language ? Why ?
2. What are design patterns ?
3. Describe some scripts you have written/automation you have done/ programs you have written. Justify your choice of scripting language and design patterns.
4. Can you port the same script to another language ? On another OS ?
5. How long would it take you to learn another language ?

**CI/CD**

1. How would you trace a binary deployment back to the source code ? How would you structure such a build ?
2. How do you manage dependencies ?
3. CI can only be used to find compile time errors quickly. True/False. Explain.
4. How would you structure CD for an app that depends on 3 other apps ?
5. How do you plan capacity for your CI/CD servers ?
6. All your built binaries should be checked in to your git/svn for quick deployment and posteriority. True/False. Explain

**MUST PREPARE**

1. How would you make software deployable?
2. How do you expect you would be required to multitask as a DevOps professional?
3. What testing is necessary to ensure that a new service is ready for production?
4. What’s a PTR in DNS?
5. Describe two-factor authentication?
6. What are the advantages of NoSQL database over RDBMS?
7. What is an MX record in DNS?
8. What are some examples of how you might scale a write/read-heavy application? Why?
9. Tell me about the worst-run/best-run outage you’ve been a part of. What made it bad/well-run?
10. How would you assess how “deployable” a system is?
11. How do you know when a deployment is ready? How would you manage that deployment?
12. How would you prepare for a migration from one platform to another?
13. What is the purpose of a post-mortem meeting?
14. Do you know how to learn from mistakes? How do you get the most value out of post-mortems?
15. How would you make key aspects of a software system traceable?
16. How do you handle interruptions?
17. How would you deploy software to 5000 systems?
18. What different types of testing need to be carried out on a software system, and
19. what tools would you use to achieve this testing?

#### General Questions:

* What did you learn yesterday/this week?
* Talk about your preferred development/administration environment. (OS, Editor, Browsers, Tools etc.)
* Tell me about the last major Linux project you finished.
* Tell me about the biggest mistake you've made in [some recent time period] and how you would do it differently today. What did you learn from this experience?
* Why we must choose you?
* What function does DNS play on a network?
* What is HTTP?
* What is an HTTP proxy and how does it work?
* Describe briefly how HTTPS works.
* What is SMTP? Give the basic scenario of how a mail message is delivered via SMTP.
* What is RAID? What is RAID0, RAID1, RAID5, RAID10?
* What is a level 0 backup? What is an incremental backup?
* Describe the general file system hierarchy of a Linux system.

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Simple Linux Questions:

* What is the name and the UID of the administrator user?
* How to list all files, including hidden ones, in a directory?
* What is the Unix/Linux command to remove a directory and its contents?
* Which command will show you free/used memory? Does free memory exist on Linux?
* How to search for the string "my konfi is the best" in files of a directory recursively?
* How to connect to a remote server or what is SSH?
* How to get all environment variables and how can you use them?
* I get "command not found" when I run ifconfig -a. What can be wrong?
* What happens if I type TAB-TAB?
* What command will show the available disk space on the Unix/Linux system?
* What commands do you know that can be used to check DNS records?
* What Unix/Linux commands will alter a files ownership, files permissions?
* What does chmod +x FILENAMEdo?
* What does the permission 0750 on a file mean?
* What does the permission 0750 on a directory mean?
* How to add a new system user without login permissions?
* How to add/remove a group from a user?
* What is a bash alias?
* How do you set the mail address of the root/a user?
* What does CTRL-c do?
* What is in /etc/services?
* How to redirect STDOUT and STDERR in bash? (> /dev/null 2>&1)
* What is the difference between UNIX and Linux.
* What is the difference between Telnet and SSH?
* Explain the three load averages and what do they indicate.

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Medium Linux Questions:

* What do the following commands do and how would you use them?
  + tee
  + awk
  + tr
  + cut
  + tac
  + curl
  + wget
  + watch
  + head
  + tail
* What does an & after a command do?
* What does & disown after a command do?
* What is a packet filter and how does it work?
* What is Virtual Memory?
* What is swap and what is it used for?
* What is an A record, an NS record, a PTR record, a CNAME record, an MX record?
* Are there any other RRs and what are they used for?
* What is a Split-Horizon DNS?
* What is the sticky bit?
* What does the immutable bit do to a file?
* What is the difference between hardlinks and symlinks? What happens when you remove the source to a symlink/hardlink?
* What is an inode and what fields are stored in an inode?
* How to force/trigger a file system check on next reboot?
* What is SNMP and what is it used for?
* What is a runlevel and how to get the current runlevel?
* What is SSH port forwarding?
* What is the difference between local and remote port forwarding?
* What are the steps to add a user to a system without using useradd/adduser?
* What is MAJOR and MINOR numbers of special files?
* Describe the mknod command and when you'd use it.
* Describe a scenario when you get a "filesystem is full" error, but 'df' shows there is free space.
* Describe a scenario when deleting a file, but 'df' not showing the space being freed.
* Describe how 'ps' works.
* What happens to a child process that dies and has no parent process to wait for it and what’s bad about this?
* Explain briefly each one of the process states.
* How to know which process listens on a specific port?
* What is a zombie process and what could be the cause of it?
* You run a bash script and you want to see its output on your terminal and save it to a file at the same time. How could you do it?
* Explain what echo "1" > /proc/sys/net/ipv4/ip\_forward does.
* Describe briefly the steps you need to take in order to create and install a valid certificate for the site[https://foo.example.com](https://foo.example.com/).
* Can you have several HTTPS virtual hosts sharing the same IP?
* What is a wildcard certificate?
* Which Linux file types do you know?
* What is the difference between a process and a thread? And parent and child processes after a fork system call?
* What is the difference between exec and fork?
* What is "nohup" used for?
* What is the difference between these two commands?
  + myvar=hello
  + export myvar=hello
* How many NTP servers would you configure in your local ntp.conf?
* What does the column 'reach' mean in ntpq -p output?
* You need to upgrade kernel at 100-1000 servers, how you would do this?
* How can you get Host, Channel, ID, LUN of SCSI disk?
* How can you limit process memory usage?
* What is bash quick substitution/caret replace(^x^y)?
* Do you know of any alternative shells? If so, have you used any?
* What is a tarpipe (or, how would you go about copying everything, including hardlinks and special files, from one server to another)?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Hard Linux Questions:

* What is a tunnel and how you can bypass a http proxy?
* What is the difference between IDS and IPS?
* What shortcuts do you use on a regular basis?
* What is the Linux Standard Base?
* What is an atomic operation?
* Your freshly configured http server is not running after a restart, what can you do?
* What kind of keys are in ~/.ssh/authorized\_keys and what it is this file used for?
* I've added my public ssh key into authorized\_keys but I'm still getting a password prompt, what can be wrong?
* Did you ever create RPM's, DEB's or solaris pkg's?
* What does :(){ :|:& };: do on your system?
* How do you catch a Linux signal on a script?
* Can you catch a SIGKILL?
* What's happening when the Linux kernel is starting the OOM killer and how does it choose which process to kill first?
* Describe the linux boot process with as much detail as possible, starting from when the system is powered on and ending when you get a prompt.
* What's a chroot jail?
* When trying to umount a directory it says it's busy, how to find out which PID holds the directory?
* What's LD\_PRELOAD and when it's used?
* You ran a binary and nothing happened. How would you debug this?
* What are cgroups? Can you specify a scenario where you could use them?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Expert Linux Questions:

* A running process gets EAGAIN: Resource temporarily unavailable on reading a socket. How can you close this bad socket/file descriptor without killing the process?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Networking Questions:

* What is localhost and why would ping localhost fail?
* What is the similarity between "ping" & "traceroute" ? How is traceroute able to find the hops.
* What is the command used to show all open ports and/or socket connections on a machine?
* Is 300.168.0.123 a valid IPv4 address?
* Which IP ranges/subnets are "private" or "non-routable" (RFC 1918)?
* What is a VLAN?
* What is ARP and what is it used for?
* What is the difference between TCP and UDP?
* What is the purpose of a default gateway?
* What is command used to show the routing table on a Linux box?
* A TCP connection on a network can be uniquely defined by 4 things. What are those things?
* When a client running a web browser connects to a web server, what is the source port and what is the destination port of the connection?
* How do you add an IPv6 address to a specific interface?
* You have added an IPv4 and IPv6 address to interface eth0. A ping to the v4 address is working but a ping to the v6 address gives yout the response sendmsg: operation not permitted. What could be wrong?
* What is SNAT and when should it be used?
* Explain how could you ssh login into a Linux system that DROPs all new incoming packets using a SSH tunnel.
* How do you stop a DDoS attack?
* How can you see content of an ip packet?
* What is IPoAC (RFC 1149)?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) MySQL questions:

* How do you create a user?
* How do you provide privileges to a user?
* What is the difference between a "left" and a "right" join?
* Explain briefly the differences between InnoDB and MyISAM.
* Describe briefly the steps you need to follow in order to create a simple master/slave cluster.
* Why should you run "mysql\_secure\_installation" after installing MySQL?
* How do you check which jobs are running?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) DevOps Questions:

* Can you describe your workflow when you create a script?
* What is GIT?
* What is a dynamically/statically linked file?
* What does "./configure && make && make install" do?
* What is puppet/chef/ansible used for?
* What is Nagios/Zenoss/NewRelic used for?
* What is the difference between Containers and VMs?
* How do you create a new postgres user?
* What is a virtual IP address? What is a cluster?
* How do you print all strings of printable characters present in a file?
* How do you find shared library dependencies?
* What is Automake and Autoconf?
* ./configure shows an error that libfoobar is missing on your system, how could you fix this, what could be wrong?
* What are the advantages/disadvantages of script vs compiled program?
* What's the relationship between continuous delivery and DevOps?
* What are the important aspects of a system of continuous integration and deployment?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Fun Questions:

* A careless sysadmin executes the following command: chmod 444 /bin/chmod - what do you do to fix this?
* I've lost my root password, what can I do?
* I've rebooted a remote server but after 10 minutes I'm still not able to ssh into it, what can be wrong?
* If you were stuck on a desert island with only 5 command-line utilities, which would you choose?
* You come across a random computer and it appears to be a command console for the universe. What is the first thing you type?
* Tell me about a creative way that you've used SSH?
* You have deleted by error a running script, what could you do to restore it?
* What will happen on 19 January 2038?

#### [[⬆]](https://github.com/chassing/linux-sysadmin-interview-questions#toc) Demo Time:

* Unpack test.tar.gz without man pages or google.
* Remove all "\*.pyc" files from testdir recursively?
* Search for "my konfu is the best" in all \*.py files.
* Replace the occurrence of "my konfu is the best" with "I'm a linux jedi master" in all \*.txt files.
* Test if port 443 on a machine with IP address X.X.X.X is reachable.
* Get <http://myinternal.webserver.local/test.html> via telnet.
* How to send an email without a mail client, just on the command line?
* Write a get\_prim method in python/perl/bash/pseudo.
* Find all files which have been accessed within the last 30 days.
* Explain the following command (date ; ps -ef | awk '{print $1}' | sort | uniq | wc -l ) >> Activity.log
* Write a script to list all the differences between two directories.
* In a log file with contents as <TIME> : [MESSAGE] : [ERROR\_NO] - Human readable text display summary/count of specific error numbers that occurred every hour or a specific hour.

#### General Questions

* Have you used Puppet, Chef, Salt or Ansible?
  + How long have you used it for?
  + Have you used it in production?
* Describe the size of the environment that you automated (how many servers, small scale or large scale)
* Describe the most challenging situation that you were faced with and how did you fix it?

#### Network Questions

* What’s a PTR in DNS?
* What’s a MX record in DNS?
* How a CDN chooses the closest host to serve a client?
* In which cases would you choose to not implement a CDN?

#### Linux Questions

* Difference between RAID 0, 1 and 5?
* What’s the advantage of one RAID over another?
* Alternative to init.d in Linux?
* How to view running processes in Linux?
* How to check DNS records in Linux?

#### Windows Questions

* Are you familiar with just linux or have you worked with Windows environments as well?
  + If yes to windows do you use powershell? Octopus Deploy? TeamCity? Active Directory? Azure?

#### Security Questions

* Difference between authorization and authentication?
* Describe two-factor authentication

#### Cloud Questions

* Have you used AWS or other cloud platforms?
  + How long for?
  + In production or just at home on personal projects?
* How to keep logs on servers or containers with ephemeral storage?
* Where to look when trying to reduce cloud costs without reducing capacity?

#### Architecture Questions

* How to scale a database without just increasing capacity of a single machine while maintaining [ACID](http://en.wikipedia.org/wiki/ACID)?
* How to choose between relational database and noSQL?
* What advantages a NoSQL database like MongoDB has, comparing to MySQL?
* How to manage API versions?
* How to reduce load time of a dynamic website?
* How to reduce load time of a static website?

#### CI Questions

* Are you familiar with CI tools? Which ones?
* Describe your experience implementing continuous deployment

#### Coding Questions

* Describe a dev/test/production workflow using GIT
* More on [Front-end Developer Job Interview Questions](https://github.com/h5bp/Front-end-Developer-Interview-Questions/blob/master/README.md)

#### Fun Questions

* Do you have any side projects?
* If you could learn any technology now, what would be?
* **On a fresh install, why does Apache have three config files - srm.conf, access.conf and httpd.conf?** - The first two are remnants from the NCSA times, and generally you should be ok if you delete the first two, and stick with httpd.conf.
* **What’s the command to stop Apache?** - kill the specific process that httpd is running under, or killall httpd.If you have apachectl installed, use apachectl stop.
* **What does apachectl graceful do?** - It sends a SIGUSR1 for a restart, and starts the apache server if it’s not running.
* **How do you check for the httpd.conf consistency and any errors in it?** - apachectl configtest
* **When I do ps -aux, why do I have one copy of httpd running as root and the rest as nouser?** - You need to be a root to attach yourself to any Unix port below 1024, and we need 80.
* **But I thought that running apache as a root is a security risk?** - That one root process opens port 80, but never listens to it, so no user will actually enter the site with root rights. If you kill the root process, you will see the other kids disappear as well.
* **Why do I get the message "… no listening sockets available, shutting down"?** - In Apache 2 you need to have a listen directive. Just put Listen 80 in httpd.conf.
* **How do you set up a virtual host in Apache?**   
  <VirtualHost www.techinterviews.com>  
  ServerAdmin [admin@techinterviews.com](mailto:admin@techinterviews.com)  
  DocumentRoot /home/apache/share/htdocs/hostedsites  
  ServerName www.techinterviews.com  
  ErrorLog /home/apache/logs/error/hostedsites/error\_log  
  TransferLog /home/apache/logs/access/hostedsites/access\_log  
  </VirtualHost>
* **What is ServerType directive?** - It defines whether Apache should spawn itself as a child process (standalone) or keep everything in a single process (inetd). Keeping it inetd conserves resources. This is deprecated, however.
* **What is mod\_vhost\_alias?** - It allows hosting multiple sites on the same server via simpler configurations.
* **What does htpasswd do?** - It creates a new user in a specified group, and asks to specify a password for that user.
* **If you specify both deny from all and allow from all, what will be the default action of Apache?** - In case of ambiguity deny always takes precedence over allow.