TIBERO
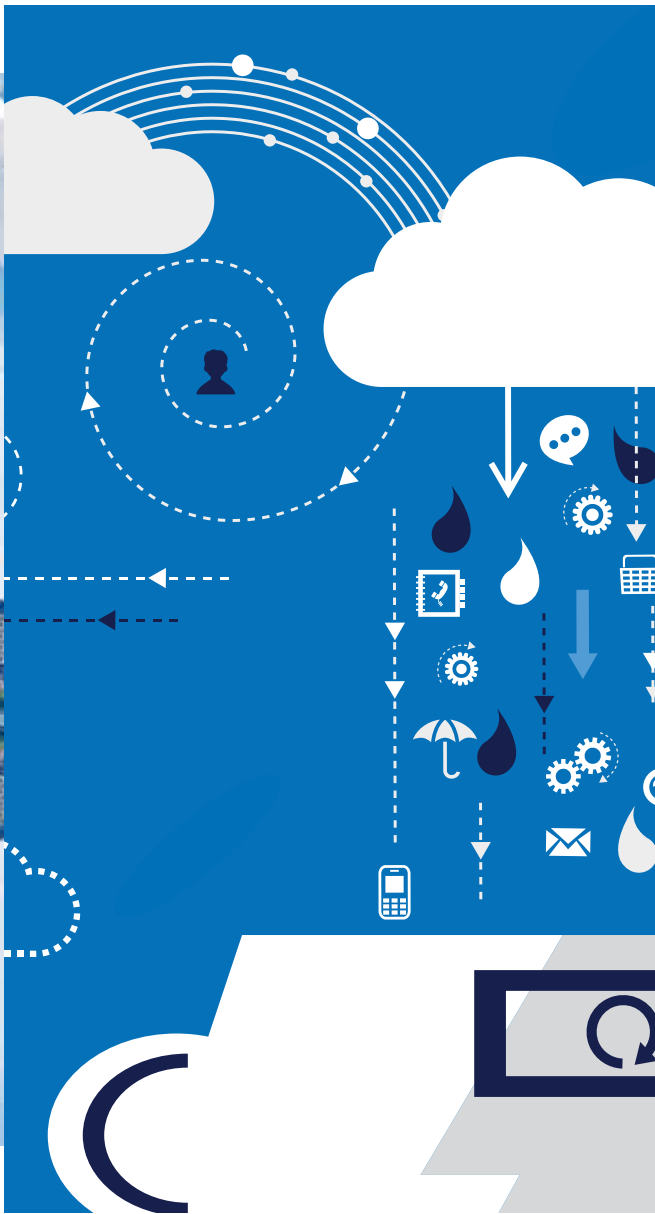
The RDBMS of choice

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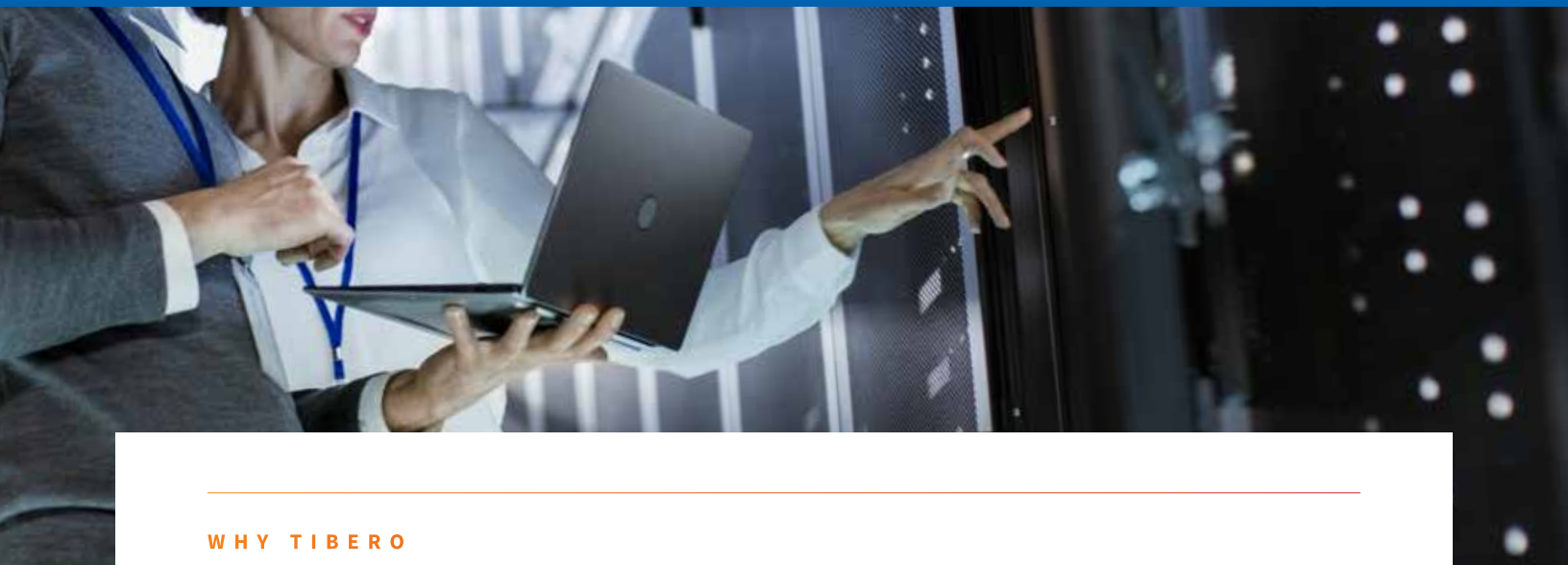
TmaxSoft

TIBERO

The RDBMS of choice

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

Highly compatible with major competitive databases including Oracle

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

2.

Guarantees **compatibility without modifying applications**

3.

Provides **robust security**

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.
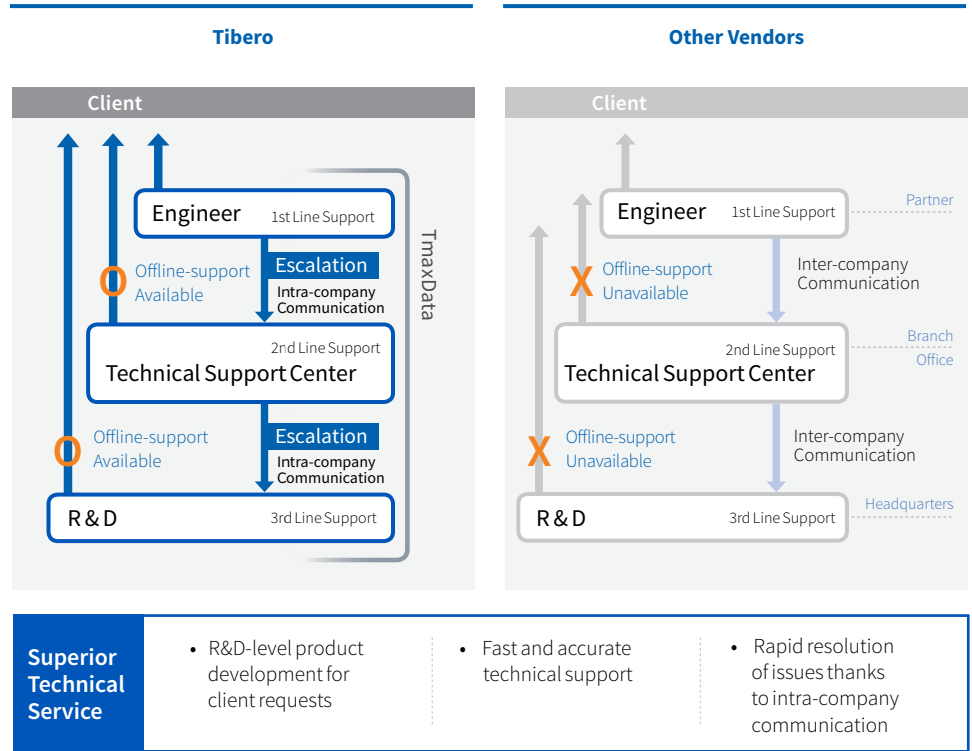   Previously only provided by Oracle RAC.

Representative Clients

Finance

Hanwha   KB Financial Group   Kyongnam Bank

NongHyup Property & Casualty Insurance Co., Ltd   SAMSUNG LIFE INSURANCE Co., Ltd.   SGI Seoul Guarantee Insurance — Your Best Credit Partner

SHINHAN BANK   Wooribank

Manufacturer

GE Capital   HYUNDAI   HYUNDAI STEEL

LG   SAMSUNG   SEUN STEEL

Public & Government

Incheon Airport   KEPCO   KOREA POST

국토교통부 Ministry of Land Infrastructure and Transport   Ministry of National Defense Republic of Korea   교육부 중앙교육연수원 National Education Training Institute

SEOULTECH   YONSEI UNIVERSITY

Telco & Media

INTERPARK Shopper's Heaven   kt   LG U+

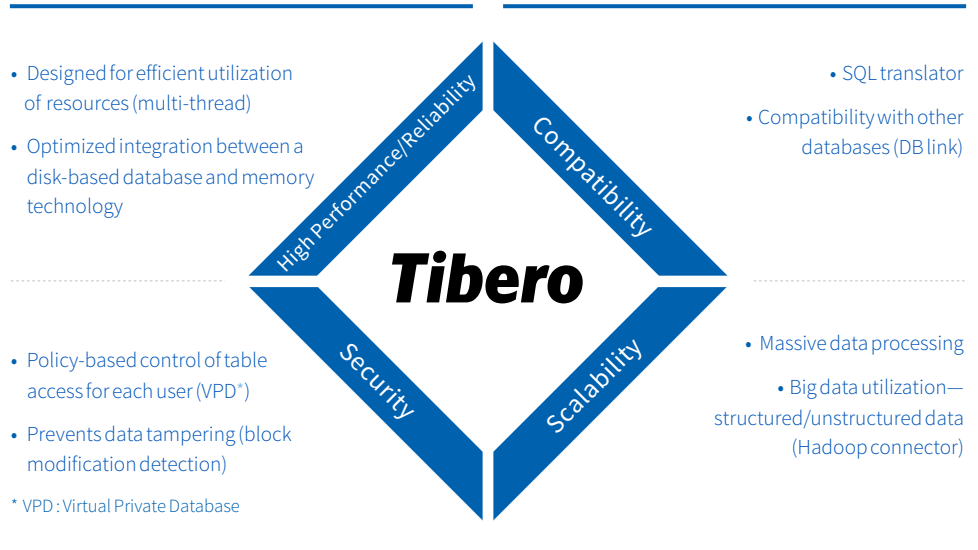LOTTE CHILSUNG BEVERAGE   전자랜드 price KING

Tibero guarantees superior technical services

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

Tibero	Other Vendors

Tibero

Client

| Engineer | 1st Line Support |

Offline-support Available

Escalation
Intra-company Communication

TmaxData

2nd Line Support
Technical Support Center

Offline-support Available

Escalation
Intra-company Communication

R & D   3rd Line Support

Other Vendors

Client

| Engineer | 1st Line Support | Partner |

Offline-support Unavailable

Inter-company Communication

Branch Office

2nd Line Support
Technical Support Center

Offline-support Unavailable

Inter-company Communication

R & D   3rd Line Support   Headquarters

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

- Designed for efficient utilization of resources (multi-thread)
- Optimized integration between a disk-based database and memory technology

- Policy-based control of table access for each user (VPD*)
- Prevents data tampering (block modification detection)

* VPD : Virtual Private Database

High Performance/Reliability

Compatibility

Tibero

Security

Scalability

- SQL translator
- Compatibility with other databases (DB link)

- Massive data processing
- Big data utilization—structured/unstructured data (Hadoop connector)

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

Tim   Bob   Anne
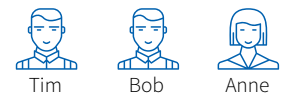
`select * from hr.emp;`

```
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.)

**MASSIVE
DATA
PROCESSING**

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.
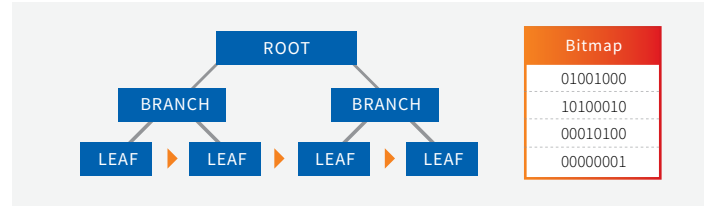
**Interval
Partition**

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
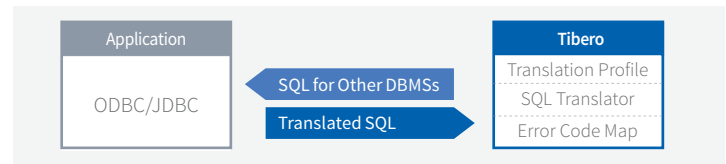
Tibero provides compatibility without modifying applications

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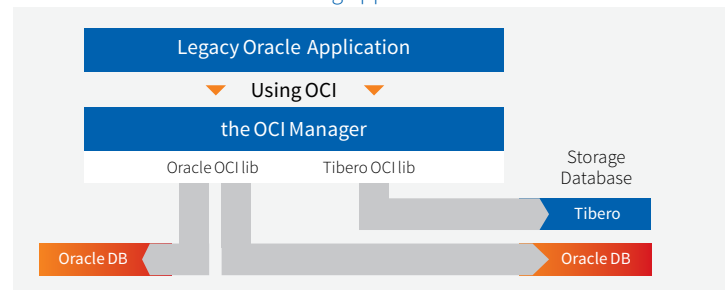- Improved compatibility with Windows

**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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