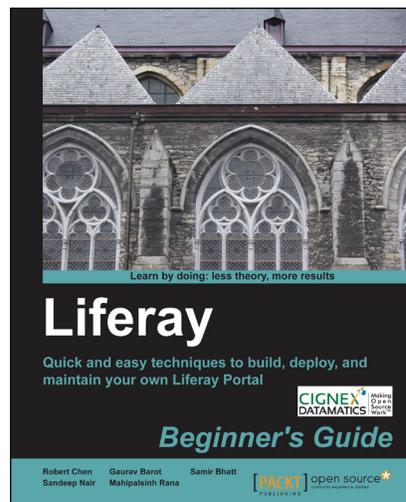


Liferay Beginner's Guide

Robert Chen
Gaurav Barot
Samir Bhatt
Sandeep Nair
Mahipalsinh Rana



Chapter No. 1 "Planning Your Portal"

In this package, you will find:

A Biography of the authors of the book

A preview chapter from the book, Chapter NO.1 "Planning Your Portal"

A synopsis of the book's content

Information on where to buy this book

About the Authors

Robert Chen is an Architect for Liferay Portal projects. He was a computer game developer and a software testing engineer. He holds an MS degree in Computer Science from California State University, San Bernardino. His focus was on online banking applications. He also has a bachelor's degree from Wuhan University, China. Mr. Chen was a QA engineer at VMware, Inc. He later led a team in developing four educational computer games for a Florida school district. He worked on Geographical Information Systems (GIS). Mr. Chen has rich experience in J2EE technologies. He has extensive experience in Content Management Systems (CMS) including Alfresco. He is an expert in web portal technologies. Mr. Chen has hands-on experience in 10 Liferay Portal projects.

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I would sincerely thank Sarah Cullington (Acquisition Editor), Zainab Bagasrawala (Project Coordinator), Shreerang Deshpande (Development Editor) at Packt Publishing. Thank you for reviewing my chapters. I appreciate your invaluable advice – it has helped me improve the quality of my writing. Thanks also go to Eleanor Duffy, Lata Basantani, and the team at Packt Publishing. It has been a happy experience working together with you!

I would also thank Dr. Munwar Shariff and Dr. Jonas X. Yuan for their support and encouragement along the way.

Gaurav Barot has worked on Enterprise-level portal development projects in various domains such as media, healthcare, and insurance. He has been working on Liferay for more than three years now. Apart from being involved in full lifecycle of portal development projects, he is also a Certified Liferay Trainer and provides Liferay Trainings worldwide. He holds a Bachelor's degree in Engineering in Information Technologies and Post Graduate Diploma in Network Computing. He has more than six years of industrial experience.

Gaurav is working as a Senior Consultant with CIGNEX Datamatics, a global leader in open source technologies.

I would like to thank all my team members at CIGNEX for making this book a reality. I am also very thankful to Munwar Shariff – CTO, CIGNEX Datamatics and Manish Sheladia – Co-founder and Chief Delivery Officer, CIGNEX Datamatics to provide an opportunity to write this book.

I sincerely thank and appreciate the entire team at Packt Publishing for providing continuous support during this project.

Last but not the least, I would like to thank my parents and my two younger sisters – Kinjal and Yogini for their love and encouragement. A special thanks to my wife Kruti and my lovely daughter Twisha – both of them have been very tolerant and understanding during all the time that I've spent on the computer while working on the book.

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Samir Bhatt Samir Bhatt has been working on Liferay for more than two years and is a Liferay certified trainer. He is leading Liferay practice at CIGNEX Datamatics. He is also part of architects panel at CIGNEX Datamatics. He has worked as a Liferay Architect in more than 10 projects. He has conducted many Liferay trainings across the globe. Samir has more than 11 years of IT experience. He delivered solutions in various business domains including telecommunication, retail, healthcare, and media. He has also worked on many other technologies including Pentaho BI, Oracle, Java Swing, ICEfaces, and Visual Basic.

I would like to specially thank Munwar Sharif (CTO, CIGNEX Datamatics) and Manish Sheladia (Chief Delivery Officer, CIGNEX Datamatics) for encouraging me to write this book.

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Lastly, I want to thank my parents for their encouragement. I specially thank my wife Hetal and my little daughter Shreeya for their support and love.

Sandeep Nair has been working on Liferay for more than two years and has overall more than five years of experience in Java and Java EE technologies. He has executed projects using Liferay in various domains such as Construction, Financial, and Medical fields providing solutions such as Collaboration, Enterprise Content Management, Web Content Management systems. He has created a free and open source Google Chartlet plugin for Liferay which has been downloaded and used by people across 90 countries as per Sourceforge statistics. Besides development, consulting, and implementing solutions, he has also been involved in giving trainings in Liferay in other countries. Before he jumped into Liferay, he has had experience in Java and Java EE platforms and had worked in EJB, Spring, Struts, Hibernate, Servicemix. He also has experience in using JitterBit, which is an ETL tool. When he is not coding, he loves to read books and write blogs.

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I would like to thank Munwar Shariff and Manish Sheladia who trusted in me and thought me worthy enough to write this book. I would like to thank Robert Chen for being so supportive from the beginning of the book and leading the team that too very efficiently. I would also like to thank rest of the co-authors Samir Bhatt , Mahipalsinh Rana, and Gaurav Barot, who were there to review and discuss each other's work and make sure we give quality book to the readers. I am also very grateful to Zainab Bagasrawala, who took the pains to co-ordinate the chapters and making sure we deliver the chapter in time, Sarah Cullington and Shreerang Deshpande for reviewing my work and giving right advice as to what should or should not be there in the book. Last but not the least, I would like to thank my parents and my brother for supporting me.

Mahipalsinh Rana's stint with portal server technologies started in Sun Microsystems when he started working with Sun Portal Server 7.2. Later Sun became the technology partner of Liferay for development in 5.2.x and he was part of that team. He looked after Internationalization (I18n) and Localization (L10n) of Liferay across various modules. He then joined CIGNEX Technologies as a Liferay Technical Architect and executed more then 10 projects in various domains such as chemical, media, telecommunications. He also enjoys doing Liferay training from time-to-time being a certified trainer from Liferay. He loves exploring other technologies such as BigData and Internationalization (I18n). He has total seven years of Industrial experience.

Mahipal is a very good speaker and has given speeches at various conferences on technical topics. He also writes blogs (<http://mahipalrana.blogspot.com/>) occasionally and actively participates in the Liferay Community.

I would like to thank all my colleagues at CIGNEX for their help in various scenarios. I would also like thank Munwar Shariff – CTO, CIGNEX (My Mentor, My Guru) from whom learning never ends. I would like to thank Manish Sheladia – Co-founder and Chief Delivery Officer, CIGNEX – to believe in me and provide opportunity to write this book.

I sincerely thank and appreciate the entire team at Packt Publishing for providing continuous support during this project.

Last but not the least, I would like to thanks my parents for their encouragement. I would also like to give big thanks to my wife Nehal to give me company and tea during my writing hours and my daughter Priyanshi to sleep early in my writing hours.

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Liferay Beginner's Guide

Liferay Portal is a leading horizontal portal product, written in Java. It has the power to provide the Intranets and Extranets of large corporations. Liferay will allow you to build your company's portal quickly, efficiently, and in a custom way to suit the needs of your corporation.

Liferay Beginner's Guide will show you how to set up your own site from scratch. Most books assume that you have knowledge of portals before working with Liferay and so include more theory than practice. However, only enthusiasm is required for reading this book as the step-by-step instructions, which follow the creation of a sample community site, will make it easy to install and configure Liferay, set up a Liferay Portal instance, and use the out-of-the-box portlets of Liferay.

By following the logical flow of the chapters and the creation of the sample site, you will set up your Liferay site in several quick and easy stages. You will start by installing Liferay in your application server or servlet container of choice. You will learn how to customize the look-and-feel of the portal, change the URL of the site, and create your own communities and organizations within the portal, then add users to them. By the end of the book, you will have a fully operational Liferay Portal and the confidence to maintain and customize it to meet your needs.

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What This Book Covers

Chapter 1, Planning Your Portal, gives an overview of Liferay Portal— the most popular open source portal framework. It briefly talks about Liferay's features and its portlets.

Chapter 2, Installing a Liferay Portal Instance, teaches you how to deploy Liferay in various application servers from a basic servlet container to an enterprise application server.

Chapter 3, Understanding Portal Basics and Theming, talks about the portal basics and portlet concepts. It also discusses Liferay User interface and use of dockbar to navigate in Liferay. It instructs on how to do basic administration in Liferay using Control Panel and different options of the Control Panel. It provides basic idea about the theme as well.

Chapter 4, Tips and Tricks—Advanced Configuration, discloses Liferay's secrets for tweaking the default behavior of portal by changing a set of properties.

Chapter 5, Building your First Liferay Site, here readers will start developing their first Liferay site. It discusses different components of the site and the approach to design the site. It talks about important concepts of Liferay such as Organization, Community, User Group, and page templates.

Chapter 6, Managing Pages, Users, and Permissions, helps the readers in learning about the concepts related to Liferay's Page, User, and Permission Management. It will also provide understanding of the various configuration options available for Pages, Users, and Permissions in Liferay.

Chapter 7, Creating and Publishing Content, the content management system and the web content management functionality are two interesting features of Liferay. Liferay's document library portlet allows users to upload documents in various formats. User can set permissions on folders and documents. Users can use the image gallery portlet to manage image files in the Liferay Portal. For web content management, Liferay has a web content portlet and a web content display portlet, which can be used to create and display journal articles.

This chapter will populate the public pages of the Guest community. It will show you how to create the Welcome page, Newcomers page, Lease office hours page, and Swimming pool hours page. We will welcome a user to our neighborhood in this chapter.

Chapter 8, Exploring Communities, helps readers to learn about various useful portlets required to build a site. This chapters covers quite a few out of box portlets such as Bookmark, Chat, OpensSocial, Language, Polls, Search. It also covers some of the custom portlets such as YouTube, SlideShow.

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Chapter 9, Setting up an Online Shop, talks about how to set up online shop using the shopping portlet. It instructs reader on how to configure payment terms, shopping items, stock, and so on. It also instructs reader on how to manage orders and discounts. It also talks about end-to-end shopping workflow.

Chapter 10, Liferay Server Administration, instructs reader on how to use liferay's server administration features to maintain Liferay Portal server. It talks about server resource management, logging configuration, virtual host configuration, and so on. It also talks about how to configure staging environment.

Appendix A, PayPal Test Account Configuration, provides step-by-step guide to set up test accounts on PayPal's sandbox environment.

Bonus Chapter, Exploring Social Collaboration, introduces you to the social functionalities of Liferay. Liferay has a blog portlet. A portal user can use it to post articles, which will be shared by the community members. Its calendar portlet can be used to create events, which will show for all community members. The wiki portlet allows a user to post his ideas. Liferay's message board portlet was used as a Liferay forum. This chapter will delve deeper into Liferay organizations. We will configure and use the message board portlet, wiki portlet and blogs portlet in this chapter.

You can download the Bonus Chapter from
http://www.packtpub.com/sites/default/files/downloads/Social_collaboration.pdf.

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1

Planning Your Portal

In this chapter, we will introduce you to the world's most popular open source portal product. You will get an overview of Liferay's architecture, features, and running environments. You will also learn to prepare the infrastructure for the installation of a Liferay Portal instance.

People use Liferay Portal to set up websites. You can see examples of Liferay Portal in action at the following sites:

- ◆ Cisco site (<http://developer.cisco.com/web/cdc/home>)
- ◆ Sesame Street site (<http://www.sesamestreet.org/>)
- ◆ AutoZone site (<http://www.autozone.com/autozone/>)

By mid-2011, Liferay Portal had been deployed 250,000 times all around the world.

In this book, we will walk through Liferay's functionalities by setting up a website using Liferay Portal. You will learn how Liferay Portal works and how you can take advantage of its features.

In the following sections, we will do some preparation for that website. We will talk about the following topics:

- Liferay Portal concepts
- Liferay architecture
- Pre-requisites for Liferay Portal installation
- Liferay Portal features

For More Information:

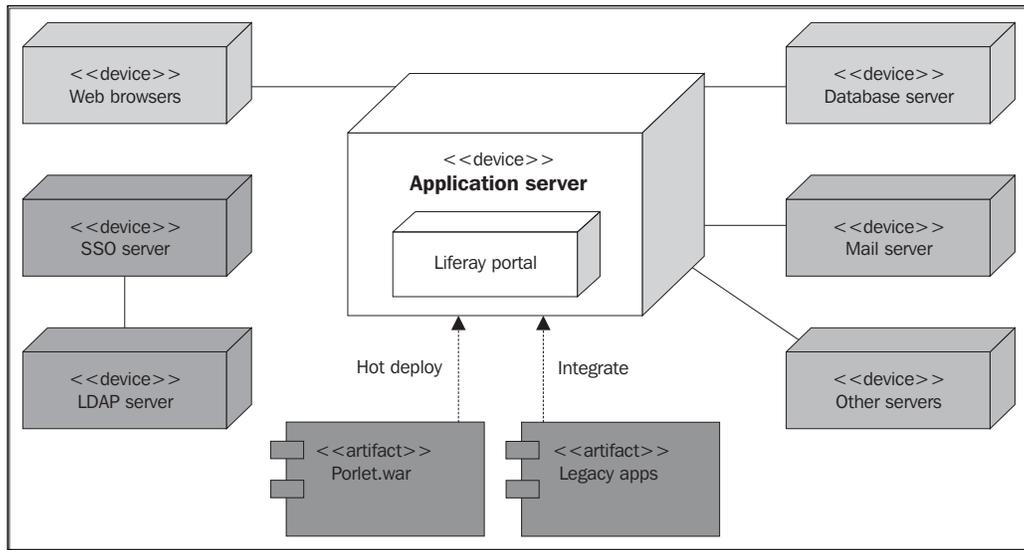
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Let us get familiar with our chessboard first and then place the king, queen, rooks, and other pieces, before we start the game.

What is Liferay Portal?

Liferay Portal is a Java web application. In a web application, a user types in a Uniform Resource Locator (URL) string in a browser address box and fires it. The browser sends the URL as a request to a corresponding application server and waits. The application server receives the request and processes data according to parameter values in the received URL. It sends a Hypertext Markup Language (HTML) format file to the requesting browser as a response. The browser interprets the HTML file and renders a webpage to the user. All the typical characteristics of a web application apply to the Liferay Portal.

The following is a deployment diagram for a Liferay Portal instance:



In this deployment diagram, a user accesses a Liferay Portal site with a web browser. Liferay receives the request and sends a request to the **Single Sign On (SSO)** server for authentication. The SSO server goes to the **Lightweight Directory Access Protocol (LDAP)** server to check the user's credentials. When that is successful, the SSO server tells Liferay Portal that the user is authenticated. Liferay Portal responds to the user request with a home landing page.

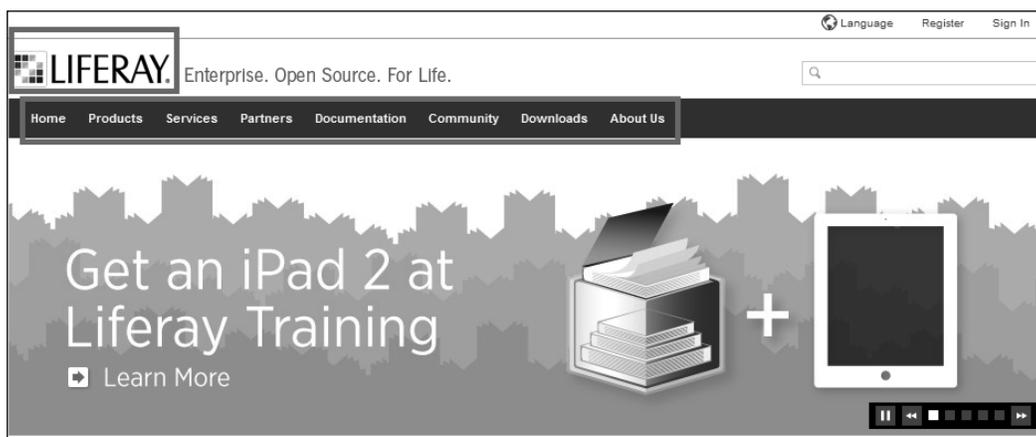


Please note that not all Liferay Portal installations run with SSO. Some Liferay Portal installations are much simpler.

The Liferay Portal also runs portlet artifacts (please read on for an explanation of portlets). It relies on a **database server** to store data. It uses the **mail server** to send mails to the portal users. Optionally, Liferay Portal may also use other servers for additional functionalities.

Time for action – browsing sites based on Liferay Portal

The Liferay Inc. company site (<http://www.liferay.com/>) is based on Liferay Portal. Go to the Liferay company site and notice the Liferay logo, and the blue hue of the page, as shown in the following screenshot:



Now, go to the <http://www.sesamestreet.org/> site of Sesame Street. (Turn on your speakers to get the full experience of this site)



This is a very interesting site. I want to stay at the site for a while, even though I am no longer a child! Have you seen any traits of Liferay Portal there? You may not; the design of Liferay's look-and-feel is so flexible that it can be easily customized.

What just happened?

Liferay Portal adopts an architecture that is flexible. It divides a webpage into a theme, a layout template, and portlets. The look-and-feel of Liferay Portal can be completely customized.

Definition of a portal

In our context, a portal is a web portal. A **web portal** refers to a website that provides a broad array of resources and services, which typically include e-mail, forum, searching, and online shopping. Yahoo! was one of the first portals.

There are also web portals for enterprise use. These portals are called enterprise portals. An enterprise portal provides content and collaboration for the employees of an enterprise. It is set up as an intranet application. Liferay Portal is often customized into an enterprise portal.

Most content at a Liferay Portal site comes from its portlets. A Liferay Portal contains portlets, as a window contains panes. A portlet is different from a pane, in that it consists of text and images.

A portlet works like a servlet. A portal URL request to the application server will invoke one or more portlets. The portlets run and produce HTML markup. Liferay Portal assembles the HTML markup into an HTML file. It returns the HTML file to the requesting browser.

Horizontal vs. vertical portals

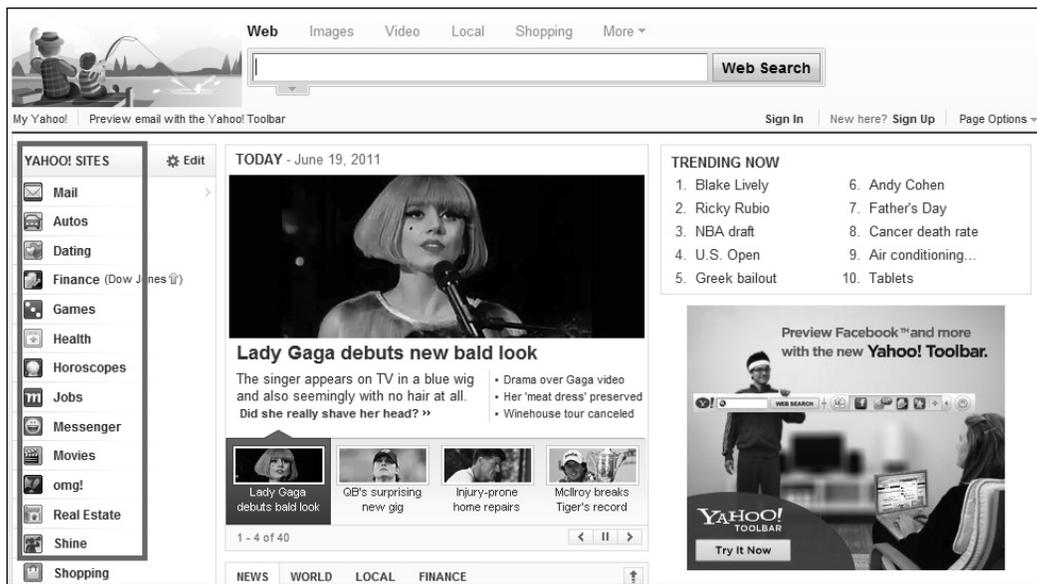
Liferay Portal was named a leader in the **Magic Quadrant for Horizontal Portals** report of Gartner in 2010 (<http://www.gartner.com/technology/media-products/reprints/liferay/206214.html>). What is a horizontal portal? A horizontal portal covers many areas. It can be used as a platform for multiple social and collaborative purposes. It can also be used by more than one company in the same industry. Liferay Portal is a horizontal portal, because it has a collaborative suite of blogs, wiki, mail, and calendar portlets. Its message board and chat portlets can be used for social activities.

A vertical portal focuses on one functional area. It is a specialized entry point to a specific market, industry, or subject area.

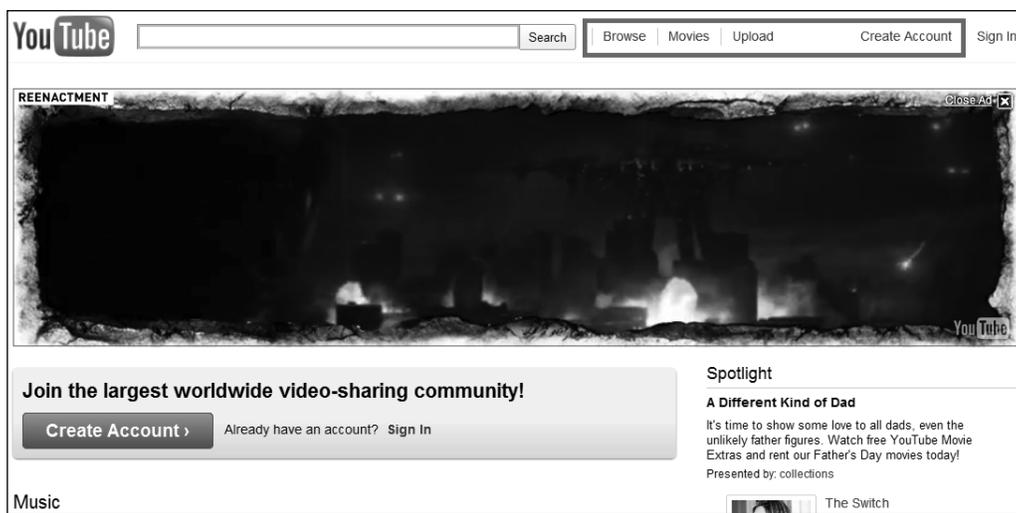
Time for action – comparing Yahoo! and YouTube

Do you have a **Yahoo** e-mail account? **Yahoo** was one of the earliest portals on the Internet. Many users are still using the e-mail service provided by **Yahoo**.

Go to the <http://www.yahoo.com/> site. You will find **Mail, Autos, Dating, Finance, Games, Health, and Jobs** links there. They cover various kinds of fields and industries, as is shown in the following screenshot:



Sometimes, I like watching videos on **YouTube** for a break. **YouTube** is a well-known site for videos. Now, go to the site at <http://www.youtube.com/>. What do you find there? You may have found **Browse, Movies, video Upload** links, and advertisements. You can also create an account at the **YouTube** site, as shown in the following screenshot:



You can do a lot of things and get a lot of services at the **Yahoo** site, while do every video-related thing at the **YouTube** site.

What just happened?

The **Yahoo** site is a horizontal portal. It is a platform for multiple social and collaborative purposes. The **YouTube** site is a specialized entry point for video fans: it is a vertical portal.

Open source vs. commercial portals

A user uses an open source portal product, free of charge. He/she can modify and extend its source code. Liferay Portal is an open source portal. It is distributed under the GNU, Lesser General Public License (LGPL) (<http://www.gnu.org/copyleft/lesser.html>).

Liferay Portal is available in two versions: Community Edition (CE) and Enterprise Edition (EE). A client can use its community edition, free of charge. If a client wants support from Liferay, Inc., they can buy the Enterprise Edition.

You can study the source code of an open source portal to learn portal technologies (Refer to <https://github.com/liferay> for the source code of Liferay Portal). A commercial portal product is more expensive than the enterprise version of an open source portal. IBM WebSphere portal and Microsoft SharePoint portal are commercial portal products.

This book is based on Liferay Portal Version 6.0. We will use this CE version to illustrate the features of Liferay Portal and set up a sample website.

Time for action – finding the source code of Liferay Portal

Liferay, Inc. hosts its community edition source code at the **SourceForge** site (<http://sourceforge.net/projects/lportal/>).

The screenshot shows the SourceForge project page for Liferay Portal. At the top, there is a search bar with the text "Find Open Source Software". Below this, there are several promotional banners, including one for Intel Xeon and another for IBM System x3650 M3 Express Server. The main content area features the project name "Liferay Portal" followed by a list of contributors: brianchandotcom, bwchan, jhoun, jorgeferrer, mhuyoung, msaechang, and stephenwilburn. Below the contributors, there is a navigation menu with tabs for "Summary", "Files", "Reviews", "Support", "Develop", and "Code". The "Summary" tab is selected. The main text describes Liferay Portal as the world's leading enterprise open source portal framework, offering integrated Web publishing and content management, an enterprise service bus and service-oriented architecture, and compatibility with all major IT infrastructure. Below this, there are several key pieces of information: "Project Home" (www.liferay.com), "Recommended By" (309 users), "Download" (liferay-portal-...zip), "Develop" (sf.net/projects/lportal/develop), "Last Update" (2011-04-01), and "Other Versions" (Browse all files).

It also hosts its latest version of source code at its own site at <http://www.liferay.com/downloads/liferay-portal/available-releases>.

Now, paste the previously-mentioned URL in your browser address box, click on the *Enter* key, and take a look at those packages.

What just happened?

Every release of Liferay Portal comes with the source code. You can compile and build the portal from the source code, if you choose to do so. You can study the source code to learn how Spring and Hibernate are used. You can modify the source code and re-build the portal if you like.

 Please note that Liferay Portal is also bundled in popular open source servlet containers or application servers in every release. It is easier to directly install with these bundles.

These are only some of the advantages of using an open source portal product.

Pop quiz – multiple choices

Which of the following statements are true about Liferay Portal?

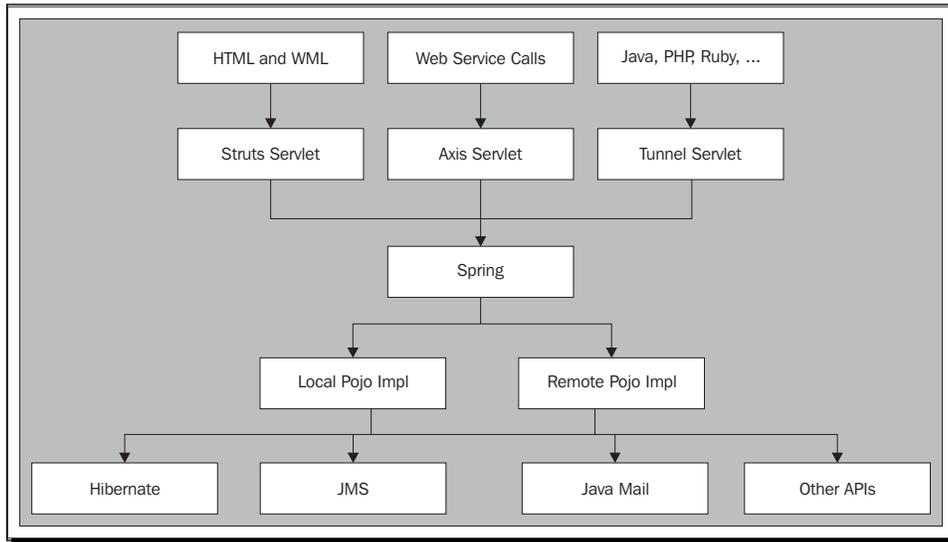
- a. Liferay Portal is a Java web application
- b. Liferay Portal was first developed for a non-profit organization
- c. Liferay Portal is an open source portal product
- d. All of the above

Liferay Portal architecture

The popularity of Liferay Portal largely comes from its adaptable architecture. There are three aspects to it.

Web service provider

Liferay Portal adopts a Service Oriented Architecture (SOA). Its architectural diagram is as follows:



In this diagram, Liferay Portal handles Hypertext Transfer Protocol (HTTP) requests from a user. The request will first be received by the Struts servlet. This servlet runs and renders portlets. During the process, the code invokes singletons, configured with Spring Application Programming Interface (API) and plain Java objects. It uses the Hibernate API to get data from or enter data into the database. Optionally, it may use the Java Messaging Service (JMS) to send out messages.

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On the other hand, Liferay Portal also provides web services for programs running on other servers. The portal uses Apache Axis specification to generate web services. The Axis configuration is specified in the `server-config.wsdd` file under the `portal/tunnel-web/docroot/WEB-INF/` folder. These are a list of Simple Object Access Protocol (SOAP) services. When an external program asks for a web service from the Liferay Portal, the Axis servlet in Liferay Portal will answer it. It will also call singletons initialized through Spring framework and call the plain Java objects. These plain Java objects will use Hibernate API to access the database.

Liferay is flexible

The architecture of Liferay Portal allows it to run on all major application servers and servlet containers, databases, and operating systems. It can be deployed on over 700 infrastructure combinations. For example, you can use MySQL or Oracle; you can run Liferay Portal in Tomcat or WebSphere.

You can plug in Solr for searching and Kaleo for workflow to Liferay Portal.

The portal administrator can apply different themes on different Liferay Portal pages. He can change the layout template of every portal page. By drag-and-drop, he can add portlets onto a portal page.

Liferay is standard compliant

Liferay Portal is compliant with Java and portlet standards. The following standards have been used in the development of Liferay Portal:

- ◆ Java Specification Request (JSR) 127 (JavaServer Faces Specification)
- ◆ JSR 168 (Portlet Specification)
- ◆ JSR 286 (Portlet 2.0 Specification)
- ◆ JSR 170 (Content Repository)
- ◆ JSR 208 (Java Business Integration)
- ◆ Asynchronous JavaScript and XML (AJAX)
- ◆ Web Services for Remote Portlets (WSRP)

Pop quiz – multiple choices

Choose the correct statements:

- a. Liferay Portal is a web service producer out-of-the-box
- b. Liferay Portal adheres to Portlet 2.0 Specification
- c. The development of Liferay Portal started in 2000
- d. All of the above

Main Liferay Portal features

Liferay Portal has award-winning features. Its hot-deployable themes, draggable-and-droppable portlets, and fine-grained permissions system, among others, make it an optimal choice among other portal products on the market.

Theme and layout

Liferay Portal themes take care of most of the look-and-feel of a Liferay Portal application. A theme usually contains a company logo, a navigation bar, footer, Cascading Style Sheet (CSS) code, and JavaScript code. A Liferay Portal site can have multiple themes. In this way, a user with proper permissions can dynamically apply a different theme to each portal page, if he/she chooses to do so.

Liferay Portal divides a page area into smaller sections with a layout template. Liferay Portal comes with 10 layout templates. A portal administrator will drag-and-drop one or more portlets into one such smaller section.

The theme and layout template makes a Liferay Portal site flexible. It is easy to change the look-and-feel of a Liferay site with the theme and layout template.

Communities and organizations

Liferay Portal provides communities and organizations for administering users and the sites. A user can belong to communities and/or organizations.

A community is a collection of users with similar characteristics and interests. The portal administrator can create a sub-site with each community.

An organization is a hierarchical collection of users. A user can be a member of multiple organizations.

Either a community or an organization can have public and private web pages. Any user at the Liferay Portal site can access the public pages, while only a member of a community or organization can browse the private pages of his/her community and/or organization.

Content Management System and Web Content Management

Liferay Portal has rich content management features.

The content displayed at a Liferay Portal site can be dynamic or static. The dynamic content can be updated by multiple users at any time. It usually comes from data saved in database tables and is presented with custom portlets. The static content is the files uploaded through the Document library portlet and web content created with the web content portlet.

The following portlets are part of the Content Management System (CMS) of Liferay Portal:

- ◆ Document library portlet
- ◆ Document library display portlet
- ◆ Image gallery portlet

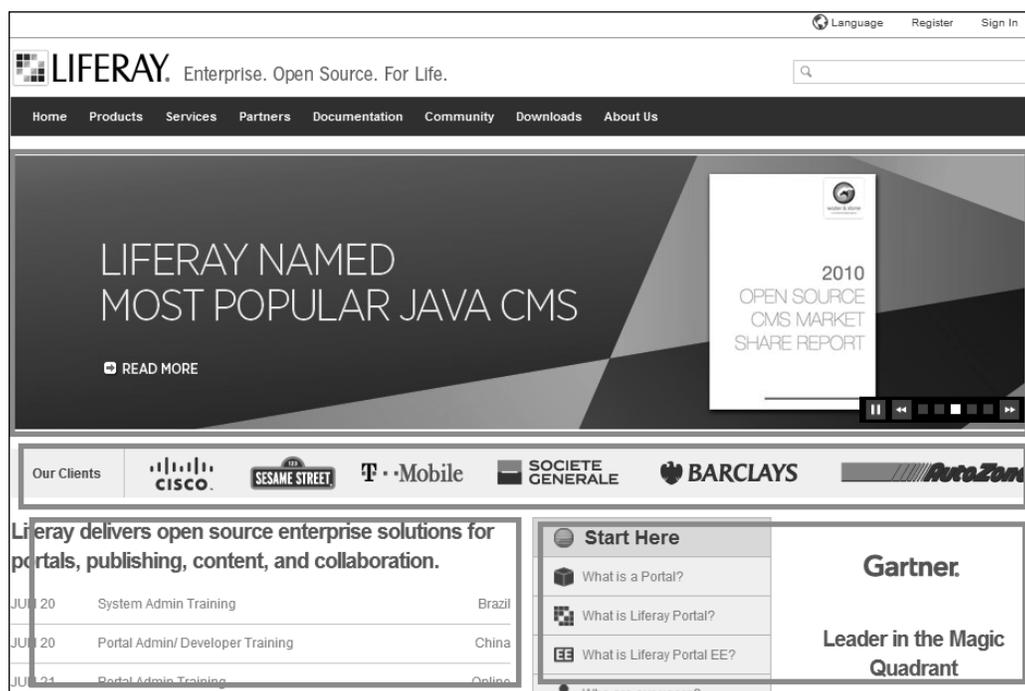
The following portlets take care of Web Content Management (WCM) in Liferay Portal:

- ◆ Web content portlet
- ◆ Web content display portlet
- ◆ Web content list portlet
- ◆ Web content search portlet

The asset publisher portlet displays documents, images, blogs, wikis, message board entries, bookmarks, and web content.

Time for action – watching Liferay Portal portlets in action

The Liferay, Inc. company site is built on Liferay Portal. Now, go to <http://www.liferay.com/> and find a portal page similar to the following screenshot:



What are the parts in the rectangles made of? They are all made of the web content display portlet.

What just happened?

The static content at the Liferay, Inc. site is created with the web content portlet (or web content display portlet). It is displayed with the web content display portlet.

The Liferay forum site at <http://www.liferay.com/community/forums> is made of the messages board portlet, while the Liferay blogs site at <http://www.liferay.com/community/blogs> is set up with the blogs aggregator portlet and the blogs portlet.

Pop quiz

Which of the following statements are true?

- a. In a typical Liferay Portal page, a theme wraps a layout template, which in turn wraps portlets
- b. Liferay Portal has powerful web content management features
- c. Liferay Portal is pre-installed with more than 60 portlets
- d. All of the above

Preparation for Liferay Portal installation

Liferay Portal runs on all major application servers and servlet containers. It works with all the important database servers on the market. Its requirements are minimal on hardware and software.

In this section, we will talk about the running environment for Liferay Portal. We will also install Java Development Kit (JDK), which is the infrastructure for Liferay Portal to operate. We will install MySQL database for Liferay Portal to connect to. This is the preparation for the installation of a Liferay Portal site in *Chapter 2, Installing a Liferay Portal Instance*.

Hardware requirements

To install Liferay Portal, you need more than 300 MB of disk space and at least 1 GB of Random Access Memory (RAM). The application server or servlet container that houses Liferay Portal runs at a port. You should make sure that other applications on your computer are not using that port.

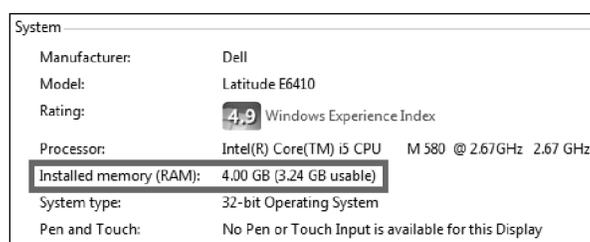
Liferay Portal is written in Java. It runs on any computer where you can install the Java Runtime Environment (JRE) and an application server or a servlet container. It runs on computers that support either 32-bit JVM or 64-bit JVM.

Some features of Liferay Portal also need a mail server for support.

Time for action – finding RAM information

Assuming that you are using a laptop computer that runs the Windows 7 operating system, carry out the following steps to get the information about RAM:

1. Click on the **Windows** icon at the bottom corner on the left-hand side.
2. Right-click on the **Computer** link and then click on the **Properties** link.
3. Find the RAM information, as shown in the following screenshot:



What just happened?

This machine has 4.00 gigabytes of RAM installed, of which 3.24 gigabytes are available. Because the available memory is larger than is required for running a Liferay Portal instance, we can install a Liferay Portal instance on this laptop computer.

Software requirements

Liferay Portal can be combined with multiple kinds of database servers and application servers.

As a web application, the running environment of Liferay Portal involves a browser, Java Virtual Machine (JVM), a database server, and a mail server.



The Liferay Portal Tomcat bundle comes with a default database called **hypersonic**, which is an in-memory database. This database is good for non-production use. This means that a reader does not have to install a database server for Liferay Portal, if he/she is running Liferay Portal purely for study purposes.

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Operating systems

Liferay Portal can be installed on multiple operating systems. In this book, we will install a Liferay Portal instance in a Windows operating system. The sample site is installed in a Linux operating system.

Java Development Kit

The **Java Development Kit (JDK)** includes code for the JVM in which Liferay Portal will run.

Let's say that your computer has the following specifications:

- ◆ Windows XP or Windows 7
- ◆ Processor: Intel(R) Core (TM) CPU
- ◆ Installed memory (RAM): 2.00 GB or more
- ◆ System type: 32-bit operating system

Time for action – installing JDK

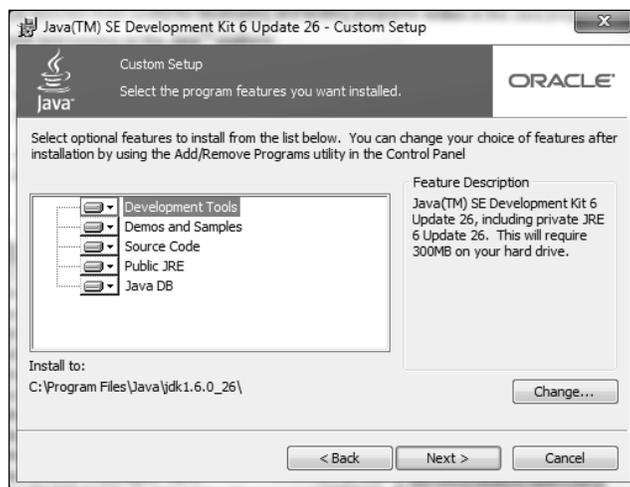
Carry out the following procedure to install the latest version of JDK on your machine:

1. Go to <http://www.oracle.com/technetwork/java/javase/downloads/jdk-6u26-download-400750.html> and find a page with the content, as shown in the following screenshot:

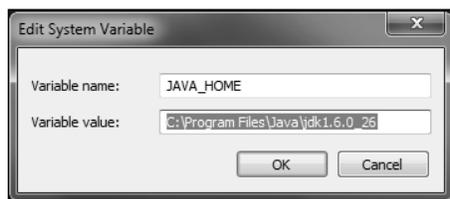
Java SE Development Kit 6 Update 26			
Product / File Description	File Size	Download	
Linux x86 - RPM Installer	76.93 MB	⬇	jdk-6u26-linux-i586-rpm.bin
Linux x86 - Self Extracting Installer	81.20 MB	⬇	jdk-6u26-linux-i586.bin
Linux Intel Itanium - RPM Installer	60.25 MB	⬇	jdk-6u26-linux-ia64-rpm.bin
Linux Intel Itanium - Self Extracting Installer	67.92 MB	⬇	jdk-6u26-linux-ia64.bin
Linux x64 - RPM Installer	77.15 MB	⬇	jdk-6u26-linux-x64-rpm.bin
Linux x64 - Self Extracting Installer	81.45 MB	⬇	jdk-6u26-linux-x64.bin
Solaris x86 - Self Extracting Binary	81.08 MB	⬇	jdk-6u26-solaris-i586.sh
Solaris x86 - Packages - tar.Z	136.89 MB	⬇	jdk-6u26-solaris-i586.tar.Z
Solaris SPARC - Self Extracting Binary	86.05 MB	⬇	jdk-6u26-solaris-sparc.sh
Solaris SPARC - Packages - tar.Z	141.37 MB	⬇	jdk-6u26-solaris-sparc.tar.Z
Solaris SPARC 64-bit - Self Extracting Binary	12.24 MB	⬇	jdk-6u26-solaris-sparcv9.sh
Solaris SPARC 64-bit - Packages - tar.Z	15.58 MB	⬇	jdk-6u26-solaris-sparcv9.tar.Z
Solaris x64 - Self Extracting Binary	8.50 MB	⬇	jdk-6u26-solaris-x64.sh
Solaris x64 - Packages - tar.Z	12.24 MB	⬇	jdk-6u26-solaris-x64.tar.Z
Windows x86	76.81 MB	⬇	jdk-6u26-windows-i586.exe
Windows Intel Itanium	63.32 MB	⬇	jdk-6u26-windows-ia64.exe
Windows x64	67.42 MB	⬇	jdk-6u26-windows-x64.exe

2. Click on the **jdk-6u26-windows-i586.exe** link. When a window pops up, click on **Run**.
3. Click on **Next** in the next pop-up window.

- Accept the default installation folder and click on **Next**.



- Accept the default installation directory for JRE and click on **Next**.
- When the installation is done, click on **Finish**.
Now that the JDK is installed, we set the `JAVA_HOME` variable and put Java commands on the path. The following is the procedure:
 - Click on the Windows icon at the bottom corner on the left-hand side of the screen.
 - Right-click on **Computer**. Click on **Properties | Advanced system settings | Environment variables**.
 - Click on **New** in the System variables section. Define a `JAVA_HOME` variable and set its value to `C:\Program Files\Java\jdk1.6.0_26`:



10. Edit the Path variable in the System variables section. Add %JAVA_HOME%\bin as a value in the Path variable. It should be separated from other values by a semi-colon. A sample value for the Path variable is as follows:

```
%JAVA_HOME%\bin;%ANT_HOME%\bin;C:\Program Files\Common Files\Microsoft Shared\Windows Live;%SystemRoot%\system32;%SystemRoot%\System32\Wbem;%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\;c:\Program Files\Intel\DMIX;C:\Program Files\Intel\WiFi\bin\;C:\Program Files\Common Files\Intel\WirelessCommon\;c:\Program Files\WIDCOMM\Bluetooth Software\;C:\Program Files\NTRU Cryptosystems\NTRU TCG Software Stack\bin\;C:\Program Files\Wave Systems Corp\Gemalto\Access Client\v5\;C:\Program Files\Common Files\Roxio Shared\DLLShared\;C:\Program Files\Common Files\Roxio Shared\10.0\DLLShared\;C:\Program Files\Windows Live\Shared;C:\Program Files\TortoiseSVN\bin
```

11. Click on **OK** to save the settings.
12. Open a Disk Operating System (DOS) interface. On the command line, enter `java-version` and press *Enter*.

```
C:\Users\Robert_C>java -version
java version "1.6.0_26"
Java(TM) SE Runtime Environment (build 1.6.0_26-b03)
Java HotSpot(TM) Client VM (build 20.1-b02, mixed mode, sharing)
```

What just happened?

The previous screenshot confirms that the JDK has been successfully installed!

Application servers and servlet containers

You can download an application server or servlet container from its website and install the Liferay Portal Web Application Archive (WAR) file and dependency Java Archive (JAR) files in it. Alternatively, if Liferay has already bundled Liferay Portal with an application server or servlet container, you can download that bundle, unzip it, and install it.

Liferay Portal supports the following application servers:

- ◆ Apache Geronimo
- ◆ Borland ES
- ◆ JBoss
- ◆ JonAs
- ◆ Jrun
- ◆ OracleAS

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- ◆ Orion
- ◆ Pramati
- ◆ RexIP
- ◆ Sun GlassFish
- ◆ Sun JSAS
- ◆ WebLogic
- ◆ WebSphere

Liferay Portal also runs in the following servlet containers:

- ◆ Jetty
- ◆ Resin
- ◆ Tomcat

For every release, Liferay, Inc. installs Liferay Portal in some open source servlet containers and application servers. The resulting packages are called Liferay Portal bundles, which are ZIP files. A user can download one such bundle, unzip it, and install it. The presently-available bundles are as follows:

- ◆ Tomcat bundle
- ◆ Resin bundle
- ◆ JonAs bundle
- ◆ Jetty bundle
- ◆ JBoss bundle
- ◆ Sun Glassfish bundle
- ◆ Apache Geronimo bundle

Database servers

We can connect Liferay Portal to the following database servers:

- ◆ Apache Derby
- ◆ IBM DB2
- ◆ Firebird
- ◆ Hypersonic
- ◆ Informix
- ◆ InterBase
- ◆ JdataStore

- ◆ MySQL
- ◆ Oracle
- ◆ PostgreSQL
- ◆ SAP
- ◆ SQL Server
- ◆ Sybase

In this book, and at the sample site, we will run Liferay Portal with MySQL database. MySQL is the world's most popular open source database. The current version of Liferay Portal requires MySQL version 5.0 or above.

Time for action – installing MySQL database server

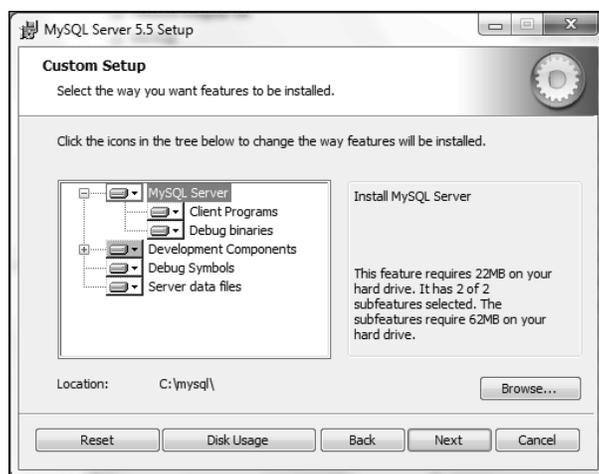
If you have not already installed the MySQL database, follow these steps to install the latest version of MySQL Community Server on your computer:

1. Go to <http://dev.mysql.com/downloads/> to download the MySQL database installation package. You will find the page similar to the following screenshot:



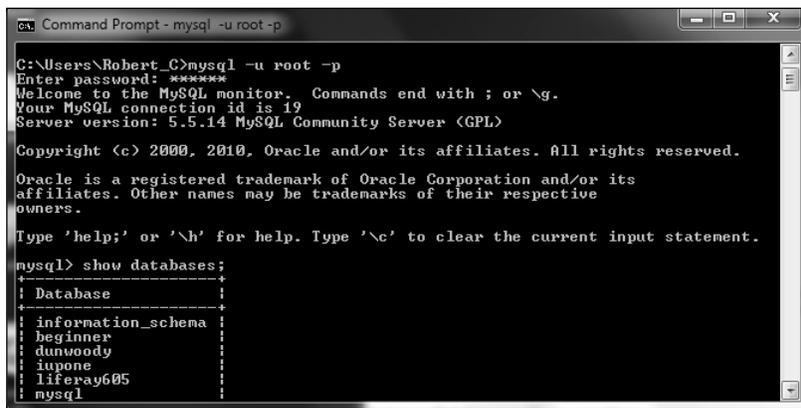
2. Download a **mysql-5.5.14-win32.msi** file to a local directory. That file is Microsoft Installer (MSI) for MySQL database server.
3. Double-click on the **mysql-5.5.14-win32.msi** file. A window pops up. Click on **Run**.

4. Click on **Next**. Check the **I accept the terms** in the **License Agreement** and click on **Next**.
5. For the setup type, choose **Custom** and click on **Next**.
6. For the installation folder, browse to **C:\mysql** and click on **Next**:



7. Click on **Next**. Click on **Install**.
8. When the installation is done, leave **Launch the MySQL Instance Configuration Wizard** checked and click on **Finish**.
9. Click on **Next** to configure the MySQL server.
10. Select **Standard Configuration** and click on **Next**.
11. Input the root password and click on **Next**.
12. Click on **Execute** to perform configuration.
13. When the configuration is done, click on **Finish**.
14. Add **C:\mysql\bin** as a value in the Path system variable, as we did for Java.

- 15.** In a DOS window, type `mysql -u root -p` on the command line. Press **Enter**.



```
Command Prompt - mysql -u root -p
C:\Users\Robert_C>mysql -u root -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 19
Server version: 5.5.14 MySQL Community Server (GPL)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| beginner |
| dunwoody |
| iupone |
| liferay605 |
| mysql |
+-----+
```

What just happened?

The previous screenshot confirms that the MySQL database server has been installed successfully.

Web browser

You can use Firefox (3.0 and above), Internet Explorer (IE) (7.0 and above), Chrome, Safari, and Opera to browse a Liferay Portal site.

The ability of a web browser to access a website depends on the user interface (UI) technologies used in the development of that website. Because Liferay Portal is highly customizable, you may be able to interact with a customized Liferay Portal site with more varieties of browsers on the market.

A Liferay Portal theme decides most of the look-and-feel of a Liferay Portal site. In almost all situations, a client will develop a custom theme for their site. The user interface technologies that they use for their custom theme decide the accessibility of their site.

Liferay 6.0 CE uses Alloy user interface (Alloy UI). Alloy UI has combined the following technologies:

- ◆ Hyper Text Markup Language 5 (HTML5)
- ◆ Cascading Style Sheets Level 3 (CSS3)
- ◆ Yahoo! User Interface Version 3 (YUI3)

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HTML 5 defines the HTML elements in a webpage. It is used for the structure of a portal page. CSS3 is used to add styles to document object models (DOM). YUI3, which includes JavaScript API, is used to make the HTML elements dynamic.

HTML 5 is the latest revision of the HTML standard. HTML 5 is still a work in progress. However, Safari, Chrome, Firefox, and Opera already support some of its features in their latest versions. IE 9 will also be available to support some HTML 5 features.

Liferay Portal has a feature to support browsing in iPad and smart phones in its 6.1 CE version. This is achieved by detecting the screen layout of the device with JavaScript code. When the computer screen layout is 960px wide, Liferay Portal knows that it is a desktop computer or iPad in landscape mode; when the screen layout is 320px wide, Liferay Portal knows it is a smart phone in portrait mode. Liferay Portal will apply a corresponding Cascading Style Sheet (CSS) class, and thus adjust the dimensions of an image and other content on the portal page.

Installing OpenOffice

Liferay Portal has a feature to convert web content, wiki articles, and message board content into PDF files and files of other formats. This feature relies on the integration of the **OpenOffice** application. OpenOffice is an open source office software that consists of a word processor, a spreadsheet program, a drawing tool, and a math program.

Time for action – installing OpenOffice

We install OpenOffice on our computer by carrying out the following steps:

1. Go to <http://www.openoffice.org/> and download the latest version of **OpenOffice.org** for Windows.
2. Save the **OOo_{\$VERSION}_Win_x86_install-wJRE_en-US.exe** file in a chosen folder.
3. Double-click on the **OOo_{\$VERSION}_Win_x86_install-wJRE_en-US.exe** filename; this triggers the installation process.

4. Click on **Next**, when you see the following pop-up window:



5. Accept the default folder for unpacking and click on **Unpack**.
6. Wait for the unpacking process to proceed.
7. Click on **Next** when a new installation window shows.
8. Input username and organization and click on **Next**.
9. Use the **Typical** setup type and click on **Next**.
10. Click on **Install**.
11. Click on **Finish**, when the installation wizard is completed.

What just happened?

Congratulations! You have successfully installed OpenOffice on your computer!

Liferay Portal depends on a service provided by OpenOffice to convert files.

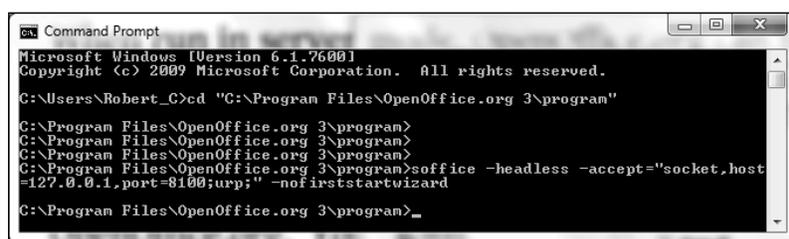
Time for action – starting OpenOffice service

To start the OpenOffice service, do the following:

1. Enter DOS mode.
2. Go to the `C:\Program Files\OpenOffice.org 3\program` directory; this is where OpenOffice is installed by default.
3. Run the following command:

```
soffice -headless -accept="socket,host=127.0.0.1,port=8100;urp;"  
-nofirststartwizard
```

A screenshot of the **DOS** window is as follows:



```
Command Prompt  
Microsoft Windows [Version 6.1.7600]  
Copyright (c) 2009 Microsoft Corporation. All rights reserved.  
C:\Users\Robert_C>cd "C:\Program Files\OpenOffice.org 3\program"  
C:\Program Files\OpenOffice.org 3\program>  
C:\Program Files\OpenOffice.org 3\program>  
C:\Program Files\OpenOffice.org 3\program>  
C:\Program Files\OpenOffice.org 3\program>soffice -headless -accept="socket,host  
=127.0.0.1,port=8100;urp;" -nofirststartwizard  
C:\Program Files\OpenOffice.org 3\program>_
```

What just happened?

The previous command means that OpenOffice has started a service with the headless option. Now, this service will accept a request at port 8100. It is waiting for the request from a server, whose Internet Protocol (IP) address is 127.0.0.1, which means the local host.

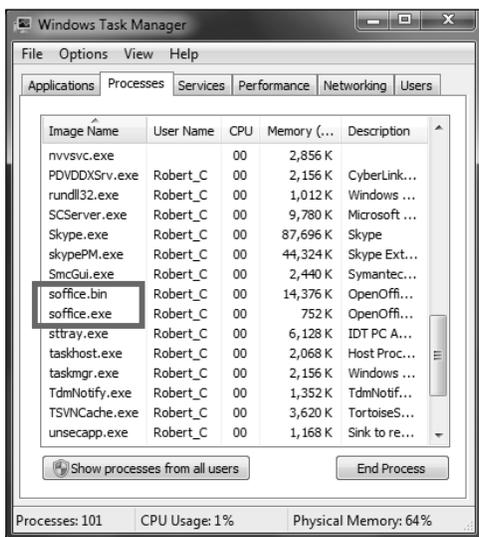
We can check to see how the OpenOffice service is running.

Time for action – checking the OpenOffice service

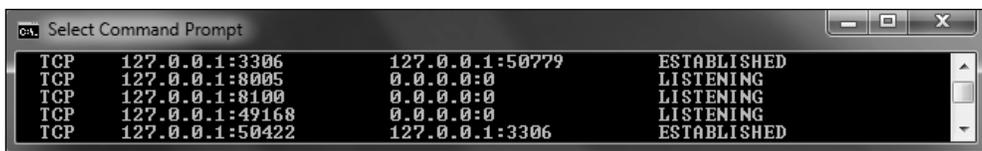
To confirm that the OpenOffice service is running, perform the following steps:

1. Right-click the **Windows** task bar.

2. Click on **Start Task Manager**, and you will find a window similar to the following screenshot:



3. You can see that the OpenOffice service is shown in the list of running processes in Windows.
4. In the DOS window, run the `netstat -anptcp` command, which will show the network activities on the computer. The DOS window will show content similar to the following screenshot:



What just happened?

As you can see, a service is listening at port 8100 for a request from 127.0.0.1.

If you reboot your computer, this service will be stopped and gone, because you started it manually. So, a better choice is to set up this service as a Windows service, which will be started whenever your machine is rebooted.

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Archive tools

You may install Liferay Portal in a bundle, such as `liferay-portal-tomcat-${version}.zip`, on your computer. If it is a Linux machine, you can run the `unzip liferay-portal-tomcat-${version}.zip` command to extract the files. On a Windows machine, an unzip tool may be already available, or you can download WinRAR at http://download.cnet.com/WinRAR-32-bit/3000-2250_4-10007677.html and install it to explode the ZIP file.

Pop quiz

Which of the following statements about the installation environment for Liferay Portal are true?

- Liferay Portal can be installed on a laptop computer
- Liferay Portal comes with a hypersonic in-memory database
- Liferay Portal depends on **Java Virtual Machine**
- All of the above

Summary

In this chapter, we have learned what Liferay Portal is. We now know the following facts about Liferay Portal:

- ◆ Liferay Portal is a Java web application
- ◆ Liferay Portal is a horizontal portal
- ◆ Liferay Portal has award-winning features

In addition, we have talked about the environment for Liferay Portal to run, including hardware and software. We have also installed JDK, MySQL database server, and the OpenOffice application.

Now that the infrastructure is set, we are ready to install a Liferay Portal instance on our computer, which is the topic of *Chapter 2, Installing a Liferay Portal Instance*.

Where to buy this book

You can buy Liferay Beginner's Guide from the Packt Publishing website:

<http://www.packtpub.com/build-deploy-maintain-liferay-portal-beginners-guide/book>.

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