What is WebLogic?

* WebLogic is a J2EE application server developed by oracle for linux, windows & other platform.
* WebLogic supports oracle,DB2,MS SQL & other JDBC compliant databases.

1)introduce yourself? day to day activities

installation configuration WebLogic and ohs/cluster/patching/ssl/jdk upgradation/WebLogic or ohs migration upgradation, performance tuning, troubleshooting, thread dump analysis.

2)WebLogic installation type?

graphical (GUI), console, silent.

installation steps

copy binary-->install java --> goto java bin run installation command--> java -jar binary name -silent -responseFile .rsp file path -invPtrLoc .loc file path

3)OHS installation type?

graphical (GUI), console, silent.

installation steps with java

copy binary-->install java --> run installation command--> ./binaryname.bin -jreLoc java bin path -silent -responseFile .rsp file path -invPtrLoc .loc file path

installation steps with out java

./binaryname.bin -silent -responseFile .rsp file path -invPtrLoc .loc file path

4) cluster setup

first thing we need same OS/same HW configuration/same WebLogic JDK version/ same JDK/same domain path/same middleware path--> after that

copy binary and JDK --> install JDK --> installation WebLogic on all nodes--> then confirm one server as admin server, and create domain try to start and stop domain --> after that go to oracle\_commomn/common/bin and run pack command this command create domain jar file--> after that copy this jar file on all remaining node --> after that go to oracle\_commomn/common/bin and run unpack command --> then edit nodemanager.properties --> go to admin server console crate manage servers try start all manage server and after starting stop all manage servers --> after that go to cluster create new cluster go to server tab and all manage servers after adding all manage server start all servers.

5) 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.

6) horizontal and vertical cluster?

Horizontal clustering is when we are configuring the domain across multiple machines, with each machine having atleast one Managed Server.

Vertical Clustering is when we are configuring the domain in the same machine which is having multiple Managed Servers.

7) WebLogic ohs binding?

WebLogic side configuration

go to manager server general configuration tab-> advance-> WebLogic plug in option available there --> in drop down list select yes option and save.

ohs side configuration.

domain home/config/fmwconfig/component/ohs/ohs1-->take backup of mod\_wl\_ohs.conf atfer that edit this file --> enter context root, setweblogic handler, IP and Port.

after that take both restart.

8) SSL configuration trusted (CA signed \* purchase)

first, we need to create CSR and JKS using keytool command--> after that send CSR and JKS 3kb to vendor DigiCert or entrust--> vendor provide bundle certificate to us --> from this bundle certificate extract 4 certificate server/root/inter2/inter1 -->import all 4 certificate into 3kb JKS after that JKS size is 11KB-->copy that file on server -->take backup of config.xml-->

go to manager server -> Configuration ->keystore tab -> select "custom identity java standard trust"

Custom Identity Keystore: Need to add JKS PATH 🡪 after that enter password and confirm password.

SSL tab--> Private Key Alias: Need to add --> enter password and confirm password.

general Tab --> SSL Listen Port Enabled --> Restart Server

-- Self Sign Certificate

first we need to create CSR and JKS using keytool command--> form .JKS Extract root.cert, need to import root.cert into trust.JKS

Both JKS copy on server then go to manager server -> Configuration ->keystore tab -> select "Custom Identity and Custom Trust"

Identity Keystore and Trust : Need to add JKS PATH after that enter password and confirm password

SSL tab--> Private Key Alias: Need to add --> enter password and confirm password

general Tab --> SSL Listen Port Enabled --> Restart Server

9) opatch ??

take backup oracle home and domain.

once your opatch version upgraded then we cannot degrade it that is the reason we take oracle home backup

opatch version upgradation-->

|  |  |
| --- | --- |
| [Patch 28186730](https://support.oracle.com/epmos/faces/PatchDetail?patchId=28186730) | OPatch 13.9.4.2.11 or later |

go to java bin --> ./java -jar /Oracle/middleware/oracle\_home/opatch/688088/opatch.jar -silent oracle\_home=/Oracle/middleware/oracle\_home

/Oracle/middleware/oracle\_home/opatch

opatch version / apply / nappy / rollback / nrollback/ lspatchces/ lsinv/ lsinventory

opatch version

opatch apply 33692551

opatch rollback id 33692551

|  |  |  |
| --- | --- | --- |
| [Patch 34890864](https://support.oracle.com/epmos/faces/PatchDetail?parent=DOCUMENT&sourceId=2806740.2&patchId=34890864) | WLS PATCH SET UPDATE 14.1.1.0.221213 | January 2023 |
| [Patch 34883826](https://support.oracle.com/epmos/faces/PatchDetail?parent=DOCUMENT&sourceId=2806740.2&patchId=34883826) | WLS PATCH SET UPDATE 12.2.1.4.221210 | January 2023 |
| [Patch 34883781](https://support.oracle.com/epmos/faces/PatchDetail?parent=DOCUMENT&sourceId=2806740.2&patchId=34883781) | WLS PATCH SET UPDATE 12.2.1.3.221210 | January 2023/EOS April 23 |
| [Patch 34883826](https://support.oracle.com/epmos/faces/PatchDetail?parent=DOCUMENT&sourceId=2806740.2&patchId=34883826) | **oracle HTTP Server 12.2.1.4 Standalone** | January 2023 |
| [Patch 34697822](https://support.oracle.com/epmos/faces/PatchDetail?parent=DOCUMENT&sourceId=2806740.2&patchId=34697822) | **Oracle HTTP Server 12.2.1.3 Standalone** | October 2022 |

10) JDK upgradation

copy latest JDK --> Install

don.t delete old jdk keep as it is.

Edit Some files

bin -->setdominenv.sh

bin-->nmjavahome.sh

node manager--> nodemanager.properties

for 14.c /Oracle/middleware/oracle\_home/oui/ ls -la --> .globalEnv.properties

11)12.2.1.4 current latest 14.1.1.0 WebLogic ohs upgradation

1. fresh installation of new setup test it then de-induct old one
2. 12.2.1.4 current running setup just install latest WebLogic version 14.1.1.0 stop old setup --> go to 14.1.1.0

/Oracle/middleware/oracle\_home/oracle\_common/common/bin then run recofig.cmd or .sh file

12) Difference between Production & Development mode

|  |  |
| --- | --- |
| Development mode: | Production mode: |
| The default JDK for development domain is Sun Hotspot | The default JDK for production domain is JRockit |
| You can use the demo certificates for SSL | If you use the demo certificates for SSL a warning is displayed |
| Auto deployment is enabled | Auto deployment is disabled |
| Server instances rotate their log files on startup | Server instances rotate their log files when it reaches 5MB |
| Admin Server uses an automatically created boot.properties during startup | Admin Server prompts for username and password during startup |
| The default maximum capacity for JDBC Datasource is 15 | The default maximum capacity for JDBC Datasource is 25 |

13)11G and 12c diff

|  |  |  |
| --- | --- | --- |
|  | 11G | 12C |
| Installer | Platform specific installers are available | From 12.1.2, there is only generic installer available |
| JDK | JDK 1.7 supported | JDK 1.8 and above supported |
| Patching | bsu/smart update to apply patches | java-based utility Opatch is introduced |
| NMConfig | Multiple domains in same m/c can share same NM process | Domain specific NM is created |
| TLS version | It support TLS1.0,1.1 | TLS 1.2,1.3 |

14) What are the different types of WebLogic Server JDBC Data Sources?

* Generic Data Sources -->It provides database connectivity through a pool of JDBC connections.
* Multi link Data Sources -->Multi Data Source is an abstraction around group of databases which provides either load balancing or fail-over
* Grid Link Data Sources-->Grid Link Data Source is a data source which provides connectivity between WebLogic Server and an Oracle RAC (Real Application Cluster) Database.

15) What are the different types of JDBC Drivers?

* Type 1 Driver ( JDBC-ODBC Driver)
* Type 2 Driver ( Native Driver)
* Type 3 Driver ( Network Driver)
* Type 4 Driver (Pure Java Driver)

16) What is the difference between XA driver & Non-XA driver?

* XA stands for eXtended Architecture, which is used to support Global Transactions.
* Non-XA stands for non-eXtended Architecture which is used to support Location Transactions

17) What is the difference between Local transactions & Global transactions?

* A transaction which involves multiple databases is known as Global transaction
* A transaction which involves single database is known as local transaction.

18) What is Shrink Frequency? \*\*\*\*\*\*\*\*\*\*\*\*\*

The number of seconds to wait before shrinking a connection pool that has incrementally increased to meet demand. Default value 900 seconds(15mins)

19) What is Inactive Connection Timeout?

The number of inactive seconds on a reserved connection before WebLogic Server reclaims the connection and releases it back into the connection pool. If you set the Inactive Connection Timeout feature to a positive value, the WebLogic server reclaims the leaked connections

20) default port

* WebLogic 7001
* WebLogic SSL 7002
* Node manager 5556
* OHS 7777
* OHS SSL Port 4443/8883 \*\*\*\*\*\*\*\*\*\*
* OHS Console Port 9990
* HTTP Port 80
* HTTPS Port 443
* Telnet 23
* SSH 22
* FTP 21

21) can we start manage server with node manager

YES

22) why we use node manager

Node manager is java-based utility which is used to start MS Remotely.

23) without start admin server can we start managed server

YES, We can start manage server without admin server in MSI ( Manage server Independent) mode.

24) if admin server is down then can we access our application URL or application is accessible or not

YES, of Couse Application is deployed on MS.

25) States of threads

* STUCK
* HOGGER
* ACTIVE
* STANDBY
* IDLE

26) How to check all listen port

* netstat -ano | findstr LISTEN 🡪Windows
* netstat -ano | grep LISTEN 🡪Linux
* netstat -ano | findstr 7001 🡪Windows
* netstat -ano | grep 7001 🡪Linux

Text

Description automatically generated

27) How to check SSL validity via command / backend

Curl --verbose url

Text

Description automatically generated

28) What is the difference between the stage and the non-stage deployments?

* Stage deployment can be understood as the process where the Admin gets a copy which is later on distributed amongst the available instances.
* #Domain\_home/servers/AdminServer/upload
* # Domain\_home/servers/ManageServer/stage
* Non-Stage deployment ->Deployed file not stored in particular directory & here admin server and manage server directly access same physical copy ( it is saved in AdminServer)
* #Domain\_home/servers/AdminServer/upload
* External stage mode: it requires some n/w drive as a share drive.

29) In how many ways can we provide credentials to start the WebLogic server?

* Command-line:
* Via boot.properties file:
* Java Option:

30) What are the different ways used to deploy your applications in a WebLogic server?

Following are the ways to deploy your applications into a WebLogic server:

* Via Console
* Via Auto-deployment
* Via CLI (Command Line Interface) - WebLogic.deployer
* Via ANT / WLST

31) How do you turn off the auto-deployment feature in the WebLogic server?

Auto deployment mode feature of WebLogic server works for the development mode, where it checks every 3 seconds to see if there are any new applications available or any new changes available for the existing applications and deploys them. To disable the automatic deployment, these are the available options:

1. Selecting the Production mode checkbox from the Administration Console for the necessary domain.

2. On CLI, use option -Dweblogic.ProductionModeEnabled=true when starting the respective domain’s Administration Server.

32) Admin server?

A WebLogic Server administration domain is the central domain configuration interface which is used to create & delete the manage server, machine,cluster,datasurce,deployment.

33)What are Managed servers?

* It hosts business application and application component, web services & their associated resources.
* Managed server maintain a read-only master copy of domain configuration document while manage server startup it connect Domain’s administration server to sync its configuration documents.

34)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.

35) How do we change the default JVM to another one? \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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

* Update the JAVA\_HOME variable in the start script of the server
* Modify your config.xml of the domain to point it to JRockit javac.exe
* Check and modify accordingly to clip off any references to Sun JVM from the startup scripts.

36) 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.

37) 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.

38) How do stubs work in a WebLogic Server cluster?

Clients that connect to a WebLogic Server cluster and look up a clustered object obtain a replica-aware stub for the object.

This stub contains the list of available server instances that host implementations of the object.

The stub also contains the load balancing logic for distributing the load among its host servers.

39) 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.

40) What are the possible reasons for a server Hang?

* Memory leak
* Dedlock
* Database query taking a long time to return
* Unimaginable load

41) 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

42)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.

43)How do you go about analysing 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.

44)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

45)Differentiate between Sun JVM and the BEA JRockit JVM.

Sun's implementation of the JVM is called the HotSpot and is also shipped in the JDK, JRE from Sun / Oracle. BEA JRockit JVM is a custom implementation from BEA for reliability, performance for the server-side applications. For this to be achieved, BEA JRockit JVM uses hot spot detection, code generation, advanced garbage collection, tight OS integration.

Tuning the JVM parameters:

If it is a single processor and a single thread machine, then you’ll have to use a single collector (enabled explicitly using -XX:+UseSerialGC).

If it is a multiprocessor machine, then you’ll have to use a parallel collector (enabled explicitly with -XX:+UseParallelGC).

If you choose to keep shorter GC pauses at the cost of using additional CPU time, then you’ll have to use a concurrent collector (enabled explicitly with the following -XX:+UseConcMarkSweepGC).

46)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

47) 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.

48) 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.

49)What is HTTP Tunnelling? How do we configure it in a WebLogic server?

HTTP Tunnelling 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 tunnelling feature to mask a connection to appear as if it was a T3Connection.

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

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

50)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.

51)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:

* INTERNAL\_ERROR
* ERROR
* NOTIFICATION
* WARNING

52) How do you set a CLASSPATH in a WebLogic server?

1. WL\_HOME/server/bin/setWLSEnv.cmd for Windows

2. WL\_HOME/server/bin/setWLSEnv.sh for Linux

53) Thread Dump

Thread dump is a texted dump of all active threads & monitors of java apps running in virtual machine.

When you will take thread dump:

* Server hang position (not responding coming req)
* While server is taking more time to restart.
* Exception error:”java.lang.outOfMemoryException”.
* Process running out of file description.
* Infinite looping in code.

Procedure to take thread dump:

**1 )From Console** Go to the Server Instance -> Monitoring -> Threads -> Dump Threads Stack.

Commandà Java/bin>./jstack -l > dump.text

**L** -list long, **m** – miss match  **f** – force full

1. Kill -3 PID
2. Analysis tool à **samurai,** **Java TDA**, eclips, therd dump viewer

54) Heap Dump?

* It is a snapshot of java process in heap memory of given time.
* It is used for memory leak or memory related issue.
* Extract using Jmap tool Exp🡪 jmap -heap:format=b pid

./jmap -dump:format=b,file=heapJMap.bin 5549

* It generate heap.bin file using MAT tool (Memory analysis tool ) can analysis heap.bin file
* Any memory related issue or application level issue or code issue can find out.

55) Issues faced in WebLogic server?

* Application URL not working
* Server is down/ crash
* Server Hang
* Space issue
* Deployment issue
* File not found exception
* Stuck thread in server
* CPU utilization high
* Socket exception
* To many file open exception
* Performance issue
* Port already in use
* Performance issue
* Manager server in warning
* Application performance issue
* Database exceptions
* Out of memory exception

56) BSU and Opatch Difference?

|  |  |
| --- | --- |
| BSU | OPACTH |
| It supports to 11G | It supports to 12C and 14C |
| --install/remove/report/version | Apply/napply/rollback/nrollback/lsinv/lspatches |
| This is located in MW\_Home/utils/bsu.cmd | This is located in MW\_home/opatch.cmd |
| Before applying new patch We need to remove old patch manually | It override new patch to old patch |

57) Life cycle of thread

* New
* Active
* Blocked/waiting
* Timed waiting
* Terminated

53) WebLogic ohs versions support and end of support

52) Application slowness issue

53) JMS

54)

55) performance tunning