



```
.....  
Return random numbers  
Dim x As Double  
Function Truncate_Normal_VC (N  
.....  
End Sub  
.....  
Cells(24, 3) = 1 - Counting  
Cell Sort (Iteration, TP)  
Cell Hisc (Iteration, 40,  
For i = 1 To 20  
Cells(i + 3, 7) = TP  
Next i  
Cells(3, 6) = "Close  
Cells(13, 6) = "Median  
Cells(23, 6) = "Close  
Cells(3, 7) = TP(4)
```

# Open Source Apps

## Get the Job Done

**B**UILD OR BUY? IT'S A QUESTION THAT VEXES EVERY ENTERPRISE IT MANAGER. On the one hand, developing applications from scratch can be a difficult endeavor, one fraught with the possibility of failure. On the other hand, high price tags and the aggravation of installation, maintenance, and support contracts can make purchasing a commercial package equally painful.

If you've ever had difficulty deciding between developing an application in-house or purchasing one off the shelf, then open source may be for you. The combination of free access to source code and a worldwide community of developers gives you the best of both worlds. You have the luxury of starting with a mature code base, to which you can add features as your business needs grow.

As recently as a few years ago, however, open source options were limited. Other than Linux, the Apache Web server, a few database servers, and an assortment of developer tools, the open source community didn't have much to offer in terms of turnkey software. The foundations were there, but full-fledged applications were lacking.

Fortunately, that's changing. Individual developers and companies alike have flocked to the open source development model. Today there's a veritable cornucopia of free business software available — from CRM to content management, portals to RFID — some of it remarkably sophisticated.

That's not to say deploying open source is a no-brainer. Support contracts must still be taken into account, and licensing issues can lead to thorny problems (see "The Licensing Landscape," page 45). Nevertheless, today more than ever, enterprise IT managers can evaluate open source with confidence — provided they know their options. To that end, *InfoWorld* presents this buyer's guide to open source enterprise software. We've scoured the ends of the Net to find the top contenders in 12 software categories, including both current and upcoming projects.

It's by no means an exhaustive list; new open source projects are launched every day. But there's a good chance you'll find something here to help you get your next venture up and running at low cost and with a minimum of pain — including some options that may surprise you. And if it's not here, who knows? Maybe your next in-house project will appear on next year's list.

— Neil McAllister

In almost every software category, open source offers a low-cost alternative to commercial enterprise apps

ILLUSTRATIONS BY  
GORDON STUDER

“We don’t expect you to adopt it simply because it’s open; we expect that you will choose it because it’s better.”

— Pentaho BI project home page

## Business Intelligence

Customers and ISVs face steep fees when licensing existing BI software, so it’s only logical that work on BI within the open source community is heating up. First out of the gate was the Eclipse Foundation, which has made BI one of its seven top-level projects. The Foundation released Version 1.0 of its BIRT (Business Intelligence and Reporting Tools) in June, under its own, Open Source Initiative (OSI)-approved Eclipse License.

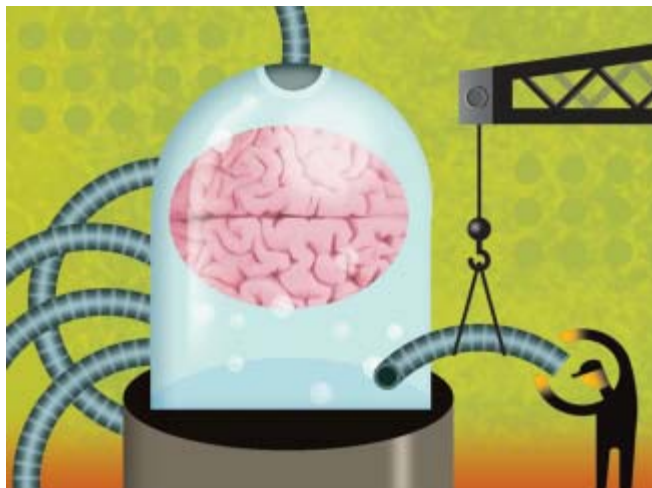
BIRT is designed primarily as a reporting system for Java-based Web applications. It consists of two parts. One is a JAR (Java Archive) file containing run-time components to be deployed on an application server. The other is a report designer that ships as an Eclipse plug-in, offering easy WYSIWYG editing and a palette of standard report items. The package is based on a framework called Open Data Access, which allows great flexibility when selecting data sources.

For those requiring professional support, maintenance, and training, a company called Actuate offers all of the above for BIRT technologies. In addition, Actuate packages its own version of BIRT under a commercial license that includes intellectual property indemnification.

Another organization worth watching is Pentaho, a startup dedicated to developing a complete open source BI platform, including reporting, analysis, dashboards, data mining, and workflow tools. The company’s development team claims it has members with past experience working on BI applications

at companies such as Cognos, Oracle, and SAS. The project’s main server architecture will be built on J2EE, with an accompanying client environment that, similar to BIRT, will be based on Eclipse. The developers have taken pains to incorporate modern technologies into their platform, such as XML definitions for all content and Web services interfaces for the analytical components, with a mind toward maximum flexibility.

No downloads were available from



Pentaho as of this writing, but the company says it plans to ship versions of all its projects by year’s end under the LGPL (Lesser General Public License) and what it calls “LGPL-type” licenses, including Apache, BSD, and Eclipse. A detailed road map is available on the project site ([infoworld.com/2981](http://infoworld.com/2981)).

Although it may be vaporware for the time being, Pentaho has all the makings of a serious contender in the BI marketplace. The project’s developers say: “We don’t expect you to adopt it simply because it’s open; we expect that you will choose it because it’s better.” We’ll check back in a few months to see how well they’ve delivered. — *N.M.*

## BPM

A full-featured business process management suite might not be the first thing you’d expect to see coming from the open source community, and yet that’s exactly what a number of projects are working to deliver. With the rise of SOAs, the need for a business-process engine to manage and orchestrate disparate services and EJBs has never been greater — even for sites that otherwise rely on open source technologies.

That’s why the Apache Software Foundation considers Project Agila the crowning jewel of its Jakarta Java tool suite. Based on an initial code donation from Gluecode in October 2004, Agila is a lightweight, embeddable open source BPM engine suitable for use with both J2EE and lower-end platforms such as J2ME. As such, Apache representatives say, it is the last major piece of an Apache Java middleware

stack to compare with those offered by major commercial vendors such as BEA or IBM. The project is currently in the incubation phase, with no files yet available to the general public, but active development is expected to begin soon.

The Apache Software Foundation isn’t the only organization thinking along these lines. JBoss is looking to expand its portfolio beyond its core application server. With the acquisition of an open source workflow engine called jBPM, JBoss brings its considerable Java development experience to bear on the BPM market.

As does Project Agila, jBPM can run as a stand-alone application or as an

## Naturally, there's far more at stake than licensing costs when betting your intranet or public Web site on these products.

embedded component in another application. As opposed to the Apache project, jBPM code is already available for download from JBoss' site, under the company's customary LGPL. In addition to the engine itself, jBPM includes a graphical process designer for creating workflows. Future plans for the project include native support for BPEL (Business Process Execution Language) and, in the long term, extending jBPM to become a full-fledged ESB.

Besides these two large players, a number of other open source workflow engines are available or have been proposed, but the status of those projects is often difficult to ascertain. Managing business processes is a complex endeavor requiring specialized expertise, however. If you're looking for an open source alternative in this category, the safe bet would be on projects backed by organizations with the funding and professional dedication of an Apache or JBoss. — *N.M.*

### Content Management

With the Web becoming the backbone for most enterprise communications, you'll find there's no shortage of Web CMSes (content management systems) available, including a wide range of open source options. Naturally, there's far more at stake than licensing costs when betting your intranet or public Web site on these products, so it's important to look for not just functionality but also frequent updates, a healthy user community, and the availability of professional support.

OpenCms runs on Apache Tomcat under most operating systems and is licensed under the LGPL. Implementation support and other professional services are available from various reg-

istered solution providers. In addition, Alkacon Software of Germany provides paid support agreements, end-user and development training courses in English and German, and custom project development.

Forms and a WYSIWYG editor make it easy to edit content items in OpenCms, and the software's convenient administration UI permits hassle-free customization. OpenCms misses in a few high-end areas, however. It lacks SSL encryption and LDAP authentication and provides limited template management. Although it's cost-effective, consider other products if you need to build out multiple sites or if you expect enterprise performance management capabilities such as caching and load balancing.

The PHP- and MySQL-based CMS Mambo is used around the world for both simple sites and complex corporate applications. Truly multinational, Mambo's development community offers strong support forums, quality third-party professional services, and user conferences. Mambo is licensed under the GPL, but Australia-based Miro, the software's originator, offers a commercial derivative called Jango.

Mambo offers decent page caching, RSS syndication, and the ability to display content on schedules. A number of solid, free add-ons are available from the Mambo community, including document management features, dis-

cussion forums, and a basic e-commerce shopping cart. Similar to OpenCms, however, Mambo lacks the multitenancy needed for large-scale implementations.

Perhaps the most complete open source CMS application is eZ publish, which offers content staging, workflow approval, and all the datacenter functions that IT staffs need — including load balancing. Plus, content reuse makes eZ publish applicable for multi-



Don't be put off by its rich feature set. The eZ publish content management system is available both commercially and under the GNU GPL.

ple international sites that are hosted using a single instance of the CMS.

A GPL version of eZ publish is available; Norway-based eZ systems — the software's creator — also offers it under a commercial license. Those license fees go toward the salaries of some 40 employees, who produce the product under a stringent QA cycle that rivals those of pure commercial vendors. Support, training, and consulting services are also available.

— *Mike Heck*

## CRM

The open source community can't provide a drop-in replacement for expensive, high-end CRM applications from the likes of Salesforce.com or Siebel just yet. Still, you might be surprised at the level of sophistication some of the available projects already offer, particularly for midsize organizations.

SugarCRM, for example, offers a complete, enterprise-class CRM system built on open source technologies, including PHP, MySQL, and the Apache Web server. The base package, called Sugar Open Source, is available for free download under SugarCRM's custom license. The company also packages a commercial version of the software called Sugar Professional. SugarCRM offers paid support packages for both the commercial and open source versions of the product.

The *InfoWorld* Test Center reviewed Sugar Professional 2.5 in April and found it to be a reasonable solution for small and midsize enterprises ([infoworld.com/2745](http://infoworld.com/2745)). What's more, SugarCRM is no slouch when it comes to feature enhancements. Version 3.0 introduced campaign and contact list management, e-mail marketing, project management, employee directory, and calendar synchronization tools. The forthcoming Version 3.5 will add an offline client for traveling sales staff, an extensible module framework, and support for Oracle databases.

Primarily an ERP solution, Compiere offers some CRM functionality. Instead of an independent module, Compiere presents the user with a logical view of all customer- and prospect-related activities, and offers lead tracking, campaign management, customer profitability analysis, and self-service online inquiry for business partners. You can

read more about Compiere in the ERP section opposite this page.

The Open for Business Project offers a suite of e-business applications under the MIT License, including CRM, ERP, and e-commerce features. Similar to Compiere, the Open for Business Project does not break out its capabilities into discrete modules. Rather, the entire suite is built on top of a common data model that facilitates a variety of sales, accounting, facilities management, and collaboration activities. This has its ups and downs; it means the various activities are well integrated within the suite, but it also means you must buy into the entire, monolithic package to take full advantage of its capabilities. A number of premium consulting organizations provide support for the package.

Sales and customer support activities are too critical for most businesses to commit to a CRM package lightly. One advantage of the open source model, however, is that you aren't restricted to a limited trial run, as you would be for a commercial package or a hosted offering such as Salesforce.com. All of the packages listed here are readily available for download, so go ahead and experiment — it costs you nothing to try. — *N.M.*

## Directory Services

With more and more companies investigating capabilities such as identity management, SSO (single sign-on), and automated provisioning, directory services are fast becoming a vital component of network infrastructures. So far, however, no open source project has gained as much traction in this area as Apache enjoys in the Web server market.

The chief contender has long been OpenLDAP, a project that provides a



reliable, scalable, stable LDAP directory server, a replication server, and some basic tools. The OpenLDAP Foundation maintains the code under a custom license and has ported it to a variety of platforms, including AIX, FreeBSD, Linux, Mac OS X, and Windows. OpenLDAP is mature and it works, but it can be difficult to configure, especially when it comes to writing ACLs (access control lists). It's also primarily a work-horse server, lacking some of the "frosting" of commercial LDAP directories from the likes of Microsoft, Novell, and Sun Microsystems.

Novell has made open source a core part of its strategy, but unfortunately for network administrators, eDirectory remains part of its commercial software portfolio — a fact that gave rival Linux vendor Red Hat the opportunity to step up to the plate with an open source offering of its own. Based on the product formerly known as Netscape Directory, which Red Hat acquired from Netscape in 2004, RHDS (Red Hat Directory Server) is available for Windows, Solaris (Sparc processors), and HP-UX (PA-RISC processors). A mature product with considerable history, RHDS offers advanced features such as replication — including fractional replication, special features for large databases, and replication over WAN links — and synchronization with Microsoft Active Directory and Windows NT4 Server.

Currently, RHDS is available to

# One characteristic of open source is that different projects define their category's feature sets in different ways.

customers only under Red Hat's subscription-based support model. The company, however, has already begun the process of open sourcing the software as a GPL-licensed project called Fedora Directory Server. As of this writing, only the core LDAP server itself and some command-line tools are available as open source, but work is in progress on other server modules, as well as the management console and administration server components.

Many observers believe that, in the long run, the Fedora project will probably prove to be a superior choice to OpenLDAP for those looking for an open source directory server. But with OpenLDAP well entrenched as the de facto standard for budget directory deployments, it's unlikely to disappear anytime soon. Either package is a solid choice for basic directory functionality, even for large databases. — *N.M.*

## ERP

The goal of ERP isn't simply to provide a unified application interface for every aspect of a company's business process — it also tries to include the inherent data-mining capabilities that go along with it. But while JD Edwards, Oracle, SAP, and others have invested significant resources in building ERP software that's customizable enough for any business, these companies have also forced the price of the software to heights many businesses just can't afford.

Enter open source.

A large part of ERP's high price tag goes toward the army of business process and programming consultants needed to customize commercial software for individual business operations. Access to open source ERP application code, on the other hand, means you can accomplish this customization in-house,

while avoiding hefty software licensing fees to boot.

One of the best-known open source ERP apps comes from Compiere. With an eye toward business analysis, the software incorporates CRM, POS (point of sale), and inventory management modules that offer excellent flexibility for multiple business scenarios. The product integrates with most relational databases using JDBC, and it offers specific support for Oracle and Sybase. Server and client platforms include Linux, Solaris, and Windows, among others. The software is published under the Mozilla public license.

Available under the GNU license, webERP — another production-grade project — contains full accounting features, including general ledger, accounts payable, and accounts receivable books, as well as role-based security and a highly customizable Web-based front end. Oriented toward manufacturing-style business processes, it includes support for order entry and inventory management. As opposed to Compiere, it has no modules for customer management, HR, or similar resources. Gold, silver, bronze, and translation support are available from a number of companies around the globe.

Other projects are available, but one characteristic of open source is that different projects define their category's feature sets in different ways. This is especially true of ERP packages. Linux-Kontor, for example, defines ERP without accounting, focusing instead on customer management, order entry, invoicing, and inventory. TUTOS, on the other hand, calls itself ERP but more closely resembles a groupware suite. Clearly, some research is needed to make sure you're really getting what you expect in this category.

— *Oliver Rist*

## ESB

With Java application servers rapidly becoming a commodity item, it's no surprise that we're now beginning to see open source implementations of other elements of the enterprise middleware stack. In particular, a number of surprisingly mature ESB (enterprise service bus) implementations have been announced in recent months.

Iona Technologies has kick-started the ObjectWeb community's ESB efforts with the donation of Celtix, a Java ESB under the GNU LGPL. No files were available as of this writing, but Iona representatives have said that Celtix will support the recently introduced JBI (Java Business Integration) specification, which specifies a standardized object container for cross-application integration. The project will also support WSDL, JMS (Java Messaging Service), SOAP, and XML and will provide application hooks for Java and POJOs (plain old Java objects). Its administration and configuration tools will be based on Eclipse.

Not to be outdone, Sun Microsystems announced its own freely available ESB at this year's JavaOne conference in San Francisco. Dubbed the Java Open Enterprise Service Bus, the project will be hosted on Java.net, with the first release expected to ship in late summer. Sun plans to package code from the community-driven project as a commercial offering, as well. As is Celtix, Open ESB will be based on the JBI 1.0 specification, via the JBI Reference Implementation. Unlike Iona, however, Sun will be releasing the code under its own Common Development and Distribution License rather than a GNU license. Further details are still scarce.

Whereas the previously mentioned projects are still in their nascent stages,

there is at least one open source ESB implementation with some history behind it. Mule, sponsored by SymphonySoft, has been in development since 2003. Currently at Version 1.1, the project supports pluggable connectivity options for a variety of network transports, including JMS, POP3, TCP, UDP, servlets, and multicast. More cutting-edge features are on the road map. For example, JBI implementation isn't due until Version 2.0. Also, the project is released under SymphonySoft's own license rather than one approved by the Free Software Foundation or OSI, which will be a minus for some.

As the code becomes available, any of the above is likely to be a good starting point for department-level ESB deployments. For larger-scale deployments, however, none is likely to gain much traction. With so many ESB deployments standardizing on JMS as their message transport of choice, companies with existing investments in enterprise-class JMS servers from vendors such as Cape Clear Software, Fiorano Software, or Sonic Software see more wisdom in going with those vendors' ESB products or sticking with more conventional middleware solutions than do in dabbling with open source. — *N.M.*

## Identity

A complete identity management solution comprises a number of components. As such, it would be difficult for any single open source project to offer a plug-and-play identity management system. There are, however, a number of projects that offer components of such a system, particularly in the area of federation and SSO.

In the SSO department, Yale University has developed a set of Java servlets

called CAS (Central Authorization Service), which is provided under Yale's own license and which many U.S. universities currently use. Another toolkit — similarly under a custom license — is the JOSSO (Java Open Single Sign-On) Project, which offers hooks for ASP, PHP, and Java applications.

Both these projects are very SSO-specific and won't provide a strong foundation for a complete identity infrastructure. On the other hand, efforts to develop standards for identity federation — including SAML, the WS-\* stack, and the various standards that the Liberty Alliance proposed — are promising, and a number of open source efforts are already under way in this space. For more information about this topic, see "Identity's Federated Future" ([infoworld.com/2975](http://infoworld.com/2975)).

Ping Identity is the sponsor of SourceID, an identity federation toolkit that provides support for the SAML 1.1 and Liberty-ID-FF 1.1 protocols under both Java and .Net, with additional support for Liberty-ID-FF 1.2 under Java only. The libraries allow developers to implement features such as cross-domain SSO and attribute queries. The code is provided under SourceID's own license. It also forms the basis of PingFederate, Ping Identity's commercial identity federation server.

Perhaps the most ambitious open source federated identity effort is Shibboleth, a project of Internet2's Middleware Architecture Committee for Education. Designed primarily for use by educational institutions on the Internet2 network, Shibboleth is a complete authentication and access control system for Web-based resources, built around SAML and released under a custom license. The software is pure Java,



and a number of organizations — including universities, libraries, and the Napster digital music service — currently have it in production use.

None of the open source identity offerings mentioned here are for the faint of heart. All require some development expertise and a thorough understanding of the local network environment in order to be implemented effectively. If a complete identity management solution is what you're looking for, you would be well-advised to seek out the various commercial vendors. As interest in identity management continues to grow, however, it's likely that some of these projects — particularly Shibboleth — will gain greater prominence. — *N.M.*

## Point of Sale

Another term for a POS application is "cash register." Although a cash register may seem to have a finite set of functional requirements, from an enterprise standpoint this category involves a surprising number of variables, including hardware compatibility, customized data gathering for verticals, and back-end data mining.

Fortunately, you have some options. A solid example of a mature open source POS application is PHP Point of Sale. Based on PHP and MySQL and licensed under the GPL, it has an excellent feature set for basic POS scenarios. It also

# Each new license you add to your environment calls for a new round of due diligence.

integrates with osCommerce, the leading open source e-commerce application, which means you can use PHP POS for online transactions as well as in brick-and-mortar environments. The software was launched in 2003 and has been downloaded more than 26,000 times. Version 9.0 is in development and promises updated sales and more flexible discounting, as well as an improved back-end reporting system.

Not every open source project makes it past its testing stages, but that doesn't mean you should ignore everything that lacks a "stable/production" tag on SourceForge.net. A good one to watch is Tina POS, a project that's cur-

rently on the cusp of production. Distributed under the GPL, Tina POS has great hardware support, including support for bar-code readers, touchscreens, and a variety of receipt printers. It connects to databases via JDBC, has a Java front end, and it provides good back-end office integration and reporting capabilities.

If no currently existing end-to-end POS solution offers all the customization options you need, the open source community can still help. Check out jPOS, a J2EE-compatible framework library suitable for inclusion in internal custom solutions. jPOS has an excellent set of hardware hooks, sup-

ports role-based security, and even has a thriving consulting practice to support it. If you've decided that developing your own POS system is the way to go, jPOS is definitely worth a close look. A possible minus is that the code is offered under an exclusive jPOS license, rather than any existing, OSI-accepted one.

Although not all applications are sustainable in an open source model, POS is a notable exception. The open source community provides not only a wide and flexible variety of options but also a support structure that really makes these applications usable — even for small businesses. — *O.R.*

## The Licensing Landscape

AT LAST COUNT, THE OPEN SOURCE INITIATIVE (OSI) RECOGNIZED nearly 60 different open source licenses. If you just want to install and use a packaged application, the license under which it was released shouldn't matter much. But it's particularly important to pay attention to licensing terms if you want to modify the code or use it in your own projects.

Easily the most recognizable open source license, and one of the most popular among developers, is the GNU GPL (General Public License). The GPL can be a problem for companies looking to develop proprietary applications because of its strict guidelines on reciprocal code sharing.

This problem led to the GNU LGPL (Lesser General Public License), which grants access to source code but still allows limited use in proprietary products without triggering a general source code release clause. JBoss favors this license, which is also the preferred license for various kinds of code libraries.

Another attempt at a commercial-friendly open source license is the BSD License. Many open source advocates view both the LGPL and especially the BSD License as being unfavorable, however, because they allow outside developers to use code from an open source project without giving anything back.

In an attempt to appease both camps, a number of open source vendors have turned to a dual-licensing model. They

make their code available under the GPL but also offer a separate, commercial license for companies that don't want to be subjected to the GPL's terms. MySQL and Red Hat are well-known vendors that use this model.

There are dozens of other OSI-approved open source licenses, but many are similar on the point of redistribution. It's also important to note that the vast majority of open source licenses grant their developers complete immunity from warranty or support.

A particular headache for businesses, however, stems from the proliferation of so-called vanity licenses. Rather than standardizing on any of the more than 50 licenses that the OSI has approved, many vendors insist on drafting their own license. Although the terms of these licenses are often similar to those of OSI-approved licenses, they usually differ on some minor — and occasionally major — points.

Unfortunately, each new license you add to your environment calls for a new round of due diligence to ensure that the license's terms are favorable to your company's business practices. That means additional costs and lost time to market. And in some cases, the new license might actually be incompatible with the licenses of the software you're already using. So while a certain vendor's license terms may indeed turn out to be favorable in the end, sometimes it pays to stick with the ones you know. — *N.M. and O.R.*

## Portals

Standards support is an important criterion for most corporate development projects. In the area of enterprise portal servers, that means a J2EE-compliant engine that supports standards such as portlets (JSR 168) and WSRP (Web Services for Remote Portlets). Fortunately, there are quite a number of open source projects competing in this space.

One standout is the eXo platform. Already in its production phase, this project is designed as a customizable enterprise portal and CMS. Its portlet container is actually certified compliant with JSR 168 and has been enhanced with caching, connection pooling, and shared-session features. The portal itself is based on JavaServer Faces (JSR 127) technology and offers a Model View Controller architecture. The software is provided under a dual license — both commercial and GPL — and the eXo project team can provide both online support and on-site training for a fee.

Another contender is Liferay Portal, which sports a feature set similar to that of eXo, including JSR 168 and WSRP compliance. Instead of JavaServer Faces, however, Liferay uses the more mature Struts and Tiles technologies. It runs atop a wide variety of application servers and databases and provides hooks for SSO capabilities, although only Yale University's SSO engine is supported out of the box. As with eXo, professional support is available from the Liferay developers themselves,

although the support costs can quickly add up. The software itself is available under the MIT license, which is similar to the Apache license.

The Apache Software Foundation has long been interested in portal software and is currently home to a number of projects in this area. Jetspeed-1 software is a basic portal system built on technologies such as JSP and XML. Jetspeed-2 is more component-based and offers a more modern, portlet-based approach. Apache also offers a reference implementation of a portlet container, called Pluto. All are available under the Apache license.

JBoss has also thrown its hat into the ring with JBoss Portal, a part of the company's JEMS (JBoss Enterprise Middleware System) Java application development stack. This is another JSR 168-compliant portlet container that offers customization through JavaServer Faces, MyFaces, and Spring, plus additional content management and administration. As "the professional open source company," JBoss offers both GNU LGPL and commercial licensing, in addition to professional

support, consulting, and training.

Finally, GridSphere is another JSR 168-compliant portlet-based portal server with support for JavaServer Faces. One notable extra is an additional portlet API that claims almost 100 percent IBM WebSphere compatibility. Consulting, training, and development support are available through Gridwise Technologies. The software is provided under an independent, non-OSI-approved GridSphere license, however.

This list gives you a number of options, and still other choices are available. Determining which project's offering works best for you will doubtless be a process of experimentation. — *O.R.*

## RFID

If there's one area of the IT industry that's gotten as much buzz as open source itself during the past year, it's RFID. So far, however, it's been a big-ticket item, with its strongest backing coming from megaretailers such as Walmart. Companies have had to rely on expensive commercial packages to get the ball rolling in their own businesses, but that could be set to change. Founded by two Canadian entrepreneurs, the RadioActive Foundation aims to develop a suite of open source RFID applications that support EPC (Electronic Product Code) and other standards from the EPCGlobal Network.

Its first project is Fusion, a middleware layer for managing and gathering data from tags and sensor readers before delivering that data to enterprise information systems. Other planned projects include Neutrino, a set of tools for exchanging EPC data between business partners; and Graviton, a driver-based simulator for RFID hardware from various manufacturers. All the



# If there's one area of the IT industry that's gotten as much buzz as open source during the past year, it's RFID.

RadioActive Foundation projects are for release under the Apache license.

Unfortunately, as of this writing, that's all we know. The RadioActive Foundation lists all its projects as being in the planning phase, so it seems likely that it will be some time before any actual code begins to appear. The Foundation encourages interested parties to get involved by joining its nascent Open Source RFID Consortium, which it hopes will spur interest and speed development of related software. Whether that actually happens, or whether the project fizzles out, remains to be seen.

Still, there's no denying that interest in RFID technology is only going to continue to grow, particularly as smaller businesses begin to get in on the act. — *N.M.*

## VoIP

One of the first open source VoIP projects — and one of the earliest VoIP PBXes, period — is Digium-sponsored Asterisk. A highly mature platform licensed under the GPL, Asterisk supports almost everything that even larger enterprises would desire of a VoIP gateway solution, including voice mail, call forwarding, conferencing, and even IVR (Interactive Voice Response). It also has call-detail records — the golden goose of VoIP — as well as advanced features suitable for use in virtual classroom or virtual conference room applications. Its large developer community contributes still more add-ons for the platform, both commercial and open source.

But while Asterisk may have been a pioneer, it's certainly no longer alone. A number of new, competitive open source VoIP platforms based on the SIP protocol have emerged. Pingtel has

released the code to its commercial SIPxchange PBX, which is currently managed by a nonprofit organization called SIPFoundry under the name sipX. Although not as mature as Asterisk, sipX adheres much more closely to the open SIP standard, giving it greater hardware and software compatibility — at least for the moment. The *InfoWorld* Test Center reviewed both Digium Asterisk and Pingtel SIPxchange in January ([infoworld.com/2974](http://infoworld.com/2974)).

SER (SIP Express Router) is a close adherent to the SIP standard. Written in C and issued under the GPL, it has been ported to Linux and Solaris. In addition to acting as an SIP server, it features gateways for SMS (short messaging service) and IM, RADIUS accounting and authorization, and Web-based user provisioning. Commercial products based on SER are available from iptelorg. A bootable LiveCD version of the software is also available, which has extended SER to include a much easier Web-based administration tool and support for general VoIP hardware from vendors such as Cisco Systems and Mitel.

Yate (Yet Another Telephony Engine) is published under the GPL and is a surprisingly flexible platform. Fully mature, it includes support for SIP, H.323, and other protocols, and it runs on either Linux or Windows. It has all the usual PBX enhancements — voice mail, call forwarding, and so on — but also functions as an IVR server.

Those interested in more robust IVR applications, however, would do well to seek out Bayonne, the script-driven telephony server of the GNU Project. Bayonne has a long history and is designed for a wide range of carrier-grade telephony applications. Commercial support is available from a number of sources. Bayonne has recently been

## Open Source Resources

### BUSINESS INTELLIGENCE

Eclipse BIRT (Business Intelligence)	
Project Agila	<a href="http://infoworld.com/3046">infoworld.com/3046</a>
Pentaho	<a href="http://infoworld.com/3045">infoworld.com/3045</a>

### BUSINESS PROCESS MANAGEMENT

Apache Software Foundation	
Project Agila	<a href="http://infoworld.com/3046">infoworld.com/3046</a>
JBoss jBPM	<a href="http://infoworld.com/3047">infoworld.com/3047</a>

### CONTENT MANAGEMENT

eZ publish	<a href="http://infoworld.com/3049">infoworld.com/3049</a>
Mambo	<a href="http://infoworld.com/3050">infoworld.com/3050</a>
OpenCms	<a href="http://infoworld.com/3048">infoworld.com/3048</a>

### CRM

Compiere	<a href="http://infoworld.com/3051">infoworld.com/3051</a>
Open for Business Project	<a href="http://infoworld.com/3078">infoworld.com/3078</a>
SugarCRM	<a href="http://infoworld.com/3077">infoworld.com/3077</a>

### DIRECTORY SERVICES

Fedora Directory Server	<a href="http://infoworld.com/3061">infoworld.com/3061</a>
OpenLDAP	<a href="http://infoworld.com/3062">infoworld.com/3062</a>

### ERP

Compiere	<a href="http://infoworld.com/3051">infoworld.com/3051</a>
Linux-Kontor	<a href="http://infoworld.com/3052">infoworld.com/3052</a>
TUTOS	<a href="http://infoworld.com/3053">infoworld.com/3053</a>
webERP	<a href="http://infoworld.com/3054">infoworld.com/3054</a>

### ESB

Iona Celtix	<a href="http://infoworld.com/3055">infoworld.com/3055</a>
Mule	<a href="http://infoworld.com/3056">infoworld.com/3056</a>

### IDENTITY

JOSSO (Java Open Single Sign-On)	<a href="http://infoworld.com/3058">infoworld.com/3058</a>
Shibboleth	<a href="http://infoworld.com/3059">infoworld.com/3059</a>
SourceID	<a href="http://infoworld.com/3060">infoworld.com/3060</a>

Yale University CAS (Central Authentication Service)	<a href="http://infoworld.com/3057">infoworld.com/3057</a>
--	--

### POINT OF SALE

jPOS	<a href="http://infoworld.com/3070">infoworld.com/3070</a>
PHP Point of Sale	<a href="http://infoworld.com/3068">infoworld.com/3068</a>
TinaPOS	<a href="http://infoworld.com/3069">infoworld.com/3069</a>

### PORTALS

Apache Jetspeed Portals	<a href="http://infoworld.com/3063">infoworld.com/3063</a>
eXo platform	<a href="http://infoworld.com/3064">infoworld.com/3064</a>
GridSphere	<a href="http://infoworld.com/3067">infoworld.com/3067</a>
JBoss Portal	<a href="http://infoworld.com/3066">infoworld.com/3066</a>
Liferay Portal	<a href="http://infoworld.com/3065">infoworld.com/3065</a>

### RFID

RadioActive Foundation	<a href="http://infoworld.com/3071">infoworld.com/3071</a>
------------------------	--

### VOIP

Asterisk	<a href="http://infoworld.com/3072">infoworld.com/3072</a>
Bayonne	<a href="http://infoworld.com/3076">infoworld.com/3076</a>
SIP Express Router	<a href="http://infoworld.com/3074">infoworld.com/3074</a>
sipX	<a href="http://infoworld.com/3073">infoworld.com/3073</a>
Yate (Yet Another Telephony Engine)	<a href="http://infoworld.com/3075">infoworld.com/3075</a>

brought under a larger GNU Telephony umbrella, which encompasses a number of other free software projects. There can be little doubt that open source efforts in this area will continue to progress as interest in VoIP and digital telephony continues to grow. — *O.R.*

Apply online at: <http://subscribe.infoworld.com>

**PRIORITY CODE: WW5PDF**

I wish to receive a free subscription to **InfoWorld**.  
 **Yes**    **No**

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**A. MAILING ADDRESS**

Publisher reserves the right to limit the number of complimentary subscriptions. Free subscriptions available in the U.S. (including APO and FPO) and Canada

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY NAME \_\_\_\_\_

DIVISION / DEPT. / MAIL STOP \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

CITY / STATE / ZIP / POSTAL CODE \_\_\_\_\_

Is the above address a home address?    1. Yes    0. No

E-MAIL ADDRESS \_\_\_\_\_

BUSINESS PHONE (INCLUDING AREA CODE) \_\_\_\_\_ BUSINESS FAX NO. (INCLUDING AREA CODE) \_\_\_\_\_

**1. Over the course of one year, do you buy, specify, recommend, or approve the purchase of the following products or services worth:**

Please include amounts for all locations of your organization. Consultants: please include what you recommend for your clients as well as what you buy for your own business.

- |                                  |                                |                            |
|----------------------------------|--------------------------------|----------------------------|
| 01. \$100 million or more        | 06. \$5,000,000 to \$9,999,999 | 11. \$100,000 to \$399,999 |
| 02. \$50,000,000 to \$99,999,999 | 07. \$2,500,000 to \$4,999,999 | 12. \$50,000 to \$99,999   |
| 03. \$30,000,000 to \$49,999,999 | 08. \$1,000,000 to \$2,499,999 | 13. Less than \$49,999     |
| 04. \$20,000,000 to \$29,999,999 | 09. \$600,000 to \$999,999     | 14. None                   |
| 05. \$10,000,000 to \$19,999,999 | 10. \$400,000 to \$599,999     |                            |

Product category	Write code in box
Large systems	<input type="text"/>
Client computers	<input type="text"/>
Networking / Telecom (including servers)	<input type="text"/>
Wireless	<input type="text"/>
Internet / Intranet / Extranet	<input type="text"/>
Security	<input type="text"/>
Storage	<input type="text"/>
Peripheral equipment	<input type="text"/>
Software	<input type="text"/>
Service/Support / Outsourcing	<input type="text"/>

**2. What is your primary job title? (PLEASE CHECK ONE ONLY)**

- |   |   |
|---|---|
| <b>IT / Technology Management</b>                                     | <input type="checkbox"/> 10. IT Staff                                   |
| <input type="checkbox"/> 01. CTO, CIO, CSO, Vice President            | <input type="checkbox"/> 11. Other IT Professional                      |
| <input type="checkbox"/> 02. Director                                 | <b>Corporate / Business Management</b>                                  |
| <input type="checkbox"/> 03. Manager / Supervisor                     | <input type="checkbox"/> 12. CEO, COO, President, Owner, Vice President |
| <input type="checkbox"/> 04. Network Manager / Director               | <input type="checkbox"/> 13. CFO, Controller, Treasurer                 |
| <input type="checkbox"/> 05. Engineer                                 | <input type="checkbox"/> 14. Director                                   |
| <input type="checkbox"/> 06. Systems Analyst / Programmer / Architect | <input type="checkbox"/> 15. Manager / Supervisor                       |
| <input type="checkbox"/> 07. Other IT Management                      | <input type="checkbox"/> 16. Other Business Management Title            |
| <b>IT / Technology Professional</b>                                   |   |
| <input type="checkbox"/> 08. Consultant / Integrator                  | <input type="checkbox"/> 98. Other Title                                |
| <input type="checkbox"/> 09. Developer                                | (specify) _____   |

**3. Please indicate your job function(s)? (PLEASE CHECK ALL THAT APPLY):**

- |  |  |
|--|--|
| <b>IT / Technology Functions</b>   | <b>Corporate / Business Functions</b>                          |
| <input type="checkbox"/> 01. Executive   | <input type="checkbox"/> 09. Executive                         |
| <input type="checkbox"/> 02. Department Management - IT                                  | <input type="checkbox"/> 10. Department Management - Business  |
| <input type="checkbox"/> 03. Networks / Systems Management                               | <input type="checkbox"/> 11. Financial / Accounting Management |
| <input type="checkbox"/> 04. Applications Development                                    | <input type="checkbox"/> 12. Research / Development Management |
| <input type="checkbox"/> 05. Management of Enterprise Applications (CRM, ERP, SCM, etc.) | <input type="checkbox"/> 13. Sales / Marketing Management      |
| <input type="checkbox"/> 06. Research / Development Management                           | <input type="checkbox"/> 14. Other Business Functions          |
| <input type="checkbox"/> 07. Consultant / Integrator                                     | <input type="checkbox"/> 98. Other Functions                   |
| <input type="checkbox"/> 08. Other IT Functions  | (specify) _____  |

**4. Are you involved in buying, specifying, recommending or approving the following IT products / services?**

(PLEASE CHECK ALL THAT APPLY):

- |   |  |
|---|--|
| <b>Software / Products / Technologies</b>   | <input type="checkbox"/> 18. Web / Video Conferencing                |
| <input type="checkbox"/> 01. Customer Relationship Management                       | <input type="checkbox"/> 19. Storage                                 |
| <input type="checkbox"/> 02. Enterprise Resource Planning                           | <input type="checkbox"/> 20. Disaster Recovery                       |
| <input type="checkbox"/> 03. Business Process Management / Outsourcing              | <input type="checkbox"/> 21. Security                                |
| <input type="checkbox"/> 04. Business Intelligence / Data Mining / Data Warehousing | <input type="checkbox"/> 22. Anti-Virus / Content Filtering          |
| <input type="checkbox"/> 05. Portals  | <input type="checkbox"/> 23. Firewall                                |
| <input type="checkbox"/> 06. Financials / Payroll / Billing                         | <input type="checkbox"/> 24. VPN                                     |
| <input type="checkbox"/> 07. Performance / Application Management                   | <input type="checkbox"/> 25. Identity Management                     |
| <input type="checkbox"/> 08. .NET   | <input type="checkbox"/> 26. Authentication / Authorization          |
| <input type="checkbox"/> 09. Other Software   | <input type="checkbox"/> 27. Intrusion Detection & Prevention        |
| <input type="checkbox"/> 10. Networking   | <input type="checkbox"/> 28. Encryption                              |
| <input type="checkbox"/> 11. Web Services   | <input type="checkbox"/> 29. Other IT Products / Technologies        |
| <input type="checkbox"/> 12. Content Delivery Networks                              | <b>Hardware / Peripherals</b>  |
| <input type="checkbox"/> 13. Network and Systems Management                         | <input type="checkbox"/> 30. Servers                                 |
| <input type="checkbox"/> 14. VoIP (Voice Over IP)                                   | <input type="checkbox"/> 31. Notebooks / Laptops                     |
| <input type="checkbox"/> 15. Telecommunications                                     | <input type="checkbox"/> 32. PDAs / Handhelds / Pocket PC / Wireless |
| <input type="checkbox"/> 16. Wireless   | <input type="checkbox"/> 33. Printers                                |
| <input type="checkbox"/> 17. Remote Access  | <input type="checkbox"/> 34. Other Hardware / Peripherals            |

**5. What is your organization's primary business activity at this location? (PLEASE CHECK ONE ONLY):**

- |  |  |
|--|--|
| <b>General Business Industries</b>   | <b>Technology Providers</b>  |
| <input type="checkbox"/> 01. Defense Contractor / Aerospace                            | <input type="checkbox"/> 12. Service Provider (MSP, BSP, ISP, ASP, etc.)                     |
| <input type="checkbox"/> 02. Retail / Wholesale / Distribution (non-computer)          | <input type="checkbox"/> 13. Computer / Network Consultant                                   |
| <input type="checkbox"/> 03. Pharmaceutical / Medical / Dental / Healthcare            | <input type="checkbox"/> 14. Systems / Network Integrator, VAR / VAD                         |
| <input type="checkbox"/> 04. Financial Services / Banking                              | <input type="checkbox"/> 15. Technology Manufacturer (hardware, software, peripherals, etc.) |
| <input type="checkbox"/> 05. Insurance / Real Estate / Legal                           | <input type="checkbox"/> 16. Technology - Related Retailer / Wholesaler / Distributor        |
| <input type="checkbox"/> 06. Transportation / Utilities                                | <b>Government / Education</b>  |
| <input type="checkbox"/> 07. Media (print / electronic)                                | <input type="checkbox"/> 17. Government: federal (including military)                        |
| <input type="checkbox"/> 08. Communication Carriers (telecomm, data comm., TV / cable) | <input type="checkbox"/> 18. Government: state or local                                      |
| <input type="checkbox"/> 09. Construction / Architecture / Engineering                 | <input type="checkbox"/> 19. Education   |
| <input type="checkbox"/> 10. Manufacturing & Process Industries (non-computer)         | <input type="checkbox"/> 98. Other   |
| <input type="checkbox"/> 11. Research / Development                                    | (specify) _____  |

**6. How many people are employed at this organization, including all of its branches, divisions and subsidiaries?**

(PLEASE CHECK ONE ONLY):

- |   |  |
|---|--|
| <input type="checkbox"/> 1. 20,000 or more  | <input type="checkbox"/> 5. 500 - 999    |
| <input type="checkbox"/> 2. 10,000 - 19,999 | <input type="checkbox"/> 6. 100 - 499    |
| <input type="checkbox"/> 3. 5,000 - 9,999   | <input type="checkbox"/> 7. 50 - 99      |
| <input type="checkbox"/> 4. 1,000 - 4,999   | <input type="checkbox"/> 8. Less than 49 |

**7. Which of the following operating systems are in use or planned for use at this location?**

(PLEASE CHECK ALL THAT APPLY):

- |  |   |
|--|---|
| <input type="checkbox"/> 01. Windows XP    | <input type="checkbox"/> 04. Linux / Unix / Solaris |
| <input type="checkbox"/> 02. Other Windows | <input type="checkbox"/> 05. Other                  |
| <input type="checkbox"/> 03. Mac           | (please specify) _____                              |

**B. CONTACT PREFERENCES**

You may receive a renewal reminder via e-mail. May we send other information about InfoWorld products, services, or research via e-mail?    1. Yes    0. No

We occasionally send our subscribers email messages with news about technology solutions and special offers from qualified third parties. Would you like to receive these messages?    1. Yes