



The Open Source Software Comparison Guide

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When IT analysts track the adoption rates for software, they often rank vendors according to license revenue and market share. The database market, for example, when tracked in this way, is dominated by Oracle, followed by IBM's DB2, and then Microsoft. But the highest growth rates for database software, according to Gartner, belong to open source databases, including MySQL, Ingres, and Apache.

Open source software projects abound on the Internet. Because they lack the salesforce of the commercial vendors, they are often at a disadvantage when it comes to communicating their features and advantages. We've asked Joshua D. Drake, President of Command Prompt, Inc. a dedicated PostgreSQL support and custom programming company, and Uday Parmar, Head of Sales and Marketing at Daffodil Software, to develop a matrix to compare the features of four of the most popular open source databases: Apache Derby 10.1, MySQL 5.0, PostgreSQL 8.1, and One\$DB 4.0.

Later, Drake will examine the features of some popular Linux distributions.

| | Apache Derby 10.1 | MySQL 5.0 | PostgreSQL 8.1 | One\$DB 4.0 |
|---|-----------------------|-----------|----------------|-------------|
| General | | | | |
| Database Connections | Multiple | Multiple | Multiple | Multiple |
| Concurrent Access to Multiple Databases | ✓ | ✓ | ✓ | ✓ |
| Multi-version Concurrency Control | ✗ | ✓ | ✓ | ✓ |
| Unicode Support | ✓ | ✓ | ✓ | ✓ |
| Replication Support | ✓ | ✓ | ✓ | ✓ |
| License | Apache (BSD) | GPL | BSD | LPGL |
| Specifications | | | | |
| SQL 99 | ✓ | ✗ | ✓ | ✓ |
| ODBC | ◆ | ✓ | ✓ | ✓ |
| Relational Database Features | | | | |
| Sequences/Auto-increment Column | ✓ | ✓ | ✓ | ✓ |
| User Defined Functions | ✓ | ✓ | ✓ | ✗ |
| Update-capable Views | ✓ | ✓ | ✓ | ✓ |
| Referential Integrity | ✓ | ✓ | ✓ | ✓ |
| Triggers | Statement / Row Level | ✓ | ✓ | ✓ |
| | Before / After | ✓ | ✓ | ✓ |
| | Nesting | ✓ | ✗ | ✓ |
| | Compound | ✓ | ✓ | ✓ |
| Domains | ✗ | ✗ | ✓ | ✓ |
| BLOB | ✓ | ✓ | ✓ | ✓ |
| CLOB | ✓ | ✓ | ✓ | ✓ |
| Name Length Limit | 128 | 64 | 64 | 128 |
| Delimited Identifiers | ✓ | ✓ | ✓ | ✓ |
| Stored Procedures | ✓ | ✓ | ✓ | ✓ |

Key to Symbols

✓ Feature supported ✗ Feature not supported ◆ External or unofficial support

The Open Source Software Comparison Guide

| | Apache Derby 10.1 | MySQL 5.0 | PostgreSQL 8.1 | One\$DB 4.0 |
|--|-------------------|-----------|----------------|-------------|
| Procedural Languages | | | | |
| PL/SQL (or equivalent) | ✗ | ✓ | ✓ | ✓ |
| Java | ✓ | ✗ | ◆ | ✗ |
| Python | ✗ | ✗ | ✓ | ✗ |
| Perl | ✗ | ✗ | ✓ | ✗ |
| PHP | ✗ | ✗ | ◆ | ✗ |
| Ruby | ✗ | ✗ | ◆ | ✗ |
| DQL | | | | |
| Joins | ✓ | ✓ | ✓ | ✓ |
| Subqueries | ✓ | ✓ | ✓ | ✓ |
| Nested Queries | ✓ | ✓ | ✓ | ✓ |
| Correlated Subqueries | ✓ | ✓ | ✓ | ✓ |
| Query in FROM Clause | ✓ | ✓ | ✓ | ✓ |
| Multi-column Predicate | ✗ | ✓ | ✓ | ✓ |
| Expression Group By Support | ✓ | ✓ | ✓ | ✓ |
| Order By | ✓ | ✓ | ✓ | ✓ |
| Union (Distinct/All) | ✓ | ✓ | ✓ | ✓ |
| Intersection (Distinct/All) | ✓ | ✗ | ✓ | ✓ |
| Except (Distinct/All) | ✓ | ✗ | ✓ | ✓ |
| Full Text Search | | ✓ | ✓ | ✗ |
| Java/JDBC | | | | |
| JDBC 3.0 | ✓ | ✓ | ✓ | ✓ |
| J2EE Certified | ✓ | ✗ | ◆ | ✓ |
| Pooled Connections | ✓ | ✓ | ✓ | ✓ |
| RowSets | ✗ | ✗ | ✗ | ✗ |
| SavePoints | ✓ | ✓ | ✓ | ✓ |
| Parameter Metadata | ✓ | ✗ | ✓ | ✓ |
| Database Metadata Imported/Exported Keys/CrossRefs | ✓ | ✓ | ✓ | ✓ |
| ResultSetGetAutoGeneratedKeys | ✓ | ✓ | ✗ | ✓ |
| XA | ✓ | ✓ | ✓ | ✗ |

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The Open Source Software Comparison Guide

| | Apache Derby 10.1 | MySQL 5.0 | PostgreSQL 8.1 | One\$DB 4.0 |
|--|---|--|-----------------------------|---|
| Native Language Support | | | | |
| C/C++ | ◆ | ✓ | ✓ | ✗ |
| C#/.Net | ◆ | ✓ | ✓ | ✗ |
| PHP | ◆ | ✓ | ✓ | ✓ |
| Perl | ◆ | ✓ | ✓ | ✗ |
| Python | ◆ | ✓ | ✓ | ✗ |
| Ruby | ◆ | ✓ | ✓ | ✗ |
| Security | | | | |
| Users | ✓ | ✓ | ✓ | ✓ |
| Role | ✗ | ✗ | ✓ | ✓ |
| Privilege | ✗ | ✓ | ✓ | ✓ |
| Encryption | ✓ | ✓ | ✓ | ✗ |
| Database Administration Tools | | | | |
| Tools | IJ Scripting Tool, Cloudview, Import/Export | WinMySQL Admin, MySQL Administrator, MySQL Query Browser Command Shell | PgAdmin, psql phpPgAdmin | Shell, Browser, Shell Server, Browser Server, Server |
| Hot Backup | ✓ | ◆ | ✓ | ✗ |
| Table Spaces | ✗ | ✓ | ✓ | ✗ |
| Point in Time recovery | ✗ | ◆ | ✓ | ✗ |
| Table partitioning | ✗ | ✗ | ✓ | ✗ |
| Graphical Interface | | | | |
| Creating Database Objects | ◆ | ✓ | ✓ | ✓ |
| Manipulate Data in Database Objects | ◆ | ✓ | ✓ | ✓ |
| Viewing Properties of Various Database Objects | ◆ | ✓ | ✓ | ✓ |
| Graphical Interface to Execute SQL Queries | ◆ | ✓ | ✓ | ✓ |
| Support for Executing Multiple Queries Simultaneously | ◆ | ✓ | ✓ | ✓ |

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Linux Distribution Comparison Matrix

Many people have written about the disjunctive nature of Linux distributions -- and the problems involved in differentiating the various distributions that exist. Questions experts routinely hear are "Which Linux is best for me?" and "How do I know my distribution will work with my hardware?" The modern reality -- and the good news -- is that most of the popular Linux distributions will service any need. With that said, a handful truly stand out from the crowd.

When you look at Linux today from a 10,000-foot view, the overall picture is fairly splintered, but the truth is: Linux is Linux. It doesn't really matter which distribution you install; the only differences lie in how hard it is to get a given version to accomplish the tasks that you need to complete.

We've developed a simple matrix where a handful of the more popular Linux distributions are listed along with a numerical legend to assess the level of support each distribution has for a number of features.

Because we could only include a finite number of distributions, we developed a set of criteria for inclusion. The criteria necessarily limits the number of distributions included in the comparison. Many great distributions didn't meet the criteria. For example, Debian is an excellent and stable distribution, but doesn't have a stable release for X86_64. Here's the criteria we used:

1. Stable releases only.
2. X86_64 required. The future of chips is in X86_64. This is also known as X64 and EMT64.
3. Recognizable community, business or otherwise. Linux is about community.
4. Usable by a non-geek.
5. Default features only. This comparison does not cover third-party products or modules.

Although there are many other Linux distributions, the five listed in the comparison matrix make up the bulk of distributions used by English-speaking Linux users. Some other important Linux distributions are region-specific, such as RedFlag, which is popular in China, and Pardus, which is popular in Turkey. One additional distribution not covered here that may be of interest is Linspire, which is specifically designed for Microsoft Windows converts and new Linux users.

Please note: To obtain the values in the matrix in this article, we made qualitative comparisons between the included distributions based on extensive experience as a Linux user and developer. Individual measures shown here may not reflect other users' experiences. The measures shown are intended for use as overall guidelines.

The Open Source Software Comparison Guide

Legend:

- | | |
|---|---|
| <p>5. Very strong or mature support.</p> <p>4. Reasonably strong, but still a couple of kinks.</p> <p>3. Possible but it takes some muscle.</p> | <p>2. You're pushing a boulder uphill—but you're strong enough.</p> <p>1. Not worth the fifty cents it cost to burn the media.</p> <p>0. Who are you kidding?</p> |
|---|---|

| | Red Hat ES | Novell SLES | Fedora FC4 | OpenSuSE 10 | Ubuntu Breezy |
|--------------------------------------|------------|-------------|------------|-------------|---------------|
| Installation | | | | | |
| Graphical installer | 5 | 4 | 5 | 4 | 3ç |
| Volume management | 5 | 3 | 5 | 3 | 2 |
| Resize Windows partition | 0 | 5 | 0 | 5 | 3 |
| Raid configuration | 5 | 5 | 5 | 5 | 4 |
| Exception handling | 3 | 5 | 3 | 5 | 5 |
| LDAP integration | 3 | 5 | 3 | 3 | 2 |
| Configuration | | | | | |
| Server configuration tools | 4 | 5 | 3 | 5 | 3 |
| User/Workstation configuration tools | 4 | 5 | 4 | 5 | 4 |
| X configuration | 4 | 5 | 4 | 5 | 3 |
| Printer management | 3 | 5 | 3 | 5 | 3 |
| Security | | | | | |
| Filesystem ACL support | 5 | 5 | 5 | 5 | 5 |
| SELinux support | 5 | 5 | 5 | 5 | 3 |
| Firewall | 4 | 5 | 4 | 5 | 3 |
| Default SSH security | 2 | 2 | 2 | 2 | 5 |
| Default configuration | 3 | 3 | 3 | 3 | 5 |
| Server Management | | | | | |
| LDAP configuration | 3 | 5 | 3 | 3 | 3 |
| User management | 3 | 5 | 3 | 5 | 3 |
| Apache configuration | 3 | 5 | 3 | 5 | 3 |
| Mail configuration | 4 | 5 | 4 | 5 | 4 |
| Thin client support | 3 | 3 | 3 | 3 | 5 |
| Support | | | | | |
| Central phone support | 5 | 5 | 0 | 0 | 4 |
| Easy to find 3rd party support | 5 | 5 | 0 | 0 | 5 |
| Free email support | 0 | 0 | 5 | 5 | 5 |
| Online support | 3 | 3 | 4 | 4 | 5 |
| Vendor Support contracts | 5 | 5 | 0 | 0 | 5 |
| Established support network | 5 | 5 | 0 | 0 | 3 |

* “curses” text-based graphical installer

Installation Summary

The Novell and SuSE installers use YAST (Yet Another Setup Tool), which is a very powerful management and installation software. However, it tends to be a bit overcomplicated. Ubuntu uses a curses-based (text-based) graphical installer that is very powerful but requires a little more expertise than the Red Hat installer. The Red Hat installer is by far the most mature of the installers.

Configuration Summary

The Novell and SuSE configuration use of YAST makes almost all Linux configuration tasks a breeze. YAST can be a little clumsy but it offers a solid console based version that allows Linux management without requiring X Windows. Red Hat has solid configuration tools but they all require X Windows, which is inane for Linux. One of the most powerful features of Unix/Linux is the ability to administrate without X Windows.

Security Summary

All the products are decent at security, however Ubuntu is the only distribution reviewed that doesn't allow root login via SSH by default. Ubuntu also does not allow root login via console by default, insuring that you actually have think about such actions as accidentally formatting your hard drive before you can perform them.

Server Management

Novell and SuSE have this one under control due to YAST, but Red Hat ES also has solid management tools. Note that experienced system administrators don't really need the administration tools provided by the vendors; such tools typically don't handle more advanced situations and can actually decrease a good administrator's productivity.

Support

This is probably the hardest of the categories to evaluate. Linux support comes in all sorts of forms. For what most consider "enterprise" support Novell and Red Hat win because they have written support policies and contracts that enterprises can purchase. This type of support gives a certain level of comfort to people who use any software. Support contracts are an excellent choice for companies who do not have expert administrators in-house. However if you do have an expert administrator or consultant available there is no reason not to explore some of the more flexible Linux distributions such as FC, OpenSuSE, or Ubuntu.

This content was adapted from DevX.com. Contributors: Joshua D. Drake and Uday Parmar. Copyright 2006, Jupitermedia Corp.