openGauss: A Fast Growing Open Source RDBMS Community

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Contents

What is openGauss?

openGauss is an **open source** relational database management system that is released with the Mulan PSL v2[1].

openGauss is built on Huawei's years of experience in the database field and continuously provides competitive features tailored to enterprise-grade scenarios.

[1] https://opensource.org/licenses/MulanPSL-2.0

openGauss: Key Features

- High performance
- High availability (HA)
- High security
- Easy O&M
- Fully open

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- Provides the multi-core architecture-oriented concurrency control technology and Arm hardware optimization, and the TPC-C benchmark performance reaches 1,500,000 tpmC in Kunpeng 2-socket servers.
- Uses NUMA-Aware data structures as the key kernel structures to adapt to the trend of using multi-core NUMA architecture on hardware.
- Provides the SQL bypass intelligent fast engine technology.

openGauss: Key Features

- High performance
- **High availability (HA)**
- High security
- Easy O&M
- Fully open

- Supports multiple deployment modes, such as primary/standby synchronization, primary/standby asynchronization, and cascaded standby server deployment.
- Data page CRC check is supported. Damaged data pages are automatically restored by the standby node.
- The standby node recovers in parallel and can be promoted to primary to provide services within 10 seconds.

openGauss: Key Features

- High performance
- High availability (HA)
- **High security**
- Easy O&M
- Fully open

- Supports security features such as fully-encrypted computing, access control, encryption authentication, database audit, and dynamic data masking to provide comprehensive end-to-end data security protection.

openGauss: Key Features

- High performance
- High availability (HA)
- High security
- **Easy O&M**
  - Provides AI-based intelligent parameter tuning and index recommendation to automatically recommend AI parameters.
  - Provides slow SQL diagnosis and multi-dimensional self-monitoring views to help users understand system performance in real time.
  - Provides SQL time forecasting that supports online auto-learning.
- Fully open

openGauss: Key Features

- High performance
- High availability (HA)
- High security
- Easy O&M
- Fully open
  - Adopts the Mulan Permissive Software License, allowing code to be freely modified, used, and referenced.
  - Fully opens database kernel capabilities.
  - Provides excessive partner certifications, training systems, and university courses.

openGauss Distributions

The openGauss Community

History of openGauss

2020.06
Open Sourced

2020.09
Local Events

2020.12
1.2K+ Contributors
140K+ Downloads

2021.03
Version 2.0.0
Released

openGauss Version 2.0.0

openGauss Community Management

Board of Directors

User Group Committee

User Groups

ShenZhen

NanJing

...

Technical Committee

Special Interest Groups(SIGs)

SQL Engine

Storage Engine

Connector

Tools

Infra

Security

IoT

AI

In-place Update

...


Wengang Tian
Chair


Guoliang Li
Member


Shifu Li
Member


Pinggao Zhou
Member


Zhengce Hu
Member


Yang Ren
Member


Qi Luo
Member

Community Members

HUAWEI

UXSINO 优炫软件

Qcubic

東方通 TongTech

天翼云 e Cloud

BES 宝兰德 BESSYSTEM

SANGFOR 深信服科技

海量数据 VASTDATA

ENMOTECH 云和恩墨

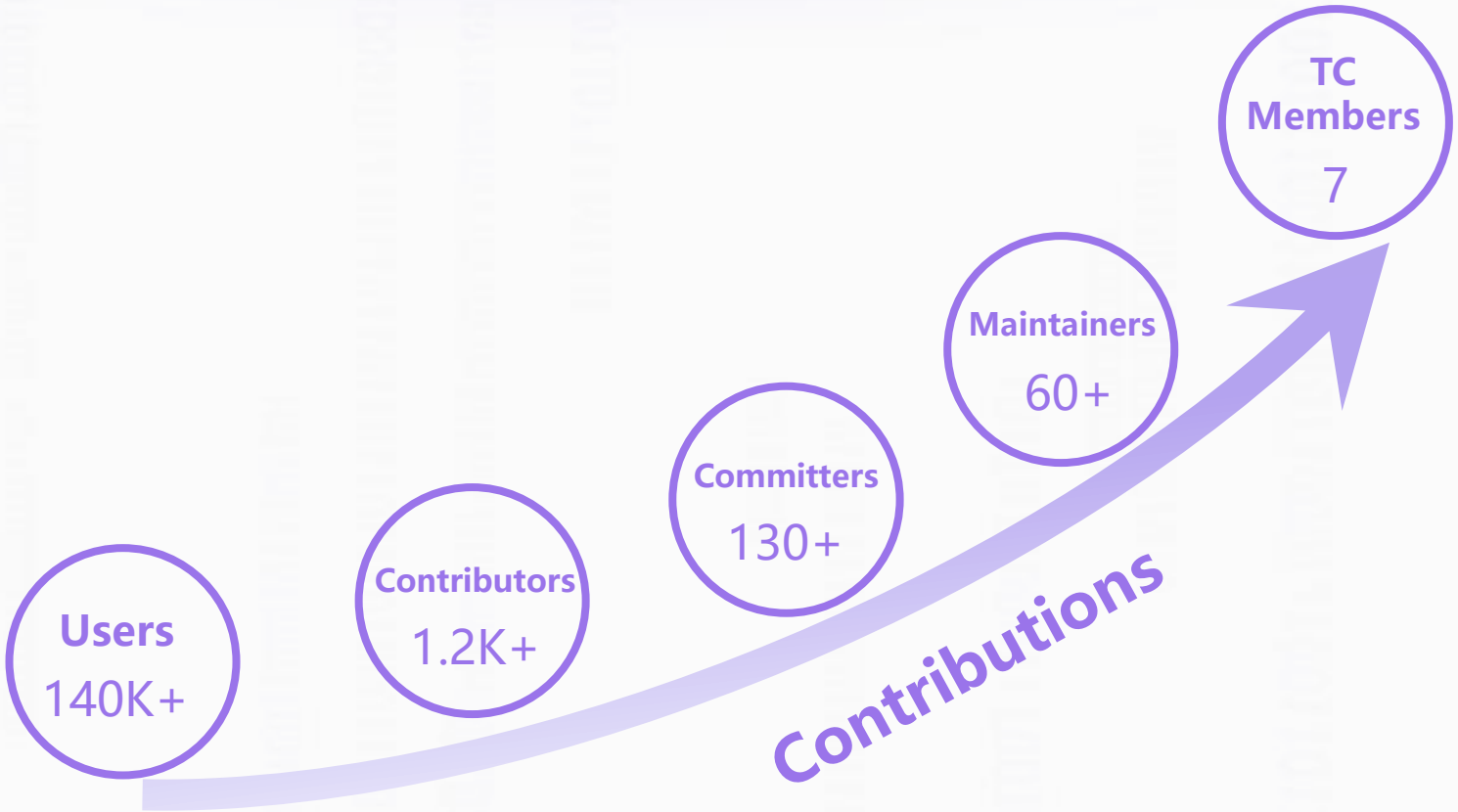
xugu 虚谷伟业

柏睿数据 BorayData

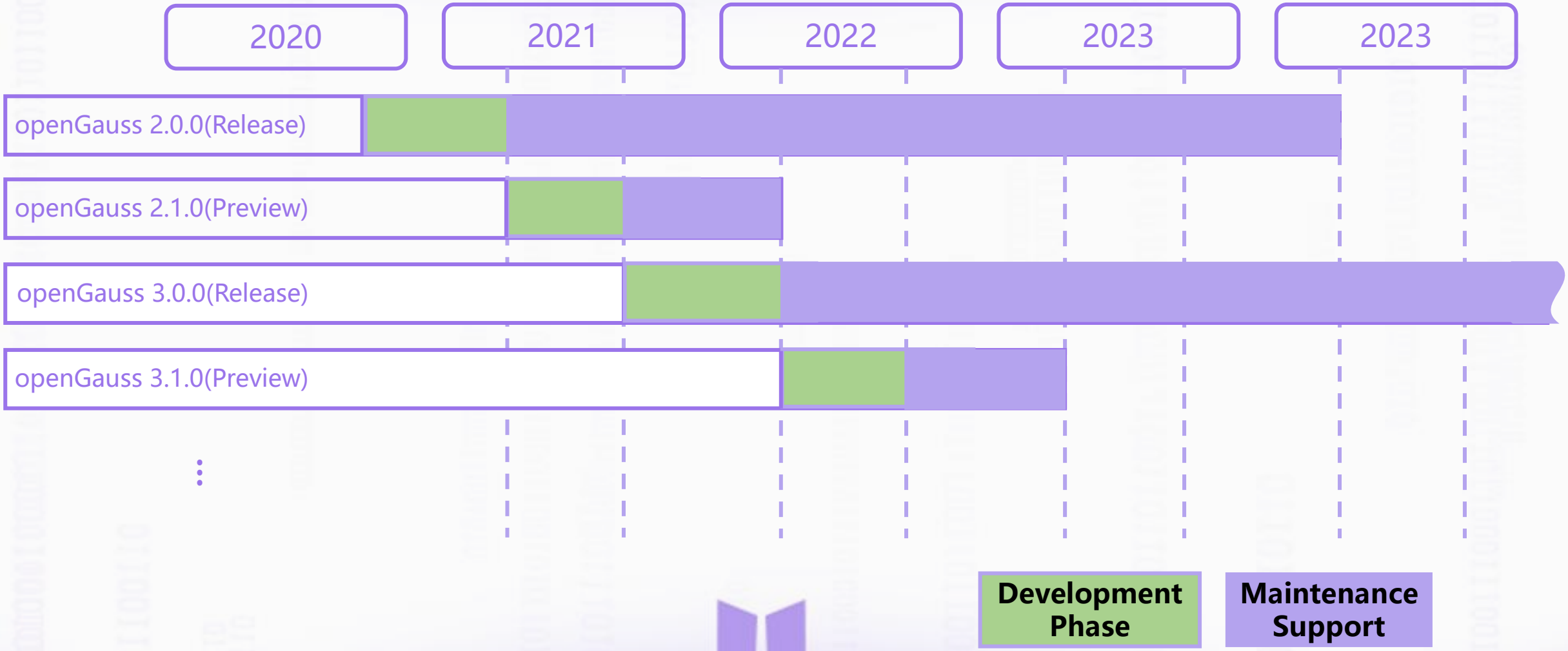
SuperMap

新数科技 ShinData

openGauss Community Roles



openGauss Lifecycle



The openGauss 2.0

openGauss 2.0:
NUMA architecture optimization to achieve industry-leading performance

openGauss	2P	4P	Degree of Linearity
After Optimization	1.5 million tpmC	230 million tpmC	150%

4P Kunpeng（Data Center Chips using Arm Architecutre） performance has reached 2.3 million tpmC, reaching the linearity of 1.5 times.

The single machine TP performance keeps leading in the industry. At the same time, it also proves that openGauss is powerful enough to support the new core business system scenario, for example in the financial industry.

openGauss 2.0:
Fully secret and AI features, leading the new direction of database development

Break through the key technology of ciphertext query and calculation of pure soft data, and provide a full dense retrieval scheme with better performance:

- The performance degradation of fully dense data processing (including data dense insertion, update and expression equivalent filtering) is less than 5%.
- Implemented secret equivalent query, which comprehensively promotes the implementation of the full secret technology standard industry, and opens the secret computing ecology.

openGauss 2.0:
Fully secret and AI features, leading the new direction of database development

Strengthen the database self-tuning and self diagnosis ability of AI4DB, and break through the machine learning mechanism in the original database of DB4AI

- **Index recommendation:**
  - effectively solve more than 90% of slow queries caused by improper index configuration;
  - 60% of SQL statements in tpc-ds benchmark dataset can achieve different degrees of performance improvement.
- **Monitoring and anomaly detection:**
  - Compared with manual on call, the efficiency of problem discovery is twice as high, and the problem recall rate under manual fault injection scenario is more than 90% on TPC-C benchmark data set.
- **MADLib compatible:**
  - Support 60+ MADLib ecological algorithm.

openGauss 2.0:
Enterprise features to build openGauss database competitiveness

- **Simplified Installation:**
  - Simplified Version provides binary files of the database kernel, individual users can quickly start the database instance, simple installation and configuration, suitable for individual developers.
- **Logical replication of standby nodes**
  Supports logical decoding on a standby node, this can reduce host pressure.
- **Enhanced capacity expansion tool:**
  - Optimizes the scale-out tool to support online scale-out without interrupting services and allows the standby node to be scaled out as a cascaded standby node.
- **Gray scale upgrade:**
  - Optimizes the upgrade tool and support business online upgrade.

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openGauss 2.0 Release Notes:
https://opengauss.org/en/news/2021-04-01/20210401.html

Join openGauss Today

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1. Sign up for Gitee Account

The source code of openGauss source code is hosted on Gitee: https://gitee.com/opengauss

Please refer to http://git.mydoc.io/?t=179267 to register your Gitee account and Set up your primary E-mail at http://gitee.com/profile/emails .

2. Signing the Contributor License Agreement (CLA)

Please sign the Contributor License Agreement (CLA) before participating in the community contribution.

3. Finding Your Interests

The openGauss community is organized based on different SIGs (Special Interest Groups), facilitating the management and improvement of working processes. SIGs are open to everyone to make contributions.

4. Starting Your Contribution

https://opengauss.org/en/contribution.html

Join openGauss to work with over 1.2k contributors

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WeChat Group

Thank you!