



# TIBERO

## DataBase

High Performance High Availability RDBMS

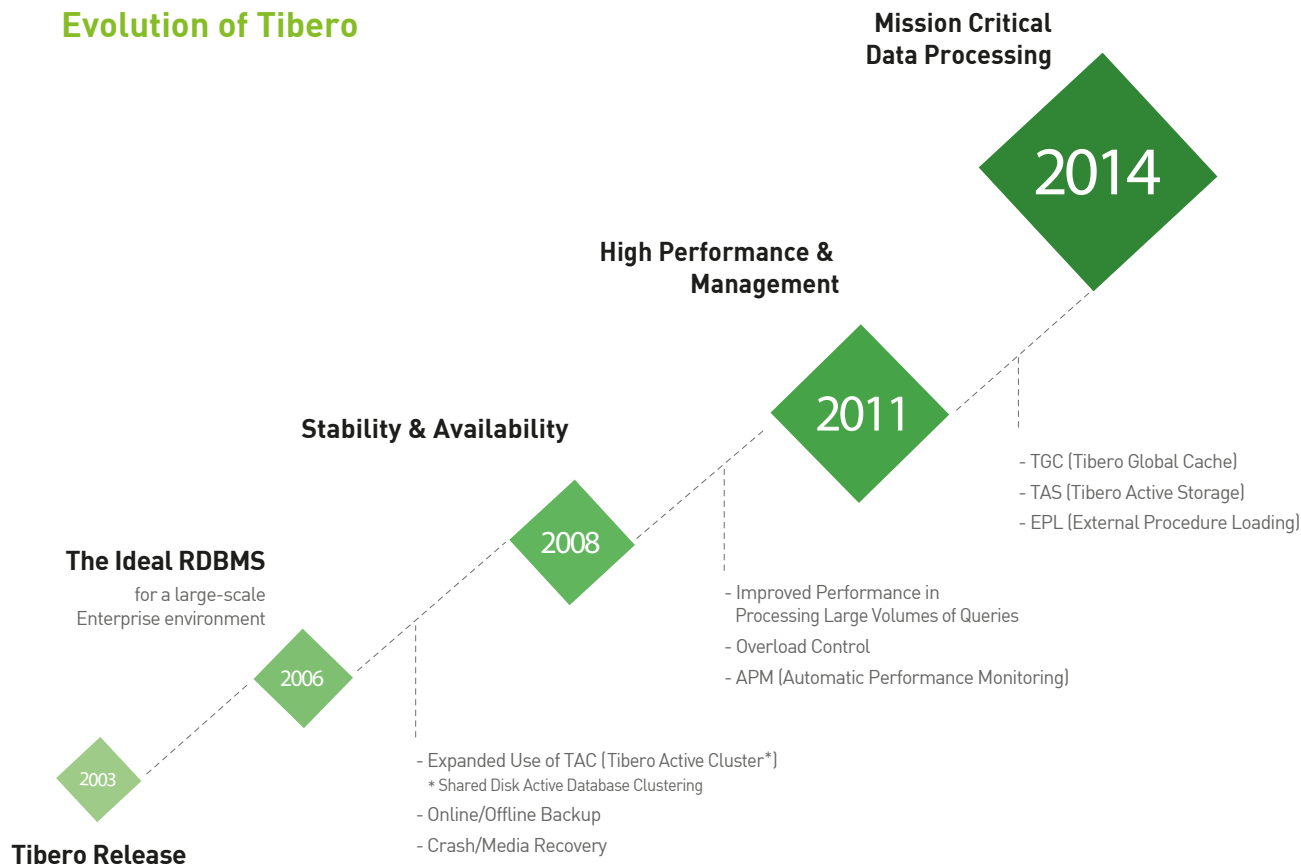
**TmaxSoft**

# Tibero DataBase

New Leader in Providing User-Centered Database Management System

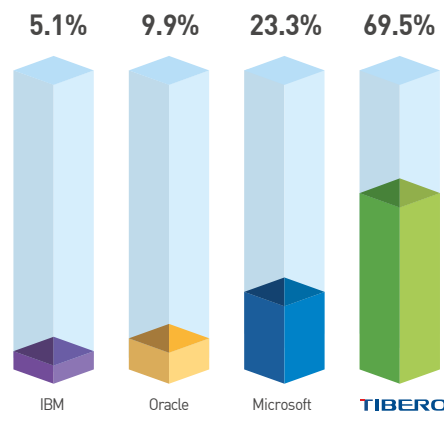
## History

### Evolution of Tibero



### Tibero Present

Tibero is a DBMS that provides stability and meets various business requirements. Tibero ensures optimal performance through efficient resource utilization even when concurrently processing a large volume of data from multiple users. By applying the shared disk based clustering technology, Tibero provides seamless and reliable services. Tibero provides various tools which help enhance the productivity for new product development and system operation. Tibero is highly compatible with Oracle, which maximizes reuse of existing applications and technical personnel. Tibero can be integrated with various heterogeneous databases in order to connect with other applications.



DBMS Vendor Growth Rate –  
First Half of 2012 / First Half of 2013

## ► Features

Tibero's multi-process and multi-thread structure provides excellent stability when processing large amounts of data without performance loss. Tibero Active Cluster (TAC) enables database instances on separate nodes to share data through disk. Tibero Active Cluster guarantees stable system operation (24 x 365) through its fail-over feature, and allows optimal transaction processing by securing data integrity in each instance's memory.

### Performance

- High performance in processing multiple user connections concurrently through row level locking and MVCC (Multi Version Concurrency Control)
- Parallel query processing
- Various indexing (Global & Local) and partitioning methods (Range, List, Hash, & Composite)

### Availability/ Scalability

- High availability and load balancing in multi-node environment (Tibero Active Cluster – shared disk clustering)
- System resource minimization through multi-processing and multi-threading structure
- Various backups and recovery functions

### Usability

- User-friendly GUI tool for database administration (tbAdmin)
- Easy-to-use automatic database migration tool (tbMigrator)
- Various column types supported (CLOB, BLOB, Long, Long Raw, etc.)

### Manageability

- Various utility tools for data loading / exporting / importing (tbLoader, tbExport, tbImport, tbProf)
- Database performance monitoring tool

### Interoperability

- Supports standard SQL and interfaces (JDBC, ODBC, OLE DB, OCI)
- Supports a variety of proprietary objects (PL/SQL, Embedded SQL, Data types, and Functions)
- Supports integration with other DBMS platforms through DB Link (Sybase, Oracle, DB2, MS SQL, etc.)

### Security

- Encryption of table columns or tablespaces using various algorithms (DES, 3DES, AES, RC4, ARIA, etc.)
- Network encryption function for sending/receiving messages between client & server.
- Various user access control methods (profiling, auditing)
- TDE (Transparent Data Encryption)

# Tibero DataBase

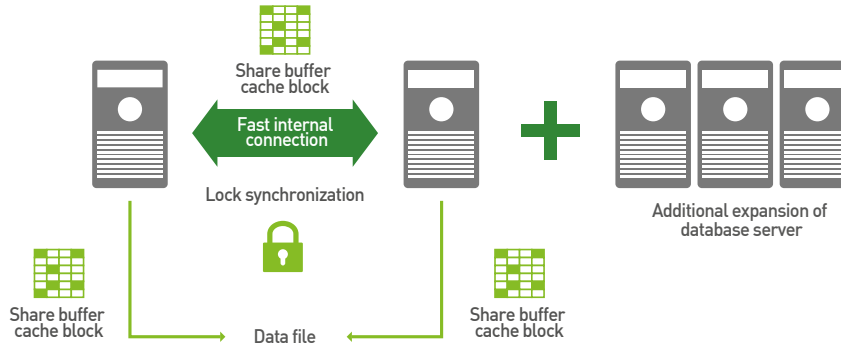
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## ► Mission Critical Data Processing

### TGC (Tibero Global Cache)

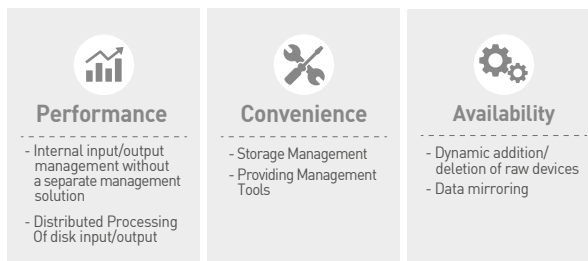
Tibero supports a fast transaction process using a single buffer cache for all servers in a cluster.

Tibero server can be easily expanded to increase the processing rate, and its data integrity can also be guaranteed.

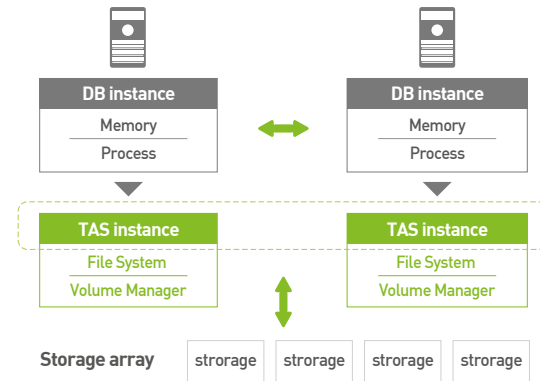


### TAS (Tibero Active Storage)

In a Tibero Active Cluster environment (TAC), a shared-disk based active cluster technology, Tibero supports its own file system through TAS.

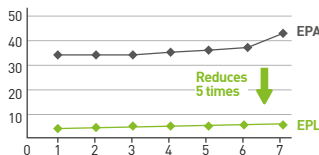


TAS: Clustered logic volume manager + file system

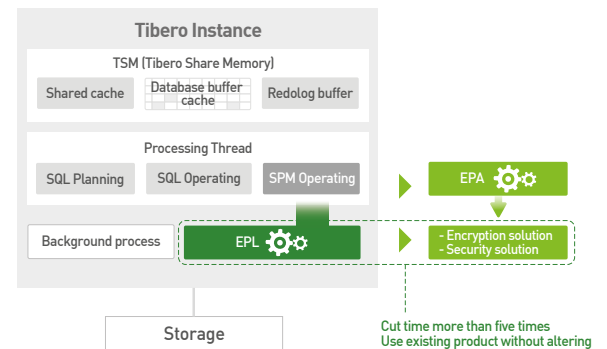


### EPL (External Procedure Loading)

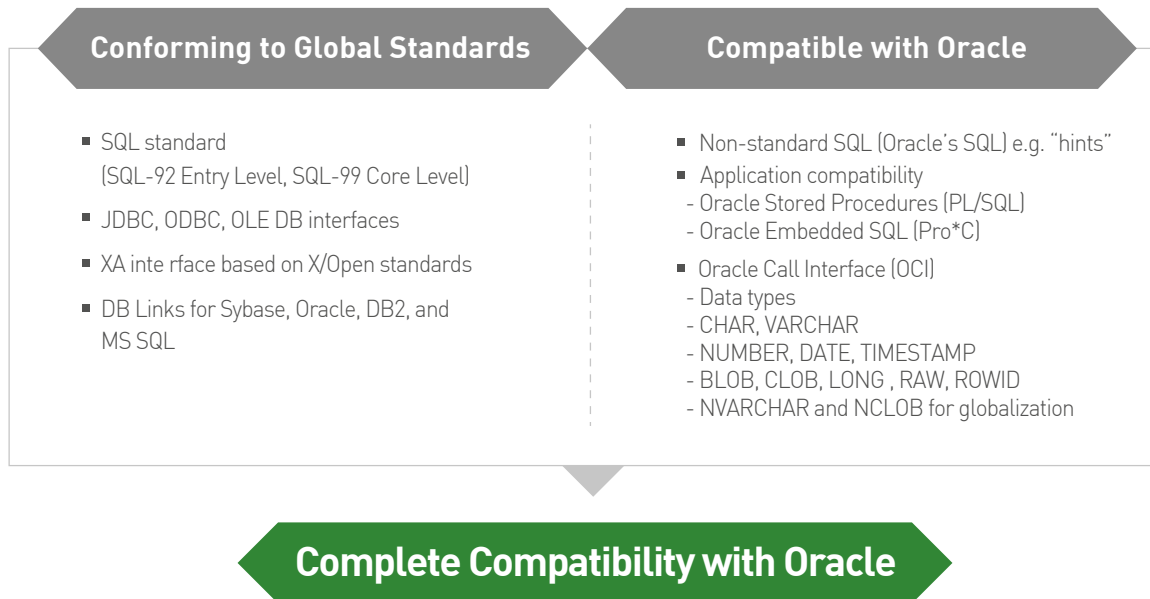
Tibero provides EPL which allows an external solution to perform PSM by calling an internal function directly. EPL ensures high performance even when there is a large amount of data manipulation, such as high-speed encryption/decryption.



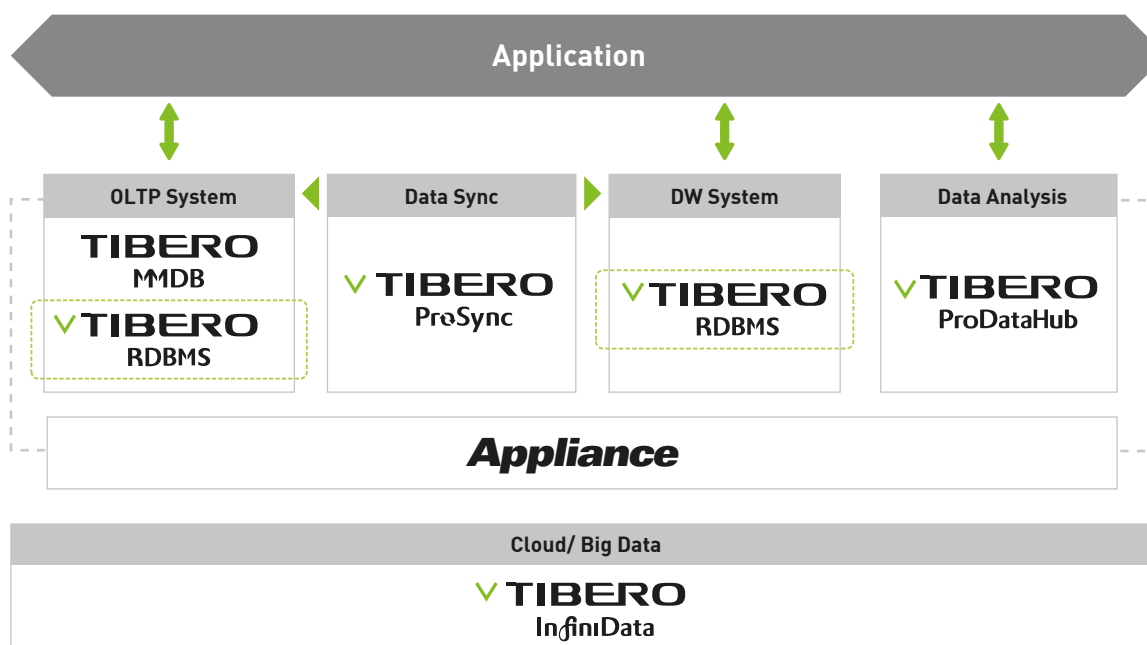
- Supports all 3rd party solutions
- Uses various functions besides 3rd party solutions
- Ensures performance when using high-speed encryption and decryption
- Supports TAC



## ► Compatibility



## ► Database Product Lineup



# Tibero DataBase

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## ► Why Tibero ?



**Operates database with stability under difficult circumstances.**

- Reliably handles customer requests during traffic overloads by efficiently utilizing the resources.
- Provides Tibero Active Cluster (TAC) for uninterrupted service operation.
- Supports various database backups and recovery capabilities, as well as high database security.



**Ensures maximized performance under various workloads.**

- Minimizes the delay by reducing locks and managing transactions through versioning.
- Provides parallel queries and diverse partitioning capabilities to efficiently process a large amount of data.
- Maximizes throughput by optimizing queries and supporting horizontal server extension.



**Provides high productivity during new product development and operation.**

- Provides management tools for database monitoring and backup.
- Supports automated tools for data extraction, transformation, and loading.
- Reuses existing applications and personnel thanks to its compatibility with Oracle.



**Drastically reduces TCO.**

- Cost savings of up to 60 percent compared to existing commercial DBMSs (Based on 5 yrs)



**Easily utilizes DB operation workforce.**

- Only requires four hours of basic training for those who already have DB operating experiences.
- Easily ensures operational workforce using the existing DB personnel.



**Quickly and Easily Perform DB Migration.**

- Performs migration without using source conversion process due to guaranteed compatibility.
- Easily performs data transfer using the provided migration tools.

**192 cores**

Tibero's largest production server environment

**450,000 users**

Highest number of Tibero users

**13 Terabyte**

Largest Tibero database size (production environment)

\*Successful BMT (Benchmarking Test): 50 Terabyte

**3 Terabyte**

Average real-time data replication size (per day)

**3 %**

Average modification rate of existing applications when migrating from Oracle to Tibero

## ▶ References

Tibero has more than 760 references as of Sep 2013 with over 20 percent using Tibero Active Cluster.

<b>Banking</b>	     
<b>Insurance &amp; Securities</b>	     
<b>Telco &amp; Media</b>	     
<b>Manufacturing</b>	       
<b>Public &amp; Government</b>	     
<b>Distribution &amp; Service</b>	     

## ▶ 3rd Party Integration

<b>Backup</b>	Tivoli (IBM), NetWorker (EMC), Quest NetVault Backup (QuestSoftware), Simpana (CommVault), VIRBAK (VIRBAK), TimeNavigator (Atempo), Veritas Net Backup (Symantec), Back up EXEC2010RZ (Symantec), DataProtector (HP)
<b>Monitoring</b>	Jennifer (JenniferSoft), GSM (Sycros), WatchAll (WatchTek), MaxGauge for Tibero (EXEM), SysMaster (TmaxSoft)
<b>Search Engine</b>	Verity K2 (Autonomy), Mariner (Dquest), DOCRUZER (KONAN Technology), SearchFormula-1 (WISEnut), Fast ESP 5.3 Search (Microsoft)
<b>Reporting</b>	ReportDesigner (M2Soft), OZReport (FORCS), OZXstudio (FORCS), REXPORT3.0 (CUPSOFIT), MyBuilder (ActiveSoft)
<b>Clustering</b>	Sun Cluster (Sun), Veritas Cluster Server (Symantec), EnCluster_HA (Clunix), Power HA (IBM), PrimeCluster (Fujitsu), MCCS (manTech), SteelEye (DAONECNS)
<b>Encryption</b>	CubeOne (eGlobalSystem), D'Amo for Tibero (PentaSecurity), KSignSecureDB (KSIGN), XecureDB (SoftForum), SafeDB (INITECH), PETRA CIPHER V3.1 (Sinsway), Dguard (Ineb), Vormetric (Vormetric)
<b>Access Security</b>	DBSafter (PNPSecure), PETRA V3.1 (Sinsway), DB-I (SOMANSA), Middleman (BanetiT), Chakra (WareValley)
<b>Development</b>	SQLGate (Antwiz), Orange for Tibero 5.0 (WareValley)
<b>CDC</b>	TiberoProSync (TIBERO), DeltaStream (DataStreams), SharePlex-Oracle to Tibero (QuestSoftware), OGG-Oracle to Tibero (Oracle)
<b>ETL</b>	Informatica 8.6.1/9.1.0 (INFORMATICA), TeraStream (DataStreams), DataStage 7.5/8.7 (IBM), BLT DI (GrowTo), ODI (Oracle), XeETL (ISET-DA)
<b>OLAP/BI</b>	IBM CognosBI (IBM), BIMATRIX (BIMATRIX), ezDAS (LGNsys), OZEQ (FORCS), WISEOLAP (WISEITECH), iDashBoard (OLAP Consulting)

## ◆ TmaxSoft offices worldwide



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