9.2. Integración de *Apache* y *Tomcat* usando mod_jk

Utiliza **mod_jk** para integrar *Apache* y *Tomcat* en la máquina **ServidorLinuxXX** y permitir que la aplicación **Calendar** del *Host* **localhost** en **Tomcat** sea accesible a través de *Apache*.

1. **Instalación de *mod_jk*.**

   1.1. Inicia sesión en **ServidorLinuxXX** con un usuario con privilegios de administración.

   1.2. Descarga el módulo desde los repositorios oficiales de *Ubuntu*.

   ```
   sudo apt-get update
   sudo apt-get install libapache2-mod-jk
   ```

   1.3. Observa que al instalar el paquete se habilita el módulo.

   1.4. Reinicia *Apache*.

2. **Configuración de mod_jk en *Apache*.**

   2.1. Edita el fichero **/etc/apache2/mods-enabled/jk.conf** y observa las directivas de configuración, Figura 9.13.

```
# limitations under the License.

# Configuration Example for mod_jk
# used in combination with Apache 2.2.x

<IfModule jk_module>

    # We need a workers file exactly once
    # and in the global server
    JkWorkersFile /etc/libapache2-mod-jk/workers.properties

    # Our JK error log
    # You can (and should) use rotatelogs here
    JkLogFile /var/log/apache2/mod_jk.log

    # Our JK log level (trace,debug,info,warn,error)
    JkLogLevel info

    # Our JK shared memory file
    JkShmFile /var/log/apache2/jk-runtime-status
```

Figura 9.13: Fichero **/etc/apache2/mods-enabled/jk.conf**

   2.2. Edita el fichero **/etc/libapache2-mod-jk/workers-properties** y configura la siguiente directiva, Figura 9.14.

```
#
# workers.tomcat_home should point to the location where you
# installed tomcat. This is where you have your conf, webapps and lib
# directories.
#
workers.tomcat_home=/usr/share/tomcat7
```

Figura 9.14: Fichero **/etc/libapache2-mod-jk/workers-properties**

2.3. Observa la configuración de los `workers` (instancias de *Tomcat* en ejecución) definidos, Figura 9.15.

```
#
#------ worker list ------------------------------------------
#-------------------------------------------------------------
#_
#
# The workers that your plugins should create and work with
#
worker.list=ajp13_worker

#
#------ ajp13_worker WORKER DEFINITION -----------------------------
#-------------------------------------------------------------
#

#
# Defining a worker named ajp13_worker and of type ajp13
# Note that the name and the type do not have to match.
#
worker.ajp13_worker.port=8009
worker.ajp13_worker.host=localhost
worker.ajp13_worker.type=ajp13
```

Figura 9.15: Fichero **/etc/libapache2-mod-jk/workers-properties**

2.4. Reinicia *Apache*.

3. **Habilitar el conector AJP en *Tomcat*.**

3.1. Edita el fichero **/var/lib/tomcat7/conf/server.xml/**. Habilita el conector AJP descomentando las directivas que se muestran en la Figura 9.16.

```
<!-- Define an AJP 1.3 Connector on port 8009 -->

<Connector port="8009" protocol="AJP/1.3" redirectPort="8443" />
```

Figura 9.16: Fichero **/var/lib/tomcat7/conf/server.xml/**

3.2. Reinicia *Tomcat*.

4. **Configuración de *Apache*.**

   4.1. Edita el fichero **/etc/apache2/sites-availables/000-default** y añade las siguientes directivas para redirigir las peticiones de la aplicación **Calendar** desde *Apache* a *Tomcat*, Figura 9.17.

```
<VirtualHost *:80>
        # The ServerName directive sets the request scheme, hostname and port that
        # the server uses to identify itself. This is used when creating
        # redirection URLs. In the context of virtual hosts, the ServerName
        # specifies what hostname must appear in the request's Host: header to
        # match this virtual host. For the default virtual host (this file) this
        # value is not decisive as it is used as a last resort host regardless.
        # However, you must set it for any further virtual host explicitly.
        #ServerName www.example.com

        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html

        ProxyPreserveHost on
        ProxyPass /sample http://localhost:8080/sample
        ProxyPassReverse /sample http://localhost:8080/sample
        ProxyPass /curso http://localhost:8080/curso
        ProxyPassReverse /curso http://localhost:8080/curso
        ProxyPass /compras http://localhost:8080/compras
        ProxyPassReverse /compras  http://localhost:8080/compras

        JkMount /Calendar ajp13_worker
        JkMount /Calendar/* ajp13_worker
```

Figura 9.17: Fichero **/etc/apache2/sites-availables/000-default**

   4.2. Reinicia *Apache*.

   4.3. Desde **DesarrolloW7XX** abre el navegador y establece una conexión a `http://192.168.1.X7/Calendar/` o `http://servidorlinuxXX.dawXX.net/Calendar/`, Figura 9.18

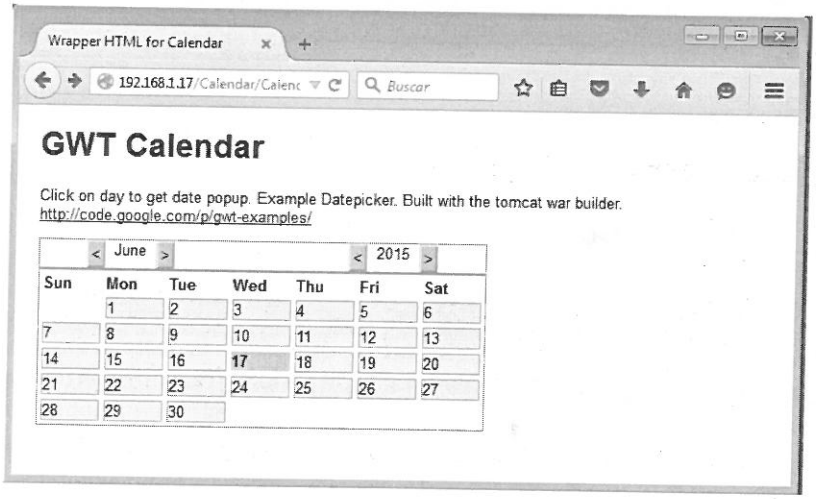

Figura 9.18: Conexión a la aplicación **Calendar**