
HPC Portal Development Platform

(高速計算與電子商務網站開發平台)

User Guide

(使用者手冊)

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1 前文

1.1 關於此文件

This user guide describes the usage of HPC Portal Development Platform from user's perspective. This development platform is based on the architecture design and implementation experiences by using Liferay Enterprise Portal.

1.2 誰應閱讀此文件

IT project managers, generic developers and relevant key users, should read this document.

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2 高速計算與電子商務網站開發平台

2.1 目的

長久以來，有些政府組織、企業團體、教育單位及其它中小企業常面臨資訊系統專案預算不足的問題。特別是近一年來，因全球景氣衰退，更多的組織及企業將大量減少相關資訊系統專案預算。雖然如此，資訊系統專案仍然須繼續依企業內部的相關需求做開發。因此，自由軟體之網站開發平台扮演重要的角色，它結合開發與支援小組提供相關的服務，但它所付出的成本比商業軟體要減少許多。

爲了提供符合全球趨勢與俱備先進技術的自由軟體之網站開發平台，因而產生”高速計算與電子商務網站開發平台HPC Portal Development Platform” (Figure 1)。此平台提供極佳的網站開發平台給Java開發者來設計、撰寫程式，客制化與部署網站系統。它採用Tomcat (Web Server) and JBoss (Java EE Application Server)將呈現層、邏輯層與資料層分開，因此它的架構相當健全，穩定與先進。此架構讓Java開發者針對他們的需求將內容豐富化。此外，此研發平台提供使用者一個完整的互動環境，給企業或個人使用服務導向型架構(Service Oriented Architecture)的相關應用，並且能使用在所有形式的服務，讓使用者可以有更佳、更有效率的體驗。

- 實用性:
 - 可運用在各種層面, 例如: 學術界, 商業界, 其它各種領域, 個人
- 經濟效益:
 - 節省龐大授權費用

	HPC Portal Development Platform	IxM
Portal Engine	Liferay Enterprise Portal	WebXxx Portal
Java EE Application Server	JBoss Application Server	WebXxx Application Server
SOA Support	YES	YES
Cost	\$0 (MIT License)	NT\$2,500,000 / per CPU

- 其它效益:
 - 提升產業發展
 - 成爲國內學術與教育系統之開發平台
 - 提升學生軟體開發技術

- ◆ Millions of Java Source code for Students to learn, use and modify for their projects

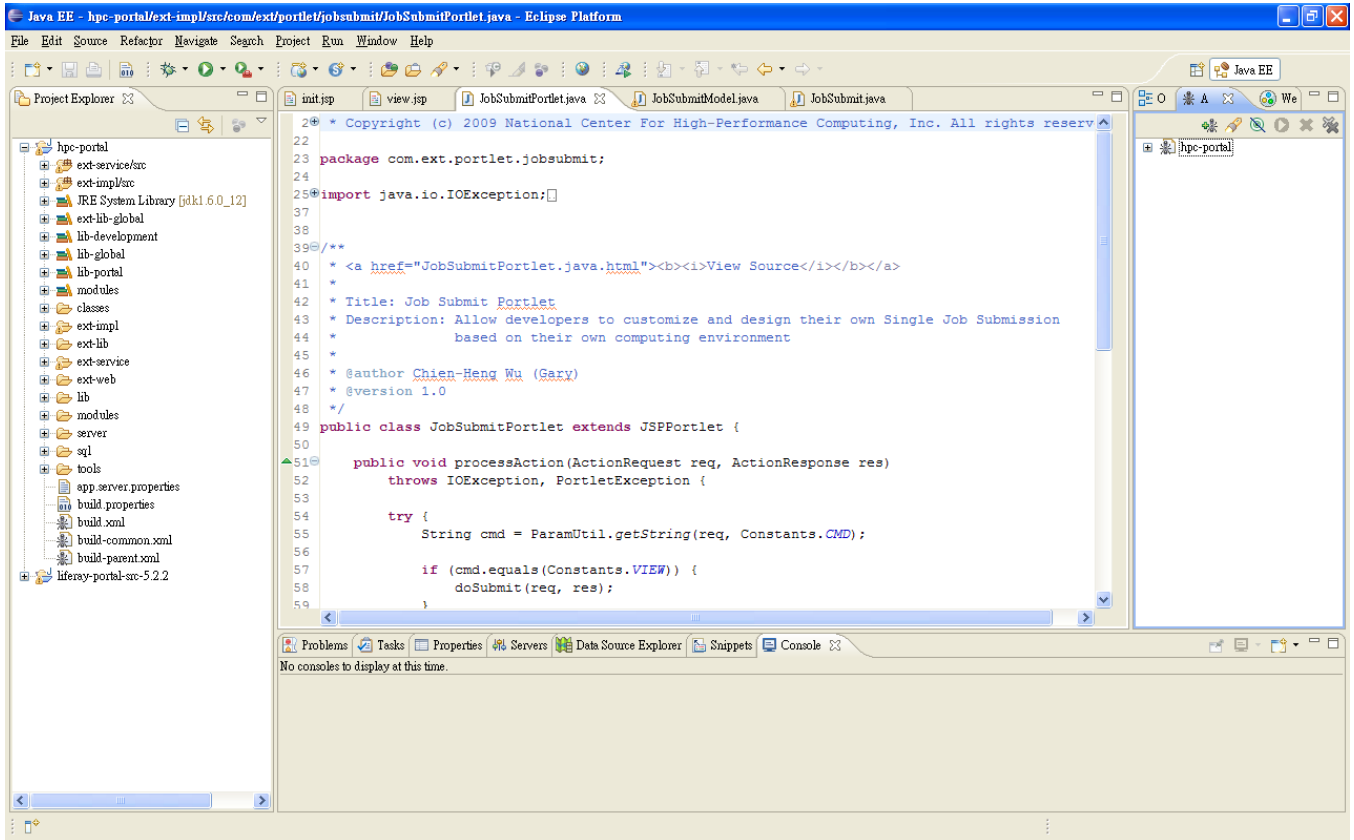


Figure 1. HPC Portal Development Platform

2.2 特性

高速計算與電子商務網站開發平台 HPC Portal Development Platform (Figure 1) 允許 Java 的開發者打開 Web-based portals 與高速計算應用方面的隔閡。它能讓他們開發活用以內容為主的工作環境，特別在程式設計與撰寫方面，高速計算的知識工作者將可使用單一窗口操作各方面的高速計算服務、高速計算應用、高速計算內容、與高速計算搜尋服務。

“高速計算與電子商務網站開發平台HPC Portal Development Platform” 能為高速計算做些什麼？

不單只為高速計算，此研發平台也能成為其它功能的Portal(入口網站)，例如：

☆ Personal Portal 個人入口網站

- ◇ Business Portal 商業入口網站
- ◇ Enterprise Portal 企業入口網站
- ◇ Educational Portal 教育入口網站

身為高速計算與電子商務網站開發平台HPC Portal Development Platform，Java的開發者與程式設計師能設計與撰寫高速計算相關的Portlet程式與應用，例如:

- ◇ Role of Infrastructure Portal with the highest security for High Performance Computing
- ◇ Cluster Status
- ◇ Single Job Submission
- ◇ Queue Status
- ◇ Workflow
- ◇ Other specific portlets for HPC users to query。

此研發平台能提供那些益處?

(1) 資訊科技架構與需求最佳化

高速計算與電子商務網站開發平台HPC Portal Development Platform 能將現有IT環境最佳化，因為它整合Liferay Enterprise Portal with JBoss-Tomcat Application Server。它能夠使用在各式的資料庫伺服器、或作業系統。

JBoss-Tomcat Application Server 是一種標準的Java EE (Java Enterprise Edition) Application Server，它提供相當強大的功能給Web and Java EE的開發。它也是全球最熱門的Java EE Application Server。JBoss Application Server (AS)並提供Clustering支援，能在Server起動時自動偵測是否為Cluster。

(2) 透過 Single Sign On 來調整與切入所有的資料與應用

高速計算與電子商務網站開發平台HPC Portal Development Platform 提供單一入口點，從組織內部到外部進入使用者所有的內容、資料、與資訊。Single Sign On讓使用者Login一次後使用所有的資訊。

在登入後，相關的認證與權限控管，提供使用者針對各式層面高速計算使用者，控制與客制相關的機密資訊與功能，例如: Enterprise Admin Portlet、Community Portlet、Other access control portlets。

(3) 協同合作與客制化

- ✧ 爲了讓不同的高速計算使用者能協同合作，此研發平台允許它們建立真實的社群，例如: Instant Messaging、Message Boards、Blogs & Wikis.
- ✧ 爲使增強使用者對此研發平台的體驗與忠誠度，每一個 HPC 的社群成員能夠提供他們自有的頁面與 URL 連結。
- ✧ 此研發平台裏的 HPC Portal 允許 drag-and-drop portlets 來根據使用者的喜好做相關的客制化。
- ✧ 在無需撰寫複雜的程式下，相關的 Themes 與 Portlets 能改變使用者的觀感(Look and Feel)。

(4) 延展高速計算領域

高速計算與電子商務網站開發平台 (HPC Portal Development Platform) 能將企業與高速計算領域裏，根據無限的內容與應用叢集化(Clustering)。並且，此研發平台能幫助企業組織與單位避免產生“vendor lock-in or dependence on a single third-party”。它也含蓋許多核心的先進技術，因此可大大的縮短開發時間。

(5) Other Specific Features

- ✧ Control Panel: All of the administration tools have been unified into the Control Panel. UI users can administer the whole portal with ease. Besides that, It allows to add your own tools into it, and is for automatic delegation of administration.
- ✧ HPC Portal includes the improvements to the web content management system
- ✧ Improved Structure: the structure of the bundle has been significantly improved so that it's completely self-contained (including its data) and thus makes life easier for administrators.

2.3 研發平台架構

給予開發者有充足的力量去操控與開發針對它們的需求所開發的相關應用。高速計算與電子商務網站開發平台HPC Portal Development Platform 提供Structs， Tiles， JSP and JSF等相關的物件，讓開發者能客製化他們的應用。使用者也可以在頁面上，增加、移動、或移除物件。

此研發平台支援多層次(multiple tiers - presentation, service, business logic, and database)架構 (Figure 2)，能夠符合相關的負載需求。它使用Session EJBs將Web server, EJB server, and database server分開，以其達到叢集化(Clustering)，使系統本身最佳化。另外，此架構支援 High Availability，透過HTTP Failover、Session Replication、與Hardware/Software Load Balancing 來達到無關機時間。

此研發平台使用Session EJB and POJO implementation 來提供在大型組織所需要的高延展性與高交易量。Local Session EJBs 將商務邏輯提供給其它的Session EJBs，並且無需做特別檢查，因

為它們無法從遠端呼叫。商務規則或政策也可以從POJO implementations 透過遠端呼叫Remote Session EJBs 傳回本機端。

此研發平台不僅支援”服務導向型架構Service Oriented Architecture (SOA)” [5] 設計方法，並且提供工具與架構來延伸 SOA 到 HPC application portlets。它也支援傳統與無線的行動裝置，讓高速計算與電子商務的使用者更加便利。

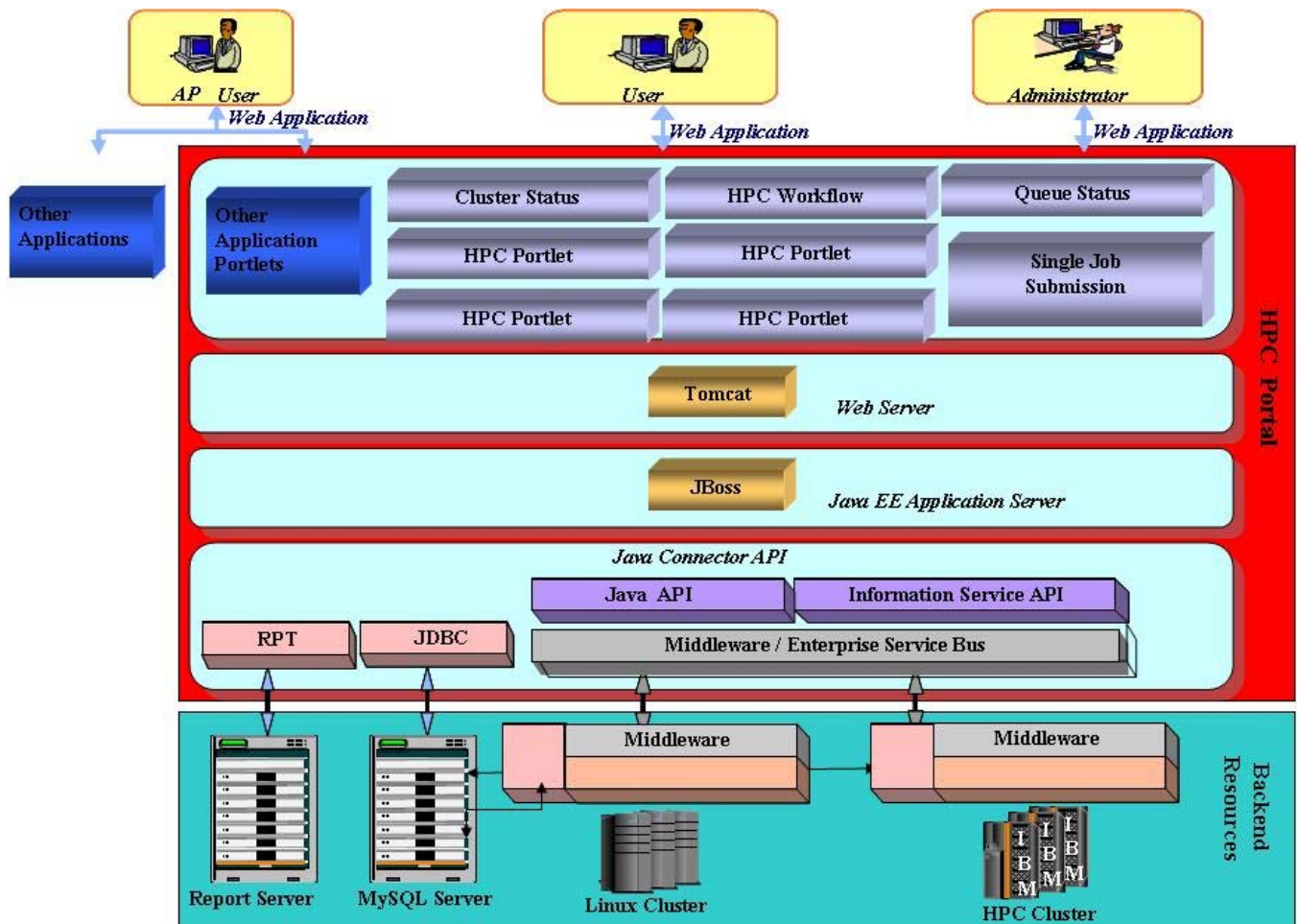


Figure 2. Platform Architecture

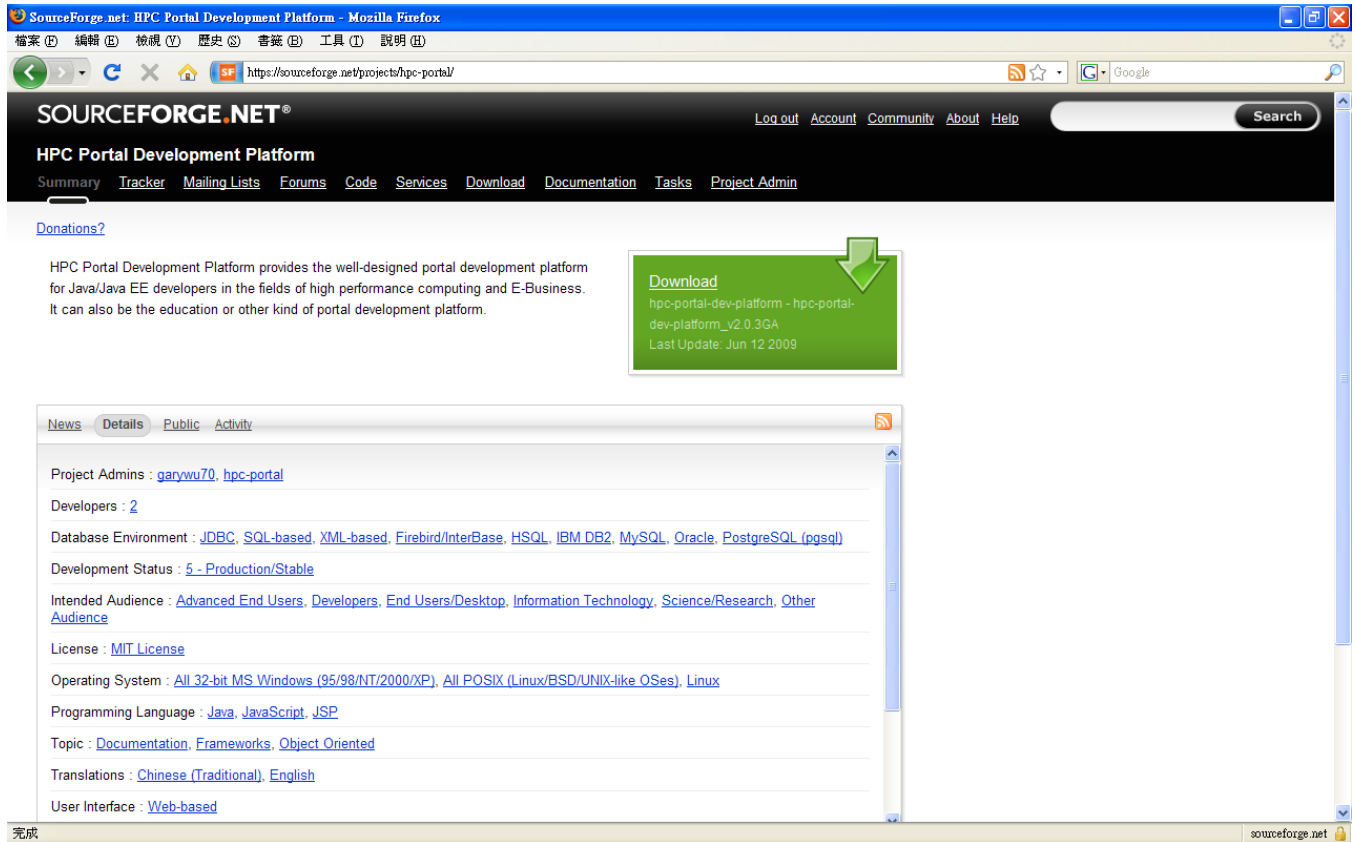
Portal Engine	Liferay Enterprise Portal 5.2.2
Application Server	JBoss Application Server 5.0.0GA

2.4 如何下載

The screenshot shows a Mozilla Firefox browser window displaying the OpenFoundry website. The page title is "HPC Portal Development Platform (高速計算與電子商務網站開發平台)". The page content includes a sidebar with navigation links like "專案資訊", "待辦事項", "共同筆記", "版本控制", "通訊論壇", and "下載區". The main content area displays project details:

基本資料	
專案代號	hpcportal
專案摘要	HPC Portal Development Platform (高速計算與電子商務網站開發平台)
專案描述	SourceForge.net -> http://sourceforge.net/projects/hpc-portal/ 專案開發者: 吳建衛 Gary Wu (garywu@nchc.org.tw) 國家高速網路與計算中心 National Center For High-Performance Computing 實用性: 可運用在各種層面, 例如: 學術界, 商業界, 其它各種領域, 個人 經濟效益: 結省龐大授權費用 其它效益: (1) 成為國內學術與教育系統之開發平台 (2) 提升學生軟體開發技術 Project Description: HPC Portal Development Platform provides the well-designed portal development platform for Java/Java EE developers in the fields of high performance computing and E-Business. It can also be the education or other kind of portal development platform. HPC Portal Development Platform provides the best platform for Java developers in the field of high performance computing and E-Business to design, implement, configure and deploy. Its architecture is robust, stable and advances because it utilizes the Tomcat (Web Server) and JBoss (Java EE Application Server) to separate the presentation tier, the business tier and the database tier. It also allows developers to create context-rich applications that satisfy these needs. In addition, this development platform provides the natural user interaction environment for your SOA (Service Oriented Architecture) applications and allows you to leverage all types of services in creating a better, more effective user experience.
專案首頁	http://hpcportal.openfoundry.org
連絡方式	garywu@nchc.org.tw
專案成熟度	釋出(Released)
程式碼授權	OSI: MIT License
圖文授權	GNU Free Documentation License 其他
授權說明	MIT License: Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

Open Foundry URL: <http://of.openfoundry.org/projects/1037>



The screenshot shows the SourceForge.net project page for "HPC Portal Development Platform". The page includes a navigation bar with links for "Log out", "Account", "Community", "About", and "Help". Below the navigation bar, there are tabs for "Summary", "Tracker", "Mailing Lists", "Forums", "Code", "Services", "Download", "Documentation", "Tasks", and "Project Admin". The main content area features a "Donations?" section, a "Download" button with a green arrow, and a "Details" section with various project information.

Project Admins : [garywu70](#), [hpc-portal](#)

Developers : 2

Database Environment : [JDBC](#), [SQL-based](#), [XML-based](#), [Firebird/InterBase](#), [HSQL](#), [IBM DB2](#), [MySQL](#), [Oracle](#), [PostgreSQL \(pgsql\)](#)

Development Status : [5 - Production/Stable](#)

Intended Audience : [Advanced End Users](#), [Developers](#), [End Users/Desktop](#), [Information Technology](#), [Science/Research](#), [Other Audience](#)

License : [MIT License](#)

Operating System : [All 32-bit MS Windows \(95/98/NT/2000/XP\)](#), [All POSIX \(Linux/BSD/UNIX-like OSes\)](#), [Linux](#)

Programming Language : [Java](#), [JavaScript](#), [JSP](#)

Topic : [Documentation](#), [Frameworks](#), [Object Oriented](#)

Translations : [Chinese \(Traditional\)](#), [English](#)

User Interface : [Web-based](#)

SourceForge.net URL: <http://sourceforge.net/projects/hpc-portal/>

2.5 安裝

- **Ant** (<http://ant.apache.org/>)
- **JDK** (<http://java.sun.com/>)
- **Eclipse for Java EE** (<http://www.eclipse.org/>)
- **HPC Portal Development Platform**
 - <http://sourceforge.net/projects/hpc-portal/>
 - <http://of.openfoundry.org/projects/1037>

安裝內容分為下列 3 步驟：

需先設定 java 開發環境，再安裝 Eclipse。HPC 平台可適用於 Linux 與 Windows 下，於下載時注意一下即可，本次筆者以 Linux 設定為例。

1. 安裝環境設定：需設定 JAVA 開發環境。

[在 Linux 下操作]

- (1) 打開終端機，切換為 root 模式
[your name:~\$] sudo su -
- (2) 將 opt 資料夾權限，改變為 777
[root:~#] chmod 777 /opt
- (3) 進入 opt 目錄，並建立 java 目錄
[root:~#] cd /
[root:~#] mkdir java

[安裝 ANT]

- (1) 移除舊版 ANT，下載 ANT，解壓縮到 /opt/java
- (2) Unzip apache-ant-1.7.1-bin.zip into /opt/java

[設定 JDK]

- (1) 移除舊版 JDK，下載並安裝 JDK：在” /opt/java” 裏 install JDK 6.0 (ex. jdk-6u16-linux-i586.bin)
- (2) 改變檔案權限
[your name:~\$] chmod 755 jdk-6u16-linux-i586.bin
- (3) 建立連結
[your name:~\$] ln -s /opt/java/jdk1.6.0_16 current-jdk

[設定 ENV Path]

- (1) 打開 Linux 隱藏檔 profile
[your name:~\$] vim /home/your name/.profile 或
[root:~#] vim /etc/profile
- (2) 在 profile 檔案內，於第 2 個 fi 的下一行，貼上以下內容：
export JAVA_HOME=/opt/java/current-jdk
export ANT_HOME=/opt/java/apache-ant-1.7.1
export PATH=\${JAVA_HOME}/bin:\${ANT_HOME}/bin:\${PATH}
- (3) 登出 Linux 之後，再重新登入
- (4) 確認 Ant 是否正常設定：“ant -version”
- (5) 確認 JDK 是否正常設定：“java -version”

[安裝 eclipse]

- (1) 至官網 download “eclipse-jee-galileo-linux-gtk.tar.gz “ 或更新版本
- (2) unzip 上述壓縮包到 into /opt/java

2. 下載 HPC、安裝與啟動

- (1) 下載 “hpc-portal-5.2.2_version_linux-gtk.zip” 檔案

下載點：<http://sourceforge.net/projects/hpc-portal/> 或 <http://of.openfoundry.org/projects/1037>

(2)將上述 zip 檔解壓縮到 /opt/java

(3)執行 eclipse :

```
[your name:~$] cd /opt/java/eclipse
```

```
[your name:~$] ./eclipse
```

(4)進入 eclipse ，點選視窗上 file 選單 > workspace > 選單，將專案來源設定為 /opt/java/hpc-portal-5.2.2

Installation Option

[Windows]

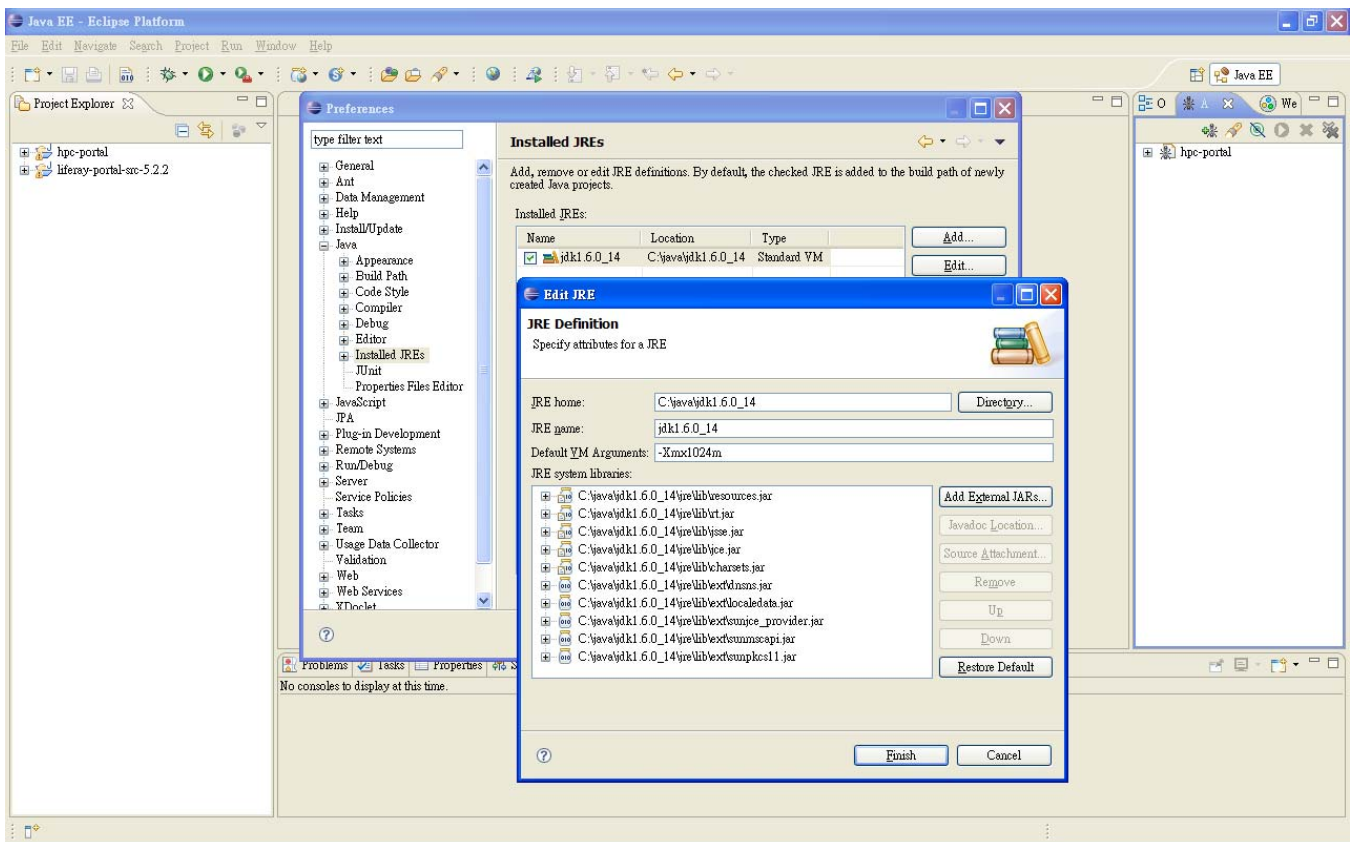
Root Folder "C:\java"	Create a folder "C:\java"
ANT	<ul style="list-style-type: none"> ● Remove the old version ● Unzip apache-ant-1.7.1-bin.zip into "C:\java" ● Set an <u>environment variable</u> called %ANT_HOME% to point to your JDK directory. <ul style="list-style-type: none"> ■ ANT_HOME = C:\java\apache-ant-1.7.1
JDK	<ul style="list-style-type: none"> ● Remove the old version ● Install jdk-6u16-windows-i586-p.exe ● Set an <u>environment variable</u> called %JAVA_HOME% to point to your JDK directory. <ul style="list-style-type: none"> ■ JAVA_HOME = C:\java\jdk1.6.0_16
ENV Path	.; C:\java\jdk1.6.0_16\bin;C:\java\apache-ant-1.7.1\bin;...
	Reboot System

- **HPC Portal Development Platform (<http://sourceforge.net/projects/hpc-portal/>)**

Linux	<p>download "hpc-portal-5.2.2_version_linux-gtk.zip"</p> <p>unzip it into "/opt/java"</p> <p>"[portal\$ cd /opt/java/eclipse]" → "[portal\$./eclipse]"</p> <p>select "Workspace: /opt/java/hpc-portal-5.2.2"</p>
Windows	<p>download "hpc-portal-5.2.2_version_win32.zip"</p> <p>unzip it into "C:\java"</p> <p>Run "C:\java\eclipse\eclipse.exe -data C:\java\hpc-portal-5.2.2"</p>

- [Eclipse for Java EE (<http://www.eclipse.org/>)]

Linux	<ol style="list-style-type: none"> 1. download “eclipse-jee-galileo-linux-gtk.tar.gz” 2. unzip into “/opt/java” 3. start Eclipse 4. select the workspace in “/opt/java/hpc-portal-5.2.2”
Windows	<ol style="list-style-type: none"> 1. download “eclipse-jee-ganymede-SR2-win32.zip” 2. unzip it into “C:\java” 3. start Eclipse 4. select the workspace in “C:\java\hpc-portal-5.2.2”



- NOTE: To avoid “**Out of Memory Error**”, need to increase the amount of memory the JVM can allocate to run ant builds
- Start Eclipse → Window → Preferences → Java → Edit JRE → set “**Default VM Arguments: -Xmx1024m**”

2.6 起動 HPC Portal Server

由 linux 終端機啓動 HPC 開發平台

(1) 在X Window 下的檔案瀏覽器，copy 位置列 Path = /opt/java/hpc-portal-5.2.2/hpc-portal/app-server/jboss-tomcat-5.0.0/bin

(2) 開啓 Linux 終端機，輸入以下指令：

```
[your name:~$] cd /
```

```
[root:~#] cd /opt/java/hpc-portal-5.2.2/hpc-portal/app-server/jboss-tomcat-5.0.0/bin
```

(2) 終端機再輸入

```
./run.sh
```

以上可搭配參數： -c < config_name > -b < bind_address >

例如： ./run.sh -b development.nchc.org.tw (備註： -b means Bind address for all JBoss services)

(備註：如使用虛擬機器安裝，建議 RAM 設定 1G 以上，較爲順暢)

Linux	<p>Path = /opt/java/hpc-portal-5.2.2/hpc-portal/app-server/jboss-tomcat-5.0.0/bin</p> <p>Open a console window, and issue the following command</p> <p>./run.sh -c <config_name> -b <bind_address></p> <p>Example: <code>./run.sh -b development.nchc.org.tw</code></p> <p>NOTE: “-b” means Bind address for all JBoss services</p>
Windows	<p>Path = C:\java\hpc-portal-5.2.2\hpc-portal\app-server\jboss-tomcat-5.0.0\bin</p> <p>Open a console window, and issue the following command</p> <p>./run.bat -c <config_name> -b <bind_address></p> <p>Example: <code>./run.bat -b development.nchc.org.tw</code></p> <p>NOTE: “-b” means Bind address for all JBoss services</p>

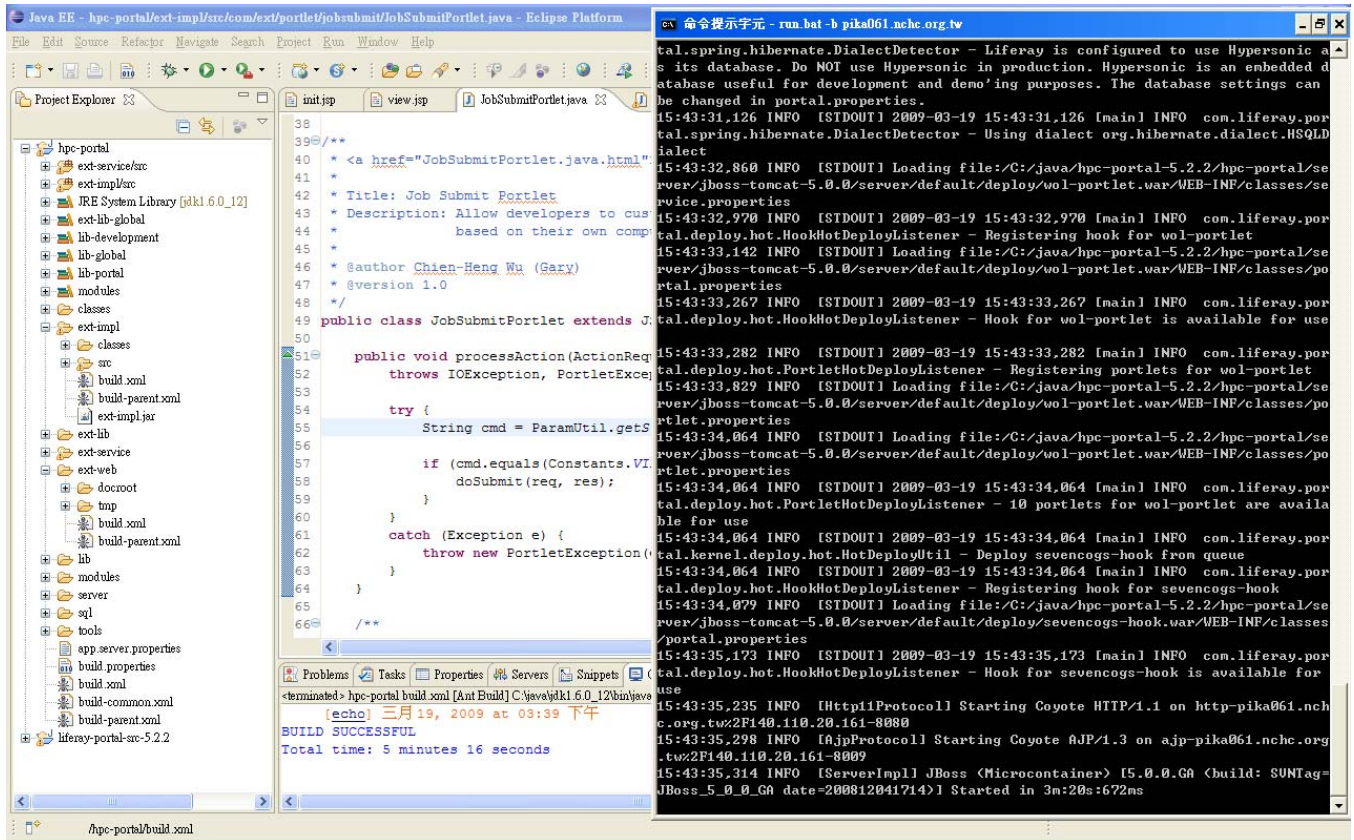


Figure. Start HPC Portal Server

After the HPC portal is up and running, the users will see the login page of HPC Portal as shown on the following figure. Those default portlets are all highly customizable and configured for any of specific groups or communities.

2.7 展示

Initial Login of HPC Portal Server

- Username: **bruno@7cogs.com**
- Password: **bruno**
- NOTE: The user “**bruno**” owns the administrator privileges.

即可開始使用（如下列畫面所示）



Figure. Demo: Front Page of Built-in Portal Engine within HPC Portal Development Platform

Usage: click “Bruno (Admin)” on the pane of “Current Users” to login as Administrator

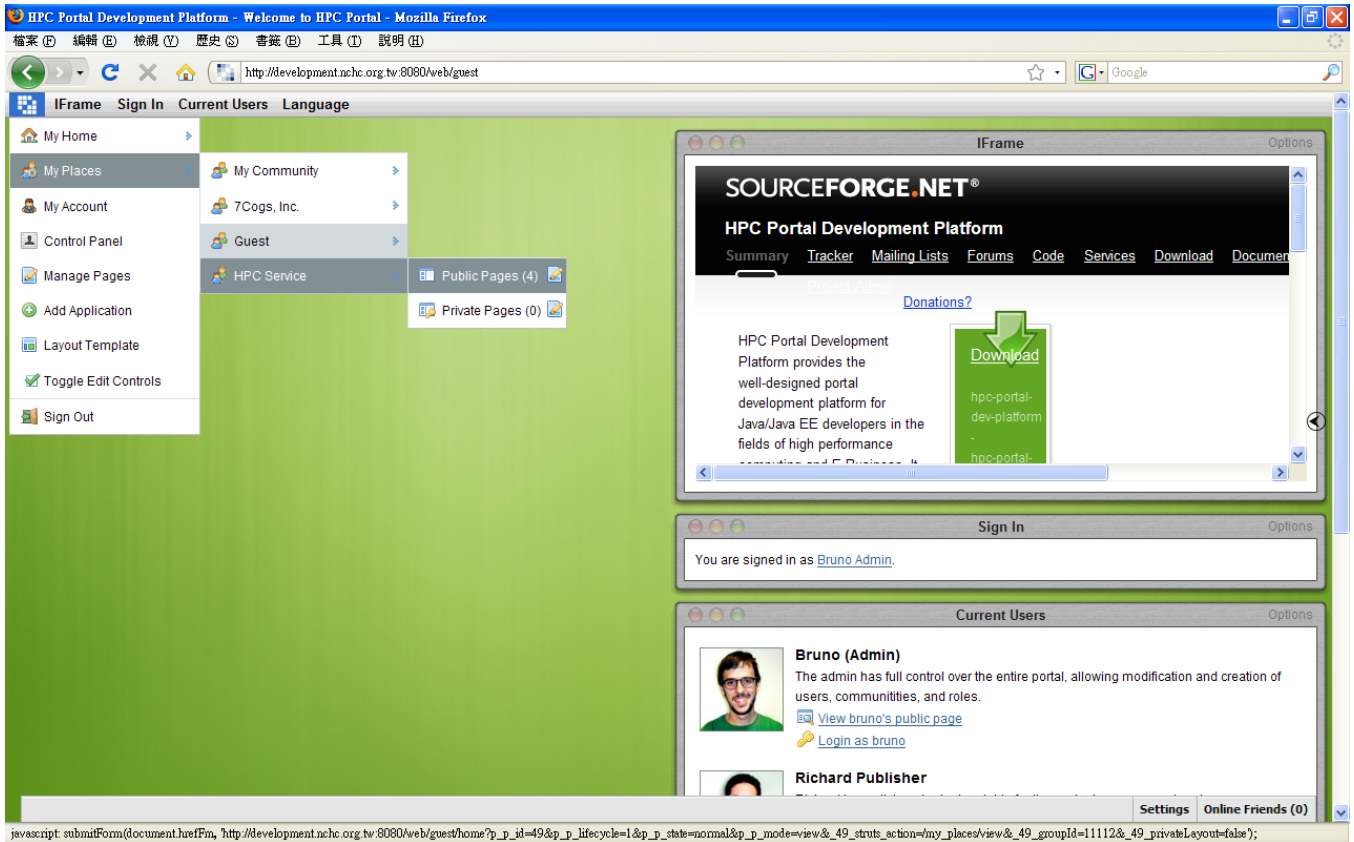


Figure: HPC Service Community in Built-in Portal Engine within HPC Portal Development Platform

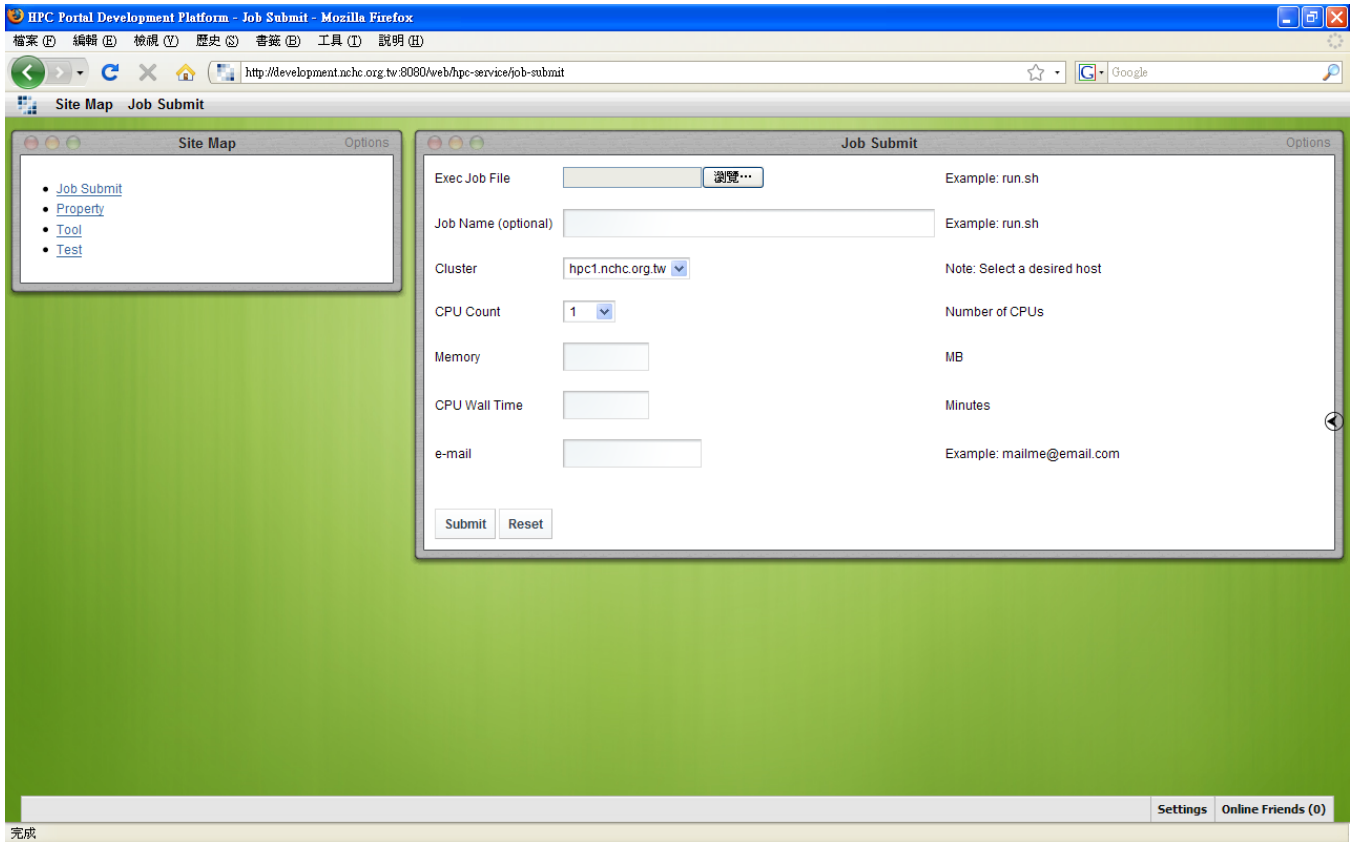


Figure: Job Submit Portlet

HPC Portal Development Platform - Job Status - Mozilla Firefox

檔案 (F) 編輯 (E) 檢視 (V) 歷史 (H) 書籤 (B) 工具 (T) 說明 (I)

http://implementation.nchc.org.tw/8080/web/hpc-service/job-status?p_id=HPC_3&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column

HPC Portal Development Platform - ...

Site Map Job Status

Site Map Options

- [Job Submit](#)
- [Property](#)
- [Job Status](#)
- [Tool](#)
- [Test](#)

Job Status Options

Cluster: Note: Select a desired host

Job ID: Job ID Number

Job Name (optional): Example: run.sh

Current Job Status

Current Status = Active

Current Host = hpc1.nchc.org.tw

Stdout: This is a sample output for Job Status.

Stderr: No Error so far

Settings Online Friends (0)

完成

Figure: Job Status Portlet

The screenshot displays the HPC Portal Development Platform interface within a Mozilla Firefox browser window. The browser address bar shows the URL <http://development.nchc.org.tw:8080/aseu/bruno/e-business>. The main content area features two portlets: a 'Currency Converter' and a 'Loan Calculator'. The 'Currency Converter' portlet shows a conversion of 1.0 USD to EUR, with a table of exchange rates for various currencies. The 'Loan Calculator' portlet shows a loan amount of 200,000, an interest rate of 7.00, and a term of 30 years, resulting in a monthly payment of 1,331, interest paid of 279,018, and a total paid of 479,018. On the right side, there is a sidebar with a clock showing 'Fri 10', a search bar for applications, and a list of available portlets including Collaboration, Community, Content Management, Entertainment, Finance, Google, HPC Service, News, Religion, Sample, Shopping, Social, Tools, Wiki, and World of Liferay. At the bottom of the browser window, there are buttons for 'Settings' and 'Online Friends (0)'. The status bar at the bottom left of the browser window shows the text '完成'.

Currency	British Pound (GBP)	Chinese Yuan (CNY)	Euro (EUR)	Japanese Yen (JPY)	U.S. Dollar (USD)
GBP	1	0.0998	0.8966	0.0068	0.6824
CNY	10.0206	1	8.985	0.0681	6.8384
EUR	1.1153	0.1113	1	0.0076	0.7611
JPY	147.0698	14.6781	131.8827	1	100.375
USD	1.4653	0.1462	1.3139	0.01	1

Loan Amount	200,000
Interest Rate	7.00
Years	30
Monthly Payment	1,331
Interest Paid	279,018
Total Paid	479,018

- Collaboration
- Community
- Content Management
- Entertainment
- Finance
- Google
- HPC Service
- News
- Religion
- Sample
- Shopping
- Social
- Tools
- Wiki
- World of Liferay

Figure: Available Portlets for Business, Personal and Others

6 OTHER

6.1 Reference

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