CNT 4714: Enterprise Computing
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Integrating Apache And Tomcat

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Connecting Apache To Tomcat

• Although it is possible for Tomcat to run standalone and handle HTTP requests directly (we did this for servlets and jsp's), the Apache server does a much better job of handling tasks such as static content and SSL connections.

• For this reason, Tomcat is typically used alongside an Apache server. Unlike PHP which runs as a module inside the Apache process, a JVM is external and requires a mechanism to connect it to the web server.

• Tomcat inherited the Apache JServ Protocol (AJP) from the JServ project. AJP is a protocol for connecting an external process to a servlet container. It is the responsibility of an Apache module, in this case mod_jk, to speak this protocol to the servlet container (Tomcat).
Connecting Apache To Tomcat (cont.)

- In this section of notes, I’ll show you how to integrate Apache and Tomcat into a single package.

- The ultimate set-up will resemble the figure shown below. Note that if you also would like Tomcat to run standalone HTTP requests, it will need to run on a different HTTP port than Apache. That’s why I set-up Apache on port 8081 and Tomcat on port 8080.
WARNING

The task you are about to undertake can have serious repercussions on your Apache Server. **DO NOT** attempt this procedure until your final project is done. It is strongly advised that you create a backup copy of your current `httpd.conf` file before embarking on this modification.
Getting The Tomcat Connector

- The first step in Apache-Tomcat integration is to obtain the Tomcat connector from Apache.

- Follow the screen shots on the next few pages to obtain the `mod_jk` connector.

- Windows based connector binary files will typically have the name of `mod_jk.so`. (Files with `.so` extensions are typically shared library files compiled under either C or C++ environments.)
From the main Tomcat webpage, select Tomcat connectors from the download section. The current documentation is also available from this page.
Apache Tomcat

mod_jk download page.

Tomcat Connectors (mod_jk) Downloads

Use the links below to download Tomcat Connectors from one of our mirrors. You must verify the integrity of the downloaded files using signatures downloaded from our main distribution directory.

Only current recommended releases are available on the main distribution site and its mirrors. Older releases and the historical mod_jk2 are available from the archive download site.

Recent releases (48 hours) may not yet be available from the mirrors.

Choose a Mirror

You are currently using http://www.eng.lsu.edu/mirrors/apache/. If you encounter a problem with this mirror, please select another mirror. If all mirrors are failing, there are backup mirrors (at the end of the mirrors list) that should be available.

Other mirrors: http://www.eng.lsu.edu/mirrors/apache/ Change

You may also consult the complete list of mirrors.

Tomcat Connectors JK 1.2

For more information concerning Tomcat Connectors (mod_jk), see the Tomcat Connectors (mod_jk) site.
You are currently using http://www.eng.lsu.edu/mirrors/apache/. If you encounter a problem with this mirror, please select another mirror. If all mirrors are failing, there are backup mirrors (at the end of the mirrors list) that should be available.

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You may also consult the complete list of mirrors.

**Tomcat Connectors JK 1.2**

For more information concerning Tomcat Connectors (mod_jk), see the [Tomcat Connectors (mod_jk)](http://tomcat.apache.org/) site.

- Source (please choose the correct format for your platform)
  - JK 1.2.37 Source Release tar.gz (e.g. Unix, Linux, Mac OS)
    - [PGP]
    - [MDS]
  - JK 1.2.37 Source Release zip (e.g. Windows)
    - [PGP]
    - [MDS]
- Binary Releases
- Browse Download Area
- Browse Archive

Tomcat-connectors-1.2.37-src.* is signed by Mladen Turk (564C17A3).

**Verify the Integrity of the Files**

You must verify the integrity of the downloaded files. We provide OpenPGP signatures for every release file. This signature should be matched against the KEYS file which contains the OpenPGP keys of Tomcat's Release Managers. We also provide an MD5 checksum for every release file. After you download the file, you should calculate a checksum for...
## Index of /dist/tomcat/tomcat-connectors/jk/binaries/windows

### Important Notices

- Windows Users, Read These First...
- Obtain the Current Stable Release
- Debugging and Source Code

### Download from your nearest mirror site!

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### Download from your nearest mirror site!

Please do not download from www.apache.org. Use a mirror site to help us save apache.org bandwidth and to speed up your download. Click here to find your nearest mirror.

### Windows Users, Read These First...

Warning: TCP/IP networking must be installed
Grab this file and locate it in the Apache modules folder.
Installing The Tomcat Connector

• Once you’ve downloaded the Tomcat connector, put it in the modules sub-directory of your Apache installation’s root directory.

Locate the mod_jk file in the modules subdirectory of Apache.
Enabling The Tomcat Connector

- Once you’ve put the connector file in the `modules` sub-directory of your Apache installation’s root directory, you are now ready to configure Apache to recognize and enable the module.
- To do this you’ll need to edit your Apache configuration file. This is the same file you edited to enable PHP.
- This file is located in the `conf` subdirectory and is named `httpd`.
- **NOTE:** Before modifying the configuration file, I would strongly suggest making a duplicate backup copy so that you can reinitialize a working version of Apache if necessary.
Add all of the material from this point down on the page into your `httpd.conf` file.

Add JKMount directives for any webapps in Tomcat.
• The JWorkerFile directive (see previous page) refers to a separate file that configures the ajp13 protocol communications parameters. An example called workers.properties is included with mod_jk. For a basic set-up, this default file will work fine.

• There are a couple of things you should verify however: (1) workers.tomcat_home should agree with the value you’ve already set for Tomcat called CATALINA_HOME, and (2) worker.ajp13.port must be the same as the one listed in the Tomcat server.xml file as shown on the next page.

• In more robust applications, additional editing of the JWorkerFile will be required. For example, if you have more than one installation of Tomcat on your machine, you’ll need to adjust the worker.ajp.port parameter in workers.properties to make sure that mod_jk is connecting to the correct Tomcat installation as Tomcat installations will not be able to start up sharing port numbers.
The portion of the Tomcat worker.properties file showing the definition for the default AJP 1.3 worker. NOTE: the port number listed here must match the port number listed in the Tomcat server.xml file as shown on the next page.
This is a minimal Tomcat worker.properties file showing the definition for the default AJP 1.3 workers. NOTE: the port number listed here must match the port number listed in the Tomcat server.xml file as shown on the next page. I’ve set up two different worker threads to handle the two different webapps we developed in Tomcat.
The portion of the Tomcat server.xml file showing the definition for the AJP 1.3 connector. This connector port number listed here must match the port number in the workers.properties file as shown on the previous page. 
Invoking the original welcome servlet from the Apache web server. Recall that this is a servlet running inside the first-example webapp. Note the server connection is via Apache and not Tomcat.
Hello!!

Welcome To The Exciting World Of Servlet Technology!

The output from the first-examples/WelcomeServlet servlet from Tomcat via Apache
Enter your name and click the Submit button to run a more personal Welcome Servlet (uses an HTTP Get request)

The WelcomeServlet2 front-end called from Apache. Note that this servlet was in the CNT4714 webapp not in first-example.
Hello Heidi,
Welcome to the Exciting World of Servlet Technology!

The output from Tomcat via Apache.