IBM Power Development Platform

AIX porting Image usage guide

11 January 2014

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Power Development Platform

User guide for the AIX porting image

1. Abstract

When using the IBM Power Development Platform (PDP) available at **ibm.com**/partnerworld/PD to port or migrate your solution on an IBM Power Systems server, you can take advantage of the PDP porting image. The preconfigured image includes IBM AIX, IBM WebSphere Application Sever, IBM DB2 and other components to help you cut down on complexity and time.

2. Introduction

The PDP porting image is an IBM Power Systems, IBM AIX® 7.1 PDP image preconfigured with IBM middleware (such as IBM WebSphere® Application Server and IBM DB2®), tools, compilers, and operating system fix packs. The image represents the latest set of IBM middleware and tools for porting, migrating, or upgrading a solution to the latest IBM operating system and middleware.

The purpose of this document is to explain what is included in the PDP porting image as well as explain how to use its various components and assumes a working knowledge of the PDP. Application developers who are interested in porting their application from another platform to POWER7 will benefit from using the PDP Porting image. Likewise, developers with applications that run on earlier versions of AIX find the preconfigured middleware and tools in the PDP porting image useful as they verify their software functions on the latest version of AIX.

3. Creating a reservation

This section provides you with information on how to create a reservation in the PDP.

3.1 Basics

This document assumes that you have a working knowledge of the PDP. If this is not the case, refer to the PDP How to section.

The how-to page contains information about how to create a reservation, access it, utilize it, and so on. In addition, the instance of Firefox installed in the porting image has had the homepage modified to a PDP porting and home page. Also the bookmarks have been modified to ease the user's needs. When you connect to your running system, you can use Firefox and select the "Software Access Catalog" tab to go to the software access catalog to download and install IBM middleware on your virtual server.

3.2 Additional information

When creating a reservation for the porting image, make sure to select the project classification port or migration:

1. Click **Add resource to cart**.
2. Select **AIX 7.1 Porting Stack (**see *Figure 1*).

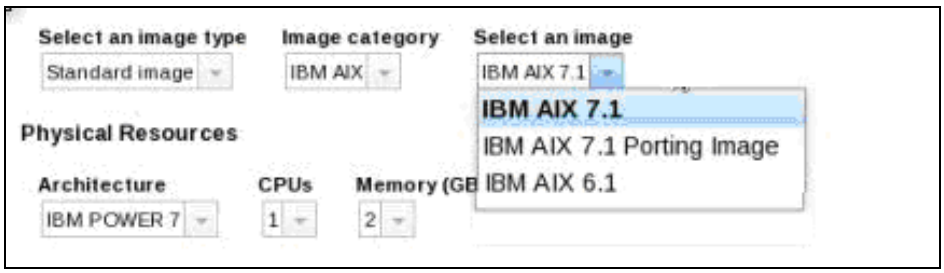

Figure 1. Project classification

4. PDP porting image details

This section provides you with details about what the PDP porting image contains.

4.1 Overview

The porting image contains the following components:

- IBM AIX7.1
- IBM WebSphere
- Java (32 and 64 bit)
- IBM HTTP Server
- IBM DB2 Enterprise Server Edition
- IBM Rational Developer for Power daemon
- Java Performance Advisor
- AIX Linux Toolkit and RPMs
- IBM C and C++ compilers
- GNU compilers
- AIX packages to create a CDE desktop

4.2 Installed operating system and fix pack

The PDP Porting Image runs on AIX 7.1 operating system and Power7 hardware. The version number is *7100-00-03-115*. This is also known as AIX 7.1 SP3.

4.3 Installed middleware

Middleware	Version	Installation location
IBM HTTP Server	7.0.0.17	/usr/IBM/HTTPServer
WebSphere Application Server	7.0.0.17	/usr/IBM/WebSphere/AppServer
DB2 Enterprise Server Edition	9.7.4	/opt/IBM/db2/V9.7
Rational Developer for Power Daemon	8.0	/opt/IBM/RDPower/8.0/rse
IBM Java 6 64 bit	Java version 1.6.0 Java SE Runtime Environment (build pap6460sr9fp1-20110208_03(SR9 FP1)) IBM J9 VM (build 2.4, JRE 1.6.0 IBM J9 2.4 AIX ppc64-64 jvmap6460sr9-20110203_74623 (JIT enabled, AOT enabled) J9VM - 20110203_074623 JIT - r9_20101028_17488ifx3 GC - 20101027_AA) JCL - 20110203_01	/usr/java6_64/
IBM Java 6 64 bit	Java version 1.6.0 Java(TM) SE Runtime Environment (build pap3260sr9fp1-20110208_03(SR9 FP1)) IBM J9 VM (build 2.4, JRE 1.6.0 IBM J9 2.4 AIX ppc-32 jvmap3260sr9-20110203_74623 (JIT enabled, AOT enabled) J9VM - 20110203_074623 JIT - r9_20101028_17488ifx3 GC - 20101027_AA) JCL - 20110203_01	/usr/java6

4.4 Compilers

Compiler	Version	Installation location
IBM XL C/C++	11.2	/usr/bin
GNU C/C++	4.6.0	/usr/local/bin

4.5 Tools

Tool	Version	Installation location
Java Performance Analyzer	1.0	/usr/local/jpa
Cscope	15.7a	/usr/local/bin
Ddd	3.3.3.1	/usr/bin
GNU Make	3.80	/usr/bin
AIX Linux Toolbox	latest	

4.6 Other

Note the following settings:

- Firefox is installed and the default home page is set to the IBM Porting Resource Page at **ibm.com**/partnerworld/page/pw_com_sys_PDP_optimization_resrc. The IBM Porting Resource Page has many useful links to Java version, middleware fix packs, the Software Access Catalog and porting tools.
- Firefox also has useful bookmarks set for porting and migrating.
- DB2 created a default instance db2inst1 in /home/db2inst1 with the password **db2inst1**.
- The UNIX® user ihsadmin was created to administer IBM HTTP Server with the password **ihsadmin**.
- The UNIX users ihsadmin, db2inst1, dasusr1, db2fenc1 were created with the passwords to match the user name. However, remote login is disabled, so you cannot log in with those IDs.

5. Working with the PDP porting image

The following sections provide you with information on how to take advantage of the PDP porting image.

5.1 Root user convenience aliases

The PDP porting image root $HOME/.profile is set up with convenience aliases to save you from typing. Among others, the following aliases are especially useful: startihs, stopihs, startwas, stopwas, gowaslogs, and goihslogs.

5.2 Starting and stopping IBM HTTP Server

To start and stop IBM HTTP Server using preconfigured aliases, perform the following steps:

1. Become the root user, by typing **su -**.
2. Use the alias **startihs** to start IBM HTTP Server.
3. Use the alias **stopihs** to stop IBM HTTP Server.

Or, start and stop the IBM HTTP Server using the apachectl command:

1. Change to the /usr/IBM/HTTPServer/bin directory
2. To start IBM HTTP Server, type **./apachectl start**.
3. To stop IBM HTTP Server, type **./apachectl stop**.

Note: The IBM HTTP Server administrator has been set up with the user ID ihsadmin and password ihsadmin.

5.3 Starting and stopping WebSphere Application Server

To start and stop the IBM WebSphere Application Server using KSH aliases, perform the following steps:

1. To become the root user, type the su command e.g. su – root.
2. Utilize the alias **startwas** to start WebSphere Application Server.
3. Utilize the alias **stopwas** to stop WebSphere Application Server.
   Alternatively, start and stop the IBM WebSphere Application Server using the startServer.sh and stopServer.sh scripts.
4. Navigate to the /usr/IBM/WebSphere/AppServer/profiles/was7profile/bin.
5. To start WebSphere Application Server, type **./startServer.sh server1 -user**

wasadmin -password wasadmin.

6. To start WebSphere Application Server, type **./stopServer.sh server1 -user wasadmin -password wasadmin**.

5.4 Accessing the WebSphere Administrative Console

Use your supplied IP address by the PDP Connections tab as follows http://172.xxx.xx.xx:9060/admin. This guide uses the IP address 172.29.140.52 to illustrate how to connect to and use middleware. For example, http://172.29.140.52:9060/admin. Log in as user: wasadmin with the password wasadmin.

5.5 Starting and stopping the DB2 Enterprise Server Edition

DB2 is installed and a default instance db2inst1 is created. You can use this instance or create your own. To use this instance, perform the following steps:

1. Become db2inst1 by typing **su – db2inst1**.
2. Supply the password **db2inst1**.
3. At the command prompt, type **db2start**.
4. Stop the instance's database manager with the command **db2stop**.

Note: The db2inst1 instance uses port 60000 as its SVCENAME (TCP/IP Service Name).

5.6 Accessing the Rational Developer for Power daemon

Rational Developer for Power is running by default. It is installed to run on the default ports. You can access it remotely using your Rational Developer for Power environment.

6. Example usages

Note: You need to use your IP address instead of the IP address show in the examples. These examples relate to the middleware and tools for developers to port or migrate their applications.

6.1 Firefox

To access resources and the IBM Software Access Catalog using your browser (Firefox is provided), perform the following steps:

Log in to the PDP Porting Reservation using VNC Viewer.

Start Firefox from the command line of a terminal window using the command **firefox&**.

The home page is set to the PDP Resource Page at ibm.com/partnerworld/page/pw_com_sys_PDP_optimization_resrc, which offers resources to help you port or migrate your solution and it provides access to the IBM Software Access Catalog from your PDP reservation. Using the IBM Software Access Catalog, you can download and install various version of software from the IBM software portfolio.

In addition, by default, this instance of Firefox offers many useful bookmarks already set as follows:

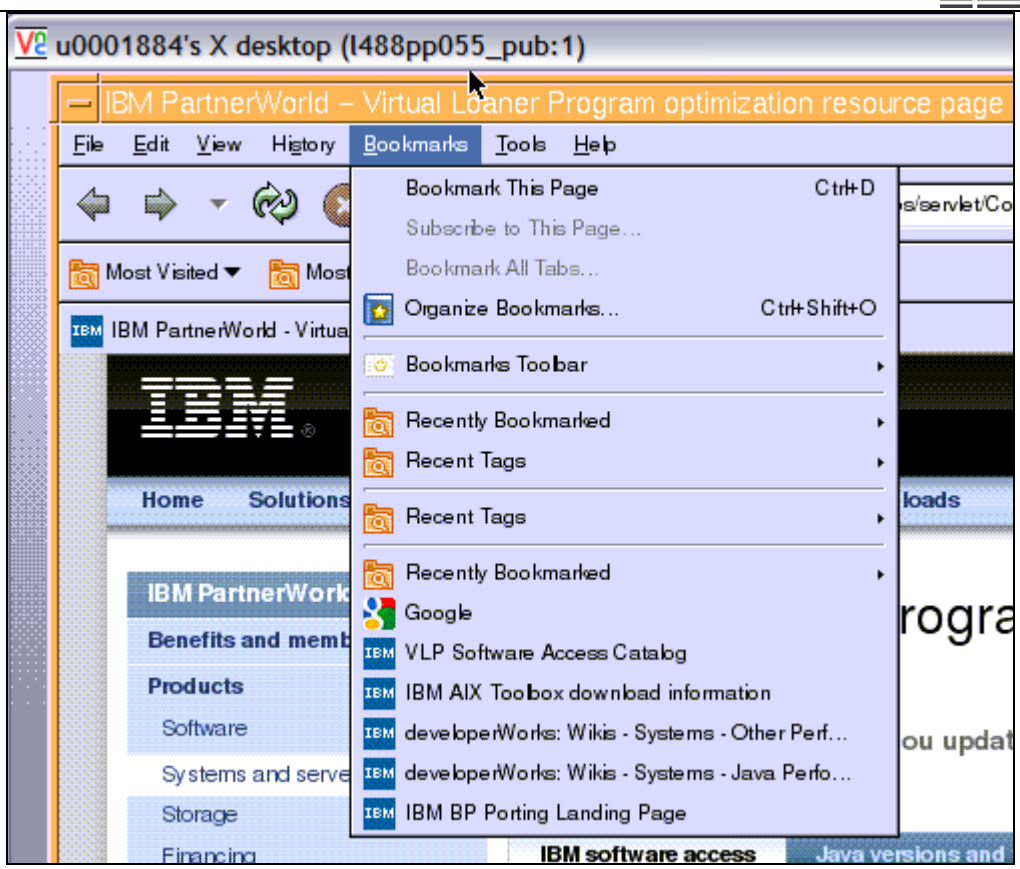

Figure 2. Bookmarks

6.2 Developer tools and source browsing

6.2.1 idebug

IBM Distributed Debugger [idebug] for AIX 11.2 does not include the AIX client. All the features of idebug has been incorporated into Rational Developer for Power. Refer to section 6.3.

6.2.2 GNU Data Display Debugger [ddd]

GNU DDD is a graphical front-end for the command-line debuggers GDB, DBX, JDB, and other open-source debuggers and has become famous because of its interactive, easy-to-use front-end. To run GNU debugger, type **ddd** from the command line.

6.2.3 Cscope

Cscope is an open-source source browser that allows searching for text, symbols, functions and allows developers easy access to code and editing. To run cscope, type cscope from the command line. To learn how to load source into the database for browsing refer to the help, cscope –help.

One option to use to load source into the database is to use a namefile. List all your source with absolute path in the namefile and use the cscope namefile option to load the namefile. For example, cscope –Rui <namefile>.

Example Namefile:

/dev/source/foo.c

/dev/source/foo.h

…

6.2.4 Make or Gnu Make

Gnu Make 3.80 is the default make and is already installed. To verify, type make –version. Gmake also works.

6.3 Rational Developer for Power daemon

Rational Developer for Power daemon is installed and should be already running. To verify, that it is running, type **ps –ef | grep RDPower**. It should return with the following results:

```
    root 9109616       1   0   Jul 08      -  0:17
/usr/java5/bin/java –Xms64m –
Xmx128m –Xss2m –DA_PLUGIN_PATH=/opt/IBM/RDPower/8.0/rse// –
DDSTORE_TRACING_ON=fa
lse org.eclipse.dstore.core.server.ServerLauncher 8050
```

Note that the server is running on port 8050: default.

6.3.1 Client

If you have Rational Developer for Power installed or want to download an evaluation version, you can add the desktop Rational Developer for Power client to your PDP Image:

1. Click **File → New → Remote C/C++ Project**.
2. From the Remote C/C++ Project window, give your project a name.
3. In the remote location section, click **Browse** to establish a connection to your host system.
4. From the Browse for Folder window click **New**. From the **New Connection** window, select ***AIX or Linux*** system, which refers to the system to which you will be establishing a connection.
5. From there follow the prompts *Specifying a valid IP and the port#.* The default is 8050. For the output, see Figure 3.

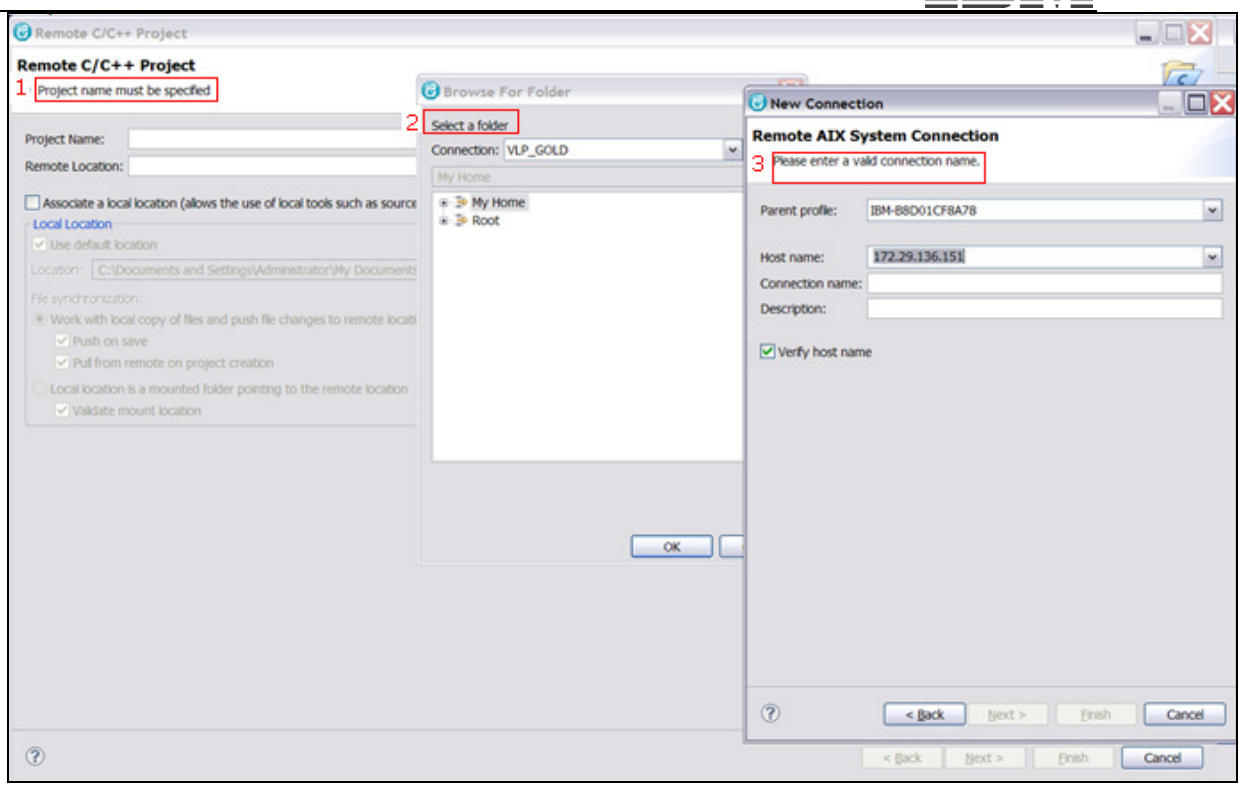

Figure 3. Rational Developer for Power output

6.4 C and C++ compilers

The latest GNU [v.4.6.0] and IBM xlC C and C++ compilers [v11.2] are installed. If you are using C++ or C, you can invoke them easily from the command line.

gcc /g++	GNU C/C++ Compilers
cc/xlc	XL C Compiler
xlc++/xlC	XL C++ Compiler

6.5 Middleware

To run the middleware, perform the following steps:

1. After VNC connectivity to the PDP logical partition (LPAR) is established, start IBM HTTP Server and WebSphere Application Server.
2. You need to use the IP address of the partition.

6.5.1 Loading the IBM HTTP Server default page

To open the default IBM HTTP Server page, perform the following steps:

1. With IBM HTTP Server running, navigate to the IP address given in your PDP reservation.
2. If necessary, accept self-signed security certifications. The default IBM HTTP Server page opens (see Figure 4).

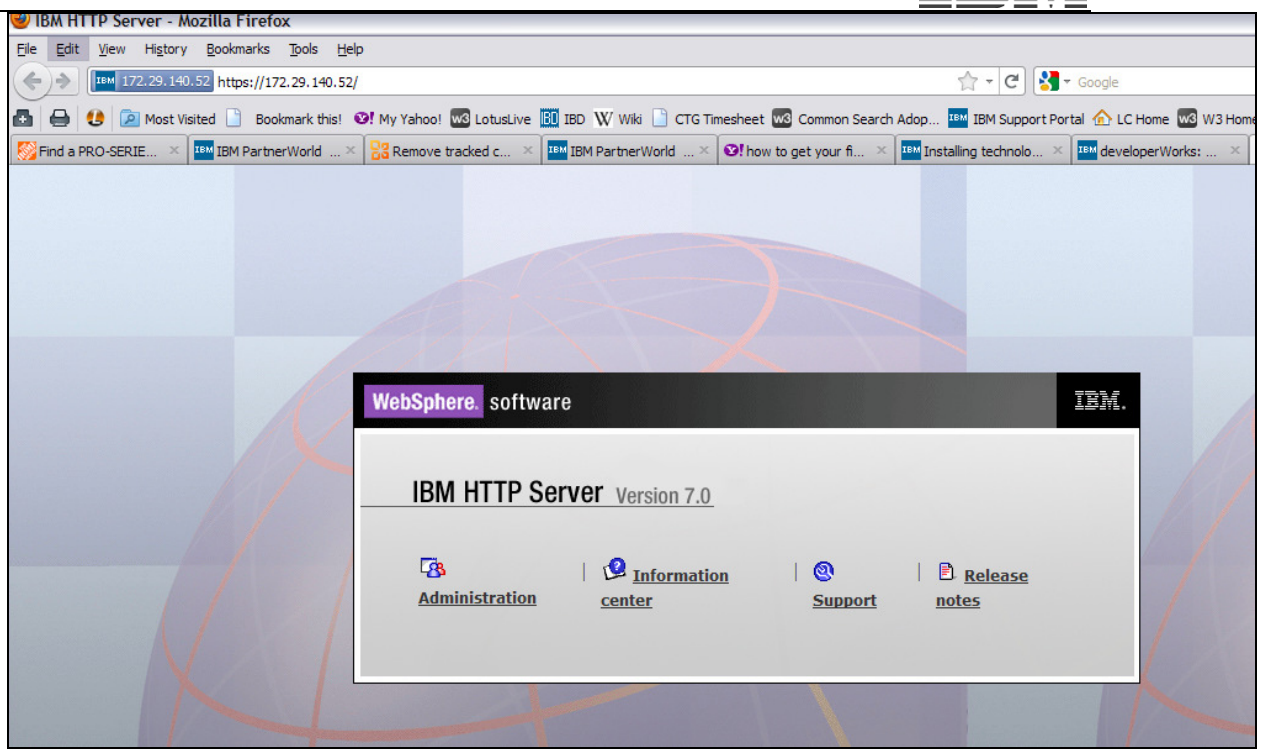

Figure 4. Default IBM HTTP Server page

6.5.2 Showing an installed application example in WebSphere

1. Show the SOX snoop Servlet.
2. Point your browser to https://172.29.140.52/partnerworld/sox/tools/SoxSnoopServlet to open the snoop Servlet page (see Figure 5).

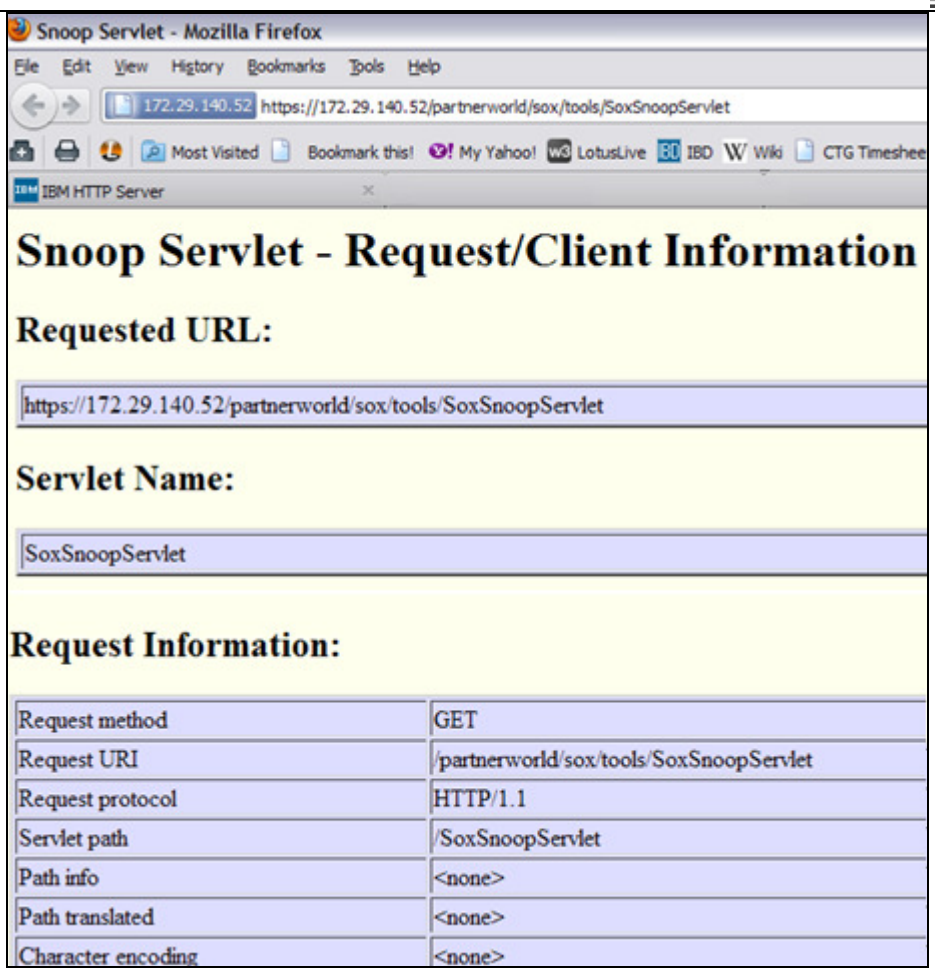

Figure 5. Snoop Servlet page

3. Show the SOX Snoop JSP
4. Point your browser to your partition as follows:

https://172.29.140.52/partnerworld/sox/tools/SoxSnoop.jsp. The JSP Snoop page opens

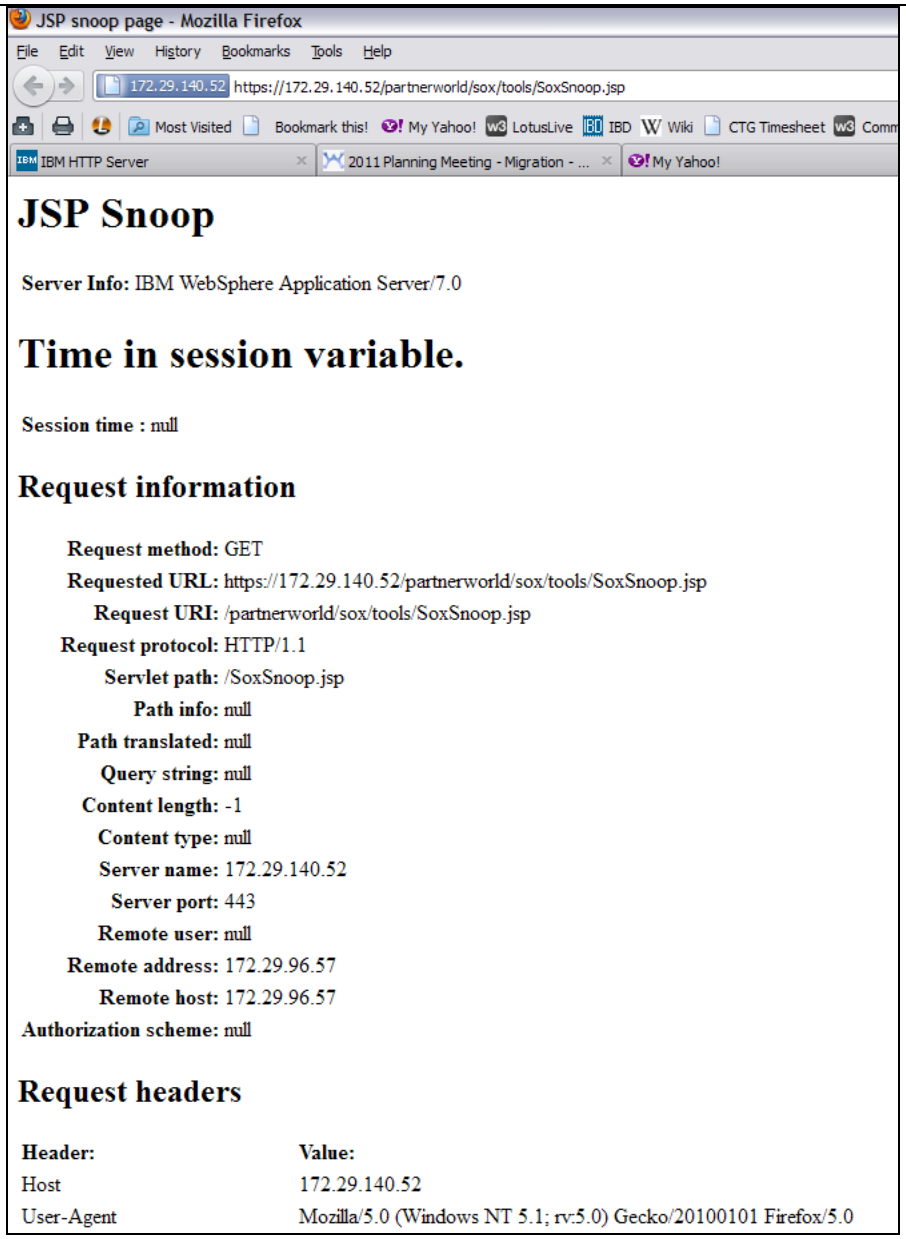

Figure 6. JSP Snoop page

6.5.3 Verifying DB2

To verify DB2, perform the following steps:

1. Install DbVisualizer from www.dbvis.com/products/dbvis/download. Select the **with Java VM** version.
2. Create a new DB2 connection with your DB2 instance at the IP address, Port- 60000.
3. Enter the user ID **db2inst1** and password **db2inst1** and connect (see *Figure 7*).

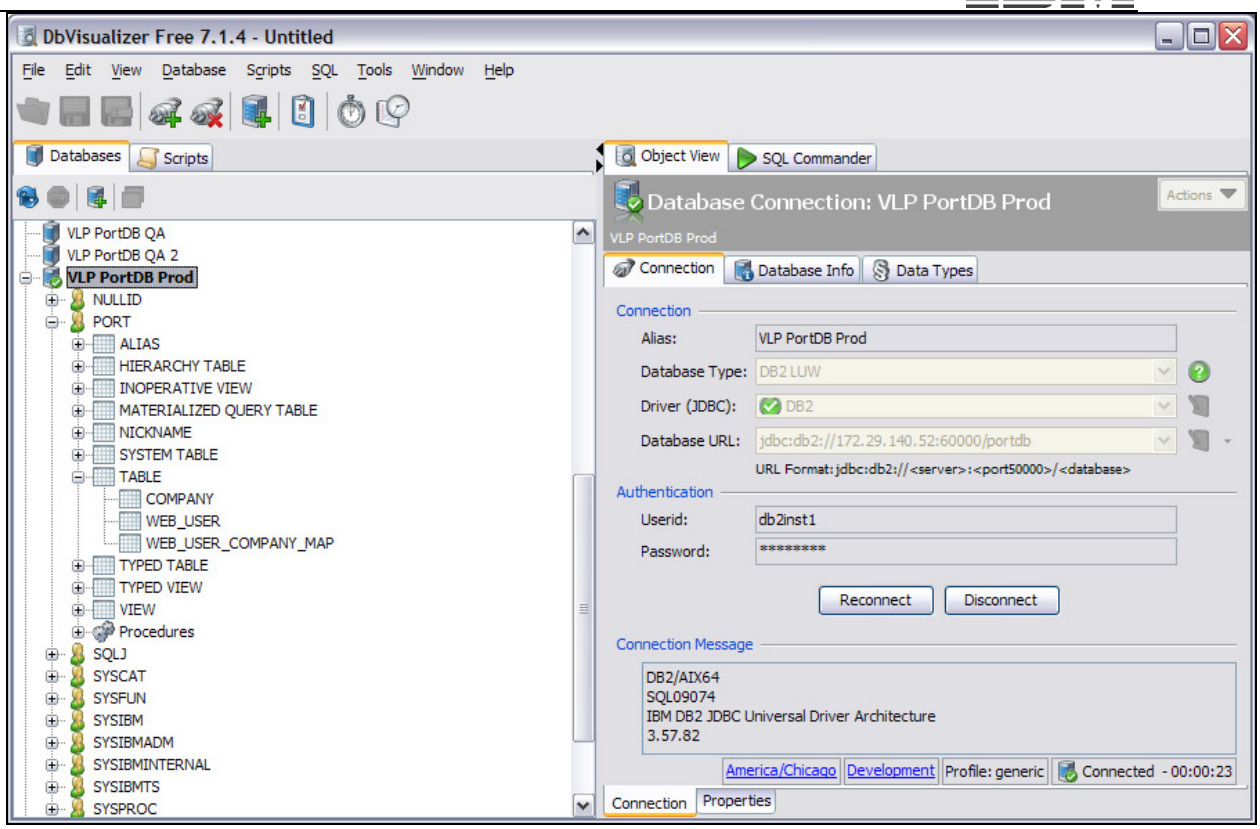

Figure 7. DbVisualizer page

6.5.4 Java Performance Advisor tool

To start Java Performance Advisor, perform the following steps:

1. Log in to the PDP Partition or LPAR using VNC Viewer.
2. Become root in an xterm window, for example su – root.
3. Navigate to /usr/local/jpa.
4. Type **jpa.pl**. The output should look similar to the screen capture in *Figure 8*.

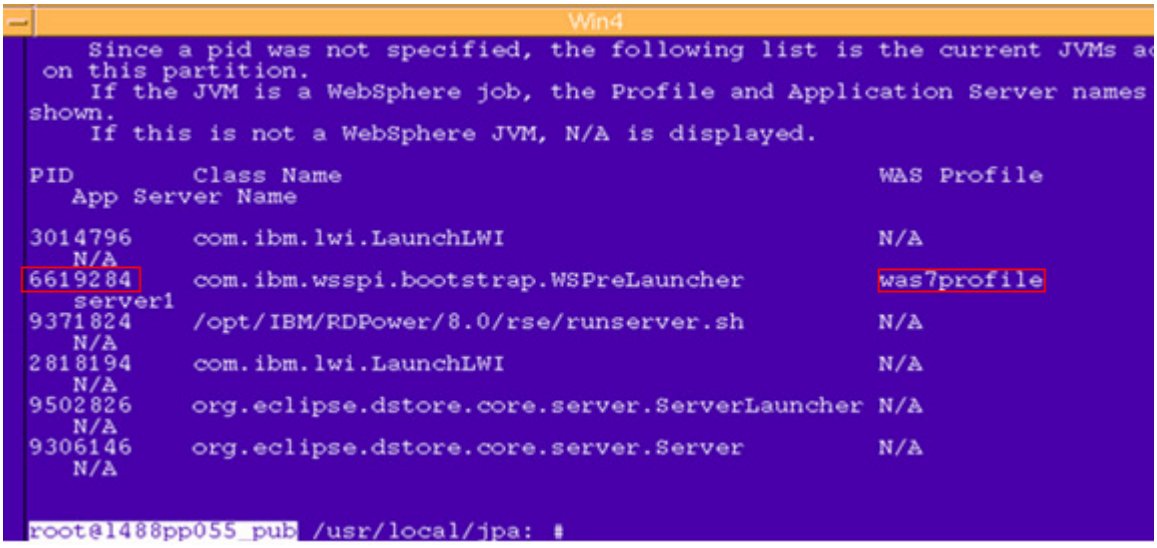

Figure 8. Java Performance Advisor output

1. If WebSphere is running, you see a was7profile UNIX process ID. In the above case, that is 6619284.
2. Rerun jpa.pl by typing jpa.pl –o filename.xml pid. In the case above - jpa.pl –o PDP_jpa_output.xml 6619284
3. Type **y** to agree to the license agreement.

After the program has completed, the command prompt returns. Verify the results by opening the file PDP_jpa_output.xml locally in your browser.

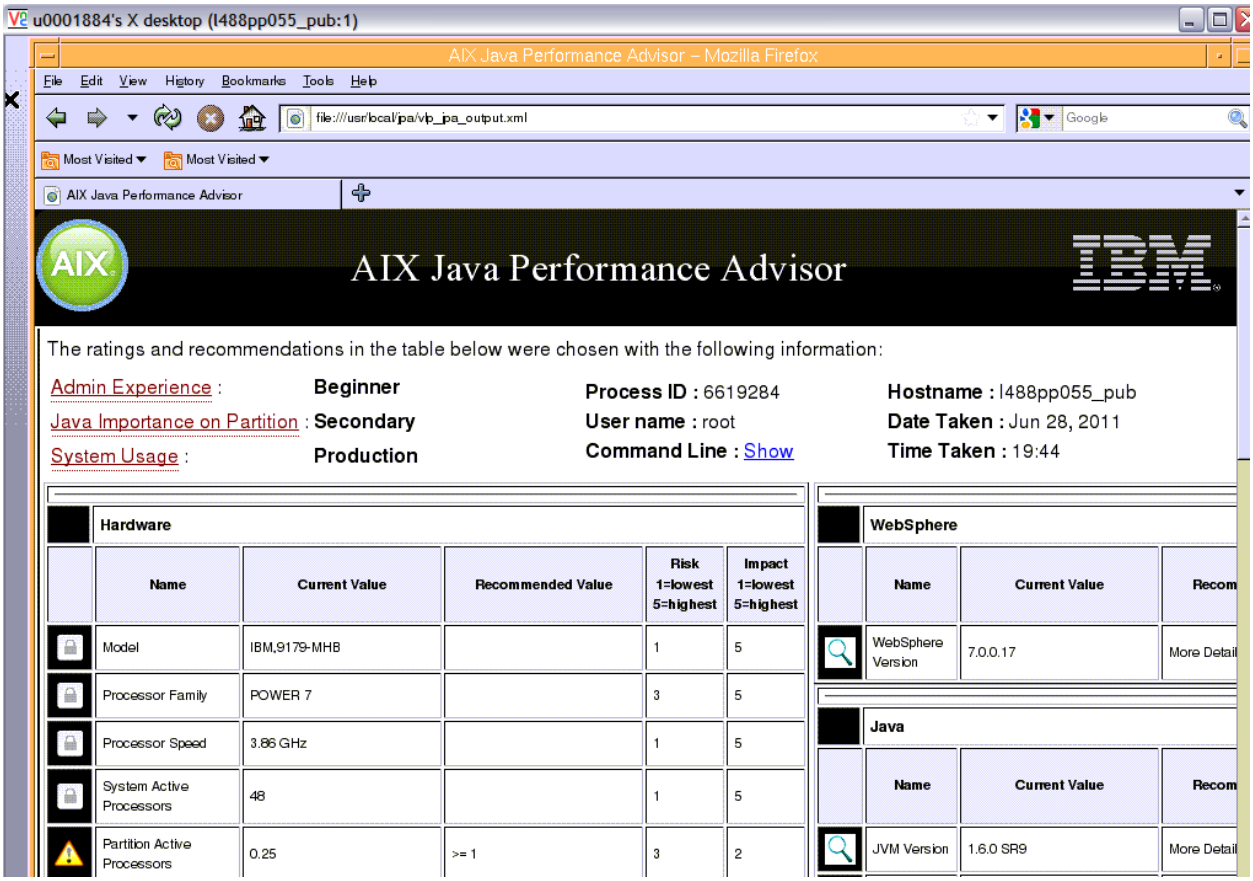

Figure 9. AIX Java Performance Advisor

7. Summary

This document discusses the process of installing and configuring the PDP porting image. The document shows what software is installed and how it is configured. The preinstalled software and tools should greatly easy the porting and migration efforts.

8. Resources

The following resources and webpages can help you with your porting, migration and work.

Websites

- Power Development Platform (PDP)

  ibm.com/partnerworld/pdp

- Power Development Platform : Resources to develop your solution on IBM Power Systems

  ibm.com/partnerworld/page/pw_com_sys_PDP_optimization_resrc

- IBM Power Systems on IBM PartnerWorld

  ibm.com/partnerworld/systems/p

- ISV resources to port to IBM platforms
  ibm.com/partnerworld/page/pw_com_sys_port_to_ibm

- IBM Systems porting and migration solution roadmaps

  ibm.com/partnerworld/wps/pub/systems/technical/roadmaps

- ISV solutions optimized on IBM POWER7

  ibm.com/partnerworld/page/pw_com_isv_solutions_optimized_power7

- AIX Version 7.1 Information Center

  http://publib.boulder.ibm.com/infocenter/aix/v7r1/index.jsp

- IBM Power Systems Hardware Information Center

  http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/index.jsp

Tools

- AIX Linux Toolbox

  ibm.com/systems/power/software/aix/linux/toolbox/download.html

- AIX Toolbox for Linux Applications

  ibm.com/systems/power/software/aix/linux/toolbox/alpha.html

- Using the IBM WebSphere Application Server Runtime Performance Advisor

  http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/index.jsp?topic=/com.ibm.websphere.express.doc/info/exp/ae/tprf_enablingrpa.html

- Rational Developer for Power Systems Software

  ibm.com/software/rational/products/rdp/#

- Evaluate: IBM Rational Application Developer for WebSphere Software

  ibm.com/developerworks/downloads/r/rad/

- Cscope

  http://cscope.sourceforge.net/

- C and C++ Compilers
  ibm.com/software/awdtools/xlcpp/
- AIX Open Source Packages
  www.perzl.org/aix/
- Rational Purify for Linux and UNIX
  ibm.com/developerworks/downloads/r/rpp/?S_TACT=105AGX23&S_CMP=DWNL

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