1. What is a WebLogic server and what purposes does it serve?

WebLogic server is an Oracle offering, a Java-based application server that can host Java-based applications. Web applications and Enterprise applications that are developed can be deployed in a WebLogic server, to serve the business logic. To put it in layman's words, with a WebLogic server we can easily deploy, distribute, run Java-based applications.

2. What are the basic components of a WebLogic server?

Following are the basic components of a WebLogic server:

- Domains
- Node Manager
- Admin server
- Managed server
- WebLogic server cluster

3. What is a domain in a WebLogic server?

Domains can be understood as that logical set of resources within the Oracle WebLogic server that individually constitutes a single unit. A domain includes a special Oracle WebLogic Server instance called the Administration Server, from where you configure and manage all resources in that specific domain. It can logically separate the kinds of environments, and Organizational divisions.

4. Is WebLogic an Application server or a Web server?

WebLogic is more of an Application server that can host both Web applications and Enterprise applications (such as EJBs). Hosting Enterprise Applications (such as .ear files) can only be done via Application servers such as WebLogic, JBoss, or WebSphere rather than Tomcat or such.

5. What are the various thread states in a WebLogic server?

Following are the various thread states in a WebLogic server:

- STUCK
- HOGGER
- ACTIVE
- STANDBY
- IDLE

6. What is an Administration server?

The Administration Server or Admin Server is a certain category of Oracle WebLogic Servers. It provides a central point for managing a WebLogic Server domain. Except for this type of server, all other WebLogic Server instances in a domain are called Managed Servers. As the Admin Server is the central domain configuration interface,

it is used to create, delete and configure the resources of a domain like managed server, machine, cluster, data source, work managers, etc.

If a domain has only a single WebLogic Server instance, it works as both the Administration Server and the Managed Server.

7. How do we access the Admin console?

You can access the WebLogic server's admin console by entering the administration machine name and port in the navigation bar of a browser. There you'll be prompted to provide the login credentials.

8. What is the default port of the WebLogic admin server?

The default port of the WebLogic Admin server is 7001 and for SSL it is going to be 7002.

9. What are Managed servers?

The Managed Server is an instance of the WebLogic server that runs on JVM and has its configuration. We deploy the java components such as Web Applications, EJB Applications, JMS Applications, and Web services in the managed server. The managed server contacts the administration server for configuration information. It runs the business application in a production environment. It does not depend on any other managed servers in a domain unless they are not in a cluster. We can have many managed servers in a domain. Generally, a single domain can have zero to N Managed Server.

Server instances other than the Administration Server are called Managed Servers in a domain. The Managed Servers in a domain can start-up independently of the Administration Server if the Administration Server is unavailable. We can configure two or more Managed Servers as a WebLogic Server cluster to increase the application scalability and availability.

10. How do we start a Managed server when there isn't an Administration server?

When the WebLogic server's Administration server is not available, then the Managed server goes into an independent mode to carry out its own set of operations. But as usual, the Managed server connects with the Administration server during its own startup and always maintains a read-only copy of the configuration file with itself.

11. What is the boot.properties file in the WebLogic server? What is the importance of this file?

The boot.properties file is available under domain/servers/<YOUR_SERVER_NAME>/security folder. This file is used by both the Administration server and/or a Managed server to get the login credentials from it.

12. What is config.xml in the WebLogic server?

The config.xml is something like a centralized repository of all details that are required for a domain. Each and every configuration that is made from any mode of connection would be registered in this file for common access. WebLogic Server 9.x onwards, it also contains the references to other XML configuration files that are available under the domain/config folder.

13. What is SSL in a WebLogic server?

Secure Sockets Layer (SSL) provides a very well-secured connection allowing applications that connect over a network to authenticate in order to identify each others' identity. By authenticating so, it allows the Server and optionally the Client to verify its identity on a network connection. The data that gets transmitted between the server and client is encrypted which will only be for the intended recipients.

14. What is the MSI mode in the WebLogic server? How do we enable or disable this option?

MSI stands for Managed Server Independence. A Manage Server can work independently when the Administration server is not available. In order to start a Managed Server in the MSI mode, then you will have to perform the following:

1. There should be a config subdirectory under the Managed server's root directory.

2. Start the Managed server from CLI (command line interface) or by using a script.

You can enable or disable this by checking or unchecking the following checkbox:

- Environment -> Servers -> YOUR_SERVER_NAME -> Tuning -> Advanced -> Managed Server Independence Enabled checkbox

15. What is the name of the default JVM which is used for a WebLogic server?

The Sun HotSpot JDK is the default JVM that is available for development whereas JRockit is the JVM that is used for the production of WebLogic servers. Based on the OS that is being used, the choice of Certified JDK / JVM depends.

16. How do we change the default JVM to another one?

The process to change the default JVM to another one is as follows:

1.Update the JAVA_HOME variable in the start script of the server

2. Modify your config.xml of the domain to point it to JRockit javac.exe

3. Check and modify accordingly to clip off any references to Sun JVM from the startup scripts.

17. What is Clustering? How does communication happen in a Cluster?

The process of grouping a certain set of servers to attain high availability and scalability is called Clustering. Communication within a Cluster happens via a multicast IP by sending periodic messages called Heartbeat messages.

18. What are Horizontal and Vertical Clustering?

Clustering can be done in two forms - Horizontal and the other one is Vertical.

1. Vertical Clustering makes use of multiple Java Application servers on one Physical machine. The CPU usage, the Machine's processing power, and the JVM heap memory are the main factors that help us decide how many instances should be run on one machine with Vertical Scaling.

2. Horizontal Clustering makes use of multiple Java Application servers on more than one Physical system. This is much more reliable than Vertical Clustering as there are many more machines than in the Cluster when compared to one machine in Vertical Clustering.

19. How does a server know that another server is UNAVAILABLE in a cluster?

There are two ways by which the WebLogic server makes a note of the participating server nodes' availability:

1. If a participating server node fails to emit 3 consecutive heartbeat messages, then the other server nodes consider that this server node is OFFLINE or UNAVAILABLE.

2. If there are any kind of socket failures corresponding to a specific server node, then WebLogic considers that the server node where these socket failures are reported to be UNAVAILABLE.

20. What are the advantages of Clustering?

The three main advantages that WebLogic server clustering brings are as follows:

High Availability:

High Availability is achieved in the WebLogic server by a combination of the following features - Failover, Replication, and also with the migratable services. With these, we can use WebLogic seamlessly without worrying even when a participating node is down or unavailable.

Load Balancing:

All server nodes are distributed to receive requests, thereby load balancing is achieved in the WebLogic server.

Scalability:

We can add server instances without deteriorating or bringing down the applications - hence we can scale as per the request load. This doesn't impact the clients.

21. Why is the Node Manager required?

Node Manager is a Java-based utility that comes in handy to perform some common operations for a given Managed server. It runs as a totally different service than from the WebLogic server.

22. What are Unicast and Multicast in a WebLogic server?

Unicast is an option by which a packet can be sent point to point, to a specific member but not to everyone. This makes it much more like a private conversation between two specific members instead of a group chat or etc.

Multicast, on the other hand, is more like a broadcast UDP option by which every member in the group is notified with the packet or announcement. The defined range for Multicast addresses are 224.0.0.1 to 239.255.255.255, so the message that is announced is more like a common one and available for every member.

23. How can you differentiate between a Server hang issue and a Server crash issue?

A server crash can be understood as a situation where the JAVA process no longer exists. On the other hand, A server hang issue is when the server doesn't respond back with proper responses. In such a case, we can collect multiple sets of dumps from the server and analyze the issue which is causing this lowered performance.

24. What are the possible reasons for a server crash?

Following could be the possible reasons for a server crash, though it is not limited to just these scenarios, but the reasons can span much more than these:

- Mismatch in the JDBC driver used.
- Unsupported configuration
- SSL native libraries
- JVM
- Native IO related issues

25. How do you analyse a server crash?

A server crash always comes with a corresponding hs_err_pid file which contains the actual cause of the crash in the first place. You can refer to this file and identify the cause of the issue and basis on that, we can take the next steps:

1.If it is a driver related issue, reach out to the respective driver teams

2.If it is related to the Native IO issue, kindly disable it and find an appropriate cause.

26. How do you go about analyzing a server hang issue?

A server hang issue is relatively different from a server crash, where there could be possibly different sets of reasons for it to happen - lack of resources, unimaginable load, other parameters that affect the system, etc.

Firstly we can use the following command to see if you get a good response:

1.java Weblogic.admin ping

2.Based on the outcome of this command, you can probably check for the cause of the issue.

27. What are the possible causes of OUT OF MEMORY?

There can possibly the following possibilities for an OUT OF MEMORY issue:

- Heap size would've less compared to the load received
- Resource leaks from the application code itself.
- Any JVM bugs that alter the occurrence of a full GC
- Placing of objects taking longer than that of a given HTTP session

28. How can one tune the performance of a WebLogic server?

The performance of a WebLogic server can be done at 4 different levels, which are as follows:

JVM Tuning:

- Monitoring GC
- Tuning GC strategy

Core server Tuning:

- Tune Chunk pool and Chunk size
- By using performance packs
- Tune Work manager
- Connection backlog buffering

OS Tuning:

- Setting the TCP IP parameters such as tcp_conn_req_max_q and tcp_time_wait_interval.

Application Tuning:

- Pre-compile of JSPs
- EJB pool size cache

29. What is Core Server tuning?

This is the process of tuning your WebLogic core server with the following parameters to consider - chunk pool, chunk size, tune work manager, connection backlog buffering, etc.

30. What is your understanding of WebLogic Cache Server?

A WebLogic cache server (also known as a Reverse Proxy) helps speed up the Web traffic. The basic understanding is that the Web traffic can be graphic intensive and there is a definite need for caching the repetitive pages. If not done, then it might slow down the Web traffic.

31. Why do we need to clear the WebLogic Cache? How do you achieve it?

The need to clear the WebLogic Cache comes in when you go for a newer version deployment. That is when we need to clear the WebLogic Cache.

We can achieve this by the following means:

- Removing these Cache folders manually after the WebLogic server is brought down gracefully.
- Use the stage mode to no_stage deployment, by doing this the Cache gets cleared automatically whenever an application is undeployed.

32. Explain the different modes of the WebLogic server?

- There are two different modes in the WebLogic server - namely Development mode and Production mode. Differences between these modes are as follows:

Development Mode	Production Mode
Default JDK is Sun HotSpot	Default JDK is BEA JRockit
Usage of demo certificates for SSL is allowed	Usage of demo certificates for SSL will throw warnings.
Auto-deployment to ADMIN server (only) is enabled by default	Auto-deployment to ADMIN server (only) is disabled by default
On startup, server instances rotate their log files	Server log files rotate when they reach a limit of 5MB
ADMIN server uses an automatically created boot.properties file for the login credentials.	ADMIN server prompts for credentials during startup
Default of maximum JDBC data sources is 15	Default of maximum JDBC data sources is 25

The classLoader analysis tool, Web Service test client is available	The classLoader analysis tool, Web Service test client is not available
Node Manager login credentials are the same as Admin Server credentials	Node Manager login credentials are randomly generated

33. What is HTTP Tunneling? How do we configure it in a WebLogic server?

HTTP Tunneling is the process by which you simulate stateful socket communication between your WebLogic server and the corresponding Java Clients, where the requirements demand only the usage of the HTTP protocol. This is generally used to tunnel through an HTTP port under a security firewall. Though HTTP is a stateless protocol, the WebLogic server facilitates the HTTP tunneling feature to mask a connection to appear as if it was a T3Connection.

To enable HTTP Tunneling in the WebLogic Server, the following has to be done:

- Click on the Protocols tab -> General -> click to check the checkbox Enable Tunneling.

34. What are the differences between T3 and the HTTP protocol?

WebLogic makes use of the T3 protocols for both internal and external communications. T3 protocol is used in WebLogic's own implementation of RMI (Remote method invocation). On the other hand, HTTP protocol is used for all communications between the browser and a Web server as per the W3C standards.

35. What is your understanding of the various error codes within the WebLogic server?

The error codes within WebLogic Server range from BEA-000001 to BEA-2163006. The types of errors that these mentions are classified as below:

1. INTERNAL_ERROR

2. ERROR

3. NOTIFICATION

4. WARNING

36. What would happen if the Administration Server fails?

If the Administration Server fails for a domain, it does not affect the operation of Managed Servers in the domain. If an Administration Server for a domain becomes unavailable while the server instances it manages (clustered or otherwise) are up and running, those Managed Servers continue to run. If the domain contains clustered server instances, the load balancing and failover capabilities supported by the domain configuration remain available, even if the Administration Server fails. In this case, if the Administration Server stops running while the Managed Servers in the domain continue to run, then each Managed Server periodically attempts to reconnect to the Administration Server.

If the system faces any hardware or software failure on its host machine, and if the Administration Server fails, then the other server instances on the same machine may be similarly affected. But, if the Administration Server fails, it does not interrupt the operation of Managed Servers in the domain. You can start a Managed Server even if the Administration Server is not running. In this case, the Managed Server uses a local copy of its configuration files for its starting configuration and then periodically attempts to connect with the Administration Server. In this case, if the connection doesn't occur, it synchronizes its configuration state with the Administration Server.

37. What Is A Thread Dump? How Will You Take In Unix/linux And Windows?

A Java thread dump is a way of finding out what every thread in the JVM is doing at a particular point in time. This is especially useful if your Java application sometimes seems to hang when running under load, as an analysis of the dump will show where the threads are stuck.
1) Linux : kill -3 <ps_id>
2) Login to WebLogic admin console. Go to Servers → Managed server → Monitoring → Threads. Here you will find “dump stack thread”. On clicking this thread dump will be displayed on the screen.

38. What Are Stating Modes Are Available In Weblogic Server ?

There are three starting modes are available:
1) **Stage mode** : Administration Server copies the deployment files from their original location on the Administration Server machine to the staging directories of each target server
2) **External Stage** : target servers deploy using local copies of the deployment files, here the Administration Server does not automatically copy the deployment files to targeted servers in external_stage mode ; instead, you must copy the files to the staging directory of each target server before deployment.
3) **No Stage** : The Administration Server does not copy deployment unit files; instead, all servers deploy using the same physical copy of the deployment files, which must be directly accessible by the Administration Server and target servers.