



IBM Systems

Ask the Experts

Understanding HA Manager, WLM and ORB in WebSphere Application Server

06 October 2015



WebSphere® Support Technical Exchange



Agenda

- Social Media – dW Answers: Connect with Experts
- Introduce the panel of experts
- Introduce "**Understanding HA Manager, WLM and ORB in WebSphere Application Server**" Topics
- Answer pre-submitted questions
- Open telephone lines for questions
- Summarize highlights



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1 Answer
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Why doesn't WebSphere Admin Console 8.5 Admin Console show Japanese language

WAS ADMIN CONSOLE NATURAL-LANGUAGE-CLASSIFIER
LANGUAGE-TRANSLATION

Vishav_Shergill answered | 6 days ago

2 Answers
0 Likes
746 Views

How do I find the default URL for the WAS Admin console in WLE?

BPM CONSOLE LOMBARDI WLE ADMIN

Vladlen Litvinov edited | Nov 21, '14

1 Answer
0 Likes
288 Views

How to learn wsadmin equivalent of WebSphere Admin Console operations?

WAS WEBSHERE APPLICATION SERVER WSADMIN ADMIN
CONSOLE

Kumaran Nathan commented | Feb 19, '15

1 Answer
0 Likes
116 Views

How the LDAP user groups can be given access to undeploy application snapshots through IBM BPM process Admin Console?

BPM LDAP SNAPSHOT USERS ACCESS ADMIN CONSOLE

Sinoh_Abhishek commented | Jul 2, '15

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Posted

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With tags

Start typing a tag...

Submit

3. No relevant hit ?
Ask your question

2. Matching Results

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4. Type your question

admin console language issues

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- Add tags that represent the service or products you are asking about.
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[More tips »](#)

Questions that may already have your answer:

- 0 Why doesn't WebSphere Admin Console 8.5 Admin Console show Japanese I...
- 0 How do I find the default URL for the WAS Admin console in WLE? 2
- 0 How to learn wsadmin equivalent of WebSphere Admin Console or
- 0 How the LDAP user groups can be given access to undeploy process Admin Console? 1
- 0 All WAS server config via XML files (aka, no more W...
- 0 Getting error when logging into Portal/Admin C...
- 'XXX' principal name. 3

language problems in websphere admin console

language problems in websphere admin console

Hint: You can notify a user about this post by typing @username.

Tags

admin console websphere languages

Hint: In order to create new tags, you must have at least 400 reputation points. Also keep in mind that tags can contain more than one word; however, no space is allowed to separate multiple words.

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6. Post your question

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- Tags represent the topic, service or product being referenced
- Tagging a post with relevant keywords/tags, helps readers find the posts with specific information they're looking for and aid search engines in finding the content

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BPM × 1134	DEVOPS-SERVICES × 764	DEPLOY × 686
UCD × 596	LIBERTY × 571	PORTAL × 526
IBMODM × 498	WATSON × 484	MQ × 447
DIGEXP × 445	WAS × 416	JAZZHUB × 396
IIB × 379	MESAGING × 362	SECURITY × 305
IOT × 290	NODE.JS × 281	ERROR × 274
UDEPLOY × 265	PUREAPP × 260	DATAPOWER × 257
WMB × 246	ZOS × 219	SQLDB × 213
HADOOP × 199	RAPIDAPPS × 199	WEBSHERE APPLICATION SERVER × 198
API × 196	HOW-TO × 196	NODE-RED × 195
INSTALLATION × 194	ZOSCS × 176	MOBILEDATA × 172
COMMSERVER × 171	PUREAPPLICATION × 170	DATABASE × 162
ECLIPSE × 162	CONTAINERS × 161	CICS × 156
DB2 × 153	SSL × 148	LOGIN × 148
FAQ × 144	CLOUDANT × 143	CASTIRON × 142

Panel of Experts

Panelist	Role at IBM
Hobert Bush III dW - @Hobert	WebSphere Team Lead, Client Success
Kumaran Nathan dW - @Kumaran	WebSphere Level 2 Customer Support
Claudia S. Barrett dW - @ClaudiaBarrett	WebSphere ORB L3 Support
Thomas F. Seelbach dW - @Tom.Seelbach	WebSphere Development
Adam Wisniewski dW - @Adam_Wis	WebSphere on z/OS, HA Manager & Liberty Development/Service

**Tag your
questions:**

WAS

WEBSphere APPLICATION SERVER

CLUSTERS

ORB

WLM

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Introduction

- We will be covering a number of questions that cover various WebSphere Application Server Topics :
 - High Availability (HA) Manager
 - Object Request Broker (ORB)
 - Work Load Management (WLM)



Question 1: CWRLS0030W or DCSV8030I messages

- What causes CWRLS0030W or DCSV8030I messages in the SystemOut.log file?



Answer for CWRLS0030W or DCSV8030I messages

CWRLS0030W: Waiting for HAManager to activate recovery processing...

- Transaction message
- Prevents server start
- Active Coordinator gives permission to recover transaction logs
- Starting member must be in a view with the Active Coordinator



Answer for CWRLS0030W or DCSV8030I messages (continued)

*DCSV8030I: DCS Stack DefaultCoregroup at Member **server1**:
Failed a join attempt with member [**server2**]. The reason
is Not all candidates are connected ConnectedSetMissing=
[] ConnectedSetAdditional [**server3**].*

- Server1 cannot join the view
- Server2 and server3 are in the view
- Server1 cannot connect to server3



Question 2: HA Instability or “split brain”

- What causes HA instability or "split brain" issue ?



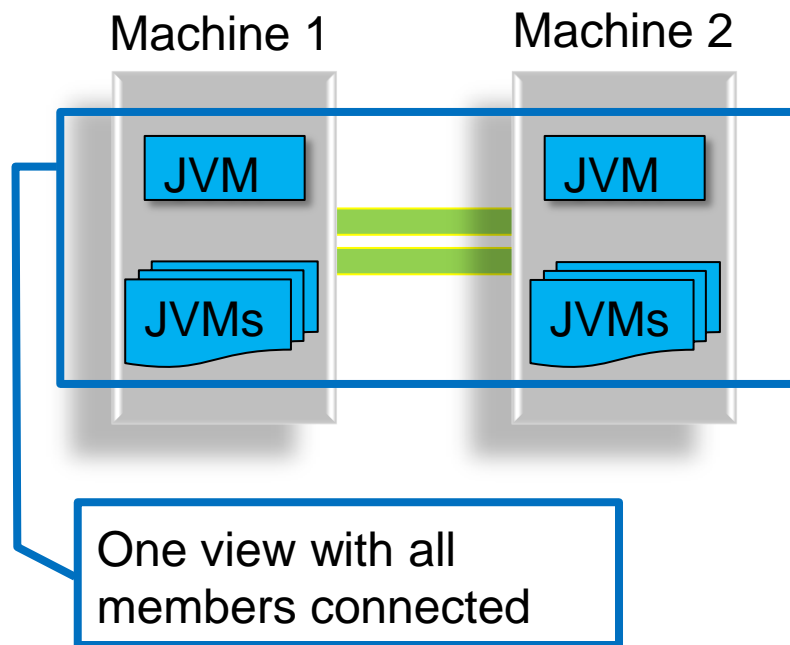
Answer for HA Instability or “split brain”

- HA Manager requires successful connectivity between all members within a core group
- A network issue between two or more machines can cause the core group to form its own view.
- When a core group develops its own view on one machine it is called a split view or split brain

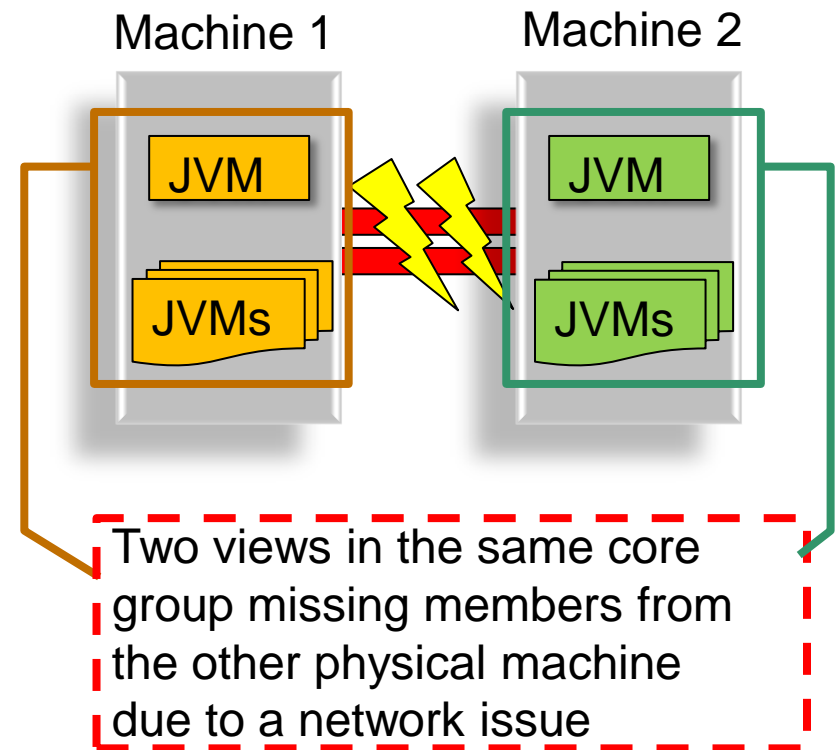


Answer for HA Instability or “split brain”

One View



Split View



Question 3: Cellnames need to be unique?

- Do my cellnames need to be unique?



Answer to Cellnames need to be unique?

- A cell name must be unique when
 - The product is running on the same physical machine or cluster of machines
 - Network connectivity between entities is required either between the cells or from a client that must communicate with each of the cells
- WLM makes routing decisions on the client side, using information gathered from the servers. Routing information is organized by CellName/ClusterName/MemberName. If the client is routing to multiple cells with the same name, WLM has no way to distinguish which cell to route to. This often results in requests being routed to the wrong cell. There is no workaround for this problem. The only solution is to effectively rename one of the cells.



Question 4: Multiple ORBs in JVM

- What is the consequence of having multiple ORBs in my JVM from running ORB.init()?



Answer to Multiple ORBs in JVM

- WLM functionality and cluster failover does not work with multiple ORBs.

<https://ibm.biz/BdHdXQ>

- Native Heap OOM.

Each ORB creates a number of Listener, Reader and Worker Threads. Too many ORBs (hundreds or thousands) may lead to exhaustion of the JVM's native memory.

- ListenerThread creation failures.

Subsequent ORBs experience these failures when static ports are employed as each subsequent ORB will attempt to bind to the ports already being used by ORB #1.

<https://ibm.biz/BdHdXk>



Answer to Multiple ORBs in JVM (cont.)

- ORB properties may not be honored.

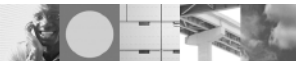
Subsequent ORBs may be created with different properties than those with which the first ORB was init'ed. Typical problems seen:

- ▶ Timeouts are not honored.
- ▶ Trace is not generated from the other init'ed ORBs.

- WebSphere Application Server does not officially support multiple ORBs.

The Application Server runtime initiates its own ORB, and any applications running within the server should access that already-existing ORB via the InitialContext object rather than initiating a new ORB.

<https://ibm.biz/BdHdXt>



Answer to Multiple ORBs in JVM (cont.)

■ Identifying multiples ORBs

- ▶ ORB trace (“O=#”, “LT=#”, “ORB.init call sequence”)
- ▶ Javacore (“LT=#”)

■ Prevention

- ▶ Do NOT call ORB.init() directly, for application code within Application Server
- ▶ Do not call ORB.init() multiple times in application code outside Application Server
- ▶ Use the `com.ibm.websphere.naming.WsnInitialContextFactory` vs. `com.sun.jndi.cosnaming.CNCtxFactory` for InitialContext creation
- ▶ Limit the number of JMX RMIConnectors using “iiop” protocol.

Java™



Question 5: WLM behavior or performance problems

- I see strange / unpredictable WLM behavior or performance problems. How do I figure out the problem?



Answers to WLM behavior or performance problems

- Ensure HA views are stable. WLM gets server up/down status from HA Mgr Bulletin Board
 - See Issue 4 : HA Manager View instability here:
<https://ibm.biz/BdHdHD>
- Make sure HA Manager is enabled
 - Look in SystemOut.log for the HMGR0005I. If you see "Single Server DCS Core Stack" has been started, it means that HAM has been disabled.
- Cell names must be unique (See Q 3)
- Core groups must be bridged. If they are not, you can get unexpected "no cluster data" messages
- Pay attention to how clients connect to the cluster
 - Use a set of corbalocs for all the app servers in the cluster
<https://ibm.biz/BdHd4x>



Answer to WLM behavior or performance problems

- Avoid the “pattern” problem, where lightweight `ejbHome.create()` and heavy `ejb.doBigWork()` calls alternate between an even number of servers. WLM balances by request, not CPU.
 - Avoid it by having asymmetric weights (set a slight variation in weight per server) and/or have an odd number of servers
- Keep cells small. Use the cell as your unit of admin and deployment replication.
- 95% of PMRs are resolved by examining/changing config or upgrading service level.
 - Be on the current Release and support level.
 - If you do this you likely have a good test process
 - If you don't do this you likely don't have a good enough test process
- Insist on good configuration, topology, HA and load handling advice from your 3rd party or IBM product running on WAS. Don't accept “its just standard WAS configuration” as good enough.

Question 6: Role of Bulletin Board

- What is the role of HA Manager Bulletin Board service ?



Answer to Role of Bulletin Board Service

- Bulletin Board is one of the four HA Manager service.
 - ▶ A server state data exchange mechanism
 - ▶ Light weight PUB/SUB mechanism.
 - ▶ Typically used for carrying WLM routing information
 - ▶ This is the only service can be configured to span core groups



Question 7: Role of nodeagent LSD

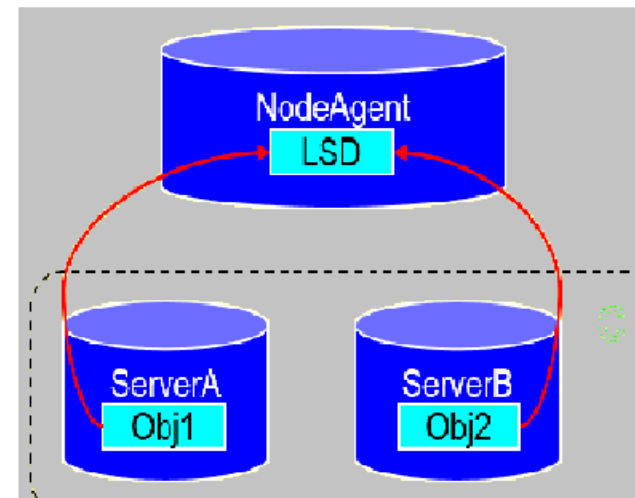
- What is the role of the nodeagents location service daemon for ORB high availability and load balancing ?



Answer to Role of nodeagent LSD

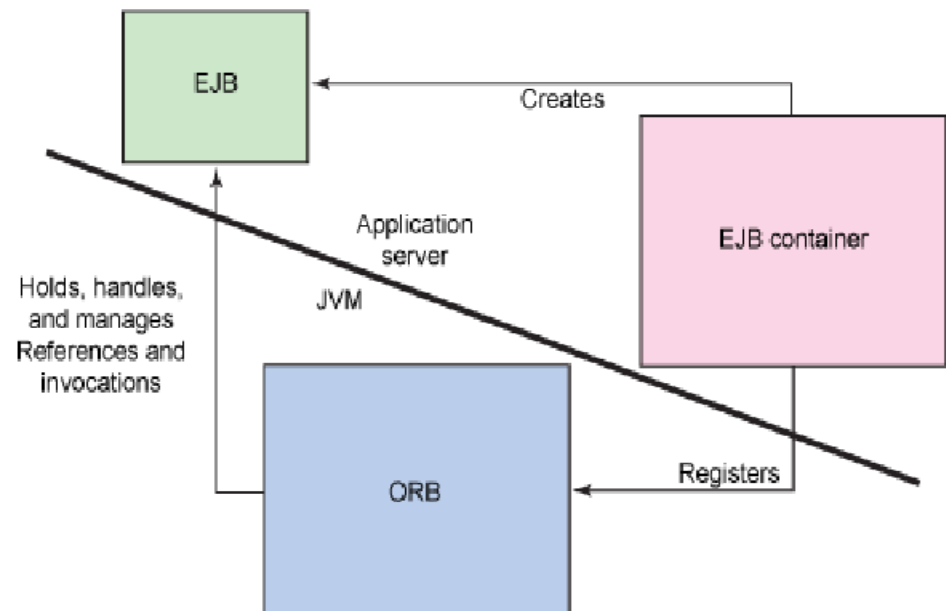
How Nodeagent involved in WLM

- Node Agent process provides service called Location Service Daemon(LSD)
- Application Server will register with Node agent during server startup
- LSD provides known direct (Interoperable Object Reference) IORs to caller
- WLM uses LSD cluster info for routing the EJB requests
- Don'ts
 - ▶ Node agent should not be used for bootstrap in distributed OS environments. Only zOS environment is allowed for bootstrap..



How Object Request Broker (ORB) is involved

- WebSphere Application Server uses the ORB to facilitate client/server communication
- EJB container depends on ORB for interactions between client/server
- ORB manages inbound and outbound requests for remote Java objects
- ORB provides a framework for clients to locate EJBs on the server
- Inter ORB communication is accomplished via the IIOP/GIOP using Interoperable Object Reference (IOR) which ORBs can understand and act.



Open Lines for Questions



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Summary



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