

MySQL-Cluster

Cơ sở dữ liệu nâng cao

GVHD: PGS.TS Đặng Trần Khánh

HVTH: Lưu Văn Diệp

Nguyễn Phan Anh

Nội dung

1. Ứng dụng thực tế
2. Đặc trưng
3. Kiến trúc
 - Partitioning
 - Heartbeat Circle
4. Demo

1. Ứng dụng thực tế

- Viễn thông
- Game online
- Ứng dụng tài chính
- Thương mại điện tử

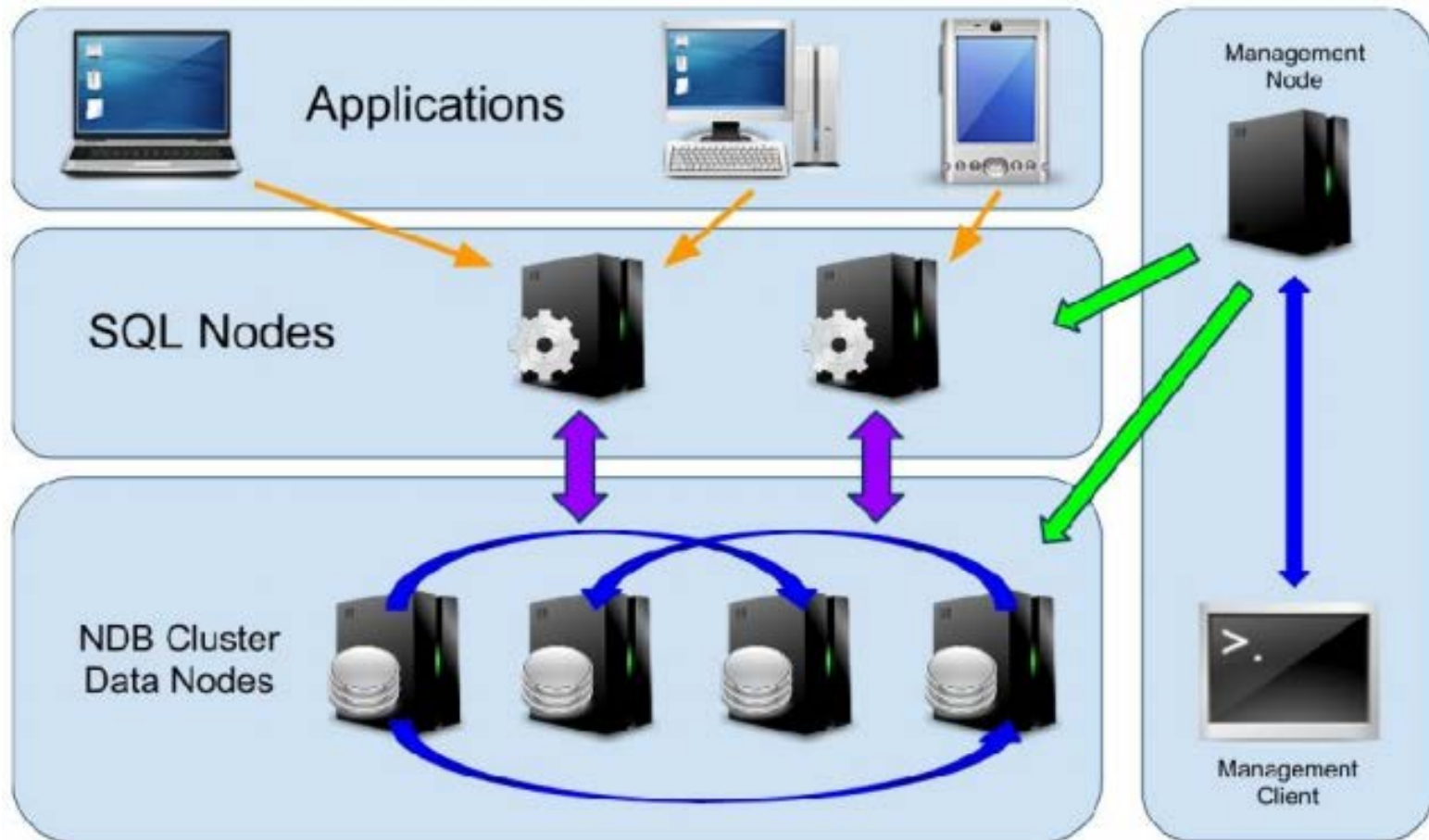
2. Đặc trưng

- Công nghệ shared-nothing
 - No single point of failure
- Đồng bộ dữ liệu giữa các node
- ACID transaction
- Row level locking

2. Đặt trưng

- In-memory storage
 - 2-phase commit that checkpoints to disk
- Indexing
 - Ordered T-trees
 - Unique hash indexes
- Online operations
 - Thêm node
 - Bảo trì / Nâng cấp
 - Alterations

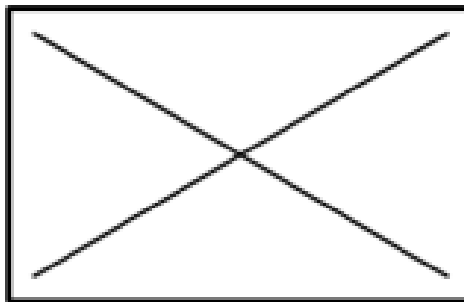
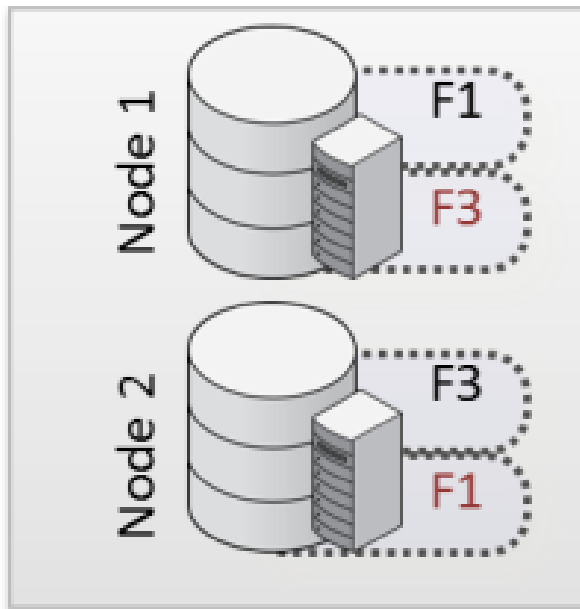
3. Kiến trúc



Data Nodes

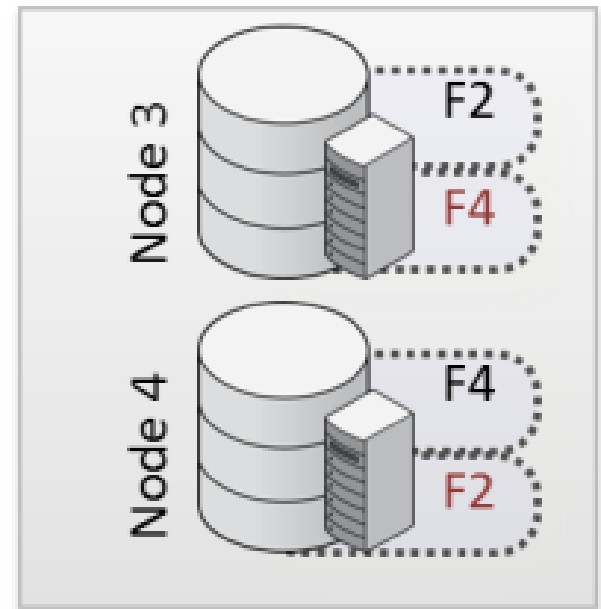


Node Group 1



Data Nodes

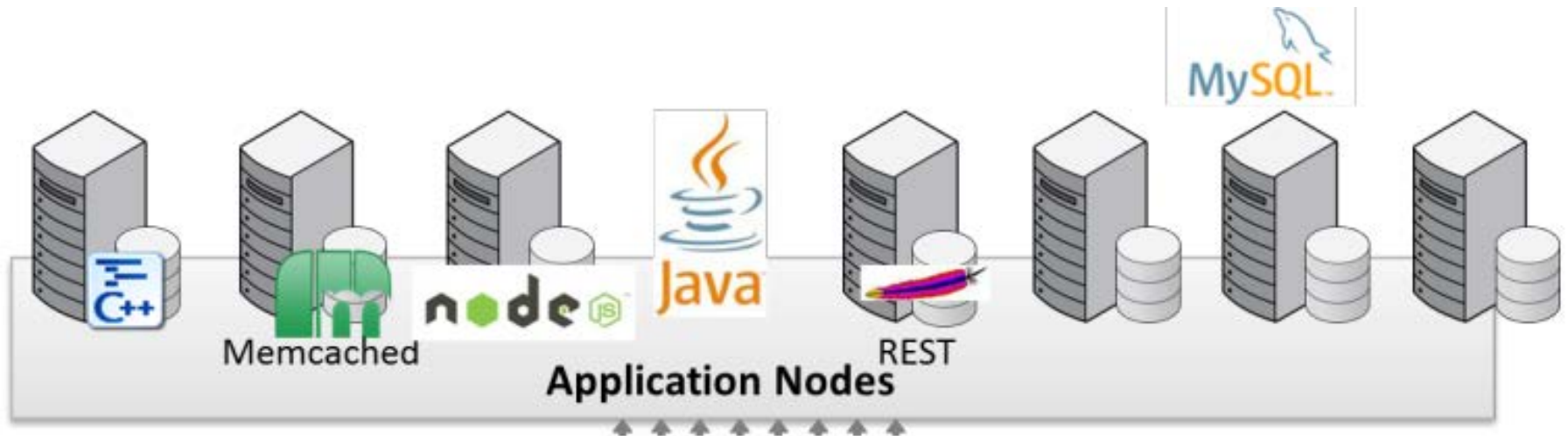
Node Group 2



Data Nodes

- Storage and management of both in-memory and disk-based data
- Automatic / user defined sharding (partitioning)
- Syncs replication
- Transaction and data retrieval
- Automatic fail over
- Automatic resyncs

Application Nodes



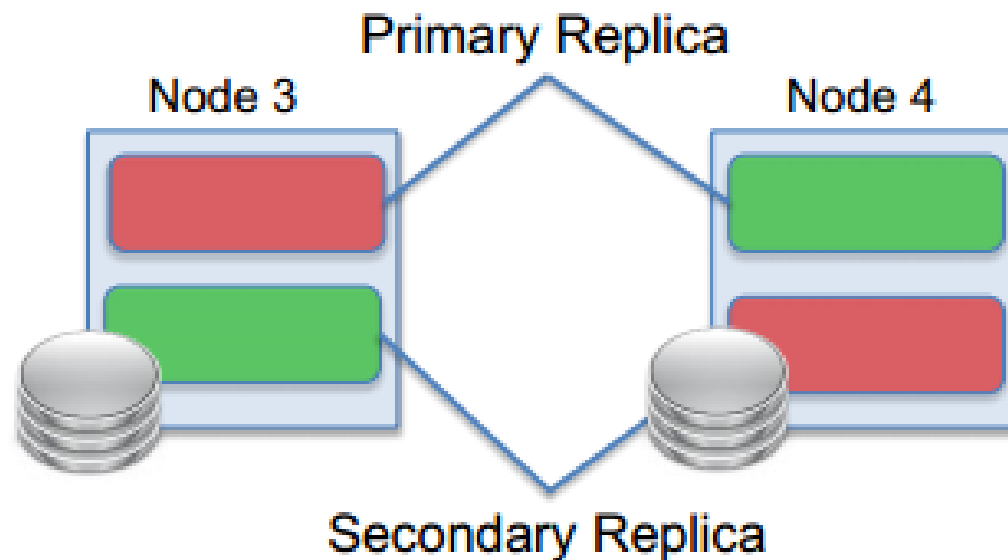
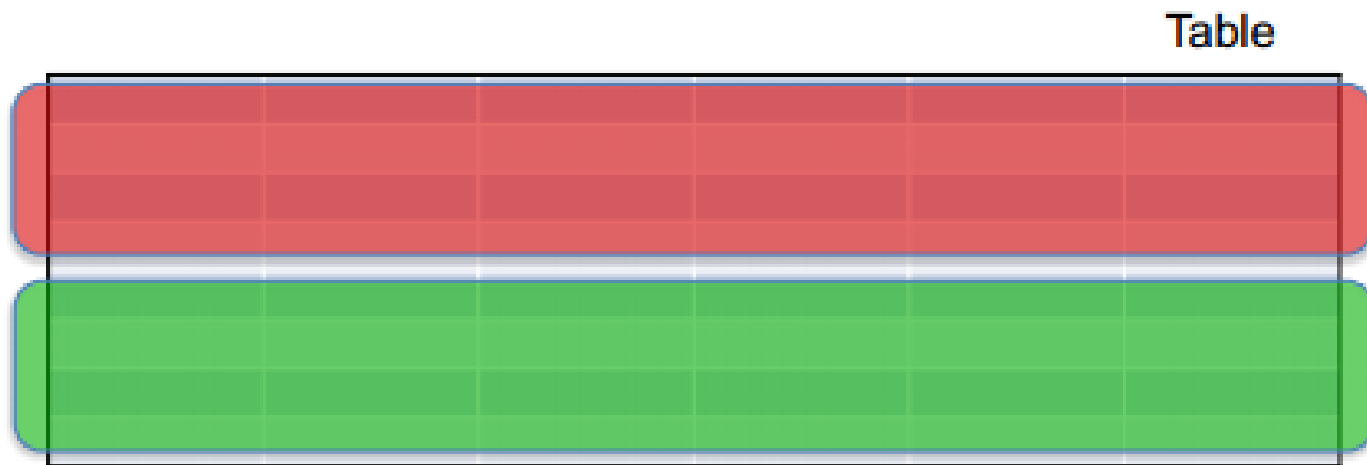
Application Nodes

- MySQL server
- High performance (C++ based): NDB API
 - Real-time behavior
 - Bypassing SQL layer: NoSQL
 - Lower latency, improved developer flexibility

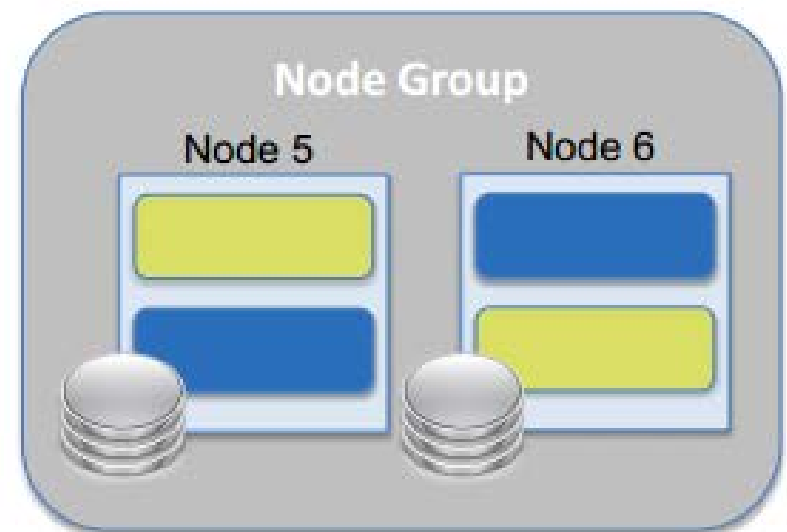
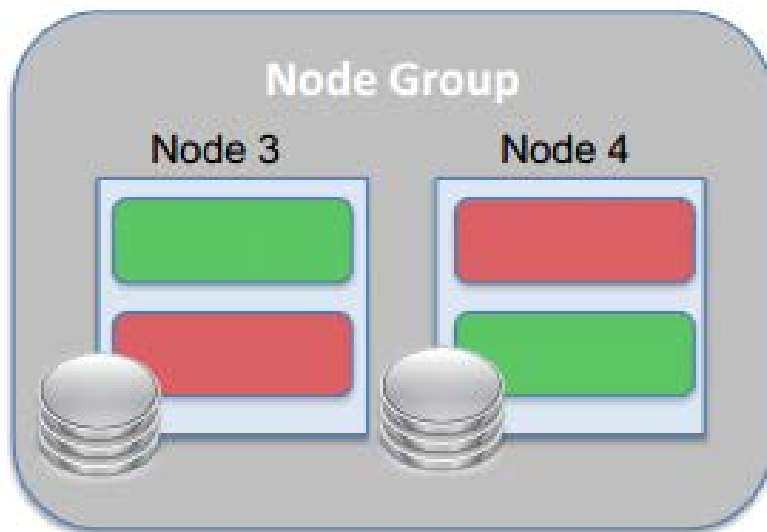
Management Nodes

- Publishing the cluster configuration
- User for:
 - Startup
 - Reconfiguration

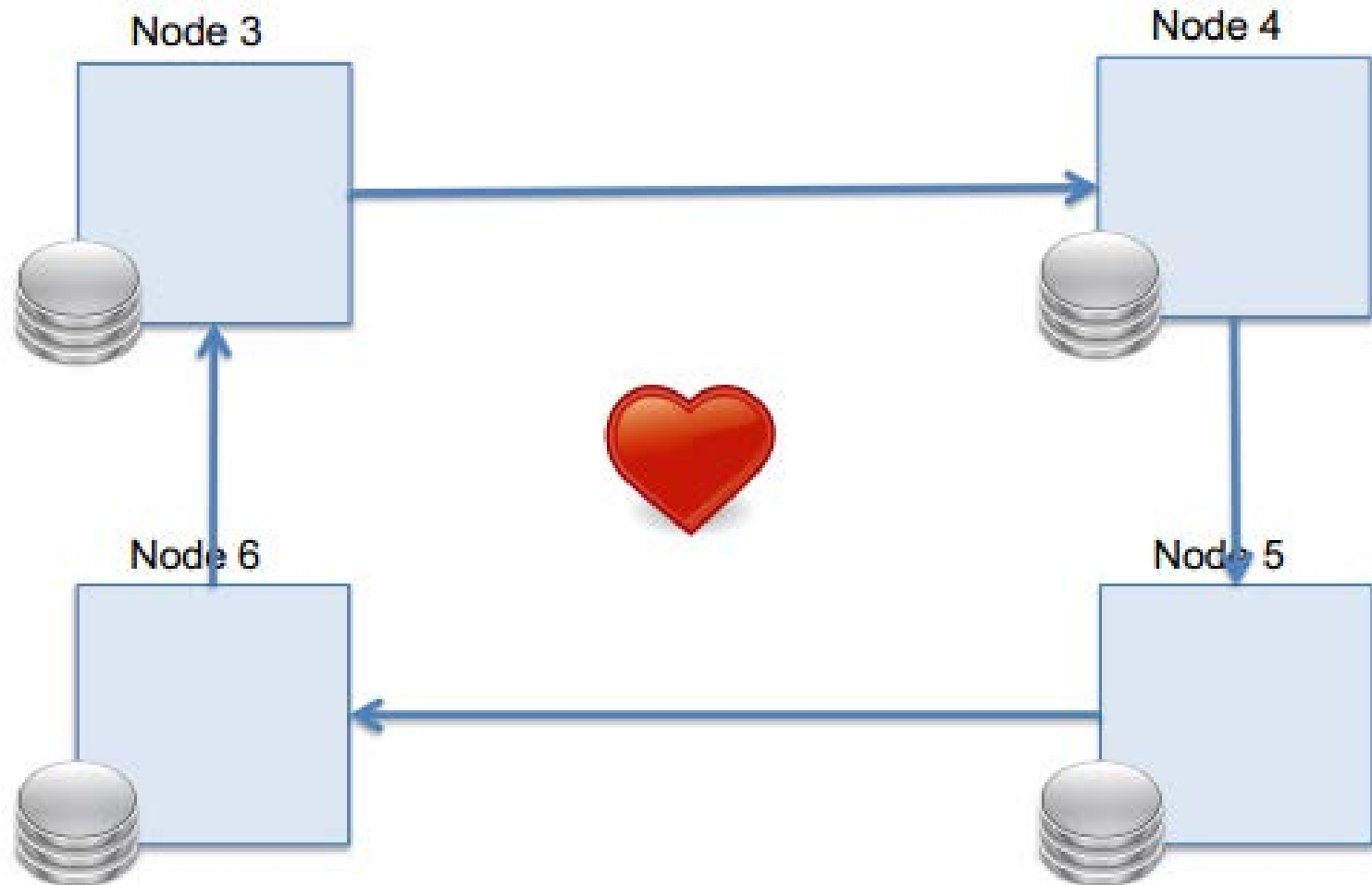
Partitioning



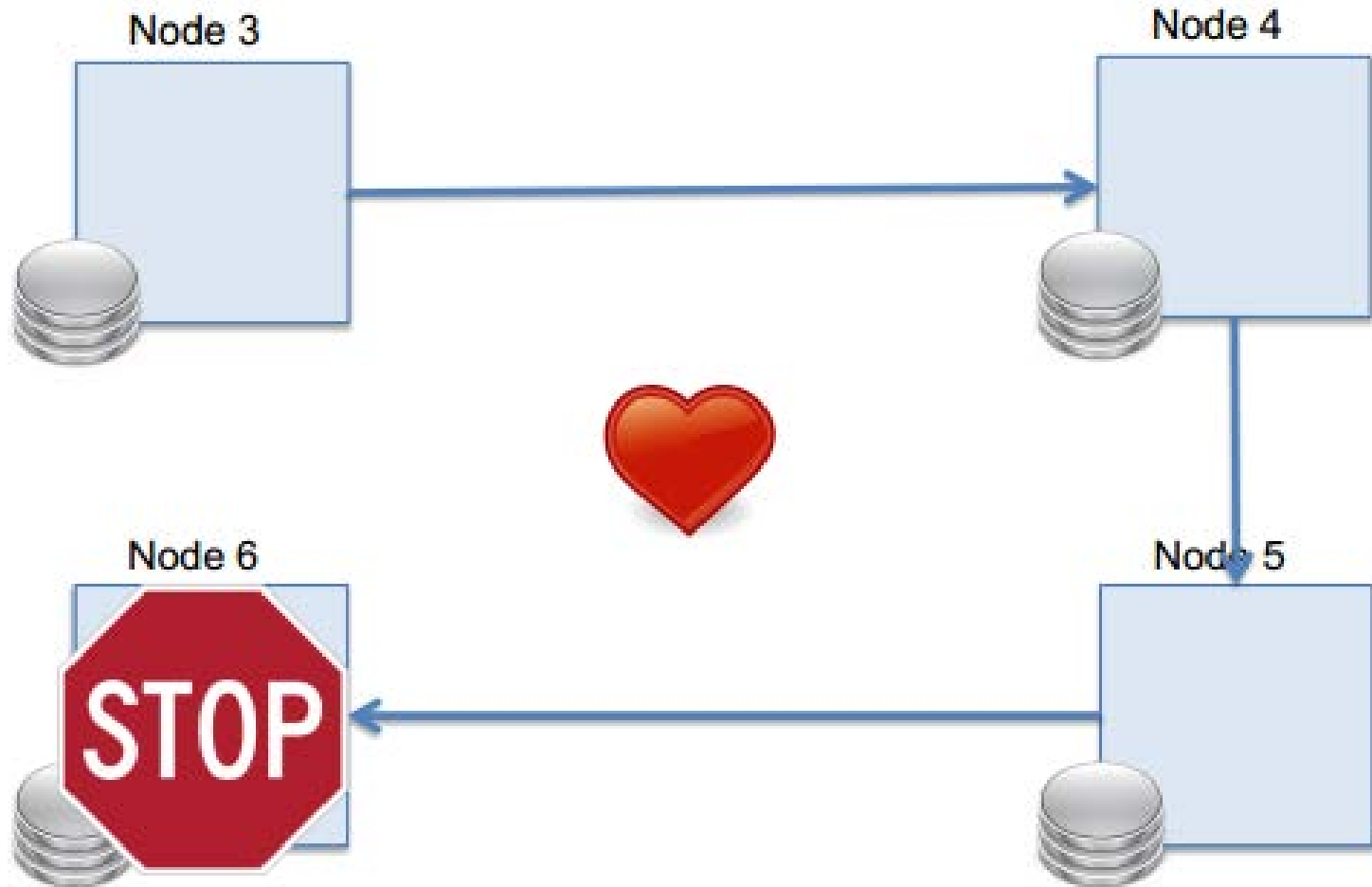
Partitioning



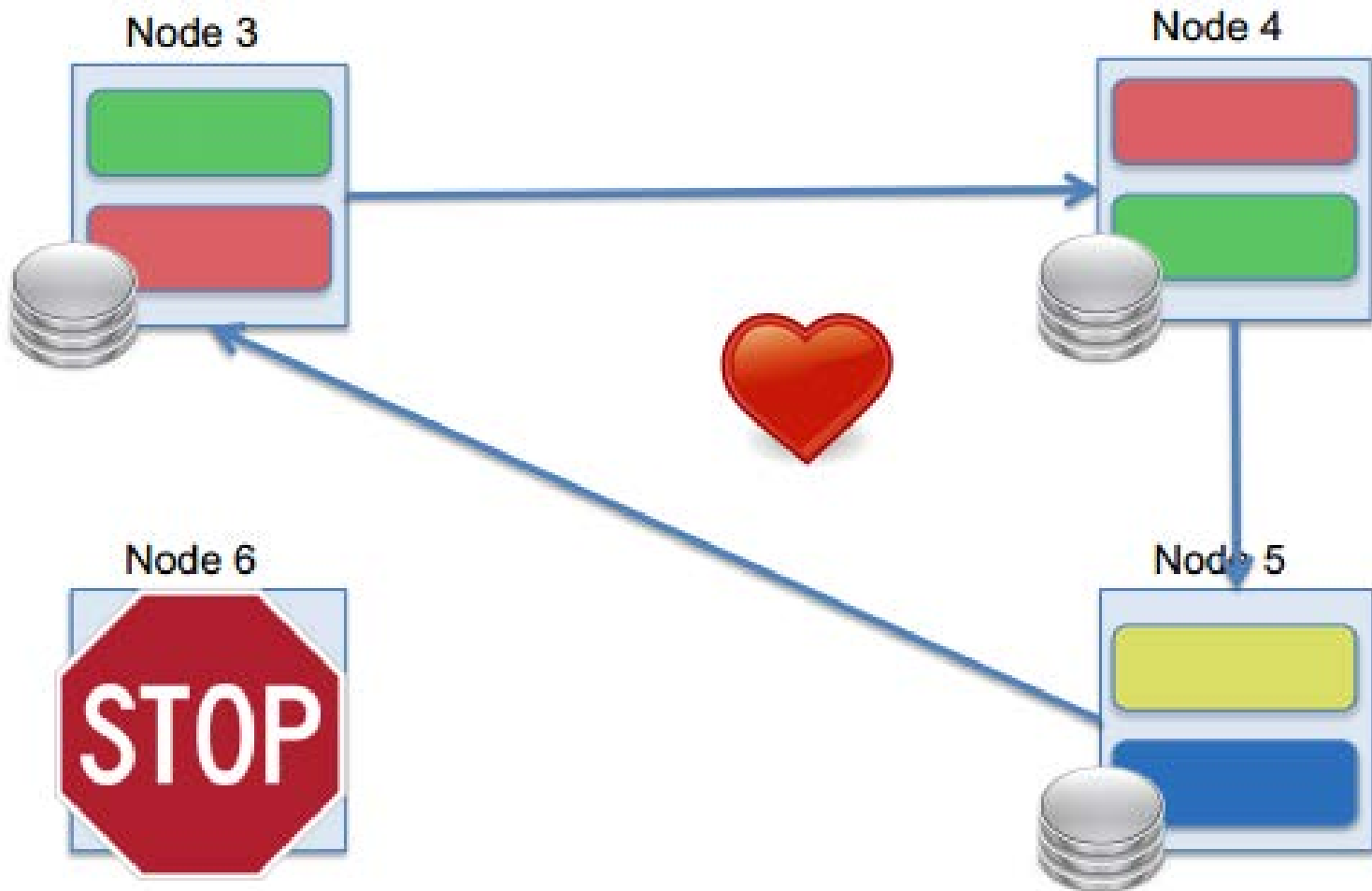
HeartBeat Circle



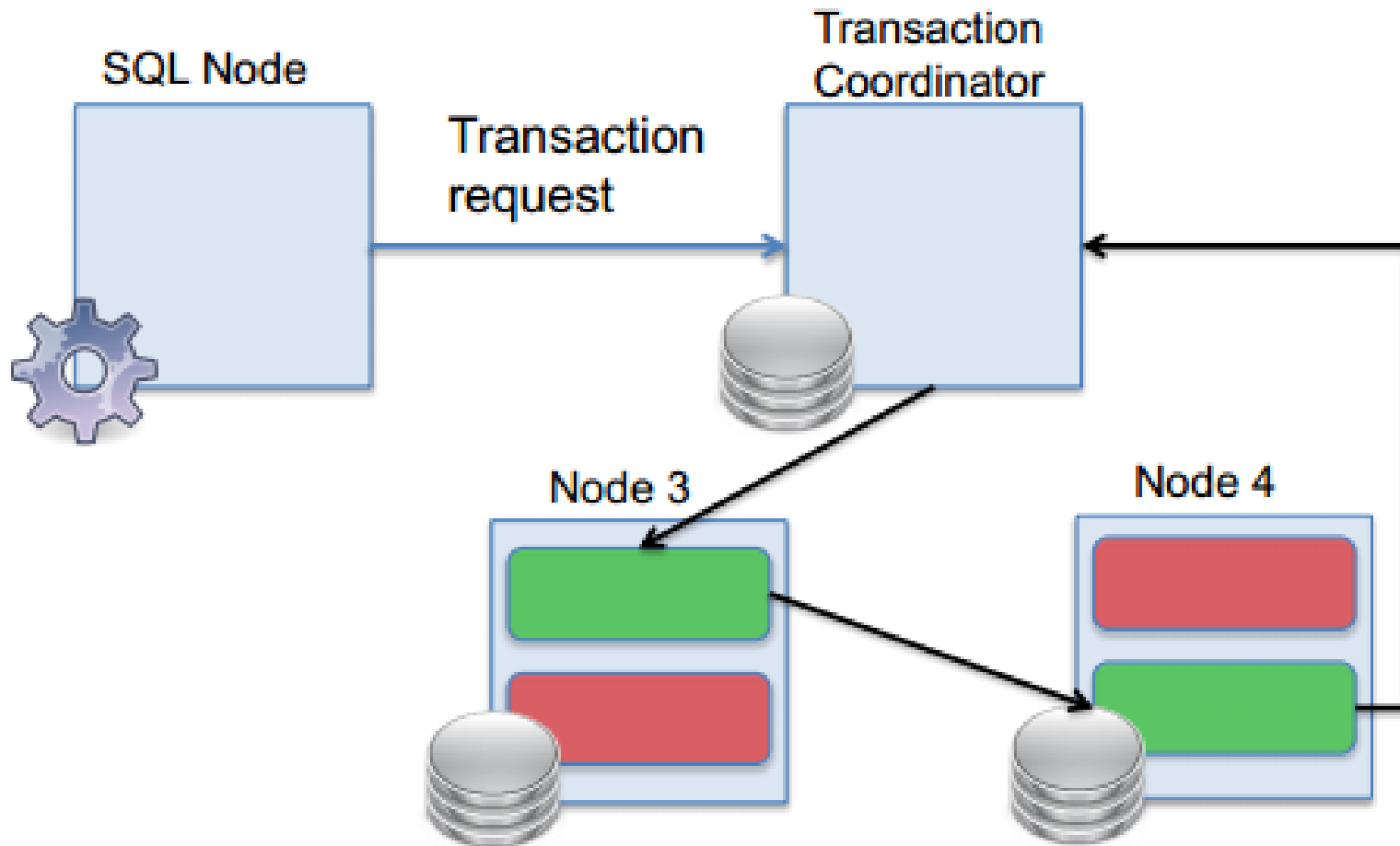
HeartBeat Circle



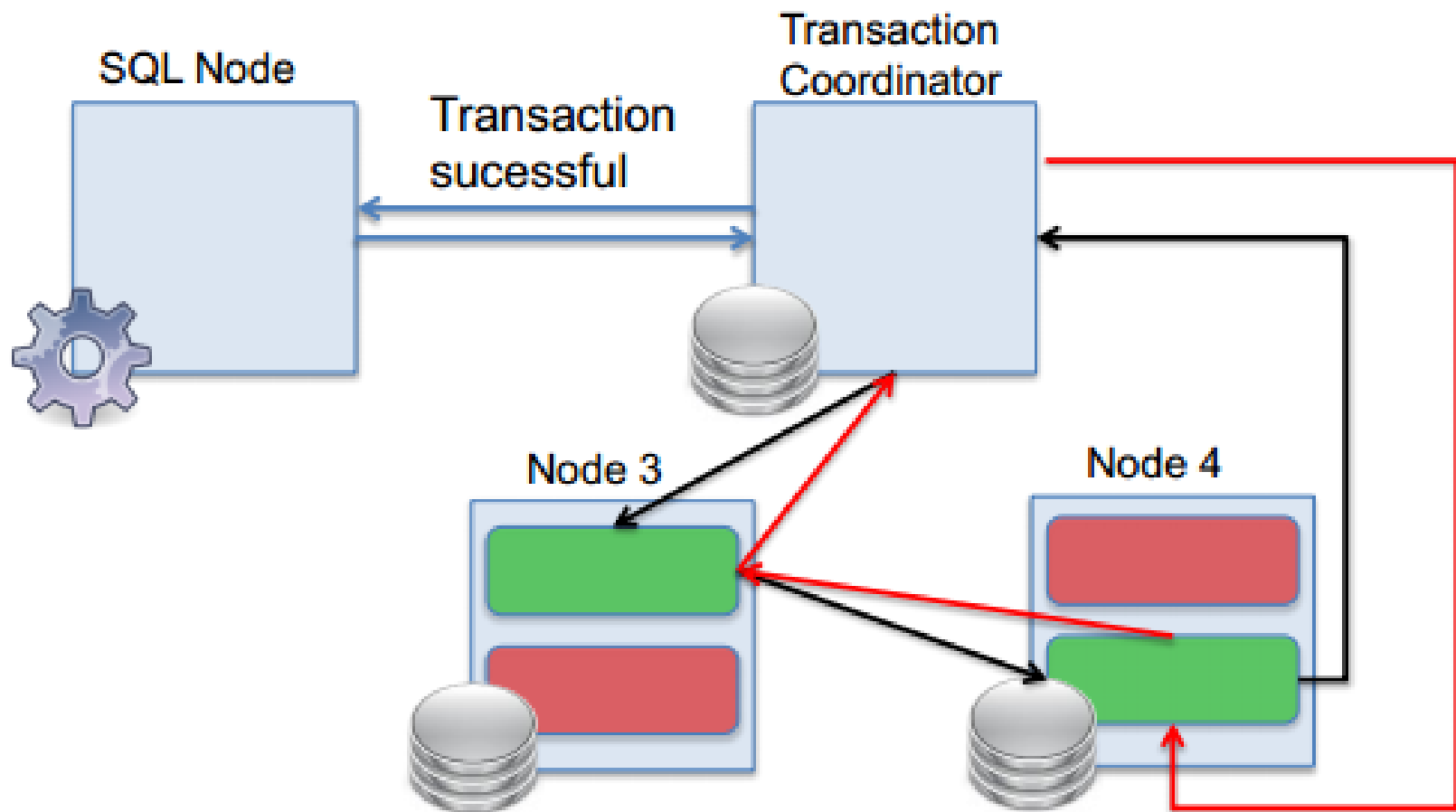
HeartBeat Circle



Transactions – Prepare Phase



Transactions – Commit Phase



Khuyết điểm

- Giới hạn dung lượng lưu trữ
 - 70% of RAM * nodes / 2

Thank YOU

Q & A