We provide most trusted and convenient data management solution.

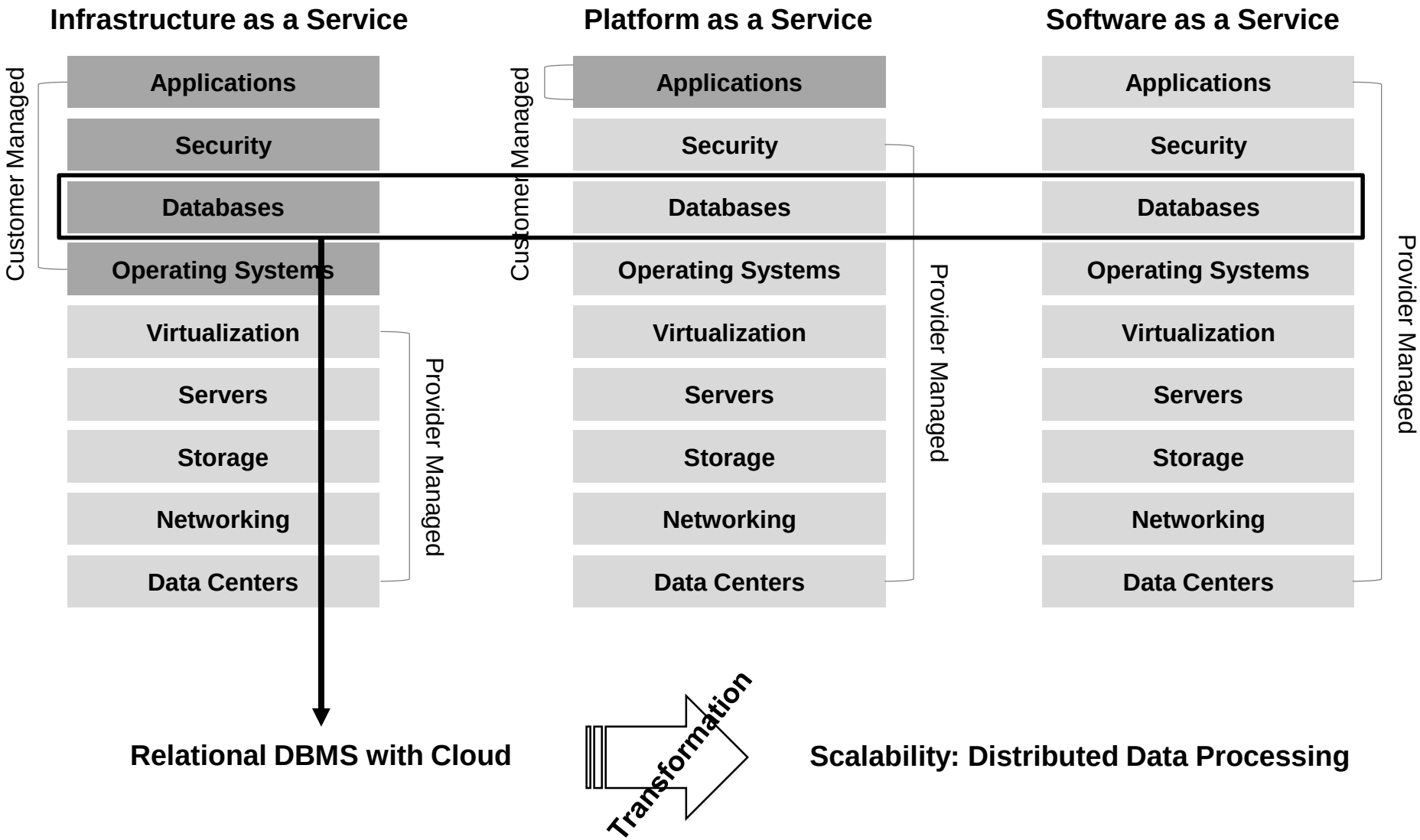
PaaS-TA 생태계를 활용한 응용서비스 클라우드화 전략

- Distributed data system for Altibase -

2017.12.14

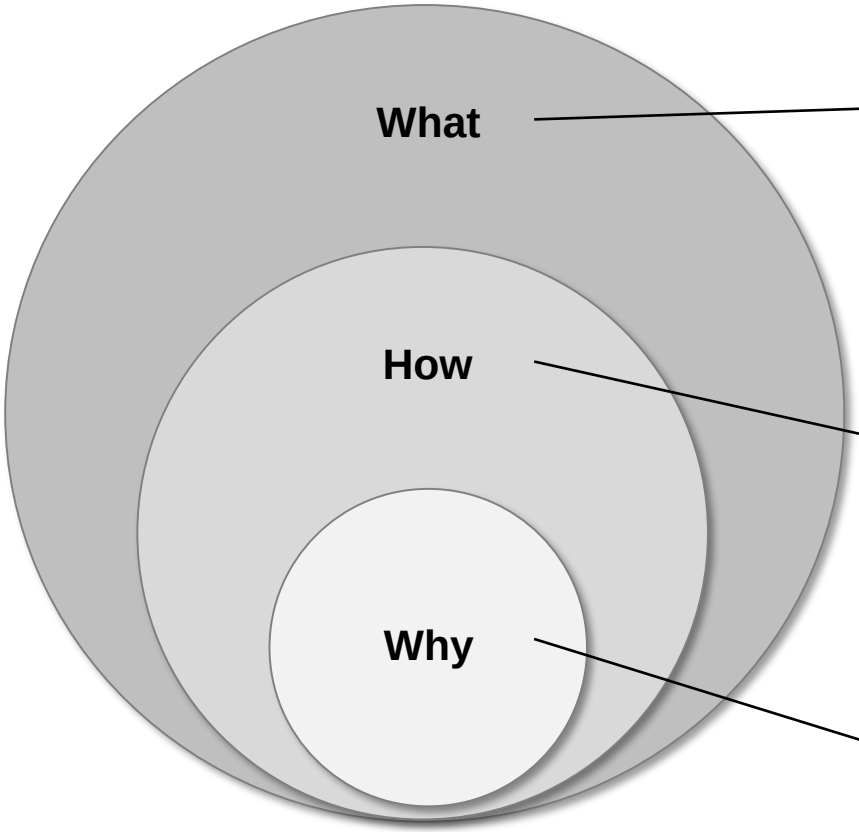
ALTIBASE

Where Are We Now — Cloud



What Are Altibase Key Characteristics

High Performance Enterprise RDBMS



Altibase

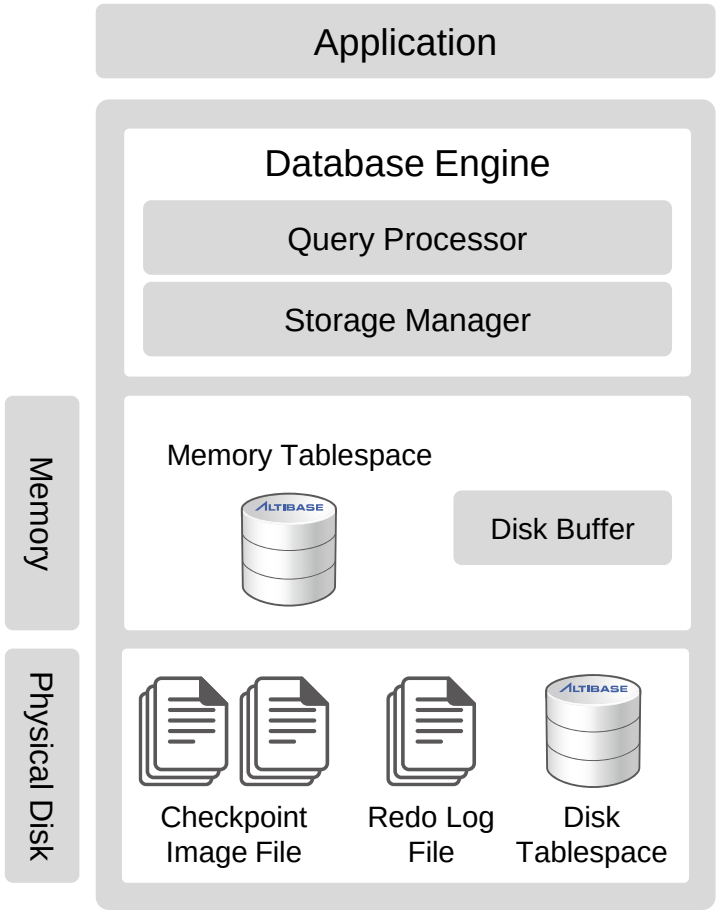
- **Providing high performance RDBMS solutions with enterprise grade quality, stability and support availability to customers worldwide.**

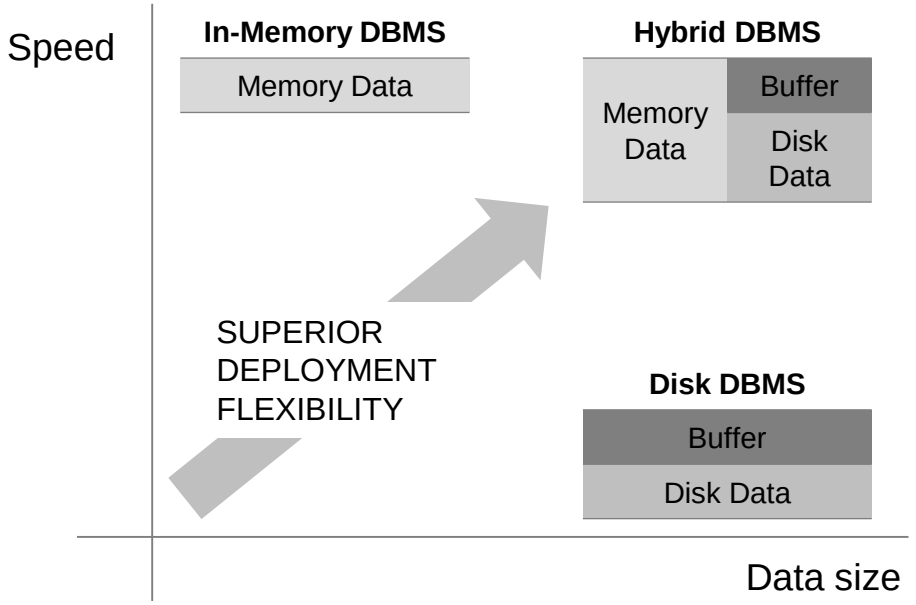
- **High performance: Hybrid**
- **Distributed Data System: Sharding**
- **Non-stop service: Replication**
- **Convenience**

Relational DBMS

What Is a Hybrid Database?

A hybrid database has both in-memory database features and on-disk database features in a single unified engine.





Flexible deployment mode

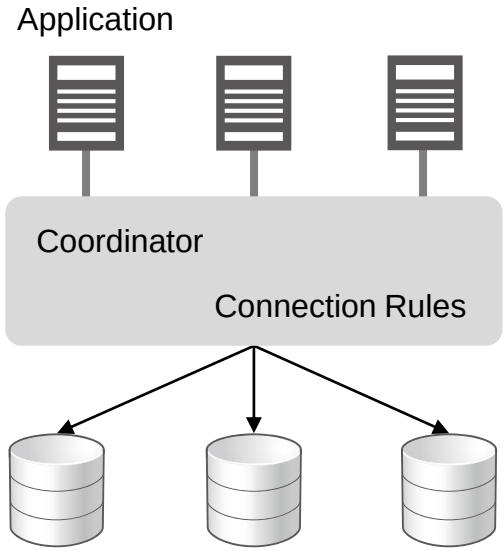
- In-memory only
- On-disk only
- Hybrid (memory and disk tables)

What Is Sharding Technology

Server-side sharding

Server side sharding requires a coordinator to integrate the partitioned database to be compatible with applications.

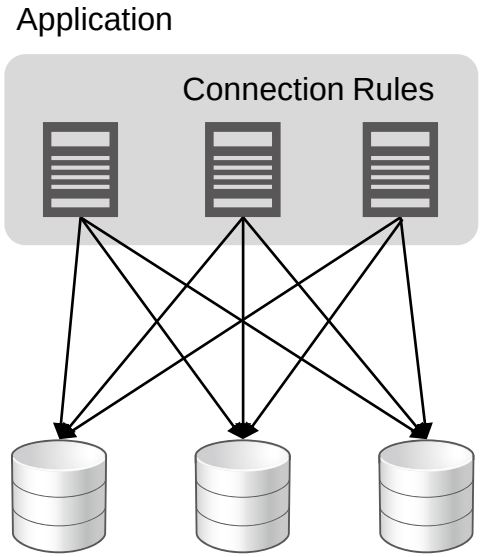
- Application no change
- Using join query
- Global Transaction
- Bottleneck



Client-side sharding

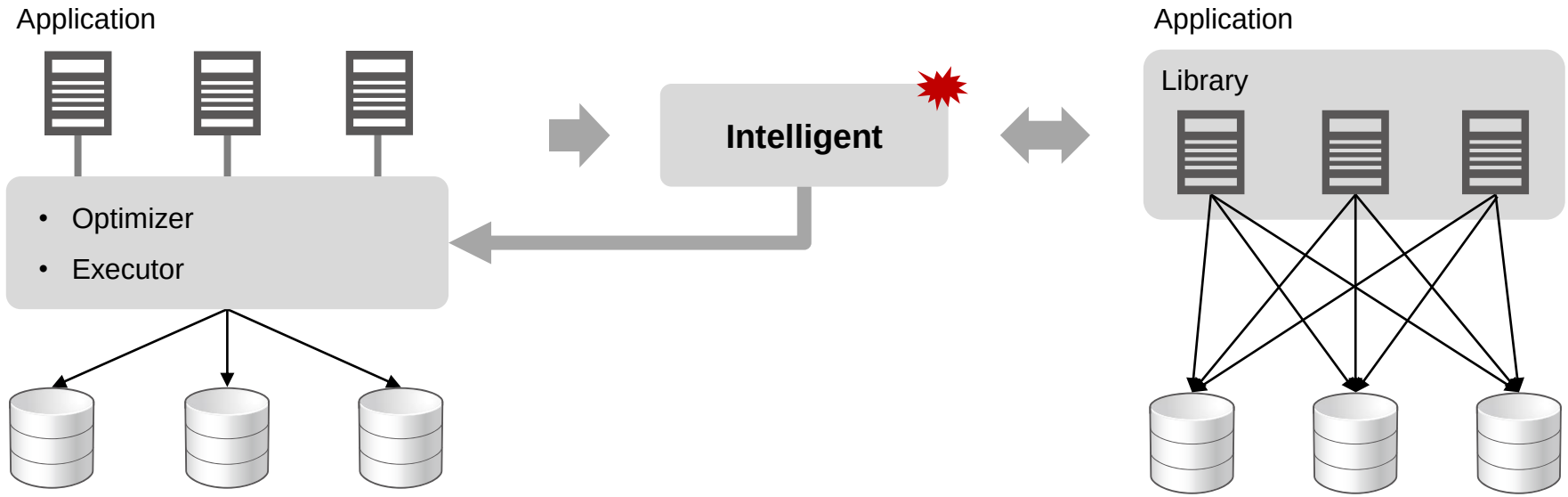
Client-side sharding is a structure in which the application program knows the database where the data is located and connects directly to the database.

- High performance
- No bottleneck
- Application change
- Join query not possible



Altibase Sharding Concept

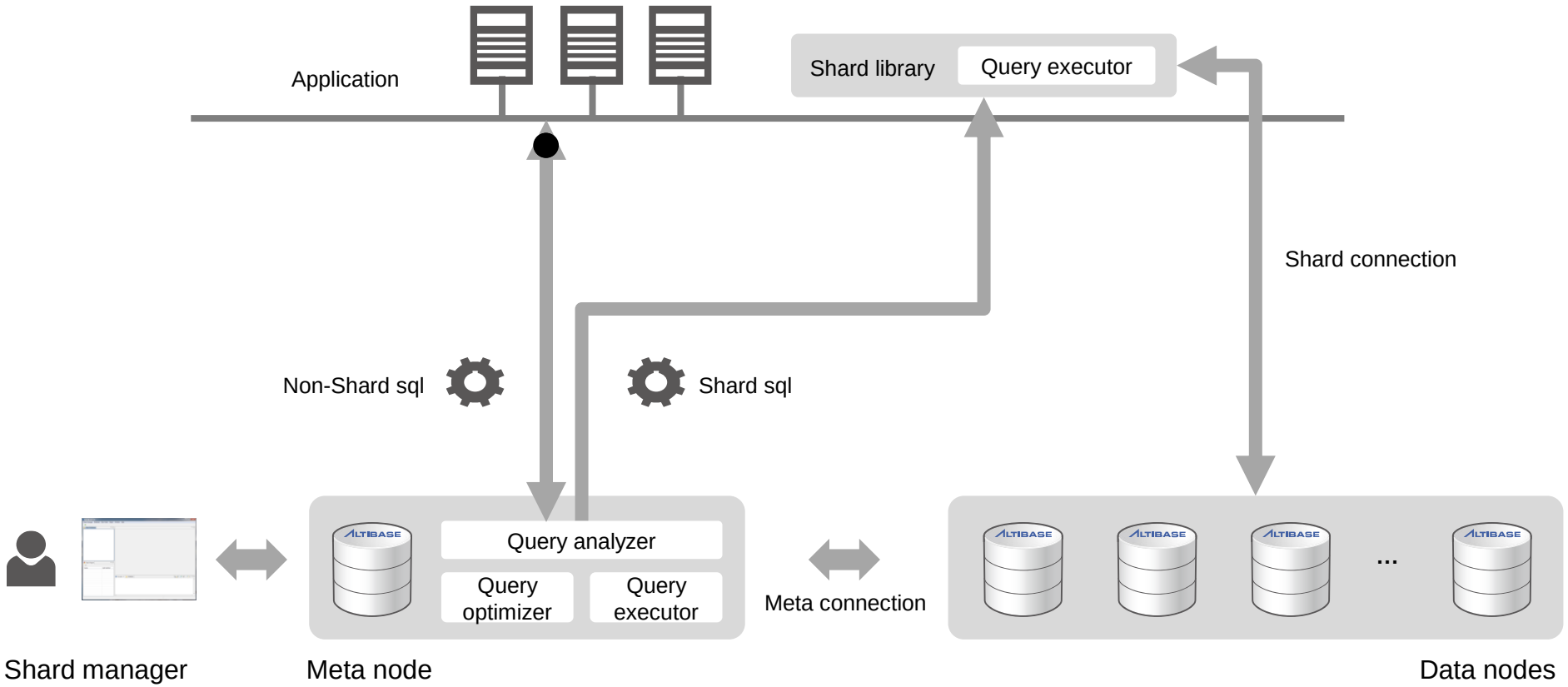
Intelligent Distributed Data System



‘Simultaneous-Use’

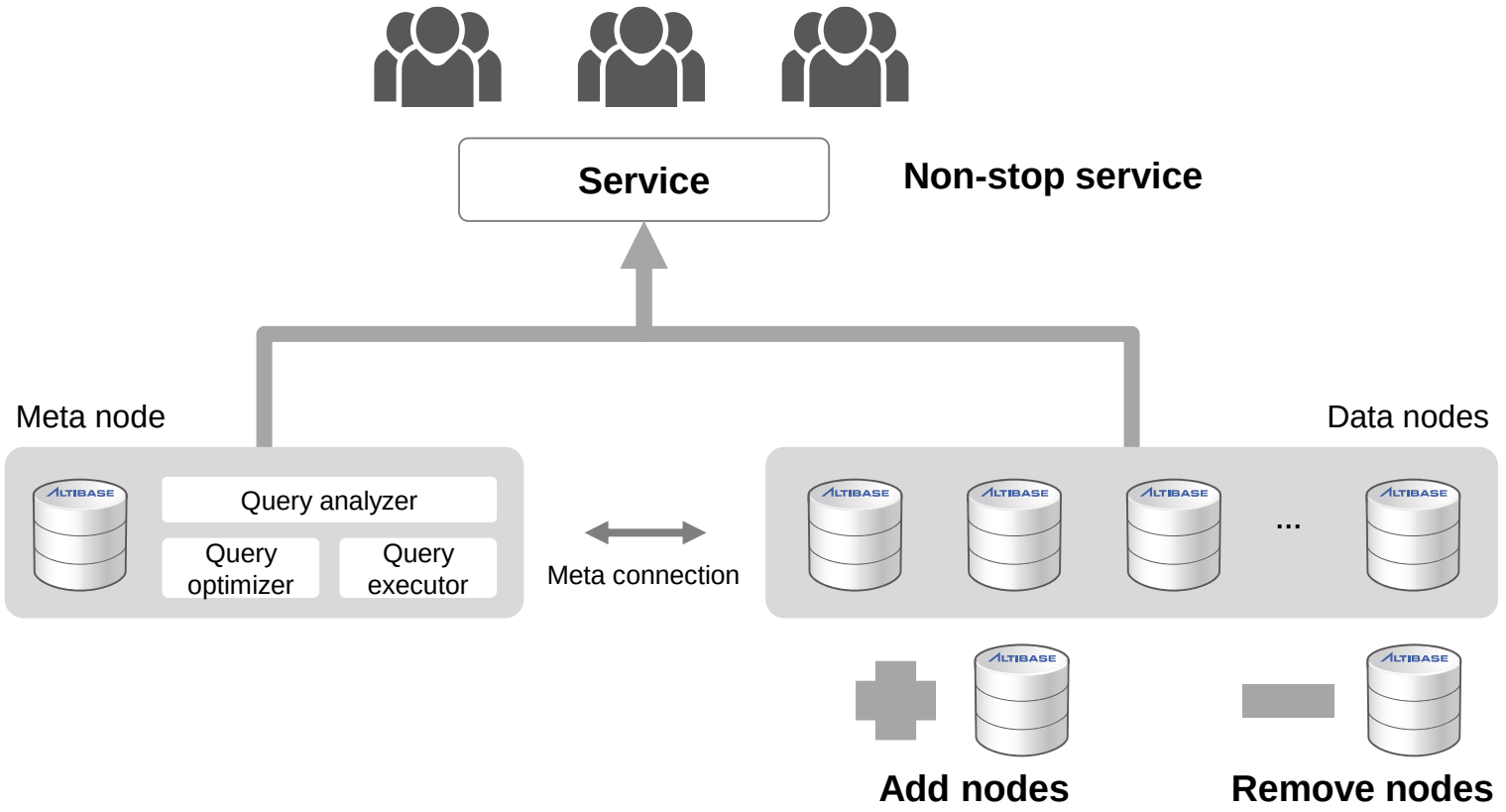
So What — Altibase Sharding

#1: No application modifications, No SQL modifications



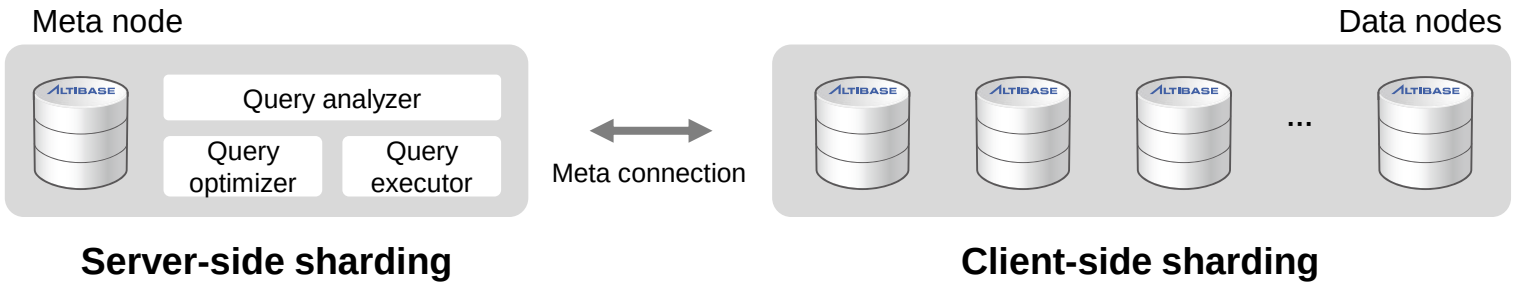
So What — Altibase Sharding

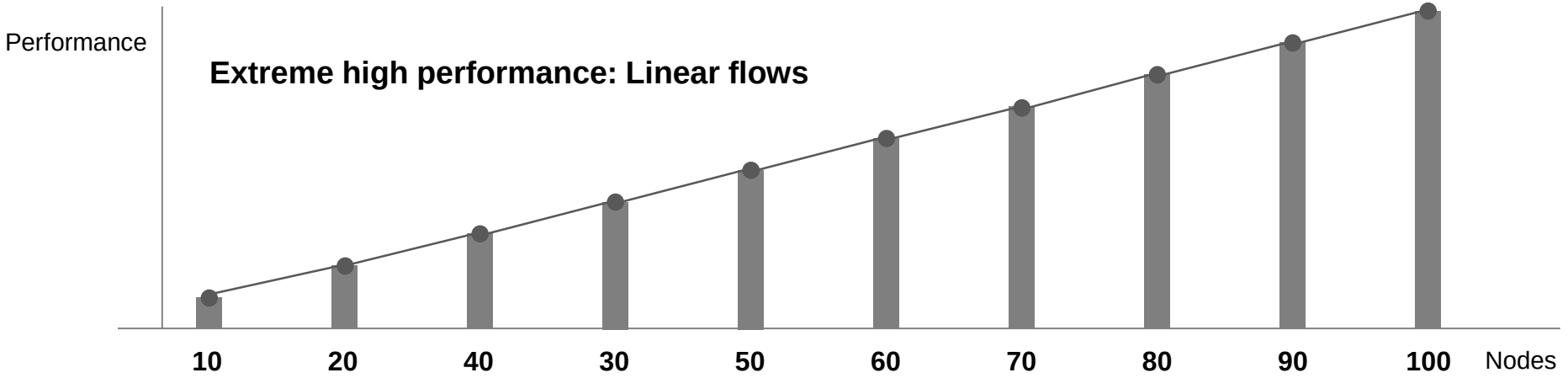
#2: Online Scale-out



So What — Altibase Sharding

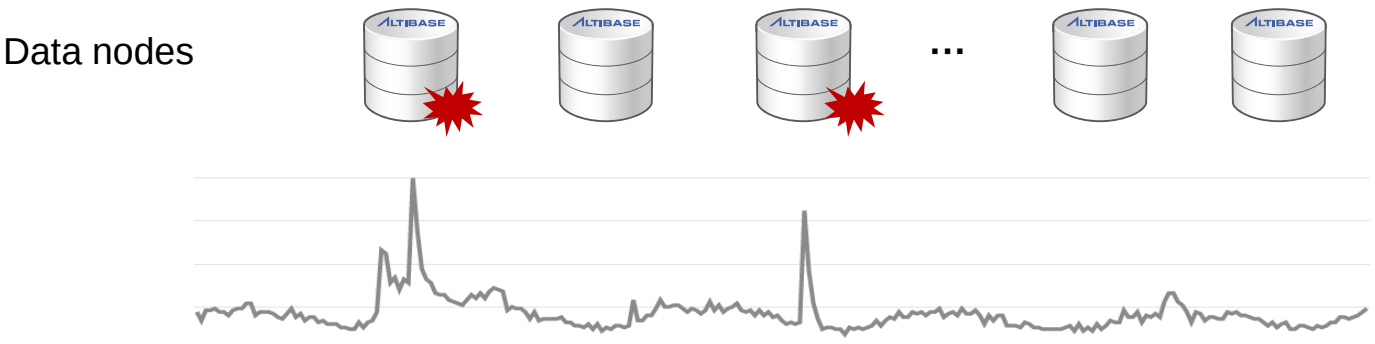
#3: High performance

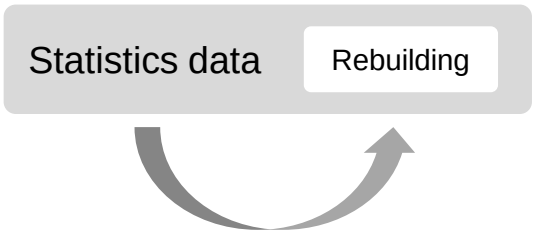




So What — Altibase Sharding

#4: Automatic data reconstruction

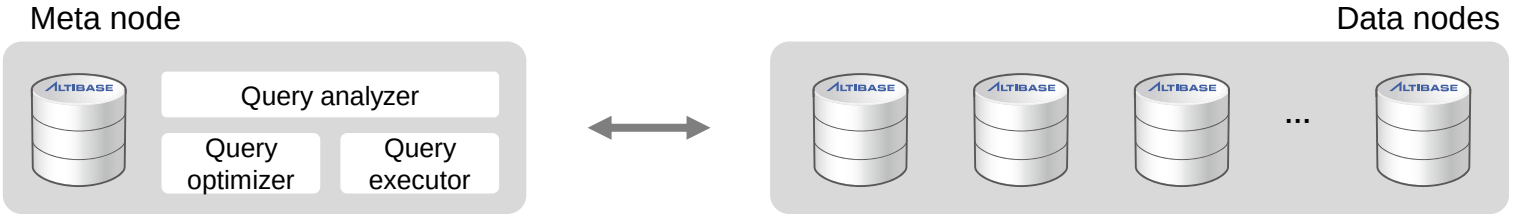


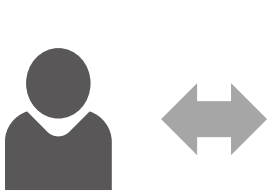


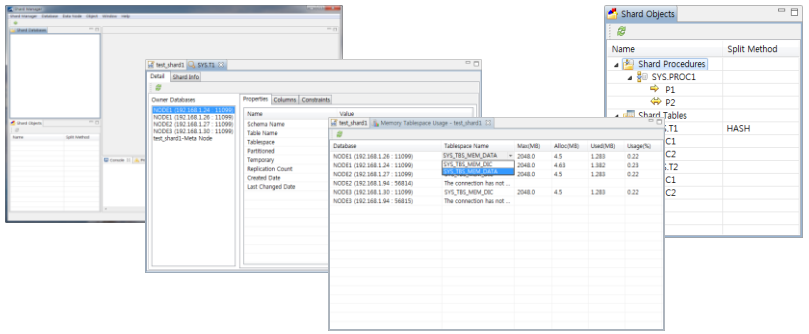
- Rules (Cycle, Time, Split Methods, etc)
- Check
- Information
- On-line data rebuilding

So What — Altibase Sharding

#5: Easy (GUI Tool)



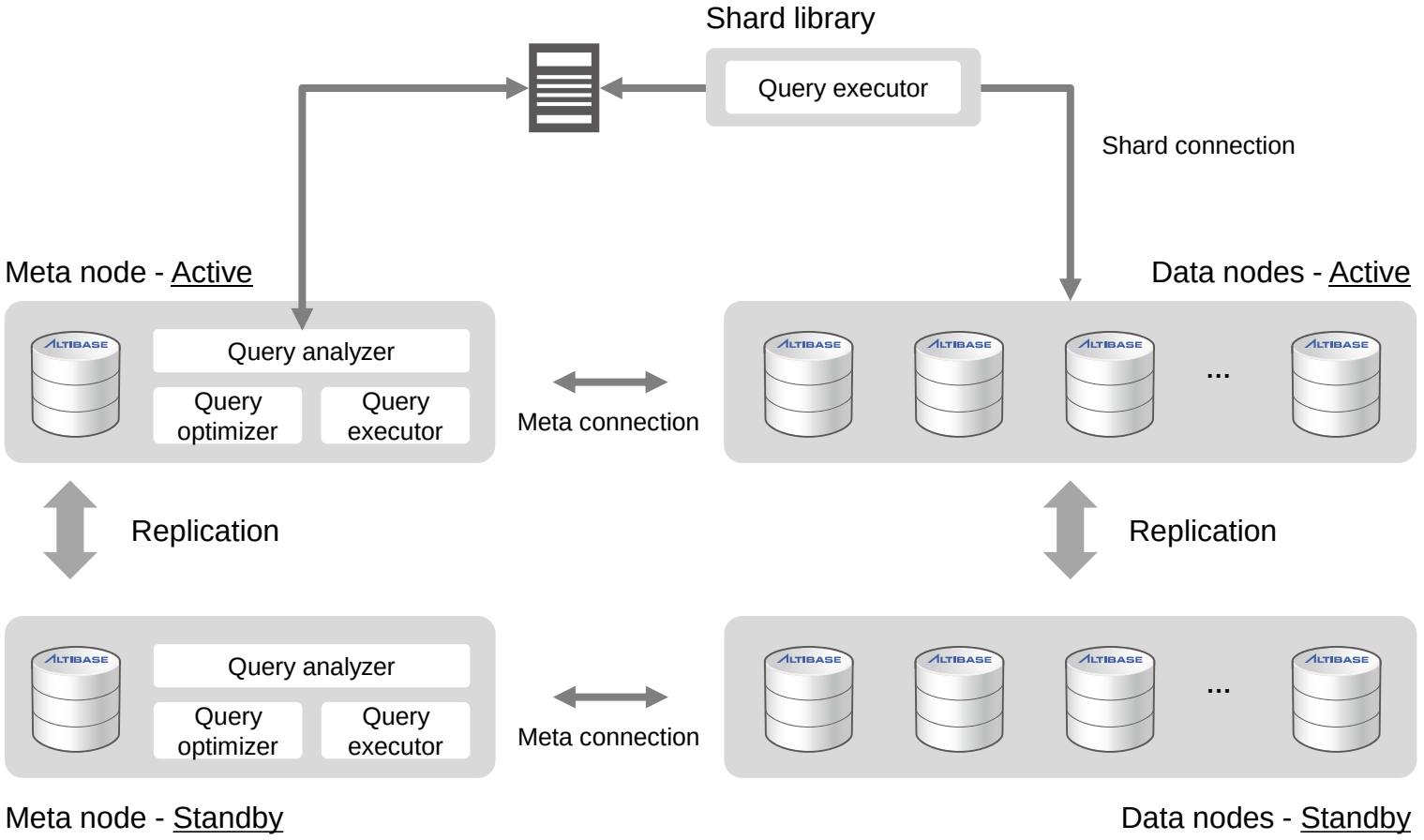




- Data nodes management
  - Monitoring
  - Rebuilding
- Meta node management
  - Connection configuration
  - Data resource

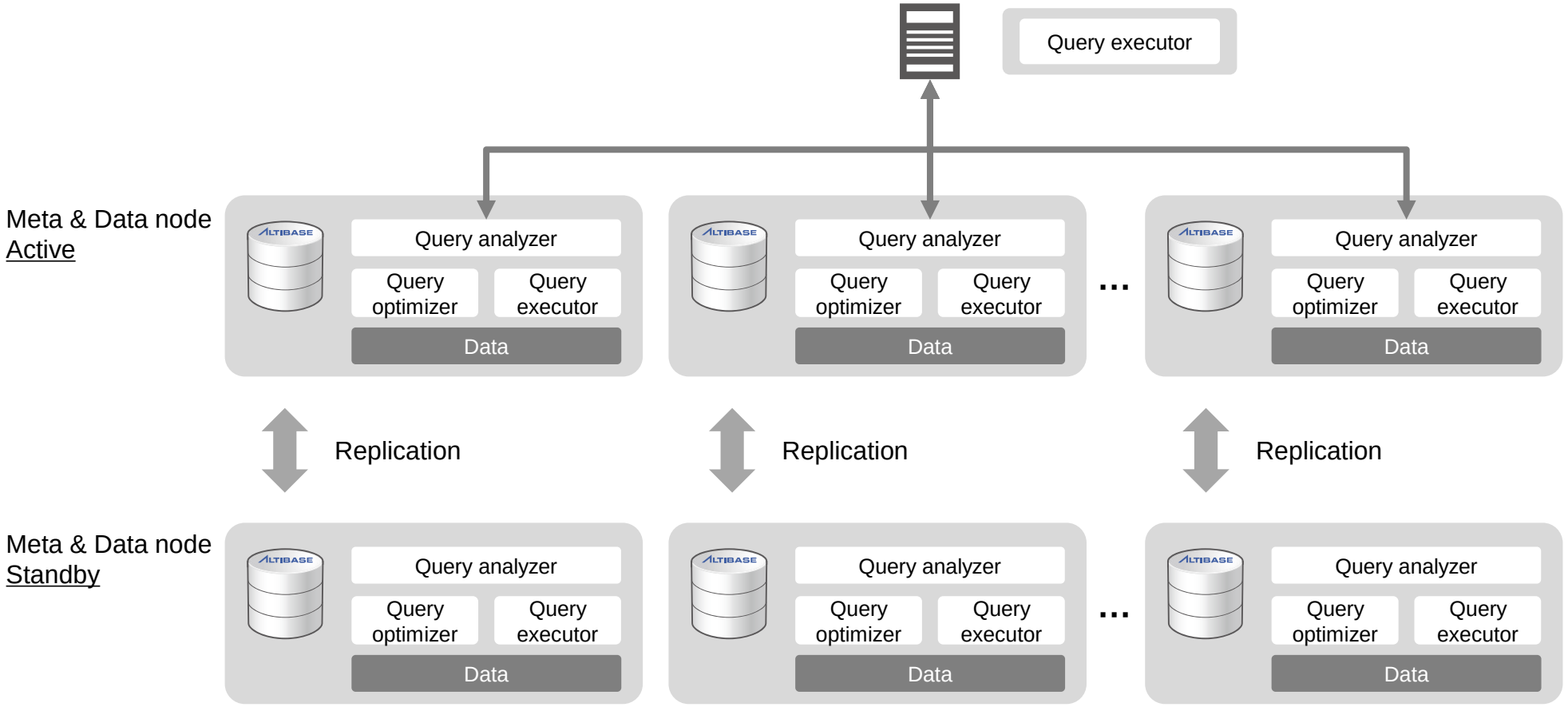
Altibase Sharding — Configuration #1

Independent configuration



Altibase Sharding — Configuration #2

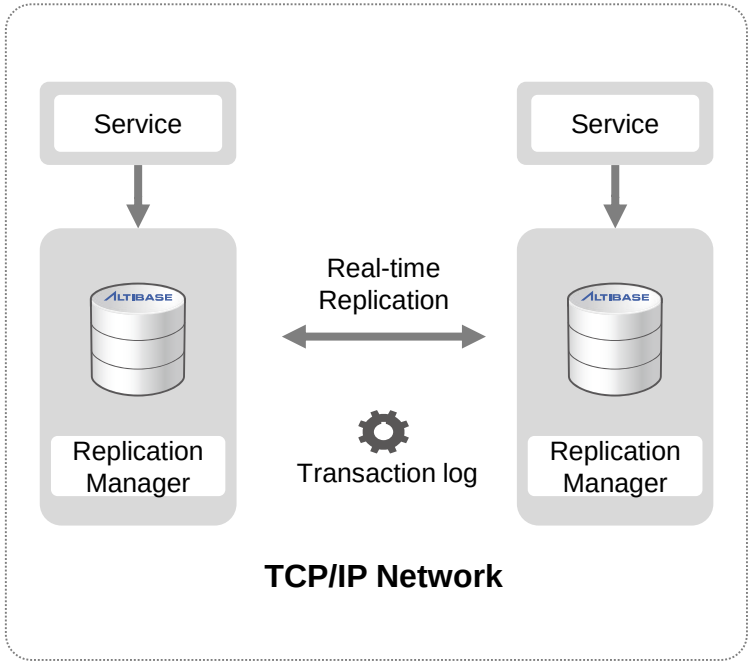
Integration configuration



Altibase Sharding — Failover #1

Failover and Replication

Altibase Replication is a TCP / IP Network-based data replication method with no distance limitation.



Stability

- Minimize uninterruptible time
- Data synchronization support for failback
- XLog-based fast redundancy

Scalability

- Unlimited redundancy expansion
- TCP / IP network-based redundancy
- Load balancing effect

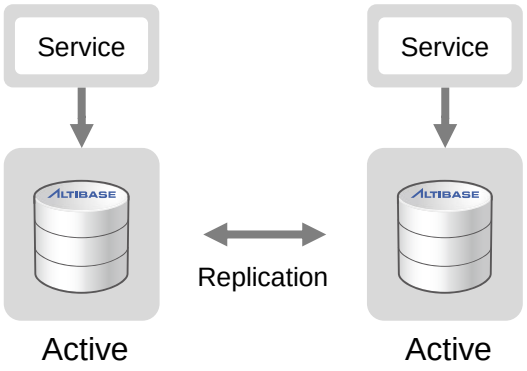
Economics

- Built-in replication
- Low cost to build based on network

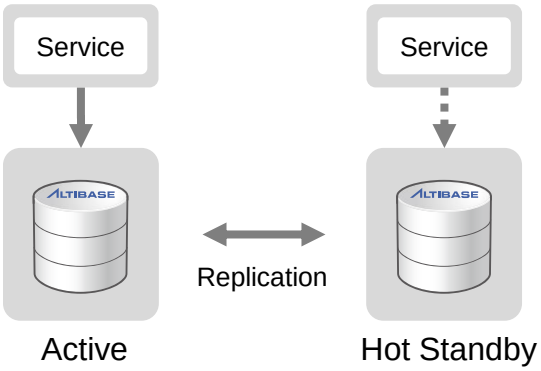
Altibase Sharding — Failover #2

High Availability and Disaster Recovery with Replication

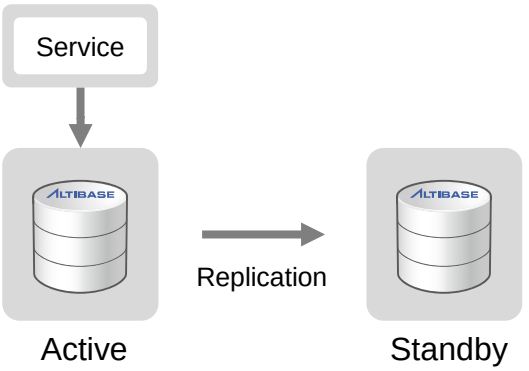
Active-Active (RW)



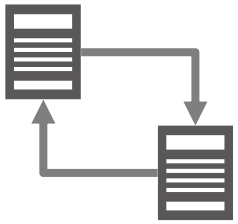
Active-Active (RO)



Active-Standby

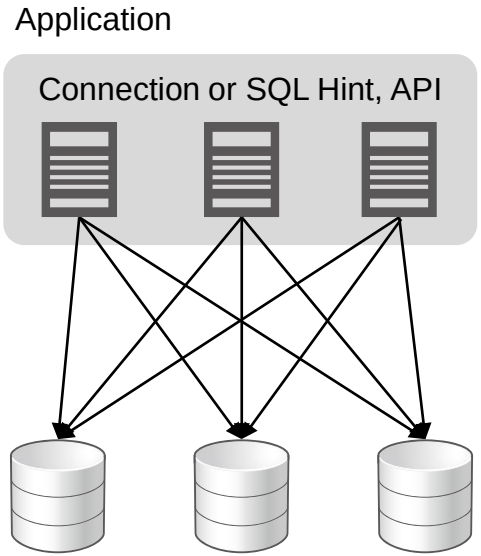


Application continuity

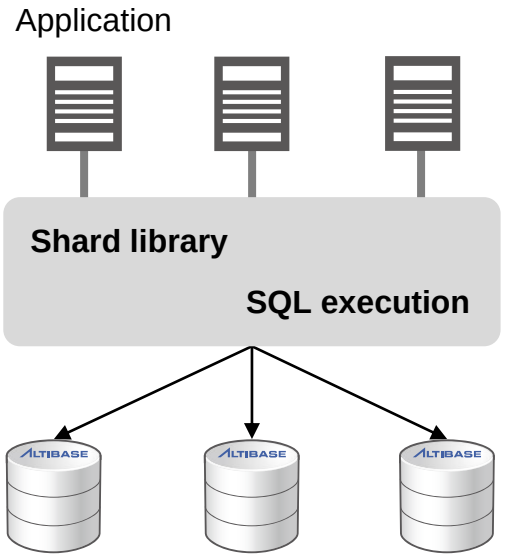


Database shutdown	Fail-over by standby database. → 1 second
Lan cable	Fail-over by standby database. → 7 seconds
Server shutdown	Fail-over by standby server. → 7 seconds

Altibase Sharding — Sophisticated Performance



Normal Sharding



Altibase Sharding

Data distribution for Flexibility

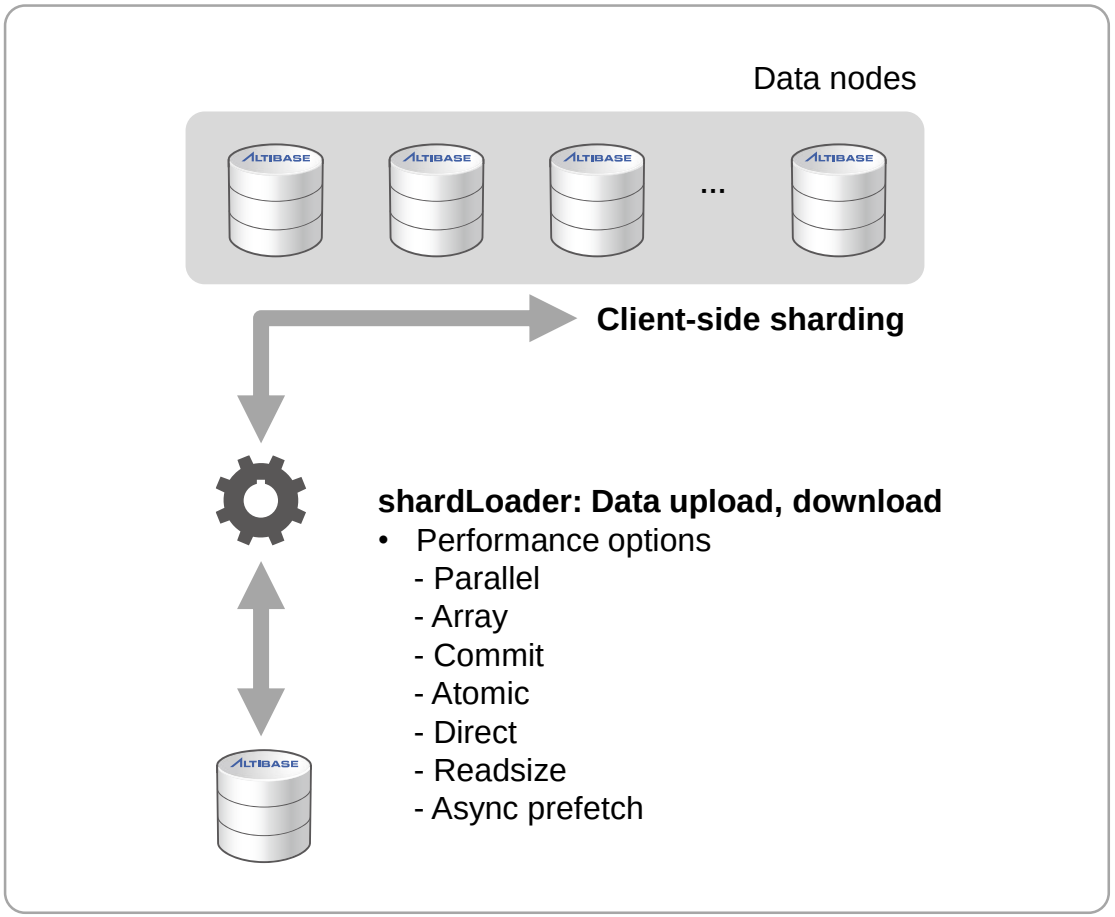
Altibase Sharding — Dispersion Methods

Split methods for Variety

Hash	Range	List
Composite	Clone	Solo

Altibase Sharding — Migration

Data migration



Altibase Sharding — Comparison

Comparison chart

	Altibase	NoSQL	MySQL	ClustrixDB
Shared-nothing architecture	●	●	-	●
Distributed processing	●	●	-	●
Built-In high availability (Replication with TCP/IP)	●	-	-	-
High performance (In-Memory)	●	-	-	-
Non-stop fail-over	●	-	-	-
Data nodes (Unlimited)	●	-	-	-
SQL full spec	●	-	●	-
Referential Integrity	●	-	●	●
Multi-table joins	●	-	●	●
ACID compliance	●	-	●	●
MVCC	●	-	●	●

Altibase Sharding — Function

Performance	Convenience	Stability

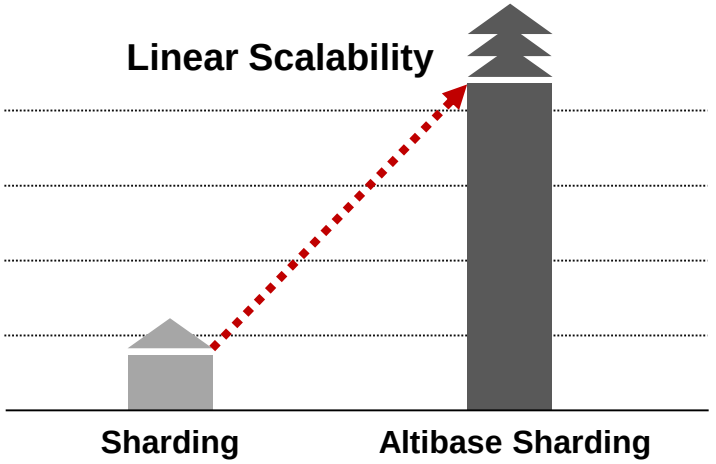
• Intelligent
  • Query Analyzer, Optimizer, Executor
  • OLTP/OLAP
• Data nodes(Unlimited)
• Hybrid RDBMS
  • In-Memory
  • On-Disk
	• ACI, APRE, ODBC, JDBC
	• SQL Full Spec
	  • No application modifications
	  • No SQL modifications
	• Automatic data reconstruction
	• Shard Manager(GUI)
	• shardLoader
	  • Data Loading Tool
		• ACID
		  • Hybrid Transaction
		  • Global Transaction
		• Non-stop Fail-over
		• Replication
		• Backup and recovery

Use Case — Cloud

Performance is:

ALTIBASE

Hybrid Scale-out
(In-Memory + On-Disk)



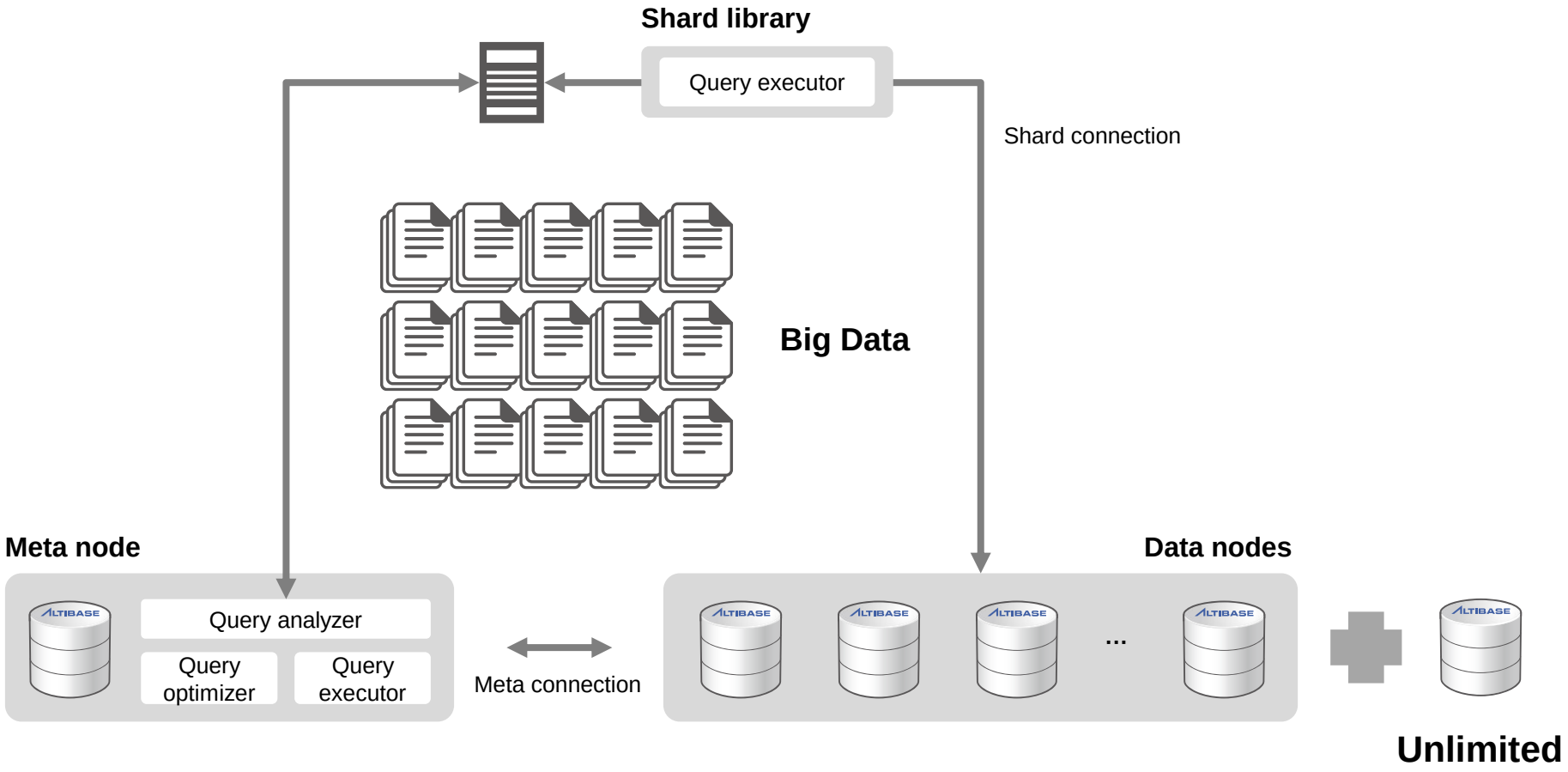
(Unit: TPS)

	Cloud #1	Cloud #2	Cloud #3	Cloud #4	Cloud #5	Cloud #6	Cloud #7	Cloud #8	Cloud #9	Cloud #10
Sharding	20,000	36,000	54,000	72,000	80,000	96,000	112,000	120,000	135,000	150,000
Altibase Sharding	80,000	160,000	240,000	320,000	400,000	480,000	560,000	640,000	720,000	800,000

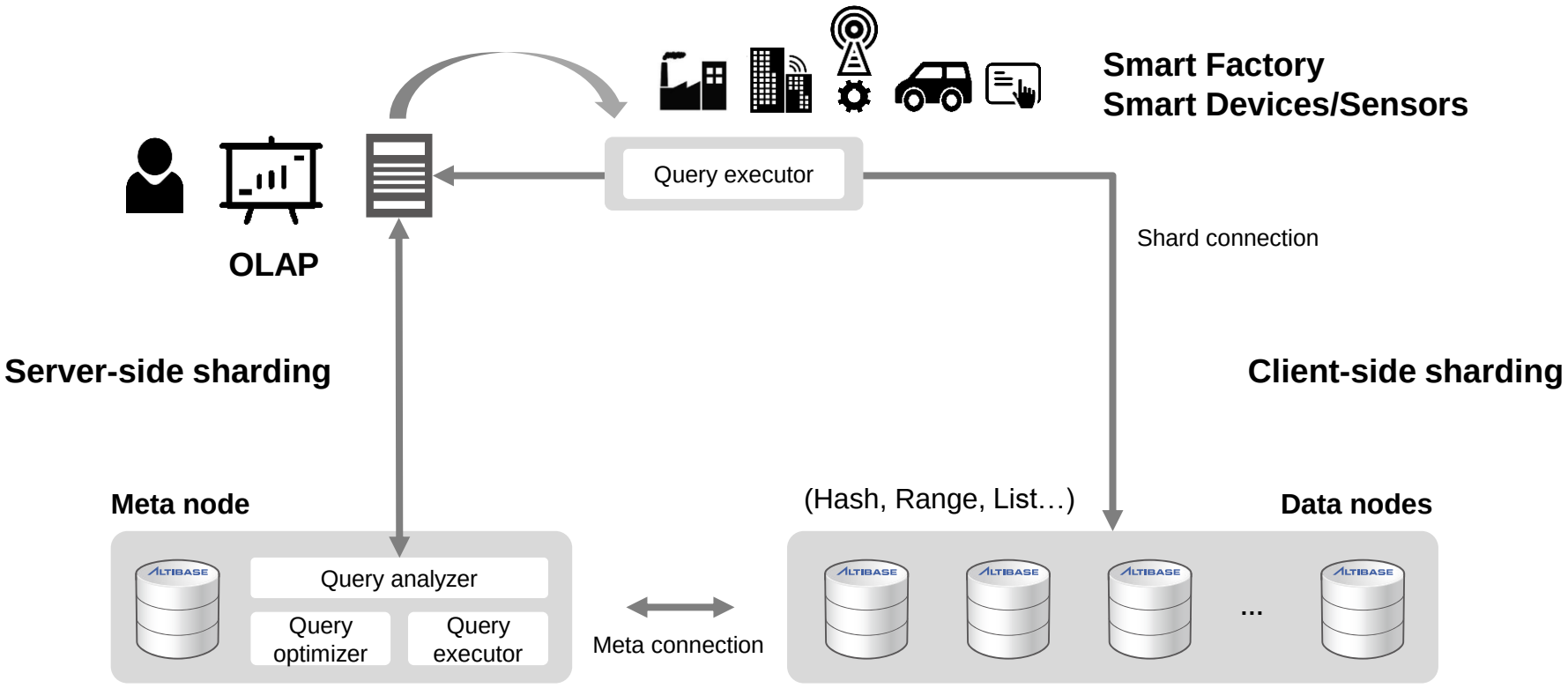
- **High Performance**
- **Low TCO**

• vCPU 16, Memory 56GB, Disk (SSD) 112GB

Use Case — Big Data

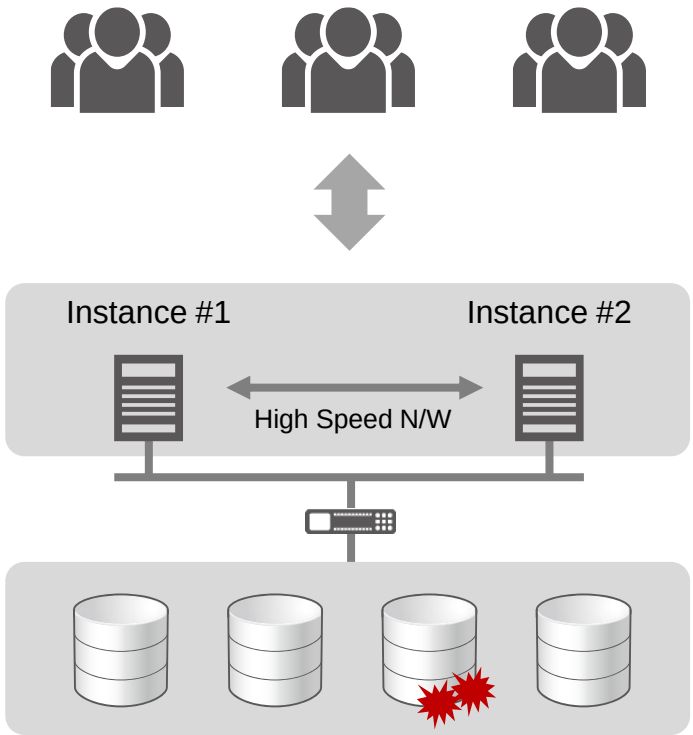


Use Case — Velocity

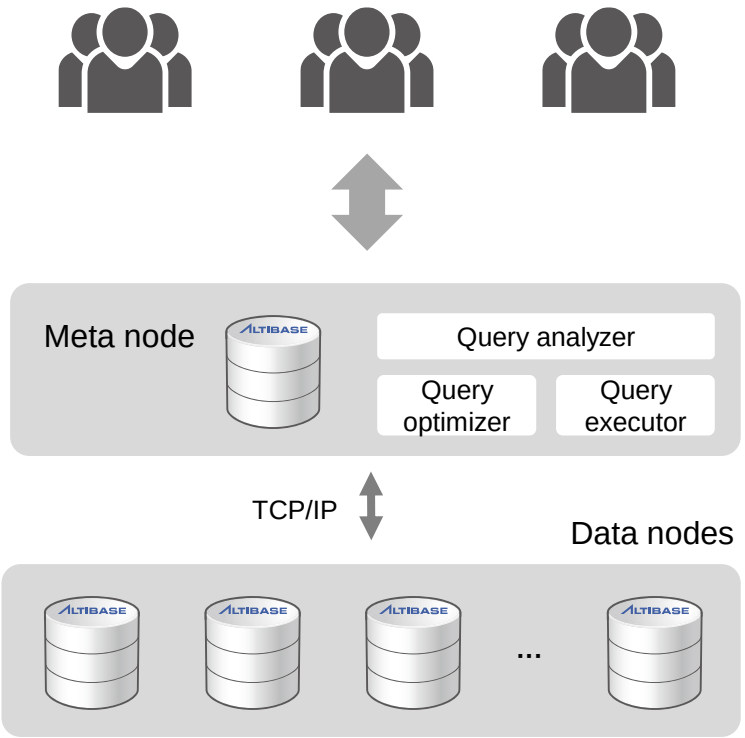


Altibase In-memory Database - Real-time Data Processing

Use Case — Load balancing

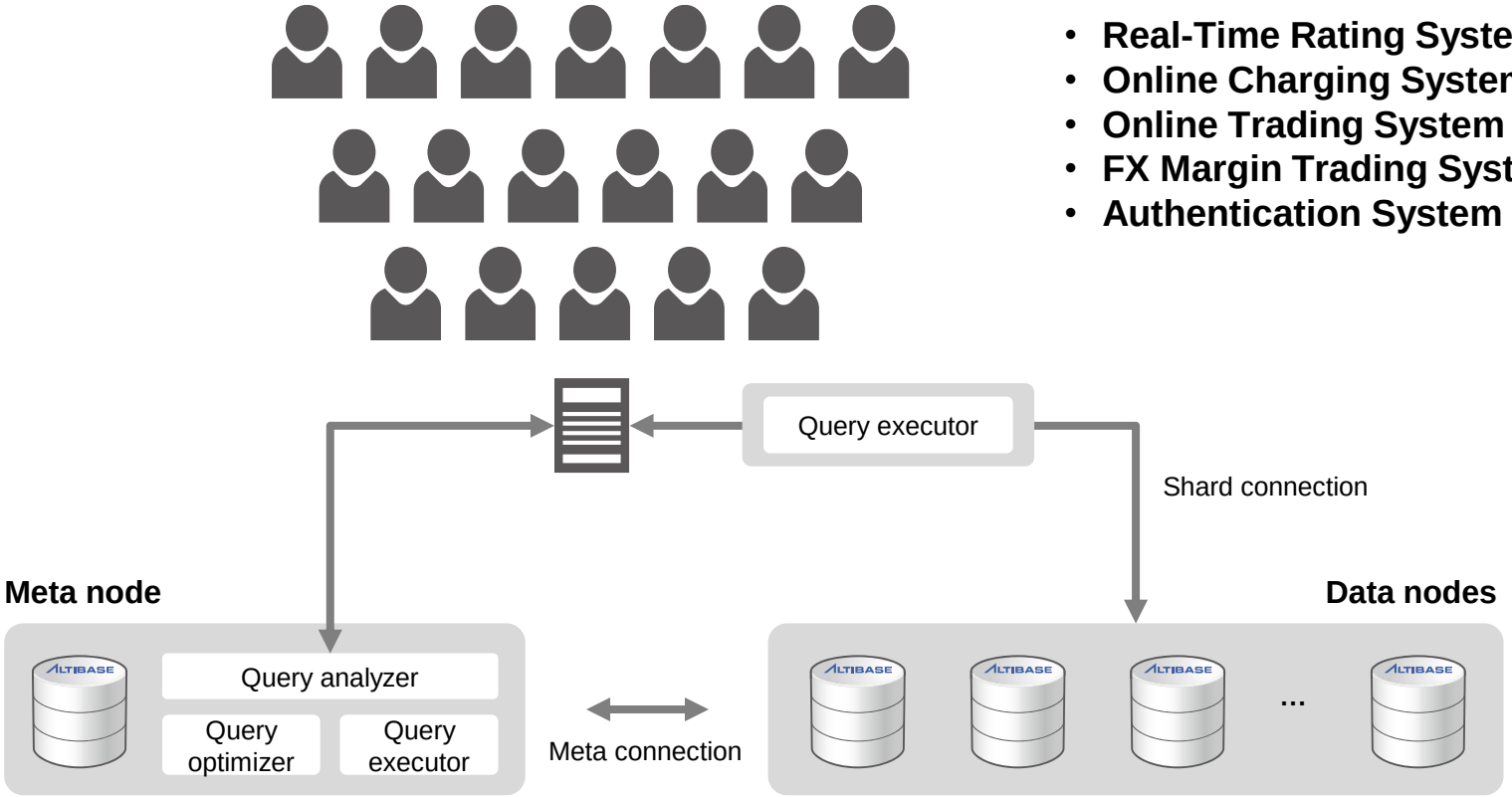


Shared storage



Altibase Sharding

Use Case — High Traffic



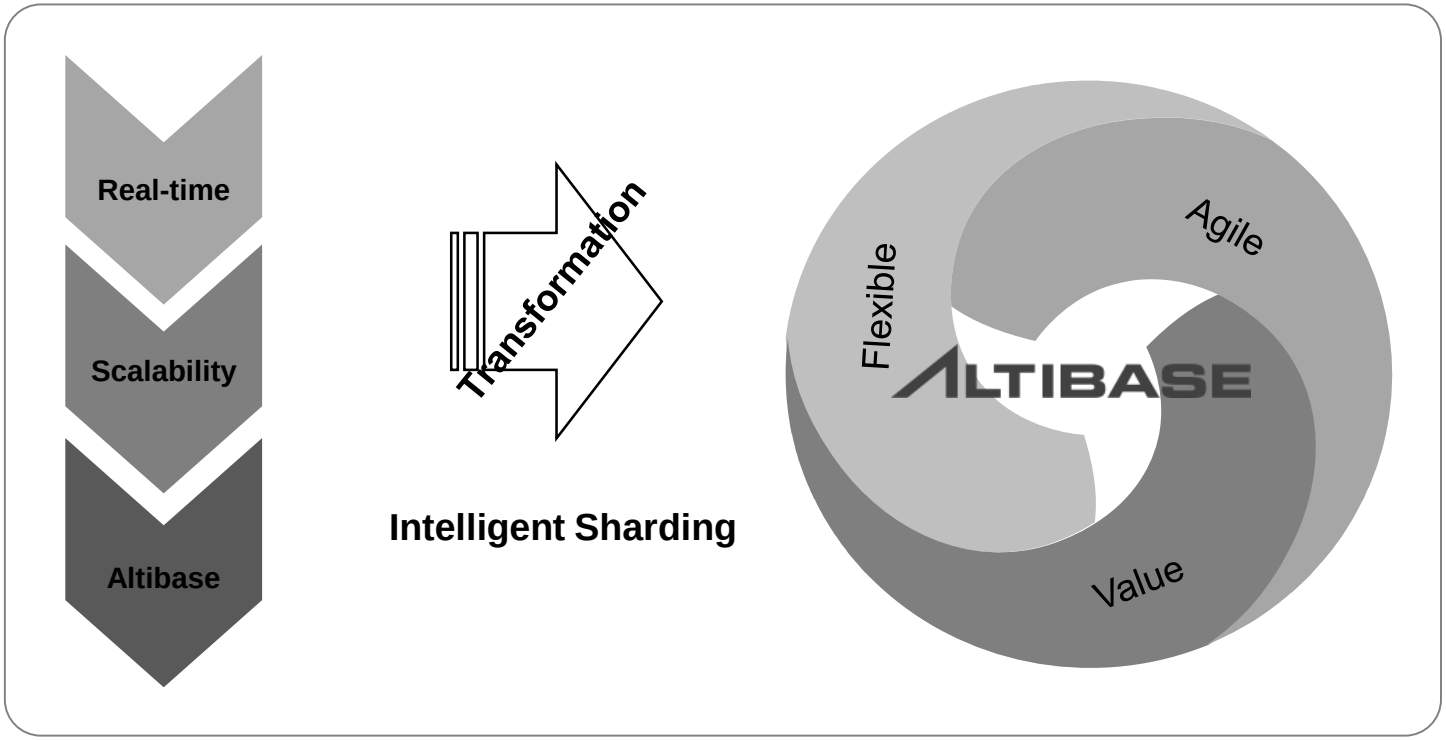
- **Real-Time Rating System**
- **Online Charging System**
- **Online Trading System**
- **FX Margin Trading System**
- **Authentication System**

Epilogue

Cloud

Infrastructure as a Service
Platform as a Service
Software as a Service

Relational DBMS with Cloud



Altibase Database Is Ready

Thank you!

ALTIBASE