

POSTGRESQL

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ABSTRACT:

PostgreSQL is also a robust open source relational object database system. it's over 15 years of active development phase and a proven architecture that has earned it a solid reputation for reliability, data integrity and precision. Before you start practicing with differing kinds of examples given during this reference, I assume that you simply simply are already tuned in to what a database is, specifically RDBMS and what a programing language is.

1. INTRODUCTION :

PostgreSQL supports advanced data types and advanced performance tuning, features available only in expensive commercial databases, like Oracle and SQL Server.

History:

PostgreSQL (originally called Postgres) was created by an IT professor Michael Stonebraker and his team. Today it has become one in every of the foremost popular open source databases.

INGRES was developed-1977, Michael Stonebraker and his colleagues developed Postgres- 1986.

Support for real ACID and PL/pgSQL - 1990, Released as Postgres95 in -1995. Re-released Postgres95 as PostgreSQL 6.0 - 1996. MVCC, GUC, Join syntax Controls and Procedural Language Loader added- 1998-2001. Version 7.2 to 8.2: Included features like Schema support, Nonblocking VACUUM, Roles and dblink - 2002-2006 , PostgreSQL 8.4 released in 2009 , PostgreSQL 9.0 released in 2010

NYCPUG (New York City PostgreSQL User Group) joins PgUS (United States PostgreSQL association)- 2013 , PGconf organised-2014

2. BODY OF PAPER:

Features of Postgres:

Compatible with various platforms using all major languages and middleware. It offers the foremost sophisticated locking mechanism .Support for multi-version simultaneous access

control Server-side mature programming functionality, Complies with ANSI SQL standard.

Full support for client-server specification SSL replication supported logs and triggers Backup and high availability server Object oriented and ANSI-SQL2008 compatible .

Implementation:

PostgreSQL includes two implementations of Data Source One that does pooling and also the other that doesn't. The pooling implementation doesn't actually close connections when the client calls the close method, but instead returns the connections to a pool of accessible connections for other clients to use. This avoids all overhead of continuously opening and shutting connections, and allows an more number of clients to share small number of database connections.

Implementing DataSource:

org.postgresql.ds.PGSimpleDataSource

org.postgresql.ds.PGPoolingDataSource

DataSource Configuration Properties

Implementations of data source use the same configuration.. JDBC requires that a DataSource to be configured via JavaBean.

- Server : PostgreSQL DB server host name
- DataBase : PostgreSQL database name
- Port no : TCP port which the PostgreSQL database server is listening on (or 0 as default port)
- User : User name, I.e used to make db connection
- Password : Password used to make db connection

3. APPLICATIONS OF POSTGRESQL :

Financial Industry: PostgreSQL could be a perfect DBMS system for the financial industry. additionally, it's fully ACID compliant, making it an ideal choice for OLTP (Online Transaction Processing). it is also capable of performing

database analyzes. it's integrated with mathematical software like Matlab and R.

Manufacturing: Nowadays, industrial manufacturers also use PostgreSQL to hurry up their overall business process. It also optimize supply chain performance by using postgres as a storage backend. It allows companies to reduce the operating costs of their business. Web technology and NoSQL: If your website requires processing hundreds or perhaps thousands of requests per second at that time, scalability is certainly an unlimited problem. Postgre is that the most effective solution here. PostgreSQL works great with all modern web frameworks like Django, Node.js, Hibernate, PHP, etc. It also offers replication capabilities that allow you to proportion as many database servers as you'd like.

Scientific data: You must generate terabytes of information if you're functioning on research and scientific projects. Therefore, it is vital to manage within the most effective way possible. For this, PostgreSQL offers wonderful analytical capabilities and a robust SQL engine. This helps you easily manage an oversized amount of information.

Web technology and NoSQL : workloads Modern websites might require thousands or perhaps many thousands of requests per second to serve your customers. Scalability is a serious issue and also the PostgreSQL community has worked hard to deal with those scalability questions within the past few years. PostgreSQL works fine with all modern web frameworks like Django, node.js, Hibernate, Ruby on rails, PHP & many more. thanks to PostgreSQL's replication capabilities, websites can easily be scaled bent as many database servers as you would like. PostgreSQL isn't just a electronic database – it also can function a NoSQL-style data store. there's no have to make a choice from the relational and also the document oriented world. you'll have both during a single product.

Government GIS data : PostgreSQL isn't only a tool for the financial industry – there's also a extremely powerful GIS extension called “PostGIS” which provides many functions to process geometric data in various formats. PostGIS is extremely standard compliant and is one amongst the de-facto standards within the Open Source GIS world. . try website on PostGIS to search out out more about our geodata services.

What does PostgreSQL has over other SQL DB ?

True Open Source :

PostgreSQL is free and is released under the PostgreSQL license, a liberal Open Source license. There is no charge to purchase the product and support. If you want to use the database software, this means that you can get all the available features of the PostgreSQL database for free. PostgreSQL is being used for 30 years the database world and has been based on touch as open source since 1996. It has known decades of developers working on extensions. This leads developers, institutions, and organizations to choose PostgreSQL for

enterprise applications; power the main commercial and mobile applications.

No License :

For users of the Oracle RDBMS platform, it is difficult to find any type of free or expensive community support. Institutions, organizations and developers often end up finding alternative information online that can offer free answers or solutions to their problems. When using Oracle, it is difficult to decide on a specific product or to resort to product support because (usually) a lot of money is involved. You can try a specific product to test it, end up buying it, just to realize that it can't help you. With PostgreSQL, the community is open source and has experts who have extensive experience and to help solving current problems.

Query Parallelism :

The parallelism of PostgreSQL has been constantly improved and constantly improved by the community. When PostgreSQL 10 was released, it added more appeal to the public, in particular the improvements on parallelism support for merge join, bitmap heap analysis, index analysis, and index analysis only, merge collection, etc. The improvements also add statistics to pg_stat_activity.

Better Handling (Massive Data) :

PostgreSQL db is not designed to handle analytical data & warehousing workloads. PostgreSQL is a row oriented database, but it has the capacity to store a large amount of data. PostgreSQL has the following limitations for managing the data store :

Maximum Database Size : Unlimited

Maximum Table Size : 32 TB

Maximum Row Size : 1.6 TB

Maximum Field Size : 1 GB

Advanced JSON Support :

JSON support in PostgreSQL is still comparable to that of other open source RDBMSs. PostgreSQL has a massive amount of JSON functions and features. The JSON data type was introduced in PostgreSQL-9.2. Since then, it has made many significant improvements and among the major additions to PostgreSQL-9.4 with the addition of the JSONB data type. PostgreSQL offers two types of data for storing JSON data: json and jsonb. With jsonb, this is an advanced version of the JSON data type that stores JSON data in binary format. This is the main improvement that has made a big difference in the way JSON data has been researched and processed in PostgreSQL.

5. ADVANTAGES OF POSTGRESQL :

PostgreSQL can run dynamic websites and web applications as a LAMP stack option. PostgreSQL's is highly fault-tolerant database. PostgreSQL ASCII computer file is obtainable at no cost under an open source license. this provides you the freedom to use, modify, and implement it PRN for your business. PostgreSQL supports geographic objects so you will be able to use it for location-based services and geographic information systems. PostgreSQL supports geographic objects, so it's used as a geospatial data store for geolocation services and geographic information systems . To learn Postgres, you are doing not need lots of coaching because it's simple to use. Low maintenance administration for integrated and enterprise use

6. DISADVANTAGES OF POSTGRESQL :

Postgres doesn't belong to any organization. Thus, he struggled to make his name known although it's complete and just like other DBMS systems. Modifications to spice up speed require more work than MySQL because PostgreSQL focuses on compatibility. Many open source applications support MySQL, but won't support PostgreSQL on performance measures, it's slower than MySQL.

7. CONCLUSION :

PostgreSQL is an enterprise-class open source management system. It supports SQL for relational queries and JSON for non-relational queries. it's supported by a community of experienced developers who have contributed immensely to making it a highly reliable DBMS system.

8. REFERENCES :

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- iii. <https://www.datacamp.com/community/tutorials/beginners-introduction-postgresql>
- iv. Textbook : PostgreSQLNotesForProfessionals