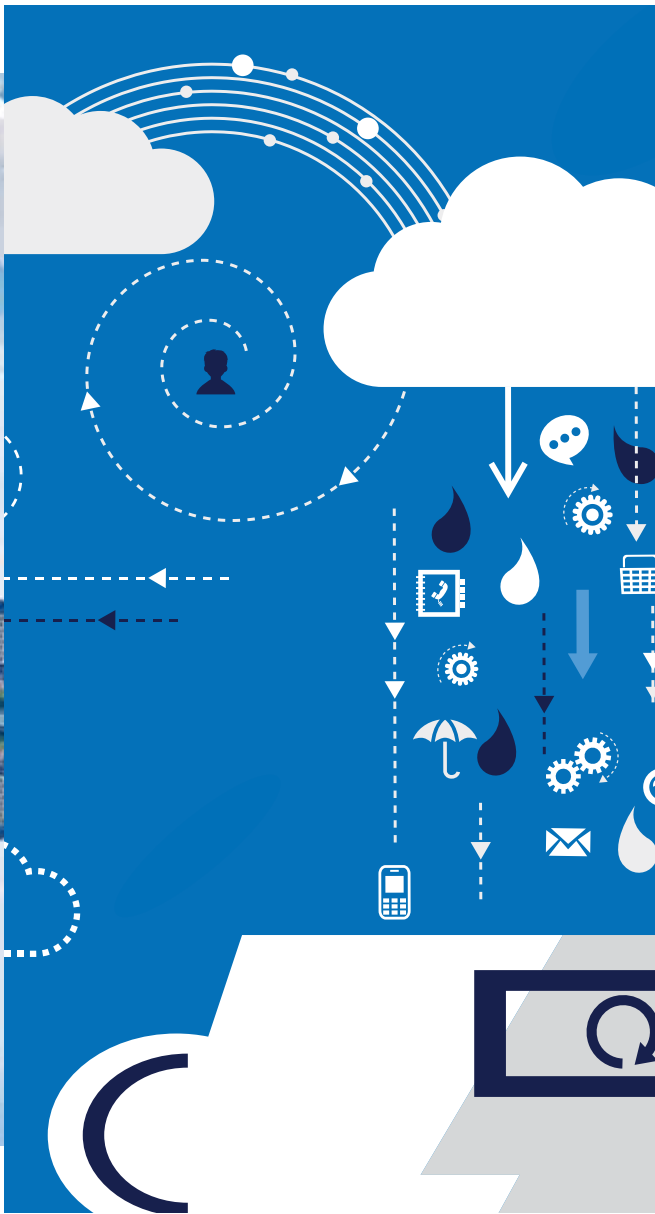


TIBERO

The RDBMS of choice

A highly compatible relational database management system
that's a drop-in replacement for legacy systems



TmaxSoft

TIBERO

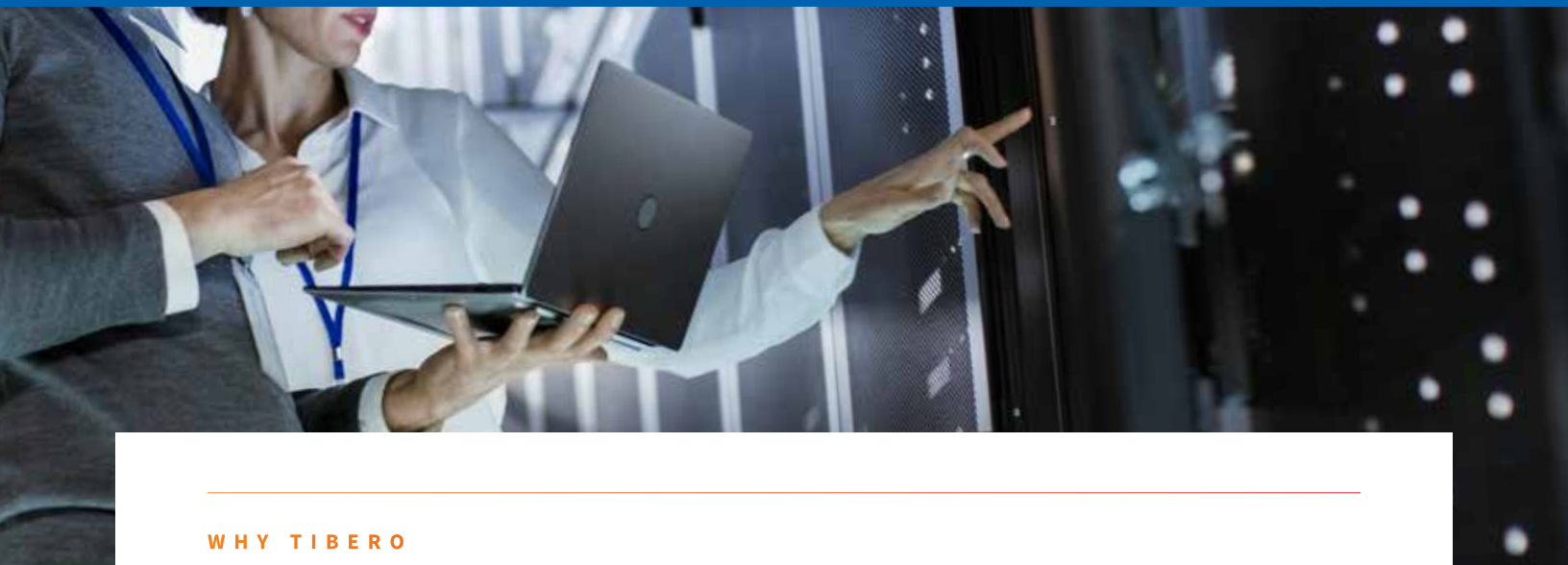
The RDBMS of choice



An innovative architecture geared toward a **highly virtualized environment**



Highly compatible with major competitive databases including Oracle



WHY TIBERO

Tibero is designed for today's software-defined datacenters (SDDC)

Tibero 6's multi-thread architecture lets the enterprise get the most performance out of its applications.

1.



Active Clustering technology provides unsurpassed reliability

3.



Provides **robust security**

2.



Guarantees **compatibility without modifying applications**

4.



Installed in enterprises with **large data lakes and data warehouses**



Tibero is the RDBMS of choice for a wide range of sectors

- Over 600 companies and 1,560 projects in Korea and overseas
- More than 200 TAC* projects (as of Dec 2015)
 - * **TAC (Tibero Active Cluster):** Tibero was the 2nd in the world to apply DB cluster technology. Previously only provided by Oracle RAC.

Representative Clients

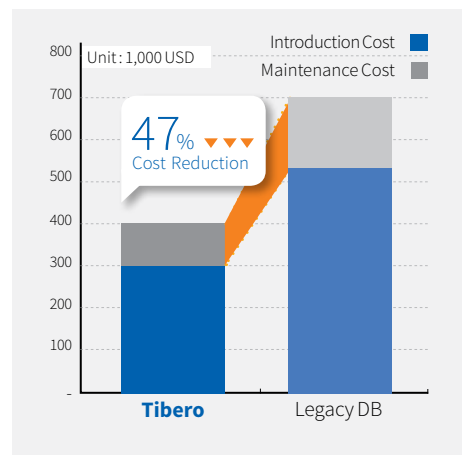
| | | | | | |
|--------------------------------|--|----------------------------------|---|-------------------------------|-------------------------|
| Finance | SHINHAN BANK | KB Financial Group | Wooribank | Kyongnam Bank | |
| | Hanwha | SAMSUNG LIFE INSURANCE Co., Ltd. | NongHyup Property & Casualty Insurance Co., Ltd | SGI Seoul Guarantee Insurance | |
| Public & Government | Ministry of National Defense Republic of Korea | KEPCO | YONSEI UNIVERSITY | 국토교통부 | |
| | SEOULTECH | Incheon Airport | 고령실 중앙교육연수원 | KOREA POST | |
| Manufacturer | SAMSUNG | LG | HYUNDAI STEEL | HYUNDAI seon STEEL | GE Capital |
| Telco & Media | LG U+ | kt | INTERPARK Shopper's Heaven | 잠재빈드 PRICE | LOTTE CHILSUNG BEVERAGE |



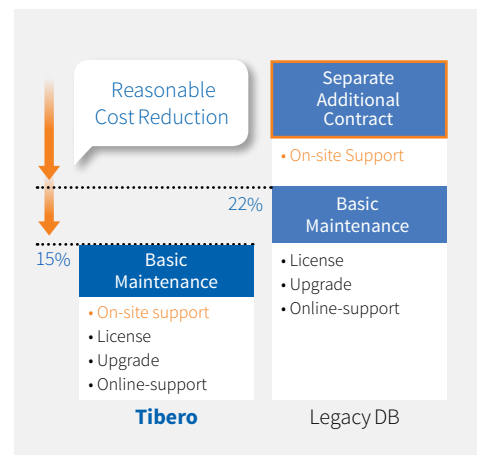
Tibero's flexible licensing model reduces the total cost of ownership (TCO) by 50% when compared to other legacy products*

- With Tibero, you only pay for the compute power you need to run your application. Redirect this savings into innovation to benefit your entire organization.

TCO (for 5 years)



Maintenance Cost

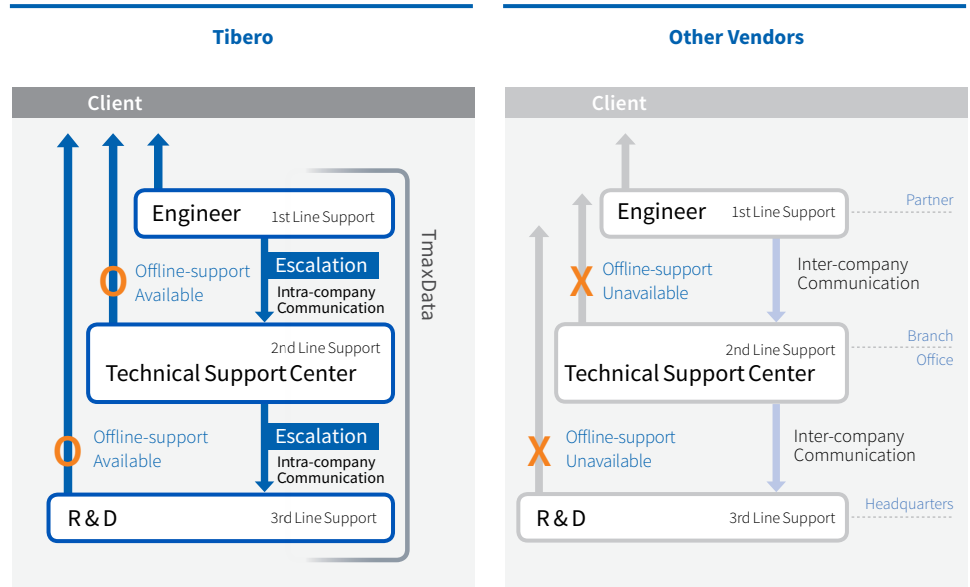


* Based on 3.8 GHz 1 Processor, 8 Cores, List Price



Tibero guarantees superior technical services

- Fixes to client issues are added to the product roadmap
- TmaxData provides dedicated technical support services

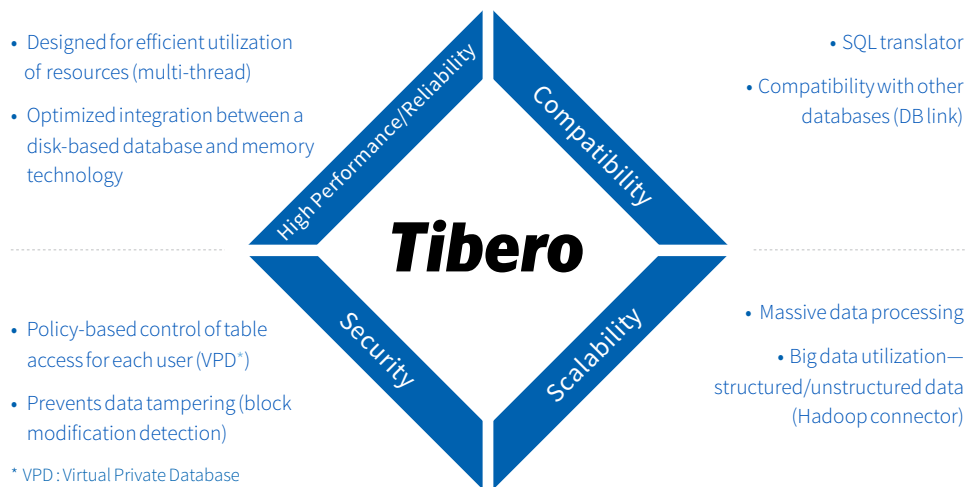


Superior Technical Service

- R&D-level product development for client requests
- Fast and accurate technical support
- Rapid resolution of issues thanks to intra-company communication

Tibero 6—the most efficient DBMS

- Provides an efficient architecture for analyses as well as core tasks
- The ideal choice for large-scale operating environments by providing security, high performance, compatibility and scalability





Tibero's architecture offers maximum efficiency

- Provides a new but simple conceptual database server architecture
- Supports reliable and efficient management by preventing potential issues

Process Integration, Simple Structure



[Major Processes]

| | |
|------|---------------------------|
| BMP | Tibero Manager Process |
| AGNT | Agent Process |
| LSNR | Listener Process |
| FWP | Foreground Worker Process |
| BWP | Background Worker Process |
| TBCM | Tibero Cluster Manager |

Improved Communication and Input/Output Performance



[Major Features]

Hyper Thread Architecture

Dramatically improved performance for processing massive data

DBWR AIO

DB Writer's improved asynchronous input/output

Improved Memory Utilization



Shared Memory Management

Variable expansion support for shared memory

Improved Memory Allocation

Error prevention and improved management

SQL Contention Minimization



Data Dictionary Lock Free

DML/DDL contention minimization

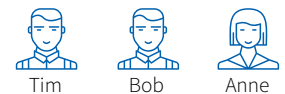


Tibero provides robust security

- Table row access control (by user)
- Fine grained audit, encrypted data tampering prevention, and country-specific encryption algorithms support

Emp Table

| ename | title | manager | deptid | salary |
|-------|----------|---------|--------|--------|
| Bob | Manager | - | 1 | 10000 |
| Alice | Engineer | Bob | 1 | 8000 |
| Tim | Engineer | Bob | 1 | 7000 |
| Eve | Analyst | Bob | 1 | 7500 |
| Anne | Manager | - | 2 | 10500 |
| Denis | Engineer | Anne | 2 | 9000 |
| Jack | Engineer | Anne | 2 | 9500 |



select * from hr.emp;

select * from hr.emp where upper(user) = sys_context('userenv', 'curr_user') or upper(manager) = sys_context('userenv', 'curr_user');



Tibero provides a monitoring and management tool for operations and management

- Monitors transaction processing and resource status in real time
- Provides an embedded GUI-based management tool (backup, recovery, security, schema management, etc.)



Tibero was developed with massive data processing in mind

- Technology**
- New architecture** Efficient processing of massive data
 - TAC and TAS** Availability and scalability in large-scale database environment
 - Various partitioning, advanced parallel processing technology**
 - Reliable and efficient operations for massive data
 - Hadoop connector support for big data (HDFS, Hbase support)**
 - Integrated analysis for semi-structured data support
 - TPR*, ASH* support** VLDB performance analysis support

- Cases**
- AA federation** 40TB
 - Large-scale communication company's NMS** 30TB
 - KEPCO, Meter Data Management System**
 - Academic Administration for the National University of Science and Technology, Yonsei University** Course registration system successfully completed

* Tibero Performance Repository / * Active Session History

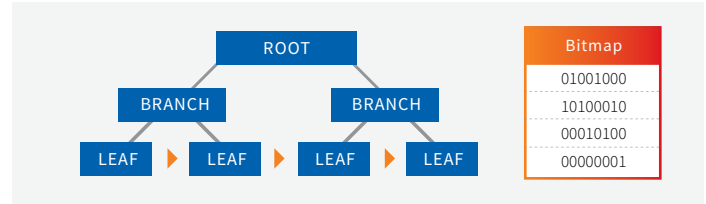


Tibero provides specialized features commonly used by DW

- Uses bitmap indexes to save storage space and improve performance
- Supports interval partitions, eliminating the need to create partitions in advance by a DBA

Bitmap Index

Saves a range value as a bitmap.
Appropriate for an OLAP environment in which many duplicate values exist.



Interval Partition

Automatically creates a partition when data is inserted into a database.
E.g., Automatically creates hour/day/month/year partitions.

Star Transformation*

Optimizes a join query that includes a large volume of tables.

* Supports transformation that is specialized for the star schema, which is commonly used by DW

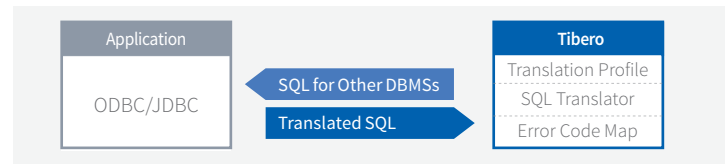


Tibero provides compatibility without modifying applications

- An existing database can be migrated or used concurrently with Tibero
- Improved compatibility with Windows

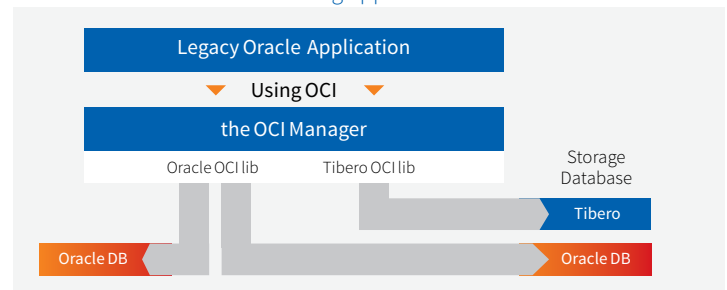
Existing SQL Automatic Translation

Applications written for other DBMSs can be used in Tibero without modification.



Oracle Compatibility

Tibero can be used for the existing applications that use Oracle OCI*



Windows Compatibility

ODP.NET compatibility

*OCI: A non-standard internal interface used only by Oracle



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