

Which Postgres is Right for Me?

PostgreSQL, Postgres Plus Standard Server,
or Postgres Plus Advanced Server

An EnterpriseDB White Paper

for DBAs, Application Developers, and Enterprise Architects

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Introduction

Corporate development teams are constantly seeking new ways to save money and protect their organizations from vendor lock-in. And in greater numbers than ever, they are turning to open source software to address these needs. In response to this increasing demand for open source software solutions, there has been a corresponding explosion in the creation and evolution of the vibrant and diverse communities producing open source solutions for key components within the enterprise.

One such community is the Postgres community. Over 20+ years, the Postgres community has produced an enterprise-class relational database management system (RDBMS) that is commoditizing the database market while increasing its number of successful deployments in high profile, mission-critical applications.

This growth has necessitated that the Postgres community establish a relationship with a commercial company – one that can provide the traditional enterprise packaging and services expected by corporate developers and IT organizations accustomed to working with enterprise-class software solutions.

EnterpriseDB Corporation addresses these needs, and provides the features, services and support needed by many enterprise development organizations. The long term and deep collaboration between the open source community and EnterpriseDB has produced three Postgres product options – each designed to meet the various needs of both corporate developers and individuals seeking the freedom and flexibility to implement their own customized database management system: PostgreSQL, Postgres Plus Standard Server, and Postgres Plus Advanced Server.

In order to maximize efforts and to successfully build an application with Postgres technology, it is important to first understand the differences between these three options and then select the right version to meet your project requirements.

What is PostgreSQL?

PostgreSQL (often referred to simply as “Postgres”) is an enterprise-class, open source RDBMS that is available for free from the Postgres community. It is a full-featured database for use in enterprise applications, and is the database infrastructure behind many high-profile mission critical applications at Sony Online Entertainment, Skype Limited, Hi5 Networks and others.

Established by Michael Stonebreaker in the mid-80s, the Postgres community now boasts over 200 contributors to the code base and over 20,000 downloads a week. Between the breadth and depth of features, and the large and diverse community of contributors focused on advancing the product functionality, Postgres has emerged as a viable and well-known alternative to enterprise database products from Oracle, IBM, and Microsoft.

As an indication of the growth of the open source database market, Postgres is one of several established open source databases available today. Others have emerged to address separate segments of the database market: MySQL focuses on web-

based applications, and specialized databases such as Derby (pure Java) and HBase (for data-intensive, distributed apps) target other niche markets. Postgres, which is uniquely targeted at enterprise IT environments, complements the landscape with high end features for security, scalability, concurrency, performance, manageability and comprehensive ANSI SQL compliance.

Who is EnterpriseDB?

As the leading provider of enterprise-class products and services based on PostgreSQL, EnterpriseDB is focused on making IT organizations successful when building enterprise applications with PostgreSQL. EnterpriseDB employs many of the leaders in the Postgres community, including Bruce Momjian and Dave Page, and has more domain expertise and access to the community than any other Postgres products and services provider.

EnterpriseDB has leveraged this deep product knowledge to develop enterprise-class consulting, training and support subscriptions, all of which span the three Postgres options that are available at www.enterprisedb.com: PostgreSQL, Postgres Plus Standard Server, and Postgres Plus Advanced Server. EnterpriseDB's Postgres Plus® products are ideally suited for any application, but perform especially well in transaction-intensive applications requiring superior performance, massive scalability, and compatibility with proprietary database products.

EnterpriseDB Services and Support

To help IT organizations successfully build mission-critical enterprise applications with Postgres products, EnterpriseDB offers many free resources on its web site, as well as fee-based services including:

- **Training** - Designed for database administrators and application developers. EnterpriseDB training courses range from half-day to multi-day agendas, demonstrate how to quickly build Postgres-based applications, and how to manage the database. All training includes modularized lessons, lectures, presentation copy, discussions, questions and answer sessions, and hands-on lab exercises guided by a live Postgres expert.
- **Consulting** – Available in fixed time and price packages or customized consulting engagements. Packages cover partitioning, high availability, replication, as well as an overall architectural health check to identify and correct issues that could cause future problems. EnterpriseDB also offers remote DBA services for cost-effective staff and skills augmentation.
- **Support/Software Subscriptions** – includes enterprise-class support subscriptions, software updates, hot fixes, and access to and influence over product development roadmaps.

EnterpriseDB Products

EnterpriseDB serves as one of the download sites for the Postgres community and makes available three offerings that are available for free download on its web site:

- **PostgreSQL (community distribution)** – this is the latest Generally Available build of open source PostgreSQL developed directly by the community. EnterpriseDB creates and certifies the binaries and then packages them in a easy to use one-click graphical installer. This version is for programmers who want to be on the cutting edge of the database development without the hassle of acquiring source code, creating a build environment, compiling binaries, testing the binaries and manually creating and configuring the database.
- **Postgres Plus Standard Server** – this open source, enterprise-class offering is a repackaging of PostgreSQL that installs by default multiple enterprise ready features such as connection pooling, distributed caching, replication, job scheduling, and more. Packaged and configured with the IT organization in mind, this offering is for enterprise users who need more than a core database package. For most users, this is the preferred option.
- **Postgres Plus Advanced Server** - as a superset of Postgres Plus Standard Server, this option also includes performance enhancements, tools, and seamless Oracle compatibility. This option is for users looking for additional enterprise-class features or to expand or replace an existing Oracle-based application with an open source solution.

In addition to packaging or enhancing PostgreSQL, EnterpriseDB also distributes StackBuilder with each product. StackBuilder provides additional optional database features, software, or development stacks that integrate with or compliment Postgres.

Before beginning an evaluation of Postgres and deciding if it meets your needs, or building a proof-of-concept project, it is important to fully understand the details of and the differences between the three offerings for Postgres development.

PostgreSQL

Overview

PostgreSQL is an open source RDBMS that has evolved into an enterprise-class technology as a result of more than 20+ years of active development by its large and diverse team of contributors. The Postgres community is truly an open source community and is not dominated by any single commercial entity.

PostgreSQL is based on a proven architecture that has earned it a strong reputation for reliability, data integrity, OLTP performance, and consistency. As an RDBMS that is designed for enterprise use, it runs on all major operating systems and includes features such as multi-version concurrency control (MVCC), support for foreign keys, joins, views, triggers, stored procedures, extensive data type support and supports multiple native programming interfaces. PostgreSQL has twice won the Linux New Media Award for Best Database System¹ and is a five-time winner of the Linux

¹ 2002, 2004

Journal Editors' Choice Award for best DBMS².

The feature set is rich enough to address the needs of large applications; PostgreSQL is highly scalable and active PostgreSQL applications in production manage in excess of 4 terabytes of data. It strongly conforms to the ANSI-SQL standard and is highly customizable through stored procedures that can be written in more than a dozen programming languages. A complete list of features is given below.

PostgreSQL is available to development teams under the Berkley Software Distribution (BSD) license, a liberal open source license. This license gives users the freedom to use, modify and distribute PostgreSQL in open or closed source form. Any modifications, enhancements, or changes made to the software belong to the development team, making PostgreSQL popular for both IT and embedded applications.

Source code for PostgreSQL can be downloaded for free at:

<http://www.postgresql.org/ftp/source/> . PostgreSQL binaries packaged in a graphical installer can be downloaded from EnterpriseDB at either:

http://www.enterprisedb.com/products/postgres_plus/getinstaller.do or

<http://www.enterprisedb.com/products/pgdownload.do> . The EnterpriseDB website also offers the Postgres Plus products along with additional resources (free tutorials, documentation, webinars, podcasts, training) for helping users get started faster.

Feature List

PostgreSQL is a full-featured, enterprise-class RDBMS. Features include

- Supported platforms: Linux x86/32 , Linux x86/64, Windows®, Solaris SPARC®
- Full ACID compliance
- Views
- User defined data types
- ANSI constraints
- Functional indexes
- Partial indexes
- Data and index partitioning
- Bitmap indexes
- Primary and foreign keys
- Rules engine
- Inheritance
- Triggers and stored functions
- Nested transactions
- Procedural language support
- SQL/XML support
- Multi-version concurrency control (MVCC)
- Full text search

² 2000, 2003, 2004, 2006, 2007

- PostgreSQL database links
- Pluggable authentication
- Improved heap-only tuples (HOT)
- GUI administration console (pgAdmin)
- Point-in-time recovery (PITR)
- Online index reorganization
- Online backup
- Interactive SQL terminal
- Client connectors: libpq, ECPG, JDBC, ODBC, .net
- Asynchronous pre-fetch for RAID: bitmap indices
- Programming language support: PL/pgSQL, PL/Java®, PL/Ruby, PL/Python, PL/PHP, PL/Perl, C/C++, PL/Tcl, PL/Scheme

Working with Open Source Software

The permissive BSD license gives organizations many freedoms, but organizations that are used to working with commercial software may have expectations that go beyond database features and code quality. With the large and diverse community developing and using PostgreSQL, the feature set and overall code quality remains extremely high, but enterprise developers may require more, including

Enhanced usability features – *contributors* to open source projects prefer doing their own builds, manual configuration, and constant monitoring of the community for updates and notifications, but *consumers* of open source technology benefit from simplified packaging and easy to use tools for easier implementation and faster skills development.

Broader solution – proven technology is required, but often is not sufficient. IT organizations need more than a stable RDBMS - they usually need additional components or products for scalability and performance that are integrated, tested and reliable.

Services and support – the most important attribute of any technology brought into a mission-critical environment is knowing that an experienced organization is standing behind the products and can provide enterprise-class expertise when it is needed.

Open source communities typically focus more on the base functionality of their technology; as a result, a number of commercial organizations exist to fill the enterprise readiness gap - most notably Red Hat for Linux, and EnterpriseDB for Postgres. EnterpriseDB combines a strong relationship with the Postgres community and a focus on the needs of the enterprise to deliver products, services and support suitable for mission-critical, application development and performance.

Postgres Plus Standard Server

Overview

Postgres Plus Standard Server is a superset of PostgreSQL that enhances the open

source PostgreSQL database with enterprise modules and usability features usually required by enterprise development teams. Like PostgreSQL, Postgres Plus Standard Server is available for free and can be used and deployed under the permissive open source BSD license. Most importantly, Postgres Plus is backed by EnterpriseDB, an enterprise-class, and worldwide support organization.

Postgres Plus Standard Server includes usability feature such as a professional GUI-based installer, and an automatic update service. In addition, this Postgres product includes StackBuilder Plus, which installs compatible software modules (see list below) that are frequently used with Postgres in an enterprise environment. EnterpriseDB also integrates, tests and certifies that all modules work with PostgreSQL, and StackBuilder Plus verifies that they are installed correctly. The automatic update service not only tracks and facilitates updates to the PostgreSQL database server but all the StackBuilder Plus modules as well.

New product releases of Postgres Plus Standard Server closely follow those of community PostgreSQL. When the community issues a point release, EnterpriseDB performs additional testing, generates commercial-grade documentation, and repackages the server with the installer, update service, and StackBuilder Plus. Typically, Postgres Plus Standard Server is released one to three months after each community release.

Postgres Plus Standard Server can be downloaded for free at the EnterpriseDB web site at: http://www.enterprisedb.com/products/postgres_plus/getinstaller.do .

Postgres Plus Standard Server Feature List

Postgres Plus Standard Server is a superset of PostgreSQL. In addition to all the PostgreSQL features mentioned above, Postgres Plus Standard Server includes

- Supported platforms: Linux x86/32 , Linux x86/64, Windows®
- Application Client connectors: pgJDBC, psqIODBC, Npgsql(.NET), libpq, ECPG
- GUI-based installer
- StackBuilder Plus with UpdateMonitor
- Postgres replication (Slony)
- Geospatial support (PostGIS)
- Job scheduler (pgAgent)
- PL/pgSQL debugger
- Distributed memory caching (pgmemcache)
- Integrated connection pooling (pgBouncer)
- Open source database migration toolkit
- Up to Date Installations
- Installation Database Tuning
- Oracle Migration Toolkit
- Oracle Replication server
- Certified PostgreSQL binaries

Working with an Enterprise Distribution

Working with an enterprise distribution of an open source project is nearly identical to working with the community edition, and certainly this is true when using Postgres Plus Standard Server. The product is available for free, the source code is open, and users can develop and deploy under the BSD license. The enterprise versions have additional features and support available, but working with the code is largely the same.

At any time a user may switch between PostgreSQL and Postgres Plus because the database server source code and binaries are identical. Since all Postgres offerings use the same database server, users never have to perform a rip and replace should their plans change. As a result there are no long-term consequences that users need to consider when taking advantage of EnterpriseDB's additional features.

Postgres Plus Advanced Server

Overview

Postgres Plus Advanced Server is a superset of Postgres Plus Standard Server (itself a superset of PostgreSQL) and includes advanced performance enhancements, tools, and Oracle compatibility. Postgres Plus Advanced Server offers scalability features like Infinite Cache, GridSQL, and a suite of development, administration and monitoring tools. It is designed for organizations that need the commercial-grade functionality or want to expand or replace their existing high-priced commercial database with cost-effective, open source technology.

Unlike Postgres Plus Standard Server, Postgres Plus Advanced Server is a proprietary version of the community PostgreSQL server. Having a good relationship with the community, many Advanced Server features are submitted back to the community for the benefit of all users.

However many features like InfiniteCache and the Oracle compatibility features, belong to EnterpriseDB and are therefore licensed differently. Users can download and develop with Postgres Plus Advanced Server for free, but deploying Postgres Plus Advanced Server into a production environment requires a licensed software subscription from EnterpriseDB.

Postgres Plus Advanced Server can be downloaded for free at the EnterpriseDB web site: http://www.enterprisedb.com/products/postgres_plus_as/download.do .

Features of Postgres Plus Advanced Server

Postgres Plus Advanced Server is a superset of both PostgreSQL and Postgres Plus Standard Server. In addition to all the features mentioned above, Postgres Plus Advanced Server includes

- Supported platforms: Linux x86/32, Linux x86/64, Windows, Solaris® x86/64, Solaris SPARC®
- Client connectors: libpq, ECPG, pgJDBC, psqIODBC, Npgsql(.NET), OCL(OCI)

- DynaTune®
- User defined object types
- Oracle dictionary views
- EDB*Loader
- Oracle SQL extensions
- Oracle database links
- Infinite cache (includes DB-in-cache)
- Asynchronous pre-fetch for RAID: bitmap indices, regular indices
- GridSQL® with parallel query
- Bulk collect / bulk bind array handling
- Query optimization hints
- DRITA (dynamic runtime instrumentation)
- EDB*Plus
- PL/SQL support
- PL/SQL debugger
- EDB*Wrap (procedural source code protection)
- Built-in function packages: DBMS_ALERT, DBMS_JOB, DBMS_LOB, DBMS_OUTPUT, DBMS_PIPE, DBMS_SQL, DBMS_UTILITY, UTL_FILE, UTL_MAIL, UTL_SMTP
- User defined packages
- Explicit transaction control
- EDB*OCI
- GridSQL monitoring console
- Multi-threaded Oracle replication
- Migration studio: MySQL, Oracle, SQL Server, Sybase
- DBA Management Server
- DBA monitoring console
- Indemnification and warranties
- Audit logging

Working with Oracle and Postgres Plus Advanced Server

For many applications, Postgres Plus Advanced Server can replace Oracle seamlessly. Users typically introduce Postgres Plus Advanced Server in one of the following scenarios:

- **New application** – when there are no considerations due to legacy systems, Postgres Plus Advanced Server is deployed as a low-cost alternative to Oracle. The [Sony Online Entertainment case study](#) goes into greater detail.
- **Extend an existing Oracle deployment** – users with Oracle deployed who do not want to rip-and replace can use Postgres Plus Advanced Server when expanding the existing application. The [FTD case study](#) goes into greater detail in how Advanced Server can compliment an existing Oracle installation.
- **Migrate Existing Application** – applications on Oracle, or applications

running on another database that now need mission-critical functionality, can be migrated to Postgres Plus Advanced Server as described in the [Vonage application](#).

EnterpriseDB has several free resources available for Oracle users that go into great depth on how to migrate to Postgres, and the details of the compatibility at http://www.enterprisedb.com/solutions/business_case.do. Some of these resources include:

- **Short video:** [What is Oracle Compatibility?](#)
- **Industry analyst white paper:** [The Explosion in DBMS Choice](#)
- **EnterpriseDB white paper:** [Delivering Oracle Compatibility](#)
- **Case study:** [FTD, Oracle Replication and Postgres Plus](#)
- **Webcast:** [Migrating Oracle to Postgres Plus Advanced Server](#)
- **EnterpriseDB white paper:** [Oracle Compatibility Developer's Guide](#)

Additional Resources

All three EnterpriseDB Postgres products offer users a rock-solid database designed for mission-critical applications. The offerings provide several commercial-grade features for enterprise development as well as comprehensive, worldwide services and support.

Available offerings include

- **PostgreSQL** – the core project developed by the community.
- **Postgres Plus Standard Server** – PostgreSQL certified by EnterpriseDB and packaged and installed with commercial-grade enterprise modules, installation tuning, additional testing, and StackBuilder Plus.
- **Postgres Plus Advanced Server** – enterprise PostgreSQL with commercial-class features including performance and scalability enhancements, tools, and Oracle compatibility.

EnterpriseDB understands that adopting an open source database is not a trivial task. You have lots of questions needing answers, schedules and budgets to keep, and processes to follow. We have helped thousands of organizations like yours through the steps to investigate, evaluate, prove, develop, and deploy their open source solutions.

To make your work easier and faster we have special [self-service](#) sections on our website dedicated to assisting you in each of the steps. For working with any of these versions, EnterpriseDB has many free resources on the web site targeted at the various stages of open source adoption. Visit <http://www.enterprisedb.com/solutions/stages/overview.do> for help.

- **[Getting started](#)** – access to free downloads, installation guides, demos, starter tutorials, and more to help get familiar with the database.
- **[Evaluations and pilots](#)** – learn how Postgres has helped hundreds of Oracle users cut costs and MySQL users improve operations.

- **Development** - EnterpriseDB employs more Postgres experts, developers and community members and than any other company, and offers key application development resources.
- **Deployment** – information on how to scale a Postgres application, add Qualities of Service (QoS) like high availability or security, or get a health check.

If you would like to discuss training, consulting, or enterprise support options, please do not hesitate to contact EnterpriseDB directly.

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Appendix: PostgreSQL and Postgres Plus Summary

	PostgreSQL	Postgres Plus Standard Server	Postgres Plus Advanced Server
Licensing	BSD	BSD	Unlimited development; deployment requires support subscription
Supported platforms	Linux x86/32 Linux x86/64 Windows®	Linux x86/32 Linux x86/64 Windows®	Linux x86/32 Linux x86/64 Windows Solaris® x86/64 Solaris SPARC®
Full ACID compliance	✓	✓	✓
Views	✓	✓	✓
User defined data types	✓	✓	✓
ANSI constraints	✓	✓	✓
Functional indexes	✓	✓	✓
Partial indexes	✓	✓	✓
Data and index partitioning	✓	✓	✓
Bitmap indexes	✓	✓	✓
Primary and foreign keys	✓	✓	✓
Rules engine	✓	✓	✓
Inheritance	✓	✓	✓
Triggers and stored functions	✓	✓	✓
Nested transactions	✓	✓	✓
Procedural language support	✓	✓	✓
SQL/XML support	✓	✓	✓
Multi-version concurrency control (MVCC)	✓	✓	✓
Full text search	✓	✓	✓
PostgreSQL database links	✓	✓	✓
Pluggable authentication	✓	✓	✓
Improved heap-only tuples (HOT)	✓	✓	✓
GUI administration console (pgAdmin)	✓	✓	✓
Point-in-time recovery (PITR)	✓	✓	✓
Online index reorganization	✓	✓	✓
Online backup	✓	✓	✓
Interactive SQL terminal	✓	✓	✓

Client connectors	libpq ECPG JDBC ODBC .net	libpq ECPG JDBC ODBC .net pgJDBC psqlODBC Npgsql(.NET)	libpq ECPG JDBC ODBC .net pgJDBC psqlODBC Npgsql(.NET) OCI(OCI)
Distributed memory caching (pgmemcache)		✓	✓
Integrated connection pooling (pgBouncer)		✓	✓
Job scheduler (pgAgent)		✓	✓
Postgres replication (Slony)		✓	✓
Geospatial support (PostGIS)		✓	✓
PL/pgSQL debugger		✓	✓
Integrated add-on components		✓	✓
Installation tuning		✓	✓
Automatic update notification		✓	✓
Open source database migration		✓	✓
Standby database for disaster recovery		✓	✓
Certified binaries		✓	✓
Distributed memory caching (pgmemcache)		✓	✓
Integrated connection pooling (pgBouncer)		✓	✓
Job scheduler (pgAgent)		✓	✓
Postgres replication (Slony)		✓	✓
Geospatial support (PostGIS)		✓	✓
PL/pgSQL debugger		✓	✓
Integrated add-on components		✓	✓
Installation tuning		✓	✓
Automatic update notification		✓	✓
Open source database migration		✓	✓
Standby database for disaster recovery		✓	✓
Certified binaries		✓	✓
Geospatial support (PostGIS)		✓	✓
PL/pgSQL debugger		✓	✓
DynaTune®			✓
User defined object types			✓
Oracle dictionary views			✓
EDB*Loader			✓
Oracle SQL extensions			✓
Oracle database links			✓
Infinite cache (includes DB-in-cache)			✓

Asynchronous pre-fetch for RAID	bitmap indices	bitmap indices	bitmap indices regular indices
Asynchronous pre-fetch for RAID: bitmap indices, regular indices			✓
GridSQL® with parallel query			✓
Bulk collect / bulk bind			✓
Query optimization hints			✓
DRITA (dynamic runtime instrumentation)			✓
EDB*Plus			✓
PL/SQL support			✓
PL/SQL debugger			✓
EDB*Wrap (source code protection)			✓
Built-in code packages			DBMS_ALERT DBMS_JOB DBMS_LOB DBMS_OUTPUT DBMS_PIPE DBMS_SQL DBMS_UTILITY UTL_FILE UTL_MAIL UTL_SMTP
User defined packages			✓
Explicit transaction control			✓
EDB*OCI			✓
GridSQL monitoring console			✓
Multi-threaded Oracle replication			✓
Migration studio: MySQL, Oracle, SQL Server, Sybase			✓
DBA Management Server			✓
DBA monitoring console			✓