

Common Problems and Other Things You Should Know about WAS on z/OS

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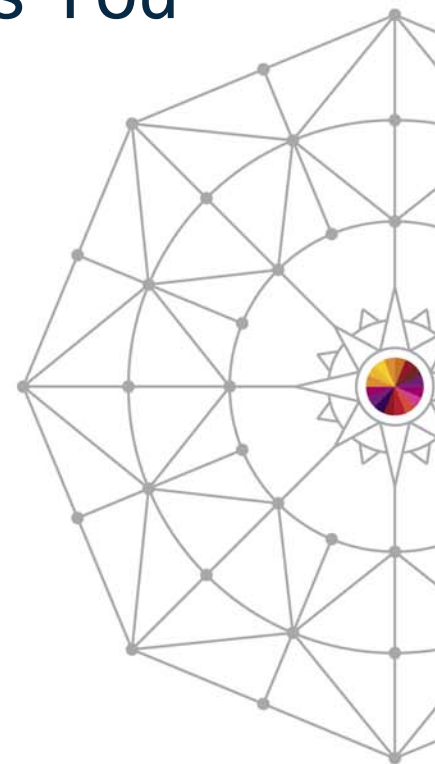
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WebSphere Application Server on System Z



Session	Title	Time	Room	Speaker
15563	Web Apps using Liberty Profile Technology in CICS	Monday 1:30	Grand Ballroom Salon C	Ian Mitchell
15783	WebSphere Liberty Profile and Traditional WebSphere Application Server – What's New?	Tuesday 10:00	Grand Ballroom Salon J	Follis/Picher/Stephen
16278	Feed Your Appetite for Knowledge about z/OS Connect and IBM Mobile Pricing over Breakfast	Wednesday 7:20	Grand Ballroom Salon K	Ian Mitchell
15784	Common Problems and Other Things You Should Know about WAS on z/OS	Wednesday 10:00	Platinum Ballroom Salon 7	Mike Stephen
15609	WebSphere Liberty Profile, Windows and z/OS, Hands-on Lab	Thursday 12:25	Grand Ballroom Salon G	Cast of Characters
15782	z/OS Connect: Opening up z/OS Assets to the Cloud and Mobile Worlds	Thursday 1:30	Grand Ballroom Salon A	David Follis
15785	IBM Installation Manager for z/OS System Programmers: Web-based Installs, Fix Packs, and How iFixes Really Work.	Friday 8:30	Grand Ballroom Salon G	Stephen/Mierzejewski
15999	Application Level Resource Monitoring of WebSphere z/OS – DB2 JDBC Workloads	Friday 10:00	Platinum Ballroom Salon 2	Follis/Catterall



AGENDA

- None really....
- Just a list of the things that have been keeping us busy in Level 2 Support

USS APAR OA43650



- z/OS UNIX Services is changing the behavior of several interfaces to restrict the symbolic links that can be used for UNIX files that are loaded or executed from APF-authorized or must-stay-clean (RACF program controlled) address spaces.
- These interfaces will now require that any symbolic link that comprises the pathname to a target executable file have an owning UID of 0.
- For WAS on z/OS, we believe the only affected paths are:
 - startServer.sh shell script provided with WAS
 - node agent start during federation
- Symptoms include:
 - BPXP029I OPEN ERROR FOR FILE PATH asv85config/azcell/azdmnode/DeploymentManager/lib/s390-31/bboorb DEVICE ID 18 INODE 348.
 - ABEND EC6-xxxC04A
- WAS will ship an update in:
 - 7.0.0.35, 8.0.0.10, 8.5.5.4
 - iFixes and ++APARs will be available for other levels
- This update changes how authorized code to issue the START console command is accessed
- If you only start/stop the servers from the admin console or with MVS console START and STOP commands, and manually start node agents after federation then WAS is unaffected.




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WAS z/OS is getting ‘Social’

WAS z/OS is Getting Social

- We're BLOGGING
- Link from the main WebSphere Support Portal

WebSphere Application Server for z/OS

Product lookup: Lookup another product name, part number or machine
 [Share your list of recently viewed products](#)

Search support and downloads

Search:

☐ Search only WebSphere Application Server for z/O

Downloads [\(view all\)](#)

- [Fixes by version](#)
- [Feature packs by version](#)
- [Ordering PTF's from the z/OS Support Web page](#)
- [WebSphere Application Server for z/OS Plug-ins for IBM HTTP Server](#)
- [ServiceLink/IBMLink](#)

Tools and resources

- [Open a new service request - sign in](#)
- [Product support lifecycle](#)
- [Product tools and utilities](#)
- [Subscribe to support notifications](#)
- [Training](#)
- [Forums, blogs and social media](#)

WebSphere BLOGs

Support Portal > WebSphere Application Server for z/OS >

Forums, blogs and social media for WebSphere Application Server for z/OS

- [Facebook: WebSphere and CICS Support](#)
- [Twitter: WebSphere Application Server](#)
- [Twitter: All WebSphere and CICS Twitter groups](#)
- [Twitter, Facebook, and Blog information for WebSphere and CICS Support](#)
- [Blog: WebSphere and CICS Support](#)
- [WebSphere Support Technical Exchanges](#)





Filter results






Twitter

-  **AppServer Support** @IBM_AppServer Aug 01, 03:05 PM
What level of JMS message delivery ordering is available for MDB apps, running in WAS, consuming from MQ? <http://t.co/ft0uBJOV3L> #wasserv
-  **AppServer Support** @IBM_AppServer Aug 01, 12:13 PM
Are you finding the DCSV9415W message in

Forums & user groups

-  **adrian64** Aug 01, 10:13 AM
WAS 7 - start server issue, windows service issue
-  **JohnDelRosario** Aug 01, 07:39 AM
Problem with Forms Experience Builder setup
-  **AnthonyBpm** Jul 31, 05:09 PM
Trust / Key Manager - What happens when (none) is selected
-  **qiocot** Jul 31, 06:54 AM

Blogs & wikis

-  **StacyCannon** Jul 24, 05:54 PM
[One Size Does NOT Fit All - WebSphere Application Server Heap](#)
-  **Mike Stephen** Jul 09, 03:48 PM
[Let's look at Dispatch Timeout Handling in WebSphere Application Server for z/OS](#)
-  **BillBulfin** Jul 09, 10:45 AM
[How to add signon disclaimer text to IBM Session Manager for z/OS](#)

Tag: websphere_application_server

All posts

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One Size Does NOT Fit All - WebSphere Application Server Heap

StacyCannon | July 24 | Visits (233)  2 Like



Where do I start with sizing the heap for my WebSphere Application Server? This question is very common when trying to determine where to begin sizing your heap for your application when using WebSphere Application Server. The default heap sizes are for use during installation and are often way too small for use in production environments. The first place to begin is to know if the server has 32-bit or 64-bit architecture and whether your installation of WebSphere Application Server is a 32-bit or 64-bit environment. Next determine... [More]

Tags: [java heap performance was storage heapsize tuning websphere websphere_application_ser...](#)



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 mqseries performance process queue security
 server ssl support transaction troubleshooting
 upgrade was websphere websphere
 application_server wmb wmq wodm wpg wps
 zos

Let's look at Dispatch Timeout Handling in WebSphere Application Server for z/OS

Mike Stephen | July 1 | Comments (2) | Visits (454)  3 Like



If you run WebSphere Application Server on z/OS you are aware of the many 'timer' settings that can affect the workload that is running in the Server. This Blog entry will focus on the topic of dispatch timeout handling, and the tradeoffs between settings that control the behavior of the environment when dispatch timeouts occur. Let's first look at the Dispatch Process Overview in the WebSphere Application Server on z/OS. 1. Request Received... [More]

Tags: [handling timeout servant session was timer websphere websphere_application_ser... dispatch](#)



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BLOG entries from z/WAS Level 2

[Let's look at Dispatch Timeout Handling in WebSphere Application Server for z/OS](#)

[Which level of WebSphere Application Server for z/OS is compatible with the different versions of z/OS?](#)

[Time saving tips for configuring WebSphere Application Server OEM Edition for z/OS](#)

collector.sh on WebSphere z/OS

collector.sh on WebSphere App Server z/OS



- collector.sh translates its output ASCII > EBCDIC
- causes problem on z/OS
- Issue these 3 USS commands from directory outside of your WebSphere config directory (ie. /tmp)

```
export IBM_JAVA_OPTIONS=-Dfile.encoding=ISO8859-1  
WAS_HOME/DeploymentManager/profiles/default/bin/collector.sh  
WAS_HOME/AppServer/profiles/default/bin/collector.sh
```

- May see 'deprecated' message... don't be alarmed...



collector.sh on WebSphere App Server z/OS



- File created in the directory where the commands were run:
- hostname.cellname.nodename.default-WASenv.jar
- When sending in files prepend PMR# to the filenames:
- eg:
12251.999.000. boss0181.pok.ibm.com-bcell1-bnode1-default-WASenv.jar
- Feed into ISA Tool:
‘WebSphere Application Server Configuration Visualizer [Report]’



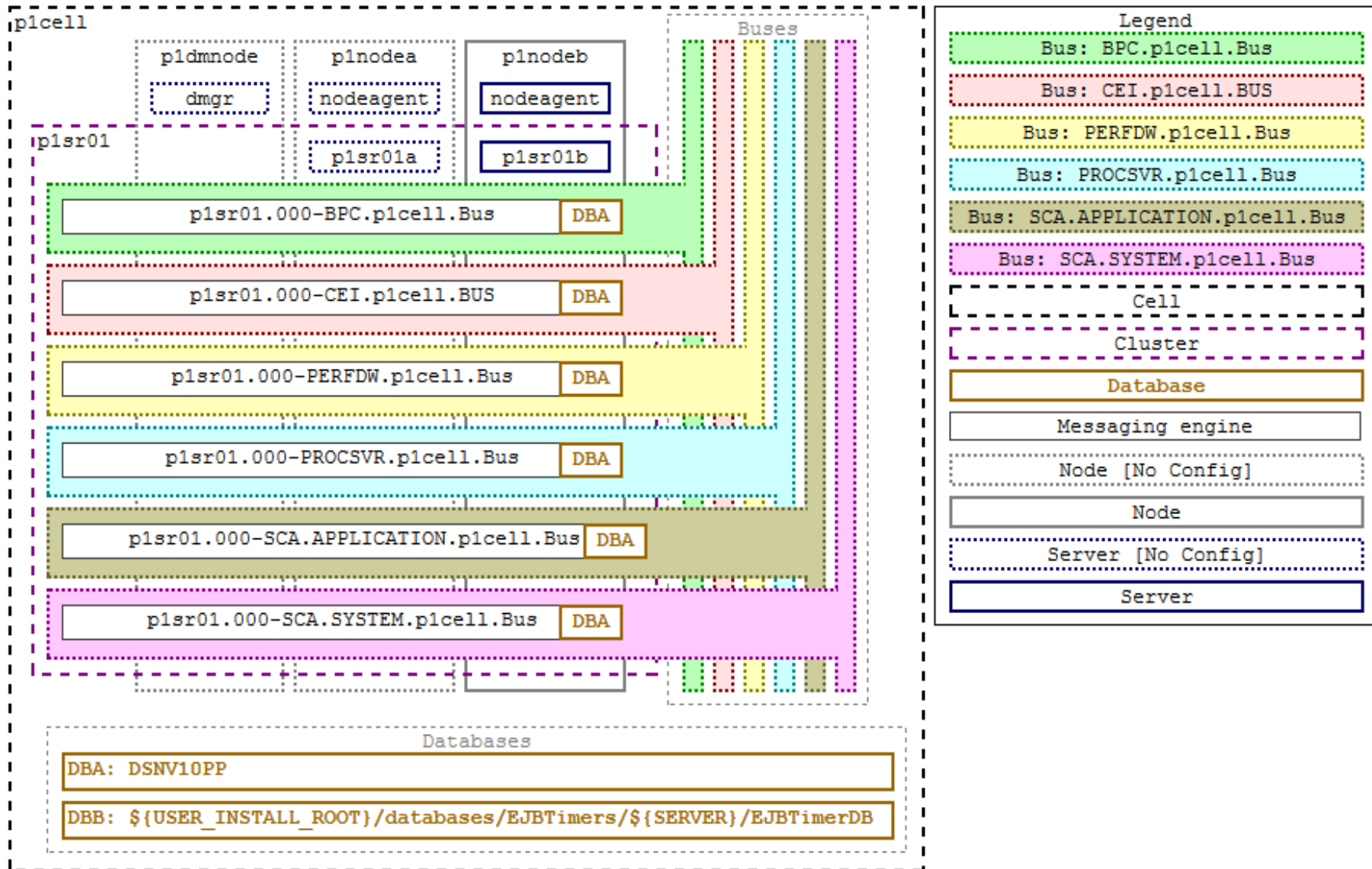
WebSphere Application Server Configuration Visualizer

- Generates an interactive HTML visualization of a WebSphere Application Server configuration. Accepts any combination of archive files containing configuration directories, such as Data Collector output. Configurations from multiple nodes in a cell will be merged into a single visualization, and multiple cells can be displayed in the output.
- It works with any (full profile) WebSphere Application Server based product, such as IBM Business Process Manager Advanced, WebSphere Process Server, WebSphere Enterprise Service Bus, WebSphere Service Registry and Repository.
- Nodes are laid out vertically, with the servers (including nodeagent/dmgr) contained in the node that hosts it.
- The clusters are shown horizontally, spanning the servers in that cluster.
- Default messaging provider (Service Integration Bus) buses are shown vertically on the right, with the messaging engines overlaid on the servers/clusters that host them.

WebSphere Application Server Configuration Visualizer

- Unique database names are shown at the bottom, from analyzing all the JDBC Data Sources in the cell.
- If you have multiple core groups, the core group membership is shown for each server and a summary of the core groups is shown at the bottom.
- If you click on an item such as a cell, cluster or server, you can see more detail such as the applications deployed, the port numbers, log locations, thread pools etc.
- A list of all the deployed applications is shown if you click on the cell name (top left corner of the outer box).
- The deployment details of each application module are shown under the cluster/server to which it is deployed (highlighted if you click the link in the 'module deployments' on the cell).
- The mapping from resource references to JNDI resources is shown for the application deployments, such as JMS Connection Factories and JNDI Data Sources.

WebSphere Application Server Configuration Visualizer



[Show all detail for browser search](#)

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5 Quick Check Items for SSL errors

Quick Check before Diagnosing SSL

Does the control region userid and servant region userid have READ access to FACILITY classes IRR.DIGTCERT.LIST and IRR.DIGTCERT.LISTRING?

Our default jobs will permit the WebSphere Administrative Group (ie. WSCFG) which the control and servant region userids are apart of to these two FACILITY classes. This can be confirmed by issuing RACF commands.

RLIST FACILITY IRR.DIGTCERT.LIST ALL
RLIST FACILITY IRR.DIGTCERT.LISTRING ALL

CLASS	NAME		

FACILITY	IRR.DIGTCERT.LIST		
USER	ACCESS	ACCESS	COUNT
----	-----	-----	-----
WSCFG	READ	000000	

WebSphere can't read the keyring containing the signer and personal certificate without this access.

Second check – Look for certificates

Does the control region userid's keyring have a signer certificate and personal certificate?

The control region userid's keyring must have at least ONE personal certificate, and the signer of that personal certificate connected to it.

This can be confirmed by issuing RACF command.

RACDCERT LISTRING(KeyRingName) ID(CR_USERID)

```
RACDCERT LISTRING(WASKeyring2048) ID(ASCR1)
```

Digital ring information for user ASCR1:

Ring:

```
>WASKeyring2048<
```

Certificate Label Name	Cert Owner	USAGE	DEFAULT
-----	-----	-----	-----
DefaultWASCert2048.NDC1	ID(ASCR1)	PERSONAL	YES
WebSphereCA2048	CERTAUTH	CERTAUTH	NO

Third check – Signer Certificate Requirements

The signer certificate details must:

- Have a status of TRUST
- NOT be expired

This can be confirmed by issuing RACF command:
RACDCERT CERTAUTH LIST(LABEL('CERT_LABEL'))

```
RACDCERT CERTAUTH LIST(LABEL('WebSphereCA2048'))
```

Digital certificate information for CERTAUTH:

Label: WebSphereCA2048

Certificate ID: 2QiJmZmDhZmjgeaFguKXiIWZhcbPB8vD0+EBA

Status: TRUST

Start Date: 2010/11/04 00:00:00

End Date: 2040/12/31 23:59:59

Serial Number:

>00<

Issuer's Name: >CN=WAS CertAuth for Security Domain 2048-bit.OU=WebSphere for zOS<

Subject's Name: >CN=WAS CertAuth for Security Domain 2048-bit.OU=WebSphere for zOS<

Key Usage: CERTSIGN

Key Type: RSA

Key Size: 2048

Private Key: YES

Ring Associations:

Ring Owner: ASCR1

Ring: >WASKeyring2048<

Fourth Check – Personal Certificate Requirements

The personal certificate details must:

- Have a status of TRUST
- NOT be expired
- Have a private key

This can be confirmed by issuing RACF command:

RACDCERT LIST (label('CERT_LABEL')) ID(CR_USERID)

RACDCERT LIST (label('DefaultWASCert2048.NDC1')) ID(ASCR1)

Digital certificate information for user ASCR1:

Label: DefaultWASCert2048.NDC1

Certificate ID: 2QXB4sPZ8cSFhoGkk6PmweLDhZmj8vD0+EvVxMPx

Status: TRUST

Start Date: 2011/02/09 01:00:00

End Date: 2040/12/31 00:59:59

Serial Number:

>27<

Issuer's Name: >CN=WAS CertAuth for Security Domain 2048-bit.OU=WebSphere for zOS<

Subject's Name: >CN=ZWASAXXX.RTP.RALEIGH.IBM.COM.OU=NDC1.O=IBM<

Key Type: RSA

Key Size: 2048

Private Key: YES

Ring Associations:

Ring Owner: ASCR1

Ring: >WASKeyring2048<

Last Check – Thin Clients

For SSL issues that occur running shell scripts from the file system such as wsadmin.sh, dumpNameSpace.sh, syncNode.sh, etc...

Make sure the id that you are logged into OMVS or telnet with is the WebSphere administrative id (ie. wsadmin or equivalent) as this id has the keyring defined to it with the signer certificate connected to it. Failure to do so will result in an SSL failure.

The keyring and signer certificate can be confirmed with RACF command.

RACDCERT LISTRING(*) ID(WAS_ADMIN_ID)

Change WAS_ADMIN_ID to be WSADMIN or equivalent.

```
RACDCERT LISTRING(*) ID(WSADMIN)
```

```
Digital ring information for user WSADMIN:
```

```
Ring:
```

```
>WASKeyring2048<
```

Certificate Label Name	Cert Owner	USAGE	DEFAULT
-----	-----	-----	-----
WebSphereCA2048	CERTAUTH	CERTAUTH	NO

Initial doc needed for IM (Installation Manager) Problems

- provide joblog that contains imcl command and output
- provide output of installed packages:
 - `imcl listInstalledPackages -long`
- provide output of available packages:
 - `imcl listAvailablePackages -repositories list_of_repository_locations`
- Mustgather:
 - <http://www.ibm.com/support/docview.wss?uid=swg21497417#show-hide>

Questions to ask yourself

- Is installation directory already in use ?
 - this is a product upgrade
 - ensure it contains the binary code for that product level that is currently installed
 - If the wrong level, or directory is empty, this will cause problems
- If installation directory is not in use
 - this is a new install
 - ensure the base repository is specified on the repository command (not just fix pack repository)
- installation directory cannot be shared between WAS, NDDMZ, IHS, Plugins
 - Needs to be unique installation directory
- installing Liberty on 8.5.5.0 or higher (versus upgrade)
 - need access to base repository
 - not just 8.5.5.0 fix pack level as this is a new offering
 - Needed for licensing purposes

Problem accessing IIM for WebSphere on z/OS

- Problems accessing IIM (IBM Installation Manager) repository for WebSphere z/OS
 - **CRIMC1011W WARNING:** The following repositories are not connected:
 - WARNING: Failed to connect repository 'https://www.ibm.com/software/repositorymanager/**com.ibm.websphere.zOS.v80**/repository.config' either because the repository does not exist, the repository is closed or the repository server can not be reached.
 - WARNING: Some reasons why a repository connection fails are:
 - WARNING: Is the Repository location mistyped?
 - WARNING: Is the local network down?
 - WARNING: If you use a firewall, does it allow the Installation Manager to access the server?
 - WARNING: If your computer uses a proxy server, are the proxy settings for the Installation Manager set correctly?

- Successful:
 - BPX BATCH SH
/opt/InstallationManager/bin/eclipse/tools/imcl
listAvailablePackages -long -repositories
/usr/lpp/InstallationManagerRepository,https://www.ibm.com/
software/repositorymanager/com.ibm.**websphere.PLG.zOS**.
v80/repository.config -preferences.....
- Fails:
 - BPX BATCH SH
/opt/InstallationManager/bin/eclipse/tools/imcl
listAvailablePackages -long -repositories
/usr/lpp/InstallationManagerRepository,https://www.ibm.com/
software/repositorymanager/com.ibm.**websphere.zOS.v80/r**
epository.config -preferences

- Actions taken this past weekend should address the issue
- Workaround
 - Download from FixCentral
 - <http://www.ibm.com/support/fixcentral/>
- Doc to gather
 - Command(s) that were run
 - Failuremessages
 - Mustgather:
 - <http://www.ibm.com/support/docview.wss?uid=swg21497417#show-hide>

JDK 6.1 / JDK 7.0 / JDK 7.1 in WebSphere App Server z/OS

- Full Profile WebSphere Application Server
 - JDK 6.1
 - Installed with full Profile WebSphere 8.5.0.0
 - JDK 7.0
 - Delivered with WebSphere 8.5.0.0
 - Optionally installed
 - MUST install JDK 7.0 BASE Level FIRST, before installing JDK 7.0 FixPacks
 - JDK 7.1
 - Available at WebSphere 8.5.5.2
 - Base level JDK 7.1 (Must install base before FixPacks JDK 7.1)
- Liberty Profile
 - No JDK installed

- Where do I get the various JDK's ??
- Download from FixPack Download Page
- For WebSphere App Server 8.5.5.2
 - <http://www.ibm.com/support/docview.wss?uid=swg24037250>

WebSphere App Server 8.5.5.2 FixPack Download Page

All Platforms	WebSphere Application Server V8.5.5.2 Fix Pack for Liberty Profile for Core, Express, Base, Developers, ND, zOS, Web Enablement	8.5.5-WS-LIBERTYPROFILE-FP0000002.zip
All Platforms, excluding HP, Solaris	IBM WebSphere SDK Java Technology Edition (Optional) V7.1.0.0 for Full Profile -- Note1	7.1.0.0-WS-IBMWASJAVA-part1.zip 7.1.0.0-WS-IBMWASJAVA-part2.zip
All Platforms, excluding HP, Solaris	IBM WebSphere SDK Java Technology Edition (Optional) V7.1.0.0 for Liberty Profile -- Note1	7.1.0.0-WS-IBMLIBERTYJAVA-part1.zip 7.1.0.0-WS-IBMLIBERTYJAVA-part2.zip
All Platforms	IBM WebSphere SDK Java Technology Edition (Optional) V7.0.6.1 for Full Profile and Liberty Profile	7.0.6.1-WS-IBMWASJAVA-part1.zip 7.0.6.1-WS-IBMWASJAVA-part2.zip
All Platforms	IBM WebSphere SDK Java Technology Edition (Default) V6.0.7.1 for Liberty Profile	6.0.7.1-WS-IBMLIBERTYJAVA6.zip

- Note1: This is a full install of IBM WebSphere SDK Java Technology Edition V7.1.0.0, which is new in V8.5.5.2.
- For detailed information about the Java SDK version shipped with each IBM WebSphere Application Server Fix Pack and cumulative fix and not as a separate download, see [this page](#).

How to install JDKs

- Get latest level of IM
 - <http://www.ibm.com/support/docview.wss?uid=swg27025142>
- JDK delivered in multiple parts
 - Need to expand (un-zip) into a single common directory
 - Point IM (Installation Manager) to the common directory
- Three locations to point IM
 - Using the web based repository
 - Download the package or iFix from fix central to your local file system and use local update
 - Order fix-pack PTFs and apply fix-Pack PTFs to the SMP/E-managed repository and use local update
- Knowledge Center Links:
 - Installing IBM WebSphere SDK Java Technology Edition Version 7.x
 - http://www.ibm.com/support/knowledgecenter/SSAW57_8.5.5/com.ibm.websphere.installation.zseries.doc/ae/tins_installation_zos_installing_jdk7.html?lang=en

**I'm upgrading to new FixPack level,
do I need a new iFix ?**

- You have iFix(es) installed
- You are moving up to a newer FixPack level
- How can you tell if you need new iFix(es) for those you have currently installed
- Check the FixList for the FixPack(s) you are installing to see if the APAR in the iFix is included in the FixPack
- Look in the iFix(es) you have
 - see what level the iFix(es) were built for
- repository.xml

repository.xml

- ```

<?xml version='1.0' encoding='UTF-8'?>
<?repositoryDigest version='0.0.1'?>
<repositoryDigest>
 <repository>
 <property name='LayoutPolicy' value='P1'/>
 <property name='LayoutPolicyVersion' value='0.0.0.1'/>
 <fix id='8.5.0.0-WS-WASJavaSDK-OS390-IFPI22585' version='8.5.0.20140724_0439'
 offeringId='EnhancedFix' offeringVersion='0.0.0.EnhancedFix'>
 <information name='8.5.0.0-WS-WASJavaSDK-OS390-IFPI22585' version=
 '8.5.0.20140724_0439'>
 SHIP JDK IV55739 IV59039 AS IFIXES FOR WAS 8.5.0.0
 DETAILS:
 THIS APAR SHIPS A JDK IFIX ON THE WAS 8.5.5.2 JDK BASE LEVEL WITH THE
 FOLLOWING CHANGES:
 IV55739 - PBEKEY GETALGORITHM() RETURNS WRONG VALUE
 IV59039 - POOR RESPONSE OR APPLICATION TIMEOUT DUE TO MULTIPLE THREADS
 WAITING ON SHARED CACHE WRITE LOCK WHEN THE SHARED CACHE IS FULL.
 </information>
 <property name='applicable.offerings' value='com.ibm.websphere.NDDMZ.zOS.v85
 [8.5.0,8.5.5003);com.ibm.websphere.zOS.v85 [8.5.0,8.5.5003)'/>
 <property name='beta.compatible' value='true'/>

```

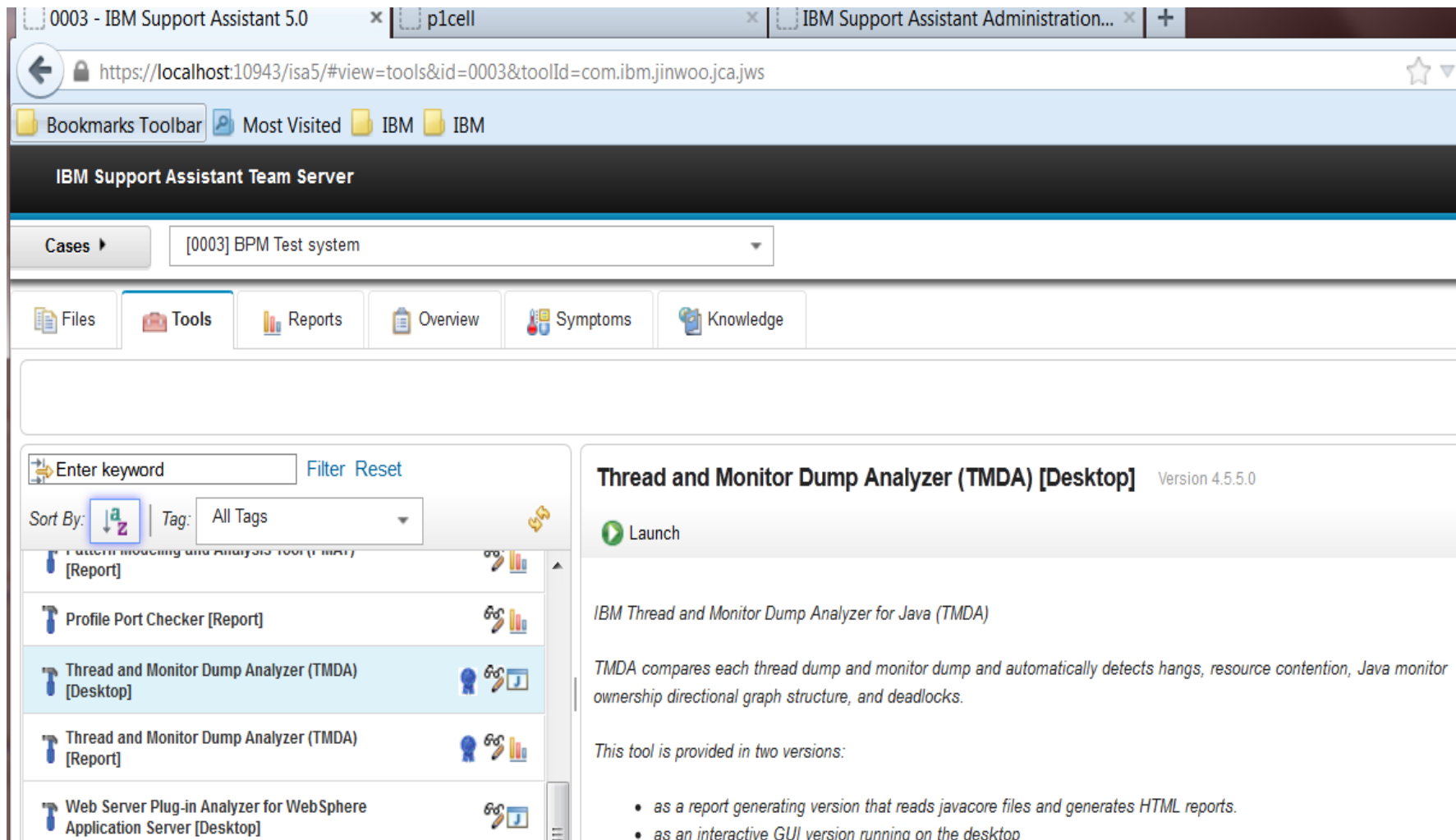
- property name = applicable.offerings
- <property name='applicable.offerings' value='com.ibm.websphere.NDDMZ.zOS.v85 [8.5.0,8.5.5003); com.ibm.websphere.zOS.v85 [8.5.0,8.5.5003)'/>
- Can be installed on both offerings:
  - com.ibm.websphere.NDDMZ.zOS.v85
  - com.ibm.websphere.zOS.v85
- FixPack level(s)
  - 8.5.0 up to (**but not including**) 8.5.5.3

# Diagnosing java/lang/OutOfMemoryError problems

- What doc do you need ?
- Must Gather:
  - <http://www-01.ibm.com/support/docview.wss?uid=swg21588553>
- Prolific problem
  - Many tools available
  - Where are the tools ??
- IBM Support Assistant (ISA)
  - <http://www.ibm.com/software/support/isa/>

| Diagnostic Data item collected                                               | ISA tool to use                                              |
|------------------------------------------------------------------------------|--------------------------------------------------------------|
| Transaction dumps(TDumps)                                                    | #3 (YES! You can input the whole untested SVC dump!)         |
| Javacores                                                                    | #1                                                           |
| Heapdumps                                                                    | #2, #3                                                       |
| Any system dump file generated by default as a result of the OOM error       | #3 (YES! You can input the whole untested SVC dump!)         |
| Verbose GC logs (native_stderr.log)                                          | #4, #5                                                       |
| Application logs (joblogs, stderr, stdout) (with imbedded verbose gc output) | #4, #5 (YES! You can use the whole log, JCL output and all!) |

# #1 TDMA – Thread and Monitor Dump Analyzer



The screenshot shows a web browser window with the URL `https://localhost:10943/isa5/#view=tools&id=0003&toolId=com.ibm.jinwoo.jca.jws`. The page title is "IBM Support Assistant Team Server". Below the title bar, there is a "Cases" dropdown menu set to "[0003] BPM Test system". A navigation bar contains tabs for "Files", "Tools", "Reports", "Overview", "Symptoms", and "Knowledge". The "Tools" tab is active, displaying a list of tools. The "Thread and Monitor Dump Analyzer (TMDA) [Desktop]" tool is highlighted. To the right of the tool list, a detailed view of the TMDA tool is shown, including its version (4.5.5.0), a "Launch" button, and a description: "IBM Thread and Monitor Dump Analyzer for Java (TMDA). TMDA compares each thread dump and monitor dump and automatically detects hangs, resource contention, Java monitor ownership directional graph structure, and deadlocks. This tool is provided in two versions: as a report generating version that reads javacore files and generates HTML reports, and as an interactive GUI version running on the desktop."

Enter keyword  Filter Reset

Sort By:  Tag: All Tags

- Pattern Modeling and Analysis Tool (PMAT) [Report]
- Profile Port Checker [Report]
- Thread and Monitor Dump Analyzer (TMDA) [Desktop]**
- Thread and Monitor Dump Analyzer (TMDA) [Report]
- Web Server Plug-in Analyzer for WebSphere Application Server [Desktop]

### Thread and Monitor Dump Analyzer (TMDA) [Desktop] Version 4.5.5.0

[Launch](#)

IBM Thread and Monitor Dump Analyzer for Java (TMDA)

TMDA compares each thread dump and monitor dump and automatically detects hangs, resource contention, Java monitor ownership directional graph structure, and deadlocks.

















This tool is provided in two versions:

- as a report generating version that reads javacore files and generates HTML reports.
- as an interactive GUI version running on the desktop

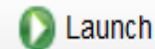
## #2 HeapAnalyzer

Filter Reset

Sort By: ↓ a ↑ z | Tag: All Tags

|                                                                                                                                             |                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  Garbage Collection and Memory Visualizer (GCMV) [Desktop] |    |
|  Garbage Collection and Memory Visualizer (GCMV) [Report]  |    |
|  Health Center [Desktop]                                   |    |
|  <b>HeapAnalyzer [Desktop]</b>                             |    |
|  Memory Analyzer [Desktop]                                |   |
|  Memory Analyzer [Report]                                |  |
|  Memory Analyzer [Web]                                   |  |
|  Pattern Modeling and Analysis Tool (PMAT) [Desktop]     |  |

### HeapAnalyzer [Desktop] Version 4.5.5.0



*IBM HeapAnalyzer helps you find possible memory leaks through its heuristic search engine and analysis of heap dumps produced by Java(TM) applications.*

























Features include:

- Parent and children view from table view and tree view
- Address search
- Root list view
- Same type view
- Automatic detection of truncated heap dump
- Automatic detection of heap dump type
- Tree view of heap dump
- Object sizes
- Total size of each sub-tree
- Total size drop in a sub-tree


## #3 – Memory Analyzer

[Filter](#)
[Reset](#)

Sort By: ↓ a z | Tag: All Tags

|                                                                                                                                         |                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Health Center [Desktop]                               |                                                                                           |
|  HeapAnalyzer [Desktop]                                |                                                                                           |
|  Memory Analyzer [Desktop]                             |          |
|  Memory Analyzer [Report]                              |          |
|  Memory Analyzer [Web]                               |    |
|  Pattern Modeling and Analysis Tool (PMAT) [Desktop] |                                                                                       |
|  Pattern Modeling and Analysis Tool (PMAT) [Report]  |                                                                                       |

### Memory Analyzer [Desktop] Version 1.2.0.2014050909

 Launch

*IBM Monitoring and Diagnostic Tools for Java(TM) - Memory Analyzer*

*Memory Analyzer is a feature-rich Java heap analyzer that helps you find memory leaks and reduce memory consumption.*

*This tool is provided in three versions:*


























- *as a report generating version that reads the dump, builds some index files and generates some zipped HTML reports.*
- *as an interactive GUI version running on the desktop*
- *an interactive web-based tool accessed remotely through the browser (tech preview only)*

## #4 – PMAT

# Pattern Modeling and Analysis Tool

[Filter](#)
[Reset](#)

Sort By: ↓ a z | Tag: All Tags

|                                                                                                                                       |                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Memory Analyzer [Report]                            |          |
|  Memory Analyzer [Web]                               |          |
|  Pattern Modeling and Analysis Tool (PMAT) [Desktop] |                                                                                           |
|  Pattern Modeling and Analysis Tool (PMAT) [Report]  |                                                                                           |
|  Profile Port Checker [Report]                     |                                                                                       |
|  Thread and Monitor Dump Analyzer (TMDA) [Desktop] |    |
|  Thread and Monitor Dump Analyzer (TMDA) [Report]  |    |

## Pattern Modeling and Analysis Tool (PMAT) [Desktop]



*IBM Pattern Modeling and Analysis Tool for Java Garbage Collector (PMAT)*

*PMAT parses verbose GC traces and performs pattern modeling analysis of Java heap usage. Based on this analysis (and subject to JVM implementation limitations), PMAT recommends values for the following configuration parameters:*

















- *maximum tenured generation size*
- *maximum permanent generation size*
- *maximum Java heap size*
- *kCluster size*
- *pCluster size*
- *pCluster buffer size*
- *class loader size*

## #5 – GCMV

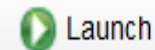
# Garbage Collection and Memory Visualizer

[Filter](#)
[Reset](#)

Sort By: ↓ a z | Tag: All Tags

|                                                                                                                                             |                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  Classloader Analyzer [Desktop]                            |    |
|  Garbage Collection and Memory Visualizer (GCMV) [Desktop] |    |
|  Garbage Collection and Memory Visualizer (GCMV) [Report]  |    |
|  Health Center [Desktop]                                   |    |
|  HeapAnalyzer [Desktop]                                   |   |
|  Memory Analyzer [Desktop]                               |  |
|  Memory Analyzer [Report]                                |  |
|  Memory Analyzer [Web]                                   |  |

## Garbage Collection and Memory Visualizer (GCMV)



*This tool is a verbose GC data visualizer. It parses and plots various log types including verbose GC logs, -Xtgc output and native memory logs (output from ps, svmon and perfmon). It provides graphical display of a wide range of verbose GC data values together with tuning recommendations and detection of problems such as memory leaks. You can select and parse multiple files for comparison.*

*This tool is provided in two forms:*

- as a batch processing mode, which saves data to a HTML report with images and a .csv file
- as a full interactive GUI version running on the desktop, which includes the following features:
  - Report, raw log, tabulated data and graph views.

Complete your session evaluations online at [www.SHARE.org/Pittsburgh-Eval](http://www.SHARE.org/Pittsburgh-Eval)

# WebSphere Server Timeout ABENDEC3 RC=04130004

- Control Region internal Worker thread default = 3
- Cross memory deadlock within the Control Region
- SR threads make mbean request back to CR
  - Seen admin related requests / use CR internal worker thread
- These can then make additional mbean requests
  - Using CR internal worker thread
- With only 3, it can tie them up quickly
- XD, Portal Server, BPM seem to use this function

- Server custom property
- private\_bboo\_internal\_work\_thread\_pool\_size
- Admin console -> Environment -> WebSphere Variables -> <Select server> <scope>
- Variable name:  
private\_bboo\_internal\_work\_thread\_pool\_size
- Value: greater than 3 (the default)  
10 seems to be a good number

## Admin Console when starting DMGR on backup LPAR

# Admin Console Unavailable when DMGR moved to backup LPAR

- After installing Fixpack(s) 7.0.0.31 / 8.0.0.8 / 8.5.5.2
- If Deployment Manager (DMGR) started on LPAR other than one configured to run on
- DMGR starts, but fails to listen on correct Ports
- PI20907
  - 7.0.0.35 / 8.0.0.10 / 8.5.5.4

# WebSphere Server won't SHUTDOWN

- WebSphere Server hangs during shutdown
  - STOP command issued
- Is Java HealthCenter agent enabled in the Server ?
  - -xhealthcenter
- Symptom:
  - Stack Trace: Native call stack:  
pthread\_cond\_wait  
monitor\_wait\_original  
j9thread\_monitor\_wait  
protectedDestroyJavaVM  
j9sig\_protect DestroyJavaVM  
DestroyJavaVM

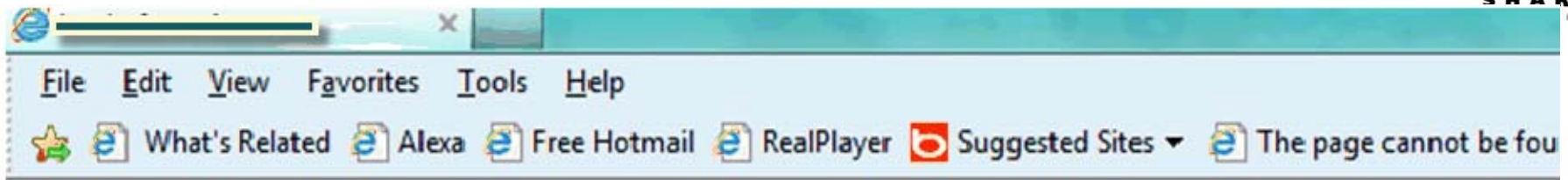
- Java APAR IV53219
  - Delivered in WAS FixPack 7.0.0.29
- IV53219- This defect will be fixed in:
  - 6 SR15 FP1 (6.0.15.1)
  - 6 R1 SR7 FP1 (6.1.7.1)
  - 7 SR6 FP1 (7.0.6.1)
  - 7 R1 SR1 (7.1.1.0)
- Local fix
  - remove HealthCenter Agent from the WAS Server
    - remove –xhealthcenter option from JVM options
- WAS iFix can be built to deliver the JDK

# CANNOTINSTATIATEOBJECTEXCEPTION

- CANNOTINstantiateOBJECTEXCEPTION may occur during EJB lookup in an application started in multiple servants
  - If a Servant region ASID is stopped, the EJB bindings may be removed from the NameSpace
  - Subsequent lookup of the EJB may fail with the above
- PM82011 – 7.0.0.33
  - APAR local fix
    - Change wlm\_maximumSRcount and/or wlm\_minimumSRcount variable such that they are EQUAL.

# **MVSDS Functionality failed When configured in HTTP Server**

- MVSDS –
- To view excel spreadsheet in HTTP Server
- Customer coded the following in the HTTP Config
  - AddType .xls application/vnd.ms-excel binary 1.0 # excel
  - AddType .xlm application/vnd.ms-excel binary 1.0 # excel
- Formatted spreadsheet was not displayed in the Web Browser
  - Source displayed



```
<?xml version="1.0" ?>
<?mso-application progid="Excel.Sheet"?>
- <Workbook xmlns="urn:schemas-microsoft-com:office:spreadsheet" xml
 xmlns:ss="urn:schemas-microsoft-com:office:spreadsheet" xmlns:htm
- <DocumentProperties xmlns="urn:schemas-microsoft-com:office">
 <Author>PCPW</Author>
 <LastAuthor>PCPW</LastAuthor>
 <Created>2014-04-25T06:52:17</Created>
 <LastSaved>2014-04-25T06:52:17</LastSaved>
 <Company>[REDACTED]</Company>
 <Version>9.02.02M3P04132010</Version>
</DocumentProperties>
- <Styles>
- <Style ss:ID="_body">
 <Interior ss:Pattern="Solid" />
 <Protection ss:Protected="1" />
</Style>
```

- Trace showed error 404 on file **'/MVSDS/CPWP.NBTG5V2.CONFIG.FLATFILE.XLM':**
- **Ý39AFE10 28/Apr/2014:10:39:08.814331": APIClassExec Trying to match "/MVSDS/CPWP.NBTG5V2.CONFIG.FLATFILE.XLM" with pattern "/MVSDS\*".**
- **Ý39AFE10 28/Apr/2014:10:39:08.814338": APIClassExec using HTReqArgPath.**
- **Ý39AFE10 28/Apr/2014:10:39:08.814343": Pattern..... match SUCCEEDED.**
- Ý39AFE10 28/Apr/2014:10:39:08.814348": APIClassExec calling function "mvsdsGet"
- Ý39AFE10 28/Apr/2014:10:39:08.814352": APIClassExec set EnuExecs for /usr/lpp/internet/bin/mvsds.so to NO.
- Ý39AFE10 28/Apr/2014:10:39:08.814358": GWAPI: HTTPD\_extract() args..... name size=5; name=PPATH
- Ý39AFE10 28/Apr/2014:10:39:08.814365": GWAPI: HTTPD\_extract() args..... buffer @ 398567C8; buffer size=1023
- Ý39AFE10 28/Apr/2014:10:39:08.814373": GWAPI: HTTPD\_extract()... successful with value\_size=41; value="/MVSDS/CPWP.NBTG5V2.CONFIG.FLATFILE.XLM"
- **Ý39AFE10 28/Apr/2014:10:39:08.816544": GWAPI: HTTPD\_log\_error() args..... value= mvsdsGetData: ?cannot open`'CPWP.NBTG5V2.CONFIG.FLATFILE.XLM'... ; value size= 67**
- Ý39AFE10 28/Apr/2014:10:39:08.816583": GWAPI: HTTPD\_log\_error()... successful
- Ý39AFE10 28/Apr/2014:10:39:08.816590": GWAPI: HTTPD\_set() args..... name size=9; name=ERRORINFO
- Ý39AFE10 28/Apr/2014:10:39:08.816596": GWAPI: HTTPD\_set() args..... value size=8; value=notfound
- Ý39AFE10 28/Apr/2014:10:39:08.816607": GWAPI: HTTPD\_set()... successful
- Ý39AFE10 28/Apr/2014:10:39:08.816612": APIClassExec return\_code=404; HTTP\_RESPONSE=200; HTErrInfo=0; ERRORINFO=16
- Ý39AFE10 28/Apr/2014:10:39:08.816625": ErrorLog.... Ý28/Apr/2014:10:39:08 +0500"/MVSDS/CPWP.NBTG5V2.CONFIG.FLATFILE.XLM'
- **Ý39AFE10 28/Apr/2014:10:39:08.816639": return\_code=404; HTTP\_RESPONSE=200; HTErrInfo=16; ERRORINFO=16**

- Attempt to recreate the problem in IBM support's lab system failed because the HTTP server served the customer's excel spreadsheet file correctly as expected.
- File was stored in EBCDIC in z/OS
- Customer has two options
  - reformat the z/OS file into ASCII format (recommended)
  - update the parm on the configured Addtype to reflect EBCDIC indicating the input data is in EBCDIC.

AddType .xlm application/vnd.ms-excel ebcdic 1.0 # excel

vs.

AddType .xlm application/vnd.ms-excel binary 1.0 # excel



# MOBILE MAINFRAME **APP**THROWDOWN

Will you be our mobile champ?

**CICS | IMS | WAS | DB2**

**Open to existing System z clients**

**The challenge:**

Build a proof-of-concept demonstrating mobile enablement of your existing mainframe apps.

**Get IBM help to build your mobile PoC**

**Call us 'Coach':**

We provide getting started guides and access to IBM zMobile Experts for questions and queries.

**Win a week with IBM experts & more**

**Make it real:**

Win help from IBM to bring your mobile app to life.

**[ibm.biz/mmthrowdown](http://ibm.biz/mmthrowdown)**

No submission of code required, only screenshots.  
Entries must be complete and submitted by **17 Sept 2014**.