INSTALLING APACHE 2.X
AND
TOMCAT 5.x WITH mod_jk CONNECTOR ON WINDOWS PLATFORM

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1)   PURPOSE

There are various documents on the net which discuss this this topic. Most of them confuse a first time implementor. This document may not be the best but is an attempt to simply this process.

2)   PREREQUISITES

BusinessObjects XI R2 has been configured using Tomcat on Windows Server (*I have tested this document with Windows 2003 Server*). One can use Tomcat supplied by BusinessObjects or can install manually and then deploy .war files. Instructions in this document have been tested with later method of installation in which Tomcat 5.0.27 was installed manually.

3)   SOFTWARES USED IN THIS INSTALLATION

3.1. Tomcat:

Version 5.0.27

3.2. Apache:

Version 2.0.54

Can be downloaded from Apache's site. (http://archive.apache.org/dist/httpd/binaries/win32/) file name is apache_2.0.54-win32-x86-no_ssl.exe. These instructions would work for other *higher* versions as well.

3.3. Connector used:

There are various connectors developed by Apache foundation and this is where most of the confusion occurs. The main two connectors used my most of the Admins are JK and JK2. Although JK2 was developed later than JK but it had been deprecated. Officially Apache foundation supports JK, so this installation has been done using JK (mod_jk) connector.

For Apache 2.0.54 this connector can be downloaded from Apache's / Tomcat's site, file name is: **mod_jk-1.2.14-apache-2.0.54.so** (http://www.apache.org/dist/tomcat/tomcat-connectors/jk/binaries/win32/jk-1.2.14/)

The connector has also been zipped along with this document. *This is not the latest version of connector. Check Apache's site for more information and the latest connector as well.*

4)   ZIPPED FILES ALONG WITH THIS DOCUMENT

- mod_jk-1.2.14-apache-2.0.54.so
- workers.properties

- server.xml (*just a sample so do not replace yours with this one as it contains machine specific info.*)
- httpd.conf (*just a sample so do not replace yours with this one as it contains machine specific info.*)

5) INSTALLATION STEPS

5.1. Installing Apache

a) Download and install Apache 2.x HTTP server as a service to listen on port 80 and install it in directory **C:\Apache**, well one can install it in any directory but I prefer a path which does not has space(s) in it, the default installation path has space(s) in it so please change it to remove space(s).

   Note: Port number can be changed after installation, however as IIS also listens on port 80 and in case IIS is running you may get error during installation of Apache so stop IIS before installing Apache and if you want to keep both IIS and Apache running on the same machine change Apache's port to some other non conflicting port like 81 as an example. To change port perform the following step.

b) This step is optional, make a safe copy of the **httpd.conf** located in the directory **C:\Apache\Apache2\conf** yours might be at a different location depending upon you installation folder. Open the original file in notepad and search the word "**Listen 80**" in it, change 80 to 81 or any other non conflicting port. Now again search a word "**ServerName**" there you will see the name of your machine and at the end of this line you will see 80 change it to the same port that you changed already like 81 or any other non conflicting port. Save this file and close it.

c) Restart Apache Service and test your installation by browsing the following like in you browser **http://localhost:*port_number*/** change *port_number* to port you specified in the above step else by default it is 80, if you get Apache's default page its good.

5.2. Installing mo_jk connector

a) Copy **mod_jk-1.2.14-apache-2.0.54.so** file to **C:\Apache\Apache2\modules** directory or wherever you have installed Apache.

b) Open Apache's **httpd.conf** file that you modified in step 5.1.b and search it for a word "**LoadModule**" you will find a bunch of them so go the end of this list and copy the line **LoadModule jk_module modules/mod_jk-1.2.14-apache-2.0.54.so** below that list. In case you are using a different version of connector then change the name accordingly in the above line of code.

c) Open a command prompt and run the command **c:\apache\Apache2\bin\Apache.exe -t** the output of this command should be *Syntax OK,* if there is an error check the change you made in the above step for spellings and name of the connector.

d) This step is a Tomcat specific, open the file by the name **server.xml** located under Tomcat's **confg** directory in my case it is **C:\Tomcat\conf** yours may be different depending upon where you installed Tomcat. Make sure you save this file before making any changes. In this file search for line **<Server port="8005" shutdown="SHUTDOWN" debug="0">** and under this line add the following line of code

<Listener className="org.apache.jk.config.ApacheConfig" modJk="c:/apache/Apache2/modules/mod_jk-1.2.14-apache-2.0.54.so"/> . Again make sure to change the path to your Apache's installation directory in the above line of code and use "/" instead of "\" in the path.

e) Again search this file (server.xml) for a word "**xmlNamespaceAware**" and below this line add the line **<Listener className="org.apache.jk.config.ApacheConfig" append="true" forwardAll="false" modJk="c:/apache/Apache2/modules/mod_jk-1.2.14-apache-2.0.54.so"/> .** Notice this line of code is **not** same as that of above step so **DO NOT** copy if from the above step.

f) Now in the same file (server.xml) search for a line **<!-- Define a Coyote/JK2 AJP 1.3 Connector on port 8009 -->** below this line you will find text similar to

<Connector port="8009"

      enableLookups="false" redirectPort="8443" debug="0"

      protocol="AJP/1.3" />

delete this text and in place copy the following line of code.

<Connector debug="0" enableLookups="false" port="8009" protocol="AJP/1.3" redirectPort="8443"/>

Save this file and close it.

g) Now browse to **conf** directory of **Tomcat**, in my case it is **C:\Tomcat\conf** yours might be different, under this location create a directory by the name "**jk**" so that you have a path like **C:\Tomcat\conf\jk\.** Go to this new jk directory and copy **workers.properties** file, zipped along with this document in it.

h) Restart Tomcat Service and wait for about 40 to 50 Secs. and then go to **C:\Tomcat\conf** directory, if the configuration is successful then you will see a directory by the name "**auto**" under **C:\Tomcat\conf**. Open this new directory (**auto**) and in it you shall get a file by the name **mod_jk.conf** automatically created by Tomcat. The size of this file should be around 28 KB, if it is around 14 KB then there are some errors in the configuration.

i) Open Apache's **httpd.conf** file in my case it is under **C:\Apache\Apache2\conf** yours might be different. At the bottom of this file add the line **Include C:/Tomcat/conf/auto/mod_jk.conf** . Notice the path given in this line of code is the path of the file that was created by Tomcat automatically in the above step, so change this path accordingly to point it to the correct location and make sure you use forward slash "/" rather than back slash "\".

j) After adding the above line add the following lines of code below it in the same file (httpd.conf).

Note: In JkAutoAlias C:/Tomcat/webapps *change the location of* webapps *directory according to your installation location of Tomcat.*

Also if you copy the below written lines of code from here any put in a text file the code will be jumbled (something is wrong with line feed in this PDF)so make the text look like as its written here manually or else you can copy if from the bottom of sample httpd.conf ***file zipped along with this document.***

JkAutoAlias C:/Tomcat/webapps

JkMount /businessobjects/* ajp13

JkMount /jsfadmin/* ajp13

JkMount /AnalysisHelp/* ajp13

JkMount /dswsbobje/* ajp13

JkMount /jsp-examples/* ajp13

JkMount /styles/* ajp13

Once you are done save this file and close it.

k) This is it, restart Apache and you are done. Test your installation by browsing the following link http://localhost:*port_numner*/jsp-examples/jsp2/el/basic-arithmetic.jsp if the page opens up then you are good, test businessObjects by browsing the following link

http://*server_name*:*port_numner*/businessobjects/enterprise115/adminlaunch/launchpad.html

make sure to change the *server_name* to your machine name and *port_number* to the value that you specified in step 5.1.b.

Suggestions and corrections are welcome. For more information about this topic visit http://www.apache.org/ and http://jakarta.apache.org/ .

Have a successful configuration.

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