

Enterprise Collaboration with Liferay

THE WAY OF THE RAY

Liferay is a powerful and easily customizable CMS that is ideal for community collaboration – once you get it configured.

BY ASHLEY WILSON

Alex Timaios, Fotolia

Users on business networks often struggle to get increasingly heterogeneous infrastructures to work seamlessly. As proprietary software loses market share to more open technologies, infrastructure administrators must find ways to preserve ease of use across increasingly differing platforms. In addition to interoperability problems, each company must move forward to more collaborative environments in order to remain competitive and make the best use of its greatest (and largely untapped) asset – the ideas of its employees.

The Liferay CMS has been around for years and it keeps getting bigger and better. Many companies have implemented Liferay to address a whole spectrum of needs. From an e-commerce platform to a collaborative intranet portal, Liferay has the scalability and functionality built-in to deploy quickly and grow as the needs of the company grow.

Liferay Portal (Figure 1) provides your organization with a powerful portal for

creating and managing content pages, message boards, and other collaboration tools. The Liferay CMS is not a ‘silver bullet’ that will solve every systematic transparency, communication, and collaboration issue for every company, but in my experience, Liferay is just about

the best portal/content management system out there and a superb foundation for unifying and simplifying company communication.

The Liferay CMS comes with a large number of useful portlets – ready-made tools that let you tailor your Liferay site

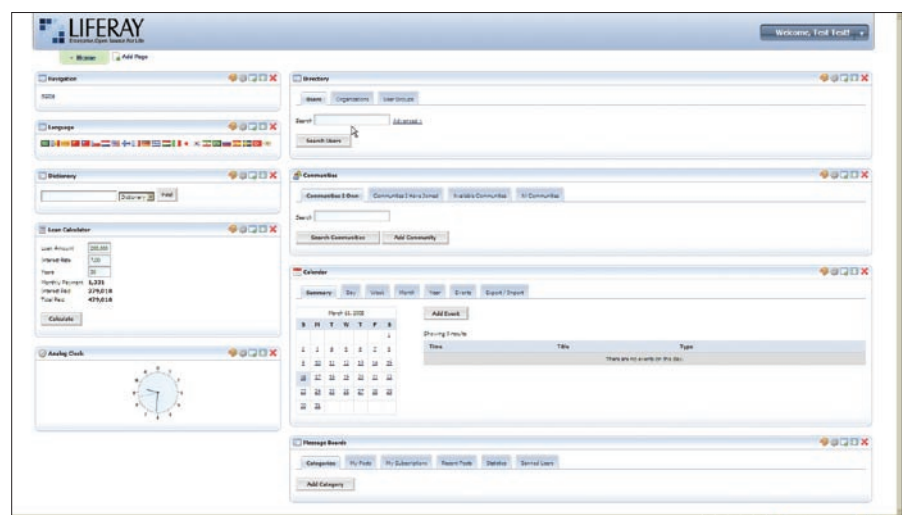


Figure 1: The Liferay user interface supports the use of drop-in “portlets” for easy customization.

to the needs of your organization. But more importantly, Liferay makes it easy to bring together many different systems in one place. Departments can arrange and rearrange content in their own web space, relieving the sys admin from the duties of posting and arranging content for everyone in the organization.

So, why isn't everyone using Liferay? It is big, it is Java, and the documentation is a little intimidating. At more than 86MB (bundled with Tomcat), Liferay is one of the larger CMS packages out there. Because it is written in Java, extensibility might require some extra attention. Liferay has a steeper learning curve than the traditional CMS running on a LAMP box. The "Getting Started" documentation is easy enough to find, but because of the size of the Liferay project and the variety of configuration options, digesting it and getting started quickly is a daunting task.

Liferay supports a variety of complex configuration scenarios. In a typical scenario, a company might need an intranet site for all departments to contribute to, but access controls are necessary for pre-

venting salespeople from rooting around in accounting's private documents and keeping HR from dropping new hire documentation in the middle of IT's web space. Different departments can use different aspects of Liferay for different things. The company will make use of the IFrame Portlet or the Web Proxy portlet to bring the web-management interfaces of several different systems like Nagios, Hobbit, or MRTG together under one roof.

The Message Boards portlet serves as a very basic help desk. Human Resources will use the Document Library portlet to post policy manuals. Sales and Marketing departments will use the Web Proxy portlet to pull in a sales dashboard report from the CRM system and the portlets related to Liferay's Journal Content portlet to store and disseminate press releases and information about product promotions.

Because Tomcat will not run on port 80 without root privileges, the configuration described in this article uses Apache HTTP server and *mod_jk* to serve Liferay on port 80 and allow for vhosting with

other web-based applications existing on the same machine. Liferay comes set up to use a Hypersonic database, but this configuration doesn't work well for production use. In this example, I will use MySQL as the production database.

Getting Ready

When you set up your Linux computer, make sure the system includes development tools, development libraries, and MySQL. Unless you need it, get rid of the GUI. If you decide to use the software firewall, make sure you leave ports 22, 80, and 8080 open. When the testing is complete, 8080 will be closed. If you are not familiar with manual firewall configuration, you can save some time by installing `system-config-securitylevel`.

Setting up MySQL

Your Liferay CMS will store and retrieve data from a back-end database system. In this case, configure the system so MySQL starts on boot. Enable the system with `chkconfig mysqld on` and check it with `chkconfig --list mysqld`. The numbers represent runlevels. The last com-

Listing 1: ROOT.xml

```

01 <Context path="" crossContext="true">
02     <!-- MySQL -->
03
04 <Resource
05     name="jdbc/LiferayPool"
06     auth="Container"
07     type="javax.sql.DataSource"
08     driverClassName="com.mysql.jdbc.
    Driver"
09     url="jdbc:mysql://localhost/lporta
    l?useUnicode=true&characterEncoding=UTF-8"
10     username="lportal"
11     password="FullMetalJacket"
12     maxActive="20"
13 />
14
15 <!-- Mail -->
16
17 <Resource
18     name="mail/MailSession"
19     auth="Container"
20     type="javax.mail.Session"
21     mail.imap.host="localhost"
22     mail.pop3.host="localhost"
23     mail.smtp.host="smtp.gmail.com"
24     mail.smtp.port="465"
25     mail.smtp.auth="true"
26     mail.smtp.starttls.enable="true"
27     mail.smtp.user="accountname@
    googleappsdomain.com"
28     password="emailpassword"
29     mail.store.protocol="imap"
30     mail.transport.protocol="smtp"
31     mail.smtp.socketFactory.
    class="javax.net.ssl.SSLSocketFactory"
32 />
33
34 <!-- JAAS -->
35
36 <Realm
37     className="org.apache.catalina.
    realm.JAASRealm"
38     appName="PortalRealm"
39     userClassNames="com.liferay.
    portal.security.jaas.PortalPrincipal"
40     roleClassNames="com.liferay.
    portal.security.jaas.PortalRole"
41     debug="99"
42     useContextClassLoader="false"
43 />
44 </Context>

```

mand should produce output that indicates *mysqld* is set to run on runlevels 2,3,4, and 5. Log in to MySQL and create the Liferay database:

```
mysql -u root -p
enter the password at the prompt
create database lportal
```

Next, create the Liferay user account and give it all privileges on *lportal*.*

Infrastructure

The Liferay configuration described in this article requires Apache, Tomcat, and MySQL. Depending on your Linux distro, some of these components might already be running on your system, or you might have the option of setting up the component through your distro's package management system. Compatibility of the specific versions may vary. Alter-

natively, you can install the components from source code.

From the Source

If you set up these tools from source, create a staging area for the code and installer binaries:

```
mkdir /opt/install
```

After obtaining the Apache http server source and *mod_jk* binary [1], place them in the new directory */opt/install*. You can obtain Liferay 4.4.2 – bundled with Tomcat 5.5 and the SQL scripts bundle – from the Liferay website [2]. Also, you will need the Java 6 binary [3] and the MySQL Connector for Java [4] – be sure you get the right version! Check the MySQL version with *mysql --version*.

Next, create a directory for Liferay to reside in:

```
mkdir /opt/liferay-4.4.2
```

Then copy the Liferay bundle to the new directory and expand:

```
cp /opt/install/liferay-portal-
tomcat-5.5-jdk5-4.4.2.zip /opt/
liferay-4.4.2
```

```
cd /opt/liferay-4.4.2
unzip ./liferay-portal-tomcat-
5.5-jdk5-4.4.2.zip
remove zip file:
rm ./liferay-portal-tomcat-
5.5-jdk5-4.4.2.zip
```

Create group *apache* and user *tomcat* as a member of Apache:

```
groupadd apache
useradd -g apache tomcat
make Tomcat startup
```

Listing 2: /etc/init.d/liferay

```
01 #!/bin/sh
02 # Script for starting Liferay (Tomcat)
03 # chkconfig: - 60 61
04 # description: Tomcat-Liferay
05 export JAVA_HOME=/opt/tools/java/jdk1.6.0_02
06 export CATALINA_HOME=/opt/liferay-4.4.2
07 export TOMCAT_USER=tomcat
08 # You may want to set a different value for sleep.
09 # You want to make sure Tomcat has plenty of time
to stop
10 # and release the port in case of restart
11 start() {
12     echo -n " Starting Liferay-Tomcat ..."
13     su $TOMCAT_USER -c $CATALINA_HOME/bin/
startup.sh
14     sleep 2
15 }
16 stop() {
17     echo -n " Stopping Liferay-Tomcat ..."
18     su $TOMCAT_USER -c $CATALINA_HOME/bin/
shutdown.sh
19     sleep 5
20 }
21 case "$1" in
22     start)
23         start
24         ;;
25     stop)
26         stop
27         ;;
28     restart)
29         stop
30         start
31         ;;
32     *)
33         echo "${start|stop|restart}"
34         exit
35 esac
```

Listing 3: workers.properties

```
01 workers.tomcat_home=/opt/liferay-4.4.2
02 workers.java_home=/opt/tools/java/jdk1.6.0_02
03 ps=/
04 worker.list=ajp13
05 worker.ajp13.port=8009
06 worker.ajp13.host=localhost
07 worker.ajp13.type=ajp13
08 worker.ajp13.lbfactor=1
09 worker.loadbalancer.type=lb
10 worker.loadbalancer.balanced_workers=ajp13
11 worker.inprocess.type=jni
12 worker.inprocess.class_path=$(workers.tomcat_
home)$(ps)lib$(ps)tomcat.jar
13 worker.inprocess.cmd_line=start
14 worker.inprocess.stdout=$(workers.tomcat_
home)$(ps)logs$(ps)inprocess.stdout
15 worker.inprocess.stderr=$(workers.tomcat_
home)$(ps)logs$(ps)inprocess.stderr
```

```
scripts executable
chmod 755 ↵
/opt/liferay-4.4.2/bin/*.sh
```

Next, configure the database connection settings and mail server settings:

```
vi /opt/liferay-4.4.2/conf/↵
Catalina/localhost/ROOT.xml
```

Edit the file so that it resembles the file in Listing 1. Note the username set earlier for the MySQL user *lportal* and the password in *mysql config*.

Now, untar and drop the MySQL Connector into */opt/liferay-4.4.2/lib/ext*:

```
cd /opt/install
tar -zxvf ./mysql-connector-↵
java-5.1.5.tar.gz
cd mysql-connector-java-5.1.5
cp ./mysql-connector-java-5.1.5-↵
bin.jar /opt/liferay-4.4.2/↵
common/lib/ext
```

(Your MySQL Connector file name may be different.) To populate the MySQL database, create a directory to expand the SQL scripts to and load the appropriate one into MySQL:

```
mkdir /opt/install/sql-scripts
mv /opt/install/liferay-portal-↵
sql-4.4.2.zip /opt/install/sql-↵
scripts
cd /opt/install/sql-scripts
unzip ./liferay-portal-sql-↵
```

```
4.4.2.zip
cd create-minimal
mysql lportal -u lportal -p < ↵
./create-minimal-mysql.sql
```

This example uses the minimal install database script because this configuration doesn't require much cleanup before production deployment. In the folder named *create*, you will find scripts that will load up a richly populated instance of Liferay, much like the Liferay website. If you have time on your hands, you can load the database from that folder to explore an environment with users, groups, content, and communities already set up.

Starting Liferay

Change ownership of */opt/tomcat-4.4.2* to user *tomcat*, group *apache*:

```
chown -R tomcat:apache ↵
/opt/liferay-4.4.2
```

Create a startup script similar to the script showing in Listing 2.

Now, make the script executable, set up Liferay as a service, and test Liferay:

```
chmod 755 /etc/init.d/liferay
chkconfig --add liferay
chkconfig liferay on
service liferay start
```

Tail the output of the log file to see that Liferay starts up ok:

```
tail -f /opt/liferay-4.4.2↵
/logs/catalina.out
```

Errors involving the MySQL driver or an inability to determine the dialect for MySQL could indicate an incorrect driver version. Verify the version of MySQL running on the server and the version of the MySQL driver you have installed. Also make sure that ownership for the connector is *tomcat:apache*.

Point your browser to *http://{serverIpAddress}:8080* to test the configuration. You should see the default welcome page with a login prompt.

Looking Forward

Congratulations. You now have a working implementation of Liferay. Although it is still not production-ready, it is ready for you to dive in and familiarize yourself with the system. The next steps are to install the Apache http server and mod_jk Tomcat connector. Before building Apache, check out Liferay. Using the password *test*, log in with *test@liferay.com*, and then change the password on the *test@liferay.com* account by selecting *My Account* under the Welcome button in the upper right corner.

With the default setup, all new users get their own community. Users get a sort of sandbox, where they can place portlets and switch around screen layouts without affecting the public pages.

Now would be a great time to take a breather and peruse some of the Liferay

Listing 4: w3.conf

```
01 NameVirtualHost 192.168.25.129           18      SetOutputFilter Deflate
02 <VirtualHost 192.168.25.129>             19      #Order Deny,Allow
03     ServerName nonexistent.testdomain.com 20      Deny from all
04     RedirectPermanent / http://w3.testdomain.com 21     </Directory>
05     DocumentRoot /opt/apache2/htdocs     22
06 </VirtualHost>                          23     <IfDefine SSL>
07 <VirtualHost 192.168.25.129>             24         SSLEngine off
08     ServerName w3.testdomain.com         25     </IfDefine>
09     ServerAdmin info@testdomain.com      26
10     DocumentRoot /opt/liferay-4.4.2/webapps/ROOT 27     <Location "/WEB-INF/*">
11     UseCanonicalName Off                 28         deny from all
12     ErrorLog /var/log/w3-error.log        29     </Location>
13     CustomLog /var/log/w3-access.log combined 30
14     HostnameLookups On                   31     <Location "/META-INF/*">
15                                           32         deny from all
16     <Directory "/opt/liferay-4.4.2/webapps/ROOT"> 33     </Location>
17     Options Indexes FollowSymLinks
```



Figure 2: Adding the Communities Portlet to a page in Liferay.

online documentation at <http://www.liferay.com/web/guest/community/documentation>.

Onward to Apache Land

Install Apache as described by your Linux vendor, or go to the `/opt/install` directory and untar the Apache source:

```
tar -zxvf httpd-2.2.4.tar.gz
```

See the Apache server documentation [4] for more on building Apache from source. Keep in mind that your web server will need to access Java functionality through Apache Tomcat. The `mod_jk` module facilitates communication between the Apache web server and Tomcat. Create a `workers.properties` file for `mod_jk`:

```
vi /opt/liferay-4.4.2/conf/workers.properties
```

A sample file is shown in Listing 3. Next, place the `mod_jk` apache module

```
cp /opt/install/mod_jk-1.2.25 httpd-2.2.4.so /opt/apache2/modules/mod_jk.so
```

and edit the `httpd.conf` file:

```
vi /opt/apache2/conf/httpd.conf
```

Make sure and set the user and groups for Apache to run under to user “apache” and group “apache.” Also,

don’t forget the `ServerAdmin` directive. Add the following lines in with the other include directives:

```
# Include mod_jk
Include /opt/apache2/conf/mod_jk.conf
```

Now, create the config file for the tomcat connector

```
vi /opt/apache2/conf/mod_jk.conf
```

and create the default `vhost` configuration file. Make a directory in which to put `vhosts`:

```
mkdir /opt/apache2/conf/vhosts
```

and create the `vhost` file.

```
vi /opt/apache2/conf/vhosts/w3.conf
```

Listing 4 is a default `vhost` that kicks anything that doesn’t fit another `vhost` over to a `w3` (intranet) site.

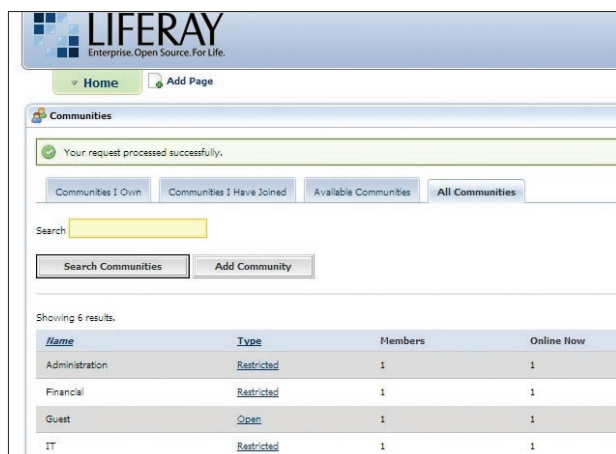


Figure 3: The Community Names list lets the user easily select a community.

Remember to change your IP address to match your server’s IP address. The `Jkmount` directives tell Apache what to get from Tomcat.

Note that every `vhost`-- even the ones handled with Liferay -- must have an entry in Apache’s config. This entry ensures that any weird hostname that might be requested will go directly to the default page. This will also prevent users from adding their own `vhosted` domains without having access to the Apache configs.

So that Apache looks for this file instead of the default `vhost` config, edit `http.conf` by replacing:

```
# Virtual hosts
Include conf/extra/httpd-vhosts.conf
```

with

```
# Virtual hosts
Include /opt/apache2/conf/vhosts/*.conf
```

Now set up Apache as a service:

```
chkconfig --add apache2
chkconfig apache2 on
```

and bounce Apache and Tomcat:

```
service apache2 restart
service liferay restart
```

You should now be able to access Liferay through `w3.testdomain.com` (replace `testdomain` with your domain). You must have a DNS record for `w3` pointing to the proper IP address (or an entry in your `hosts` file).

Setting up Your Site

If you are configuring Liferay to act as an intranet portal on an actual production network, you’ll probably want to tie Liferay to your organization’s user data-

INFO

- [1] The Apache Project: <http://www.apache.org>
- [2] LifeRay: <http://www.liferay.com>
- [3] Java: <http://www.sun.com/java>
- [4] MySQL: <http://www.mysql.com>
- [5] Apache documentation: <http://httpd.apache.org/docs/>

MISSING LINUX MAGAZINE?

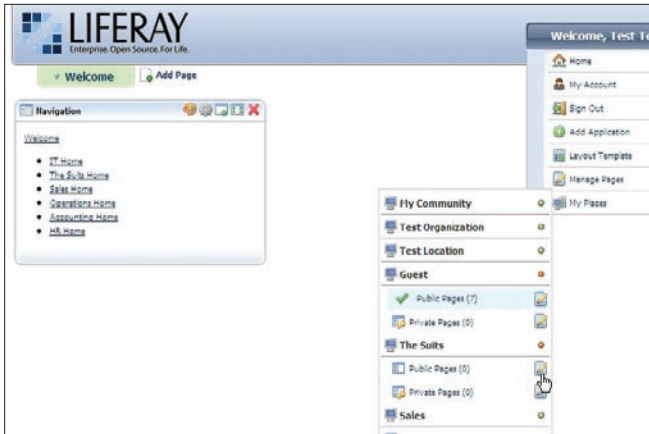


Figure 4: The Manage Pages option lets you create and edit content pages.

base. On our network, Liferay uses an Active Directory server for authenticating users. Other approaches are also possible depending on the structure of your network. Consult the Liferay user forums or your favorite search engine. Because authentication techniques vary, this article will not cover the topic, but keep in mind that one of the principal benefits of Liferay is to create communities of users within the network for the purpose of sharing content, and this process works best when it is tied into the network's existing user database.

Once you have logged into the system, add the Communities Portlet by mousing over the Welcome button in the upper right corner of the page (Figure 1), selecting Add Application in the toolbar on the left, and selecting *Community | Communities (add)* (Figure 2). Use this portlet to create a community for each department.

Next, assign members to communities by browsing to the *All Communities* tab and selecting *Actions | Assign Members*, select the *User Groups* tab and then the *Available* tab, then select the user group you want to map to the community. Commit the changes with the *Update Associations* button. Do this for every community except for *Guest*.

Add the *Enterprise Admin* portlet to the home page and select the *>>* button. Select the *Settings* tab and fill in the following information: *Name* and *Mail Domain*. Next, go to the *Default User Associations* tab and list the *Guest* community in the *Community Names* box (Figure 3). This will ensure that all users can browse the *Guest* community pages while they are logged in. Commit your changes with the *Save* button.

After you have installed Liferay and organized the space into user communities, it is easy to add new content pages to the site. Go back to the home page and mouse over the Welcome button and select the *Manage Pages* option (Figure 4). You can create a public or private page for any of the Liferay communities. Next, mouse over the Welcome button and go to *My Places*. From here, you can edit the layout of each community's site structure.

Conclusion

Liferay is a big, complex system. Just getting Liferay installed and working is the first and largest hurdle. After that, you can easily use Liferay as a central, reasonably secure approach to collaboration and information dissemination. ■



Ever have problems finding Linux Magazine on the newsstand? Just ask your local newsagent to reserve a copy of Linux Magazine for you!

Simply download our Just Ask! order form at www.linux-magazine.com/JustAsk, complete it, and take it to your local newsagent, who will reserve your copy of Linux Magazine.

Some newsagents even offer home delivery, making it even easier to ensure you don't miss an issue of Linux Magazine.



**SPECIAL SERVICE
FOR OUR UK READERS!**

www.linux-magazine.com/JustAsk