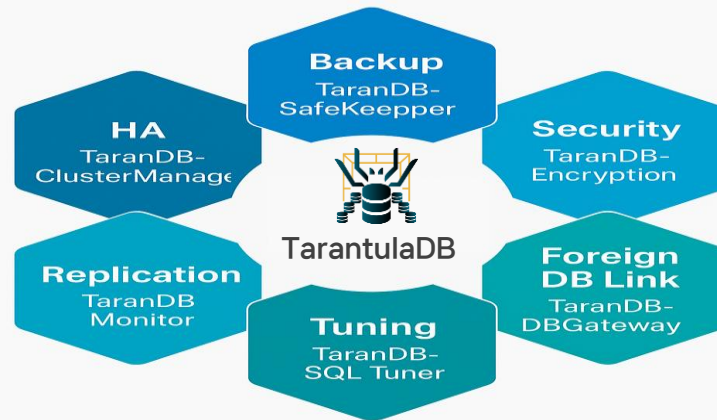Total Enterprise DB Solution based on PostgreSQL

TarantulaDB

UN° NET

TarantulaDB is a comprehensive enterprise DB solution based on PostgreSQL, providing essential features required by businesses along with top-tier technical support in Korea..

Backup
TaranDB-
SafeKeepper

HA
TaranDB-
ClusterManage

Security
TaranDB-
Encryption

TarantulaDB

Replication
TaranDB
Monitor

Tuning
TaranDB-
SQL Tuner

**Foreign
DB Link**
TaranDB-
DBGateway

Development Story

Is there no perfect DB solution?

Over 20 years of concerns as a DBA

For over a decade, while working as an Oracle and PostgreSQL DBA and consultant, I wanted to solve the real problems that customers were experiencing in the field.

To build and operate a DB service with excellent features and performance:

- An All-in-One solution that integrates the most reliable components is needed.

- There is a need to address the demand for data integration management in companies operating various DBs.

- When DB failures or performance degradation occur, DB tuning should be done swiftly, and failures should be recovered, ensuring the productivity and continuity of DBA work..

Why PostgreSQL?

PostgreSQL is the most advanced open-source DBMS with enterprise-grade features.

This is why TarantulaDB chose PostgreSQL as its DB engine.

The most advanced open-source database

PostgreSQL

- Over 20 years of history
- Open-source object-relational database system (ORDBMS)
- Provides enterprise-class DBMS (Oracle, DB2, SQL Server, etc.) features and next-generation DBMS-level features
- Unlike other RDBMSs, users can arbitrarily create various DB objects, making it easy to implement infinite functions like a new programming language.

Key Features of PostgreSQL

Diverse and powerful features

Various language support, various data type support, Full-text search, strong authentication and access control and privilege management, Foreign data wrappers, Materialized views, Write-Ahead Logging, NoSQL-like behavior support
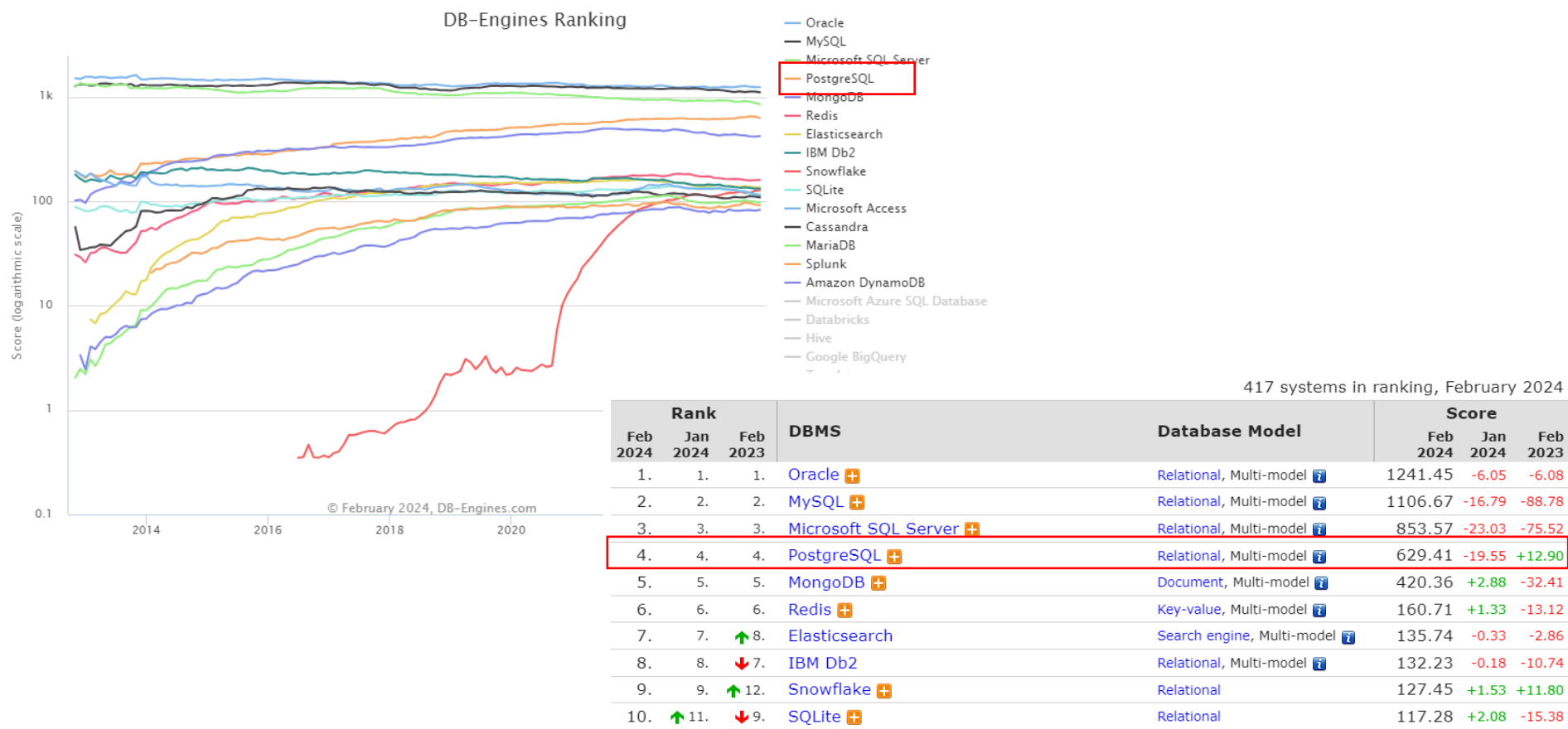
SQL standard and ACID compliance

Based on ANSI / ISO SQL:2023, it meets 170 of the 177 mandatory requirements, ensuring quality such as interoperability, portability, vendor neutrality, and scalability. Reliability is guaranteed by complying with ACID, the core property of relational DB.

Continuous technological innovation through the community

Rapid technological innovation is possible through a global community with diverse users sharing the latest technical information and solutions to problems. It has a long history of over 20 years and continues to be developed steadily.

DB Engine Ranking Trend: PostgreSQL is emerging as a popular DB in enterprise data environments

DB-Engines Ranking

417 systems in ranking, February 2024

	Rank		DBMS	Database Model	Score		
Feb 2024	Jan 2024	Feb 2023			Feb 2024	Jan 2024	Feb 2023
1.	1.	1.	Oracle ➕	Relational, Multi-model ℹ️	1241.45	-6.05	-6.08
2.	2.	2.	MySQL ➕	Relational, Multi-model ℹ️	1106.67	-16.79	-88.78
3.	3.	3.	Microsoft SQL Server ➕	Relational, Multi-model ℹ️	853.57	-23.03	-75.52
4.	4.	4.	PostgreSQL ➕	Relational, Multi-model ℹ️	629.41	-19.55	+12.90
5.	5.	5.	MongoDB ➕	Document, Multi-model ℹ️	420.36	+2.88	-32.41
6.	6.	6.	Redis ➕	Key-value, Multi-model ℹ️	160.71	+1.33	-13.12
7.	7.	↑8.	Elasticsearch	Search engine, Multi-model ℹ️	135.74	-0.33	-2.86
8.	8.	↓7.	IBM Db2	Relational, Multi-model ℹ️	132.23	-0.18	-10.74
9.	9.	↑12.	Snowflake ➕	Relational	127.45	+1.53	+11.80
10.	↑11.	↓9.	SQLite ➕	Relational	117.28	+2.08	-15.38

Source: https://db-engines.com/en/ranking   (Current database ranking trend)

Architecture

Delivers enterprise-grade features reliably through a PostgreSQL-based DBMS engine, ensuring high compatibility with Oracle.

Edition	Standard	Enterprise			Option	
TarantulaDB Components	TaranDB-Monitor	TaranDB-ClusterManager	TaranDB-SafeKeeper	TaranDB-Encryption	TaranDB-DBGateway	TaranDB-SQLTuner
Feature	Operation Monitoring	High Availability	Backup & Recovery	Security	Heterogeneous DB Link	SQL Tuner
Postgres Open Source	PostgreSQL (Stable Community version)					

PostgreSQL Open Source

– **PostgreSQL: The most stable version of large-capacity enterprise-class open-source DB engine**

– **Extensions: Ensures very flexible scalability by easily adding various functions not provided by the DB engine**

TarantulaDB Components

– TaranDB-Monitor: Solution for intuitive performance and operational status monitoring
– TaranDB-ClusterManager: High availability configuration solution to ensure stable and continuous operation
– TaranDB-SafeKeeper: Powerful backup and recovery solution for safe management of data
– TaranDB-Encryption: Data security solution that meets NIS standards
– TaranDB-DBGateway: Solution that guarantees free data combination and exchange between heterogeneous DBMS
– TaranDB-SQLTuner: Dedicated solution for performance improvement through professional SQL statement tuning

Description of 6 Main Features - High Availability Solution
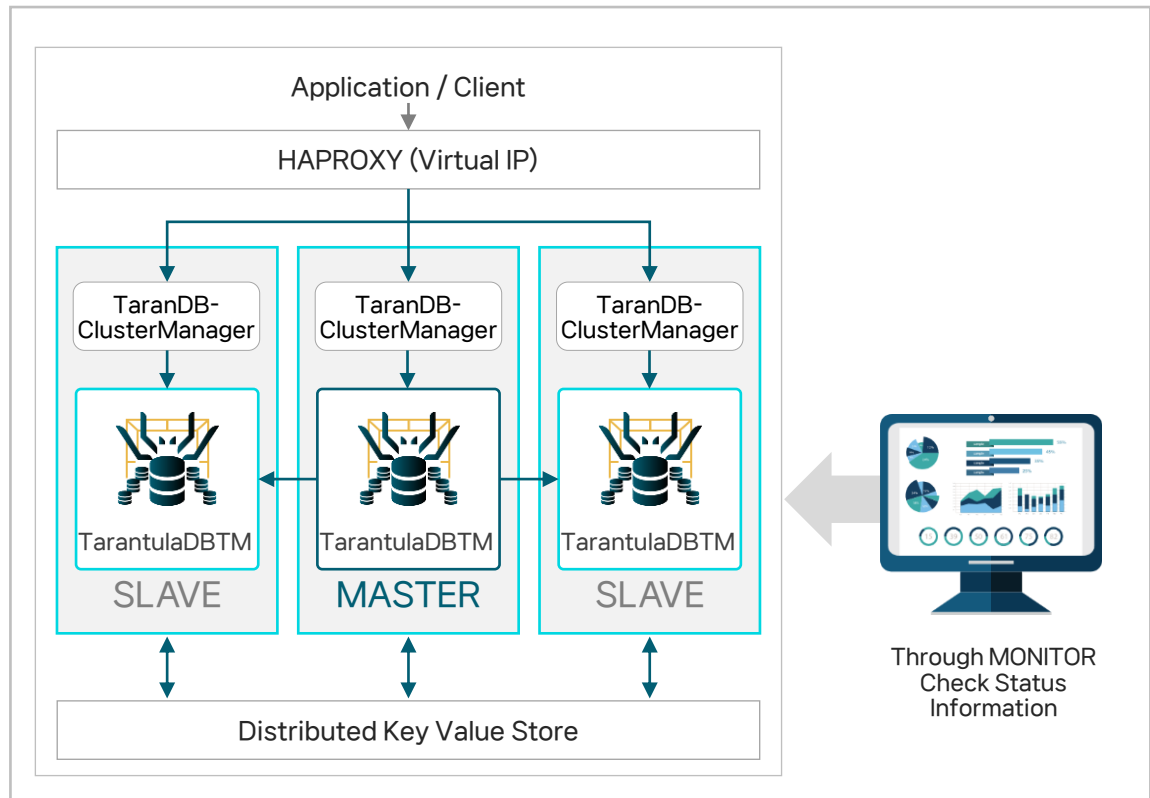
1) TaranDB-ClusterManager

High availability refers to the ability to continuously provide services during system failures.
The goal is to allow users to use services without interruption.

High Availability Solution

- High availability HA solution based on open-source components

High Availability Cluster Function

- Supports rapid Failover within tens of seconds to minutes in the event of a master server failure

- Provides a multi-node environment for PostgreSQL HA architecture configuration, deployment, and operation

- Provides shared cluster status and architecture configuration maintained in a distributed configuration store (DCS)

- Provides a monitoring screen to easily check the status information of the cluster

Application / Client

HAPROXY (Virtual IP)

TaranDB-ClusterManager	TaranDB-ClusterManager	TaranDB-ClusterManager
TarantulaDBTM	TarantulaDBTM	TarantulaDBTM
SLAVE	MASTER	SLAVE

Distributed Key Value Store

Through MONITOR Check Status Information

5 / 14

Description of 6 Main Features - Backup Solution
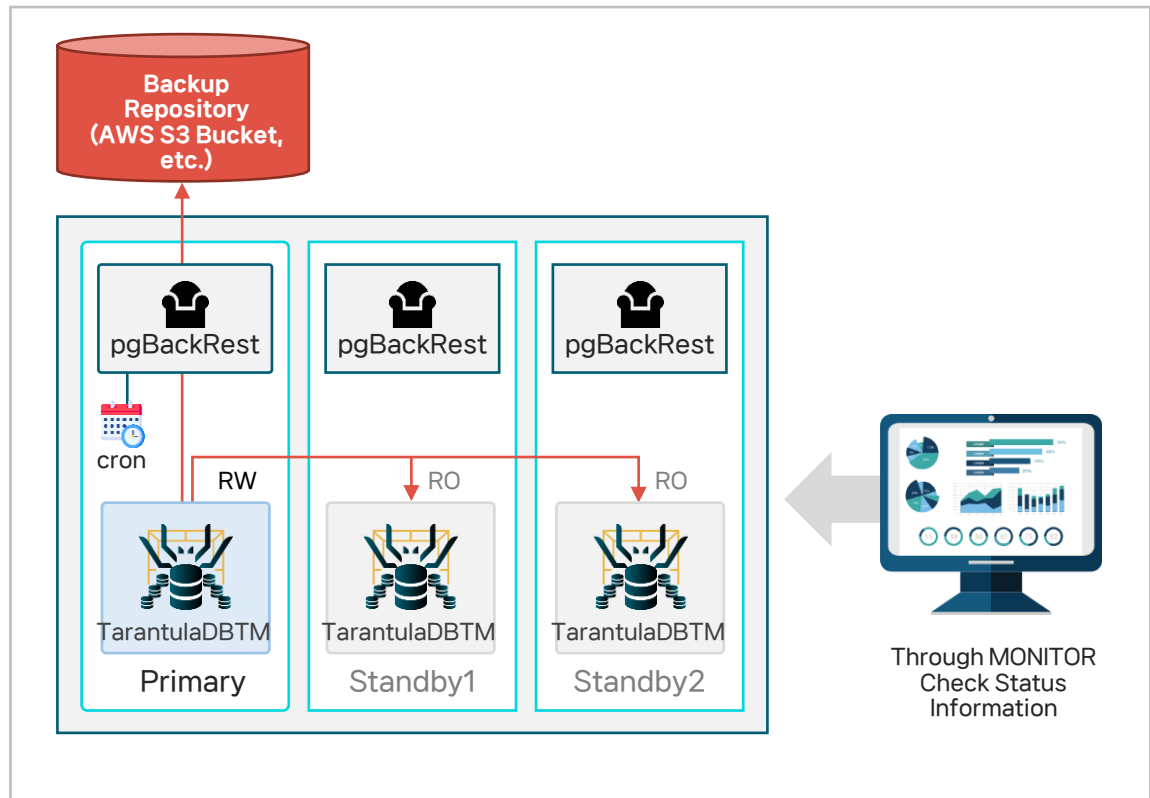
2) TaranDB-SafeKeeper

Offers powerful and flexible backup capabilities, maximizing efficiency through easy scheduling and automation.

Backup Solution

- Based on PostgreSQL's best open-source backup solution pgBackRest

Backup Solution Features

- Supports various types such as Full/Incremental

- Safely store backups in remote locations such as on-premises or cloud (AWS S3, etc.)

- Compress backup data to save storage space

- Encrypt data to enhance security

- Point-in-time recovery through continuous archive backup and Reader synchronization using stored logs

- Supports parallel backup and restore

- Supports online backup

- Backup possible from Standby server

Backup Repository (AWS S3 Bucket, etc.)

pgBackRest

cron

RW

pgBackRest

RO

pgBackRest

RO

TarantulaDBTM
Primary

TarantulaDBTM
Standby1

TarantulaDBTM
Standby2

Through MONITOR Check Status Information

Description of 6 Main Features - Monitoring Solution

3) TaranDB-Monitor

Provides a screen where you can intuitively see the core elements necessary for actual operation

Monitoring Solution

- Provides aesthetically pleasing and highly intuitive screens
- HA/BACKUP/DB Performance Information Monitoring

Monitoring Solution Features

- Check the status of each server at a glance
- Check the status of the cluster in real time
- Check OS metrics for each server in the cluster
- Real-time database SQL check
- Check various database metrics such as AAS, ASH, TPS, SLOW QUERY
- Check start/end time, size, etc. by backup type
- SQL Plan Viewer

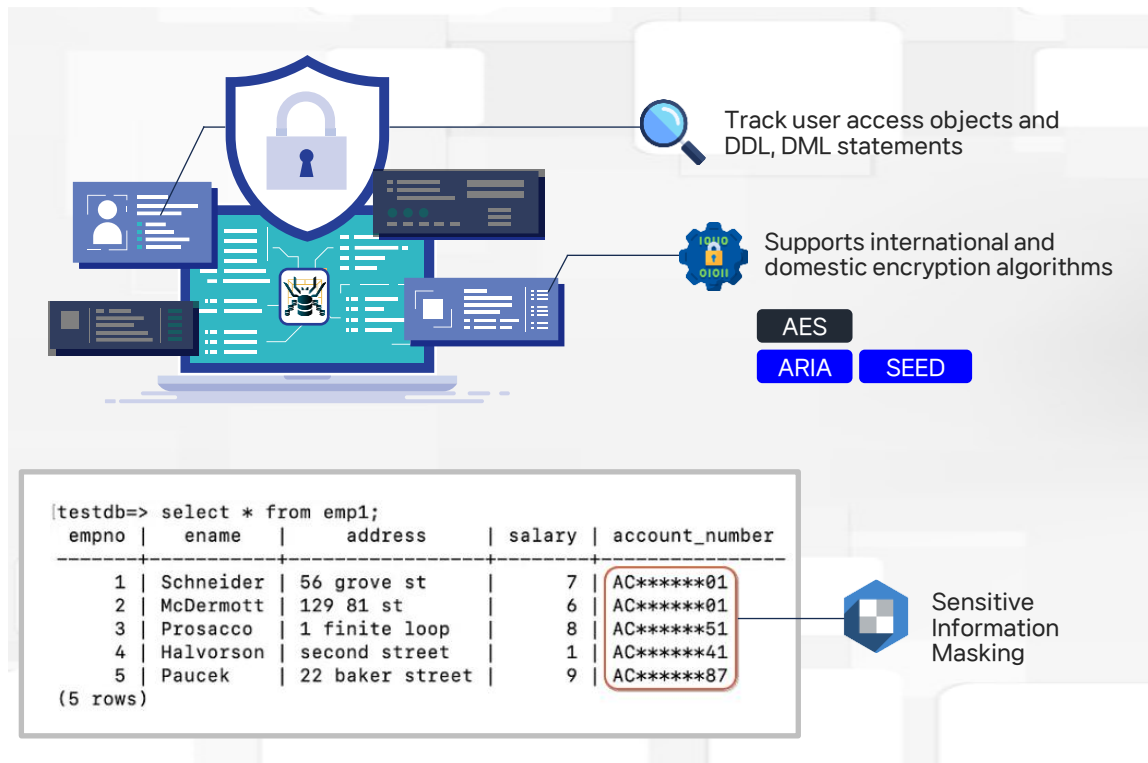Description of 6 Main Functions - Security Solution

4) TaranDB-Encryption

Provides international and domestic standard security algorithms and data audit/masking functions

Security Solution

- Supports International Standard AES Algorithm

- Supports National Standard ARIA, SEED Algorithms

Security Solution Features

- Tracks Objects, DDL, and DML Statements Accessed by Users

- Personal Information Masking Function for Security Audits

- Column Data Encryption/Decryption

Track user access objects and DDL, DML statements

Supports international and domestic encryption algorithms

AES

ARIA   SEED

```
testdb=> select * from emp1;
 empno |   ename    |     address      | salary | account_number
-------+------------+------------------+--------+----------------
     1 | Schneider  | 56 grove st      |      7 | AC******01
     2 | McDermott  | 129 81 st        |      6 | AC******01
     3 | Prosacco   | 1 finite loop    |      8 | AC******51
     4 | Halvorson  | second street    |      1 | AC******41
     5 | Paucek     | 22 baker street  |      9 | AC******87
(5 rows)
```

Sensitive Information Masking

Description of 6 Main Functions - SQL Tuning Tool
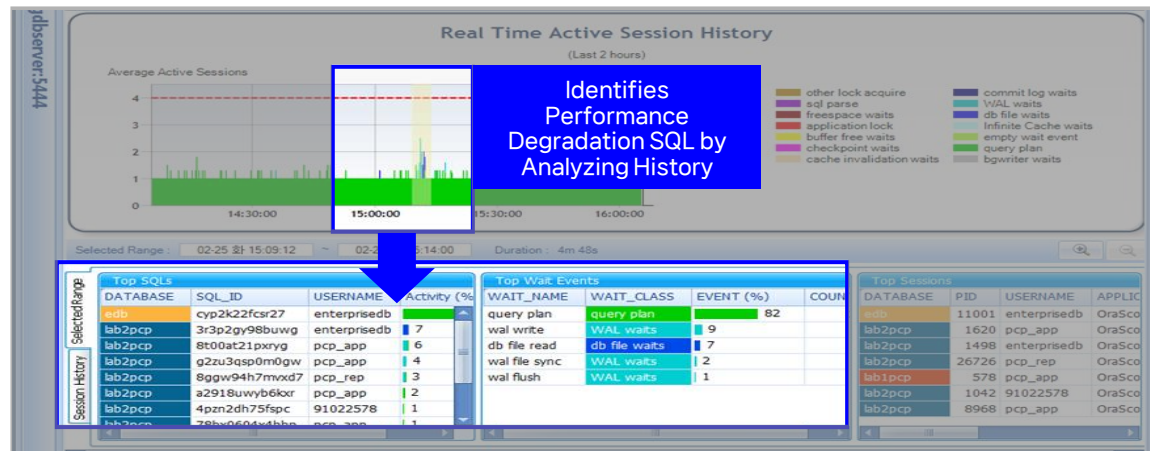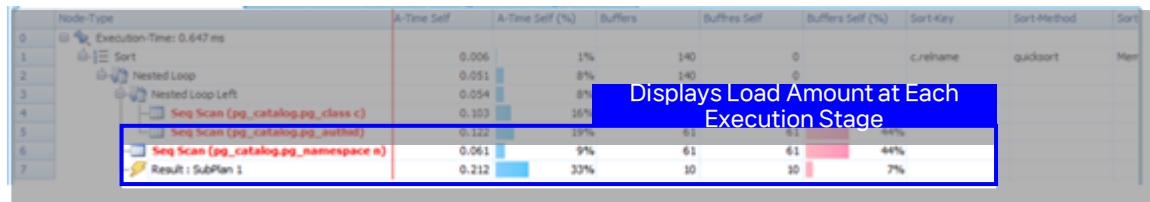
5) TaranDB-SQLTuner

A specialized performance enhancement tool for professional SQL tuning (the only one of its kind in Korea).

Tuning Solution

- Professional SQL Tuning Solution Providing Detailed UI in CS Version

Tuning Solution Features

- Provides Detailed Execution Plan Screen, an Essential Element for SQL Tuning

- Enables Identification of Load Amount at Each Execution Plan Stage

- Improves Work Efficiency and Tuning Performance Through Automated Execution Plan Analysis

- Active Session History (ASH) Function

- Easily Extracts SQL Statements with Performance Degradation Based on ASH

- Identifies Accurate Performance Improvement Points by Referencing ASH in Addition to CPU Load

Displays Load Amount at Each Execution Stage

Identifies Performance Degradation SQL by Analyzing History

Description of 6 Main Functions - Heterogeneous DB Integration Solution

"Supports various types of databases such as RDBMS, NoSQL, and In-Memory DB. "
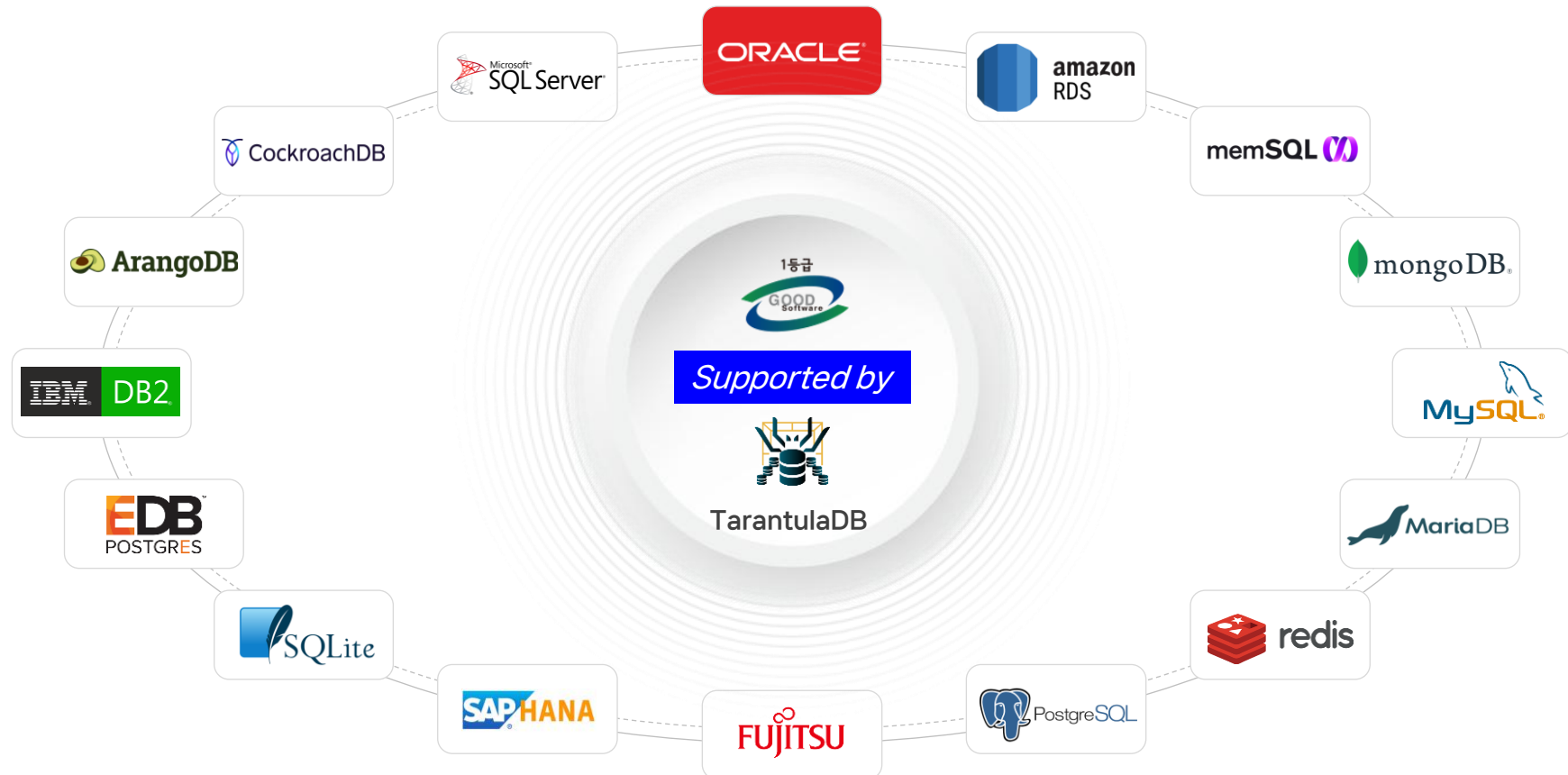
Description of 6 Main Functions - Heterogeneous DB Interworking Solution

6) TaranDB-DBGateway

Free Combination and Exchange of Data Is Possible Regardless of Existing Legacy DB Types, and Completely Replaces DB LINK

Free Combination of Heterogeneous Databases

- Free Combination and Exchange of Data Regardless of Existing Legacy DB Types

- No Separate Programming Language Required for Data Communication Between Heterogeneous DBs

- Extremely Convenient as It Only Uses SQL, Which Any Programmer Knows

Real-Time Multi-Database Query

- Can Merge and Query Data from OLTP and OLAP Databases in Real Time

- Perfect DB LINK Replacement Solution Enabling DB LINK Between Heterogeneous Databases

Easy Replacement of Databases

- Data-Centric Architecture

- No Application Modification Required Even If the Database, Which Is the Data Provider, Is Replaced

- Can Be Written in Each Native SQL According to the Type of Database Distributed as Microservices, and There Is No Need to Restart WAS Even If SQL Is Modified

Detailed Feature List

Main Function	Detailed Function	Configuration Component
DBMS	• PostgreSQL-Based DBMS • Provides Oracle Function Compatibility • GIS Function (PostGIS Optional) • Provides Various PostgreSQL Extensions	TarantulaDB
Monitoring	• Provides ACTIVE SESSION and LOCK Monitoring Screen • Provides HA Function (VIP Failover, etc.) Monitoring Screen (Only One in Korea) • Monitoring of CPU, Network Traffic, File System, etc.	TaranDB-Monitor
Availability	• Full HA Function (Including AutoFailOver) • VIP failover function • Multi-Node Load Balancing Function • Redundant Architecture Consulting Support	TaranDB-ClusterManager
Backup/Recovery	• Full Backup and Incremental Backup • Online and Offline Backup • Parallel Backup • Tera-Scale Large-Capacity Real-Time Backup and Recovery	TaranDB-SafeKeeper
Security	• Supports International Standard AES and Domestic ARIA, SEED Security Algorithms • Data Object Access Audit Function • Data Masking Function	TaranDB-Encryption
Heterogeneous DB Interworking	• Supports Interworking with Oracle, MySQL, Tibero, MongoDB, EDB, PostgreSQL, Redis, SQL Server, SAP HANADB, Altibase • Provides the Most Heterogeneous Interworking Functions Including NoSQL (Only One in Korea) • Provides Real-Time Join Function Between Heterogeneous Databases • Provides Two Types of Interfaces: SQL Only and REST API	TaranDB-DB Gateway
SQL Tuning	• Korea's Only SQL-Dedicated Tuning Tool • Execution Plan Dedicated Viewer (Only One in Korea) • ASH (Active Session History) Viewer (Only One in Korea) • Provides SQL Execution Window	TaranDB-SQLTuner

License

Edition	Included	Optional	Type	Carepack
Standard	• PostgreSQL and Extensions • TaranDB-Monitor			• 8*5
Enterprise	• PostgreSQL and Extensions • TaranDB-Monitor • TaranDB-ClusterManager • TaranDB-SafeKeeper • TaranDB-Encryption	• TaranDB-DBGateway • TaranDB-SQLTuner	• Perpetual • Subscription	• 24*7

Carepack Service

✓ 24*7, 4Hr Response
✓ Wired/Wireless/Email Remote Technical Support
✓ Regular Inspection

✓ **Emergency support for system failures (remote or on-site)**
✓ Performance Inspection (DBMS)
✓ Service, System, Network Environment Configuration Change Support

Thank You.

UN NET

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