

CNT 4714: Enterprise Computing Fall 2009

Integrating Apache And Tomcat

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University of Central Florida



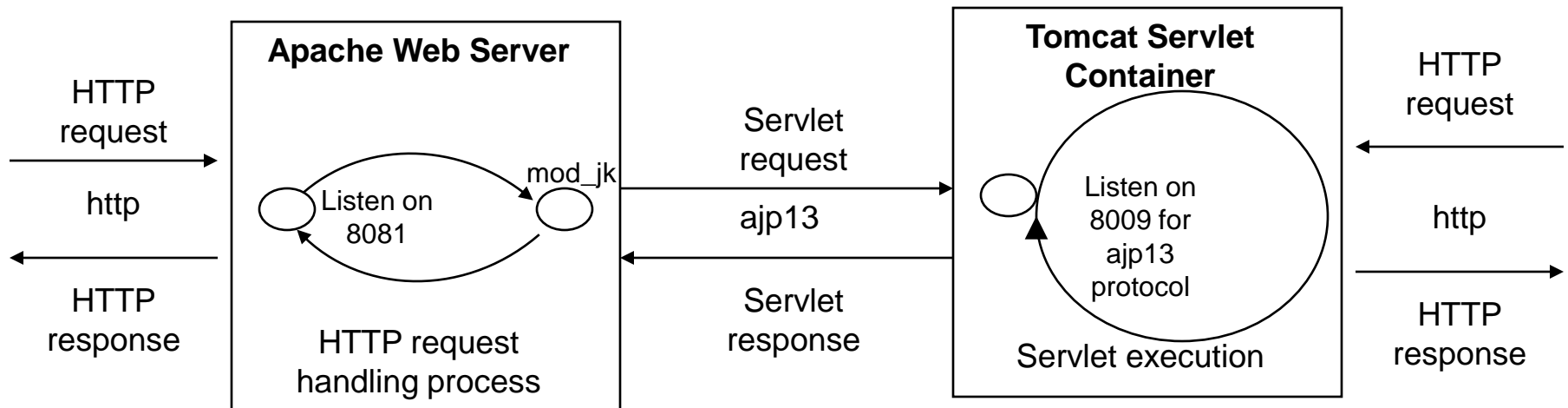
Connecting Apache To Tomcat

- Although it is possible for Tomcat to run standalone and server HTTP requests directly (we did this for servlets and jsps), 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 last 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.



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`.



Apache Tomcat - Welcome! - Windows Internet Explorer

http://tomcat.apache.org/

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Apache Tomcat

Apache Tomcat is an open source software implementation of the [Java Servlet](#) and [JavaServer Pages](#) technologies. The Java [Community Process](#).

Apache Tomcat is developed around the world. We are getting involved, [click here](#).

Apache Tomcat powers numerous large-scale, mission-critical web applications across a diverse range of industries and organizations. Some of these users and their stories are listed on the [PoweredBy](#) wiki page.

Tomcat Native 1.1.18 Released

The Apache Tomcat Project is proud to announce the release of version 1.1.18 of Tomcat Native. This version is principally a security and bugfix release.

[Download](#) | [ChangeLog for 1.1.18](#) |

From the main Tomcat webpage, select Tomcat connectors from the download section. The current documentation is also available from this page.

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Documentation

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.

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You are currently using <http://www.gossipcheck.com/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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Other mirrors:

You may also consult the [complete list of mirrors](#).

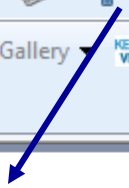
Tomcat Connectors JK 1.2

For more information concerning Tomcat Connectors (mod_jk), see the [Tomcat Connectors \(mod_jk\)](#) site.

- Source (please choose the correct format for your platform)
 - [JK 1.2.28 Source Release tar.gz](#) (e.g. Unix, Linux, Mac OS)
 - [\[PGP\]](#)
 - [\[MD5\]](#)
 - [JK 1.2.28 Source Release zip](#) (e.g. Windows)
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mod_jk download page.



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Index of /mirrors/apache/tomcat/tomcat-conne...

Index of /mirrors/apache/tomcat/tomcat-connectors/jk/binaries

Name	Last modified	Size	Description
 Parent Directory		-	
 aix/	02-Dec-2008 15:08	-	
 freebsd/	02-Dec-2008 15:09	-	
 iseries/	02-Dec-2008 15:09	-	
 linux/	27-Mar-2009 13:18	-	
 macosx/	10-Aug-2007 13:37	-	
 netware/	23-May-2009 16:13	-	
 solaris/	27-Mar-2009 13:18	-	
 win32/	23-May-2009 16:16	-	
 win64/	23-May-2009 16:16	-	

The Apache Tomcat Connector

- Current stable version is jk-1.2.28.

Index of /mirrors/apache/tomcat/tomcat-connectors/jk/binaries/win32 - Windows Internet Explorer



http://www.gossipcheck.com/mirrors/apache/tomcat/tomcat-connectors/jk/binarie

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Index of /mirrors/apache/tomcat/tomcat-connectors/jk/binaries/win32

Name	Last modified	Size	Description
 Parent Directory		-	
 jk-1.2.28/	27-Mar-2009 13:42	-	

The Apache Tomcat Connector

- Current stable version is jk-1.2.28.
- Current development version is jk-1.2.29.

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Index of /pub/apache/tomcat/tomcat-connectors/jk/binaries/win32/jk-1.2.28 - Windows Internet Explorer

http://mirror.olnevhost.net/pub/apache/tomcat/tomcat-connectors/jk/binaries/win32/jk-1.2.28/

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- [Parent Directory](#)
- [README.html](#)
- [isapi_redirect-1.2.28-chunking.dll](#)
- [isapi_redirect-1.2.28-chunking.dll.asc](#)
- [isapi_redirect-1.2.28-chunking.dll.sha256](#)
- [isapi_redirect-1.2.28.dll](#)
- [isapi_redirect-1.2.28.dll.asc](#)
- [isapi_redirect-1.2.28.dll.sha256](#)
- [mod_jk-1.2.28-httpd-2.0.52.so](#)
- [mod_jk-1.2.28-httpd-2.0.52.so.asc](#)
- [mod_jk-1.2.28-httpd-2.0.52.so.sha256](#)
- [mod_jk-1.2.28-httpd-2.2.3.so](#)
- [mod_jk-1.2.28-httpd-2.2.3.so.asc](#)
- [mod_jk-1.2.28-httpd-2.2.3.so.sha256](#)
- [nsapi_redirect-1.2.28.dll](#)
- [nsapi_redirect-1.2.28.dll.asc](#)
- [nsapi_redirect-1.2.28.dll.sha256](#)
- [symbols.zip](#)
- [symbols.zip.asc](#)
- [symbols.zip.sha256](#)

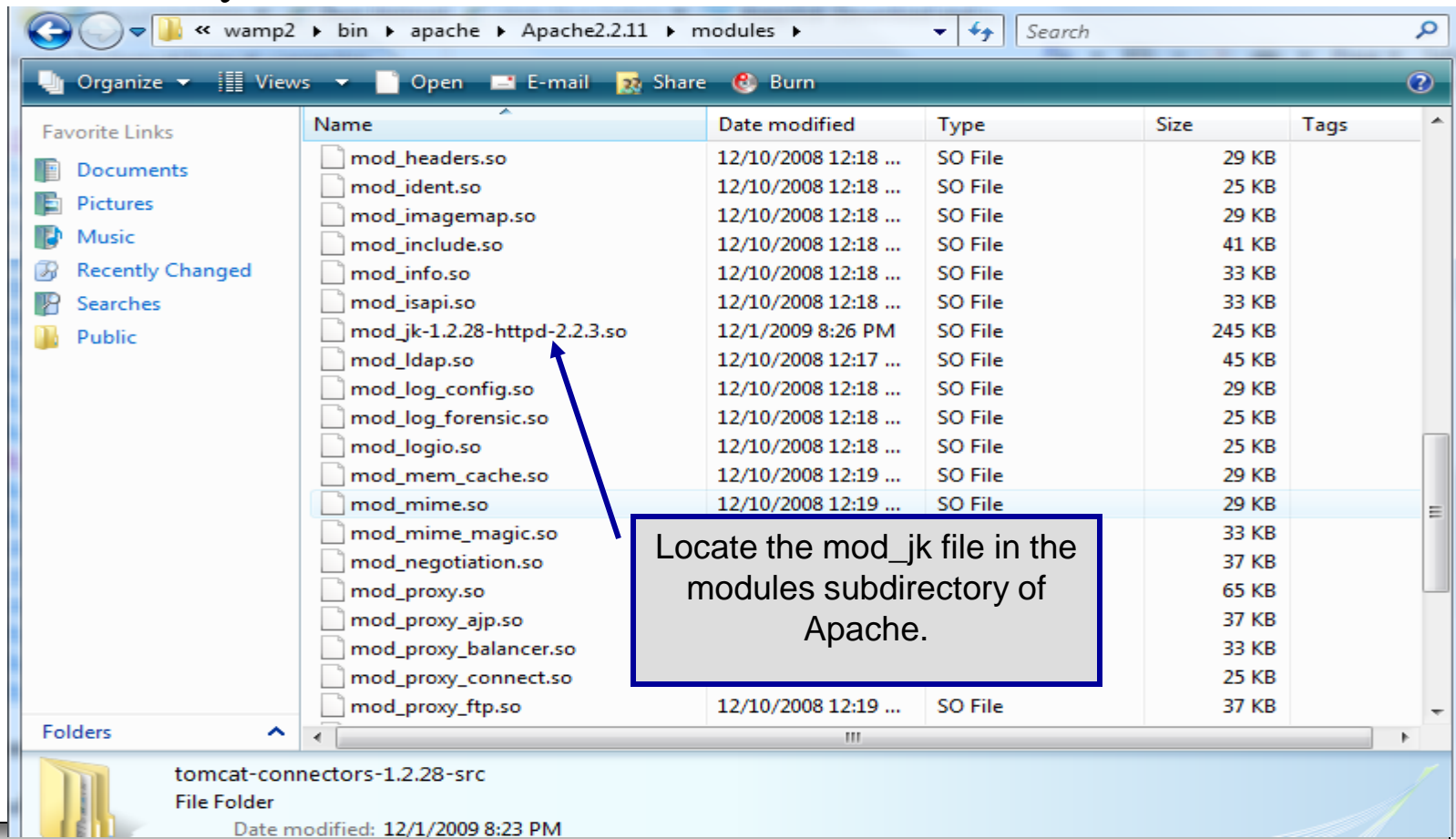
Apache Tomcat Connectors 1.2.28 for WIN32

Here you'll find the module binaries for Microsoft IIS, Apache HTTPD and Sun Java System Web Server.

- **mod_jk-1.2.28-httpd-2.2.3.so** is for Apache 2.2.x. It has been build against version 2.2.3, but should work with Apache 2.2.0 and later. Rename to **mod_jk.so** before putting it in your Apache2.2/modules directory or adjust your **LoadModule** statement.

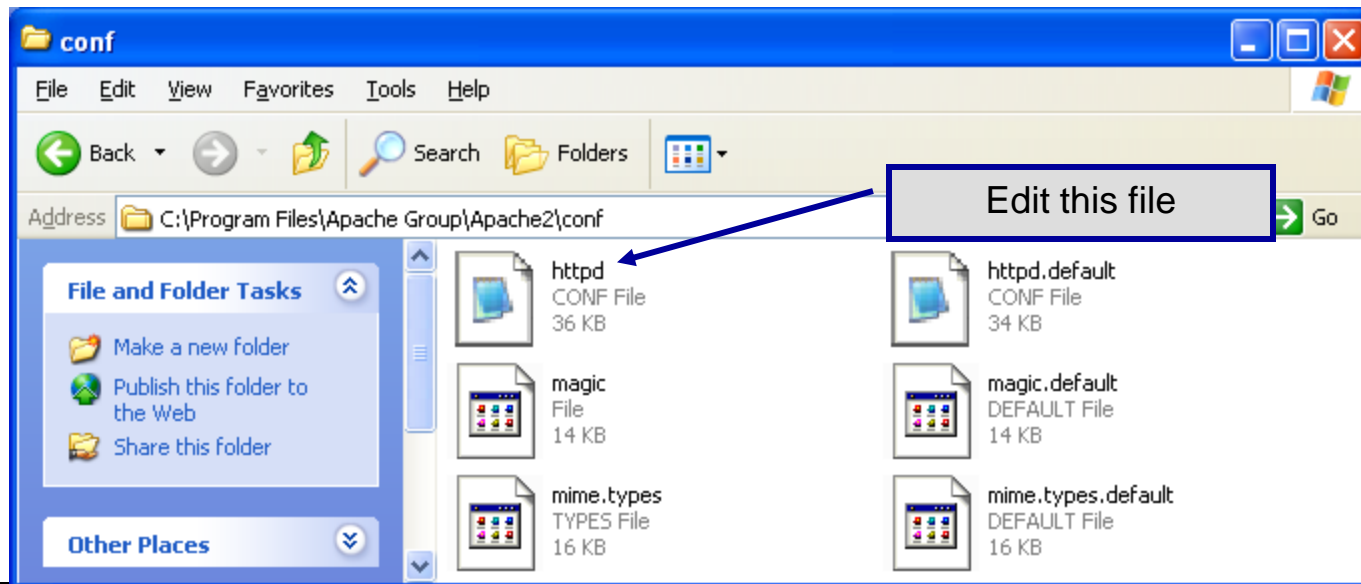
Installing The Tomcat Connector

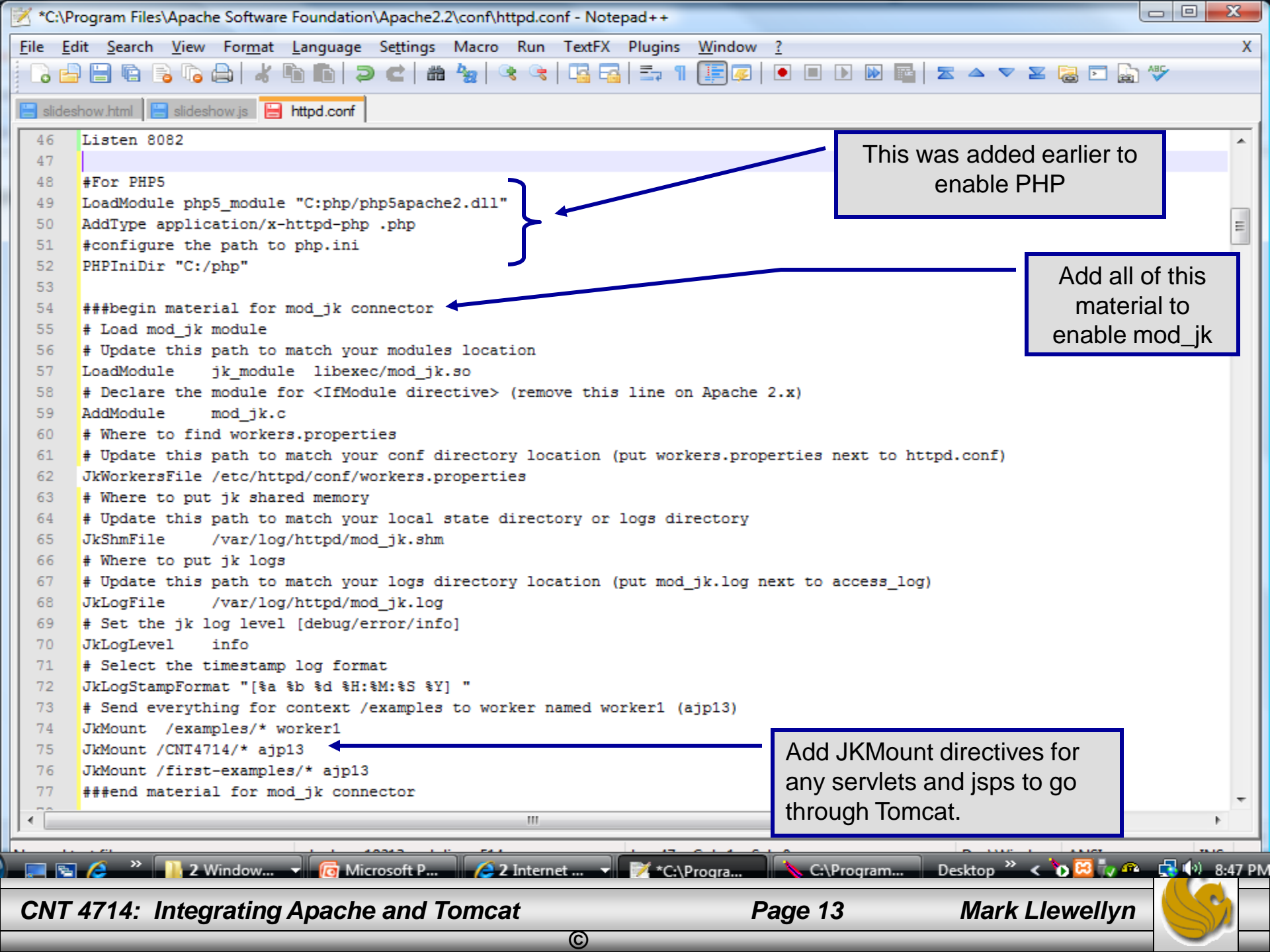
- Once you've downloaded the Tomcat connector, put it in the `modules` sub-directory of your Apache installation's root directory.



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`.





This was added earlier to enable PHP

Add all of this material to enable mod_jk

Add JKMount directives for any servlets and jsps to go through 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.



```
workers - WordPad
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[Icons]
worker.ajp12.lbfactor=1
#
#----- DEFAULT ajp13 WORKER DEFINITION -----
#
#
#
# Defining a worker named ajp13 and of type ajp13
# Note that the name and the type do not have to match.
#
worker.ajp13.port=8009
worker.ajp13.host=localhost
worker.ajp13.type=ajp13
#
# Specifies the load balance factor when used with
# a load balancing worker.
# Note:
# ----> lbfactor must be > 0
# ----> Low lbfactor means less work done by the worker.
worker.ajp13.lbfactor=1
#
# Specify the size of the open connection cache.
#worker.ajp13.cachesize
#
#----- DEFAULT LOAD BALANCER WORKER DEFINITION -----
#
#
#
For Help, press F1
```

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.




```
C:\Program Files\Apache Software Foundation\Tomcat 5.5.12\conf\server.xml - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Home Search Favorites Refresh Print Home Links
Address C:\Program Files\Apache Software Foundation\Tomcat 5.5.12\conf\server.xml Go Links
enableLookups="false" disableUploadTimeout="true"
acceptCount="100" scheme="https" secure="true"
clientAuth="false" sslProtocol="TLS" />
-->
<!-- Define an AJP 1.3 Connector on port 8009 -->
<Connector port="8009" enableLookups="false" redirectPort="8443" protocol="AJP/1.3" />
<!-- Define a Proxied HTTP/1.1 Connector on port 8082 -->
<!-- See proxy documentation for more information about using this. -->
<!-- <Connector port="8082"
maxThreads="150" minSpareThreads="25" maxSpareThreads="75"
enableLookups="false" acceptCount="100" connectionTimeout="20000"
proxyPort="80" disableUploadTimeout="true" />
-->
<!-- An Engine represents the entry point (within Catalina) that processes
every request. The Engine implementation for Tomcat stand alone
analyzes the HTTP headers included with the request, and passes them
on to the appropriate Host (virtual host). -->
<!-- You should set jvmRoute to support load-balancing via AJP ie :
<Engine name="Standalone" defaultHost="localhost" jvmRoute="jvml">
-->
<!-- Define the top level container in our container hierarchy -->
- <Engine name="Catalina" defaultHost="localhost">
<!-- The request dumper valve dumps useful debugging information about
the request headers and cookies that were received, and the response
headers and cookies that were sent, for all requests received by
this instance of Tomcat. If you care only about requests to a
particular virtual host, or a particular application, nest this
element inside the corresponding <Host> or <Context> entry instead.
```

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.

