Marcel Mitran, STSM, Architect Java on System z
Ken Irwin, IBM, zOS Java L2 Service Support

IBM Java on System z: Service Topics

Trademarks, Copyrights, Disclaimers

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of other IBM trademarks is available on the web at "Copyright and trademark information" at http://www.ibm.com/legal/copytrade.shtml

Other company, product, or service names may be trademarks or service marks of others.

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IN ADDITION, THIS INFORMATION IS BASED ON IBM'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY IBM WITHOUT NOTICE. IBM SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION. NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, NOR SHALL HAVE THE EFFECT OF, CREATING ANY WARRANTIES OR REPRESENTATIONS FROM IBM (OR ITS SUPPLIERS OR LICENSORS), OR ALTERING THE TERMS AND CONDITIONS OF ANY AGREEMENT OR LICENSE GOVERNING THE USE OF IBM PRODUCTS OR SOFTWARE.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval

Service Topics

- JDMPVIEW
  - Java 6
  - Java 601 and later JVMs

- IDDE
  - Interactive Diagnostic Data Explorer

- Health Center

- Service Recommendations

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval

JDMPVIEW

- JDMPVIEW is a fully supported Diagnostic Tool integral to the JVM on all platforms

- Java 6
    - Java 6 continues to rely on a 2 step process for dump analysis
        - jextract creates an XML control file for the dump viewer
            - Default option creates a zip file containing:
                - The dump, XML control file, Trace (.dat) files
            - **-**nozip option creates just the XML file
        - jdmpview is the dump viewer tool
    - Input file can be a dump dataset or file

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval

JDMPVIEW

- Java 601 and Java 7
  - jdmpview no longer requires jextract to be executed against the dump
    - jdmpview -core <dumpfile>
  - provide a build and version independent jdmpview

  - Command line invocation
    - Referred to as 'batch mode' in our documentation

  - Command file option
    - Pass multiple commands in a single file

Jdumpview Sample Output

The following command is entered:
 jdmpview -core 'TESTID.JDMP1.TSTDMP'

  And the following might be displayed:
Source : file:///u/testid/TESTID.JDMP1.TSTDMP
        0 : ASID: 0x1 : No JRE : No JRE
        1 : ASID: 0x3 : No JRE : No JRE
        2 : ASID: 0x4 : No JRE : No JRE
        3 : ASID: 0x6 : No JRE : No JRE
        4 : ASID: 0x7 : No JRE : No JRE
        *5 : ASID: 0xd0 EDB: 0x4800105570 : JRE 1.6.0 z/OS s390x-64 build
20120214_102688 (pmz6460_26sr1fp1ifix-20120618_01(SR1 FP1))
        6 : ASID: 0x1a0 EDB: 0x4800105570 : JRE 1.6.0 z/OS s390x-64 build
20120214_102688 (pmz6460_26sr1fp1ifix-20120618_01(SR1 FP1))
        7 : ASID: 0xffff : No JRE : No JRE

        >

                        What does this mean?

Jdmpview Output Explained

- Jdmpview lists the dump name it has opened
- Jdmpview will then locate and list all JVM's within the dump
  - Address spaces containing a JVM (JRE) will list the jvm version and address space number
  - The CURRENT jvm is marked by '*'
  - The ASID list will expand as JREs are found

    How does one switch from one JRE to another?

    - Use the **context** command:
      - context x   where **x** is the number preceding ASID
      - context   by itself displays the context list

SHARE
in San Francisco
2013

JDMPVIEW Usage

- Logging
    - Command output can be routed to a file or files
        - set logging file <filename>
          logging turned on; outputting to "/u/testid/out"
        - Set logging off
          logging turned off; was logging to "/u/testid/out"

- Limitations
    - Data output can exceed session scrolling capacity
    - No session history is maintained

    What options are available ?

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval

IDDE

- Interactive Diagnostic Data Explorer
  - The single greatest feature is the

    SUSPEND/RESUME CAPABILITY

  - Dump diagnosis history is now maintained across multiple invocations
      - User notes can be created and saved inline with the extracted data

  - The second greatest feature is

    SESSION DATA PORTABILITY

    - Projects can be passed amongst users

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval

SHARE in San Francisco
2013

IDDE

Interactive Diagnostic Data Explorer

- Supports jdmpview commands

- Includes user controlled display limit capabilities
  - User is given the option to suspend/continue data displays if an excessive number of objects exist.

- Custom plug-in capability is available
  - User-written data extraction and formatting plug-ins may be imported and executed.

Health Center

- Health Center is a low overhead tool for collecting and analyzing data in realtime during application execution

- Comprised of an Agent and Client
  - Agent (zOS) is enabled via
    - **-Xhealthcenter**
  - Client
    - Windows or Linux x86 based

Health Center Capabilities

- Health Center provides visibility, monitoring and profiling in the following application areas:
- Performance
  - Method profiling
  - Lock analysis
  - Garbage Collection
  - Threading
- Memory Usage
- System environment
- Java class loading
- File I/O
- Real Time Monitoring
- Object Allocations

Health Center Capabilities

- Version 2.1 of the Health Center introduces a new comprehensive API

    - Provides application access to the same live data used by the Health Center client.
    - Allows the creation of specific event driven code based on application behavior.

- See the Health Center API documentation for more details

Service Recommendations

- For those customers using the zOS 64bit JVMs, Level 2 Support recommends the following APARs be installed to ensure complete dumps are captured:

- OA37563, OA39596, OA40501, and OA40015

- Dumps captured by the jvm via -Xdump or exception handling have been noted to be missing large portions of memory, causing errors running dump analysis tools (jdmpview as well as IPCS)

Information Resources

- jdmpview information is available on developerWorks

  - https://www.ibm.com/developerworks/mydeveloperworks/ groups/service/html/communityview? communityUuid=15e0de25-1bcd-4faf-8028-0767423203d4

Information Resources

- IDDE: Interactive Diagnostic Data Explorer information is also available on developerWorks

- http://www.ibm.com/developerworks/websphere/
    techjournal/1210_supauth/1210_supauth.html

- Installing IDDE under Eclipse

- https://www.ibm.com/developerworks/
  mydeveloperworks/wikis/home?
  lang=en#/wiki/Wbfbb94d5fce7_491b_a55c_3998e5cb89a6/
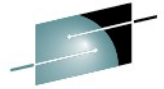 page/Installing%20IDDE%20into%20Eclipse

Information Resources

....and so is Health Center information

- http://www.ibm.com/developerworks/java/jdk/tools/healthcenter/
- http://publib.boulder.ibm.com/infocenter/hctool/v1r0/index.jsp?
topic=%2Fcom.ibm.java.diagnostics.healthcenter.doc
%2Fhomepage%2Fplugin-homepage-hc.html

- Videos are also available, too!

  http://www.youtube.com/watch?v=QDFaus8ZwRs

Information Resources

- IBM Support Assistant

- http://www-01.ibm.com/software/support/isa

  - Select ISA 4.1 for the IDDE tool

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval