



HBASECON ASIA 2019

THE COMMUNITY EVENT FOR
APACHE HBASE™

BDS: A data synchronization platform for HBase

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Requirement

- HBase support cross-version migration without downtime?
- HBase support data backup to OSS or other storage?
- HBase support replicate incremental data to MQ,ES,Solr?
- Replicate incremental data from RDS to HBase?
- HBase data can be archived to Spark cluster for offline analysis?
- HBase High Availability
-

Challenges

HBase clusters Migration

Migration Step

- Table Structure transformation
- Real-time data replication
 - Client double write
 - HBase Replication
- Full data migration
 - DataX
 - CopyTable
 - Create Snapshot & Export Snapshot
- Data consistency verification

Defect

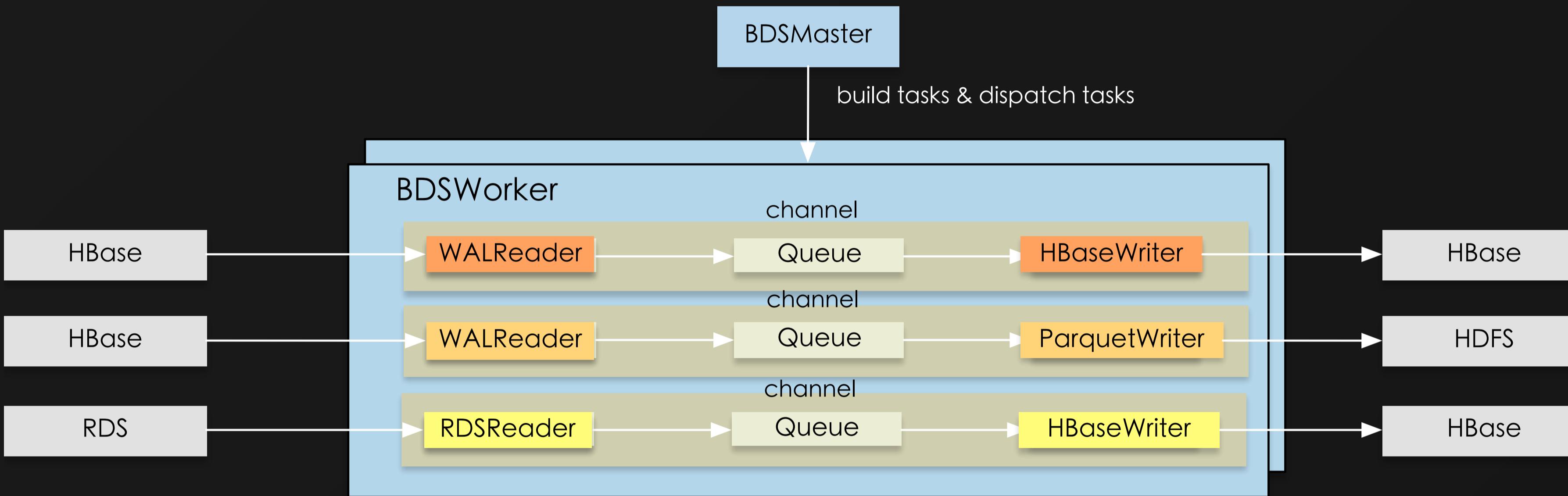
- Cross-Version Migration compatibility issues
- Impact on Business
- Lack of integrated solutions

Heterogeneous Data Transmission

- Heterogeneous full data migration
 - DataX
 - Sqoop
- Heterogeneous Real-time Data Replication
- HBase Real-time Data export
 - Custom Replication Endpoint
 - Custom Replication Sink

BDS

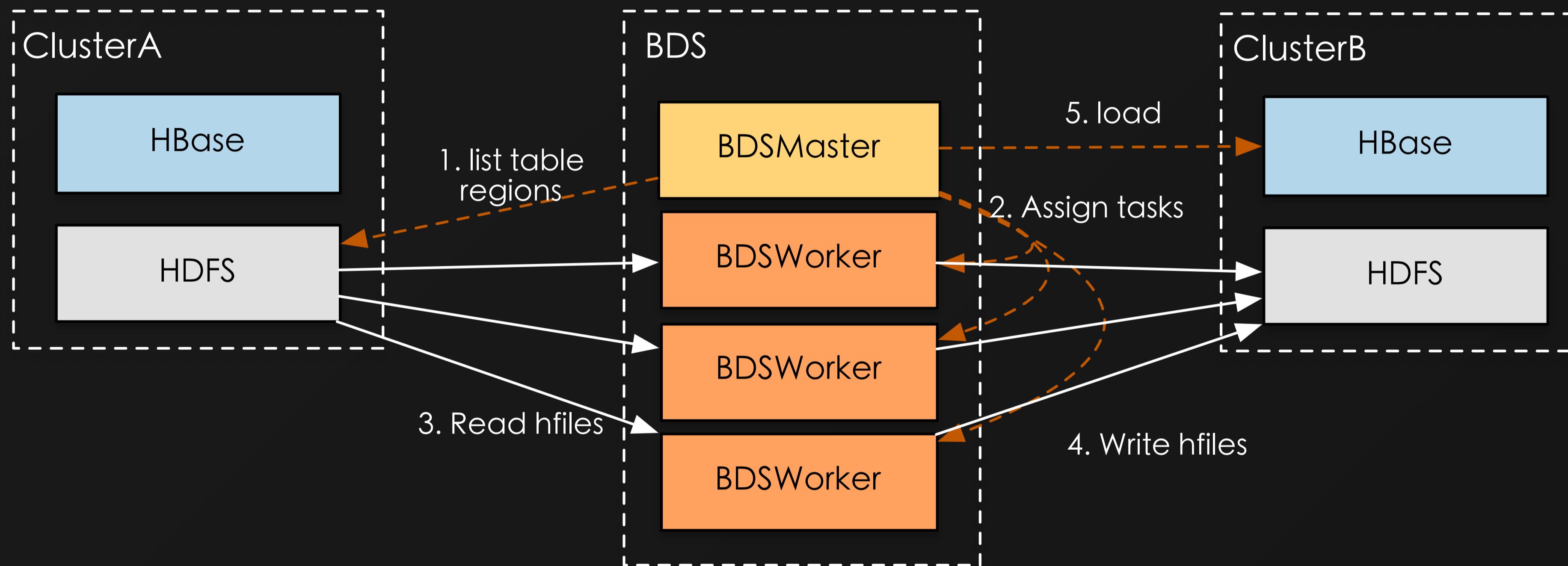
High-Level Architecture



- Master & Slave
- Stateless Slave
- Plugin-in mode
- Higher scalability and better performance

Technical Detail

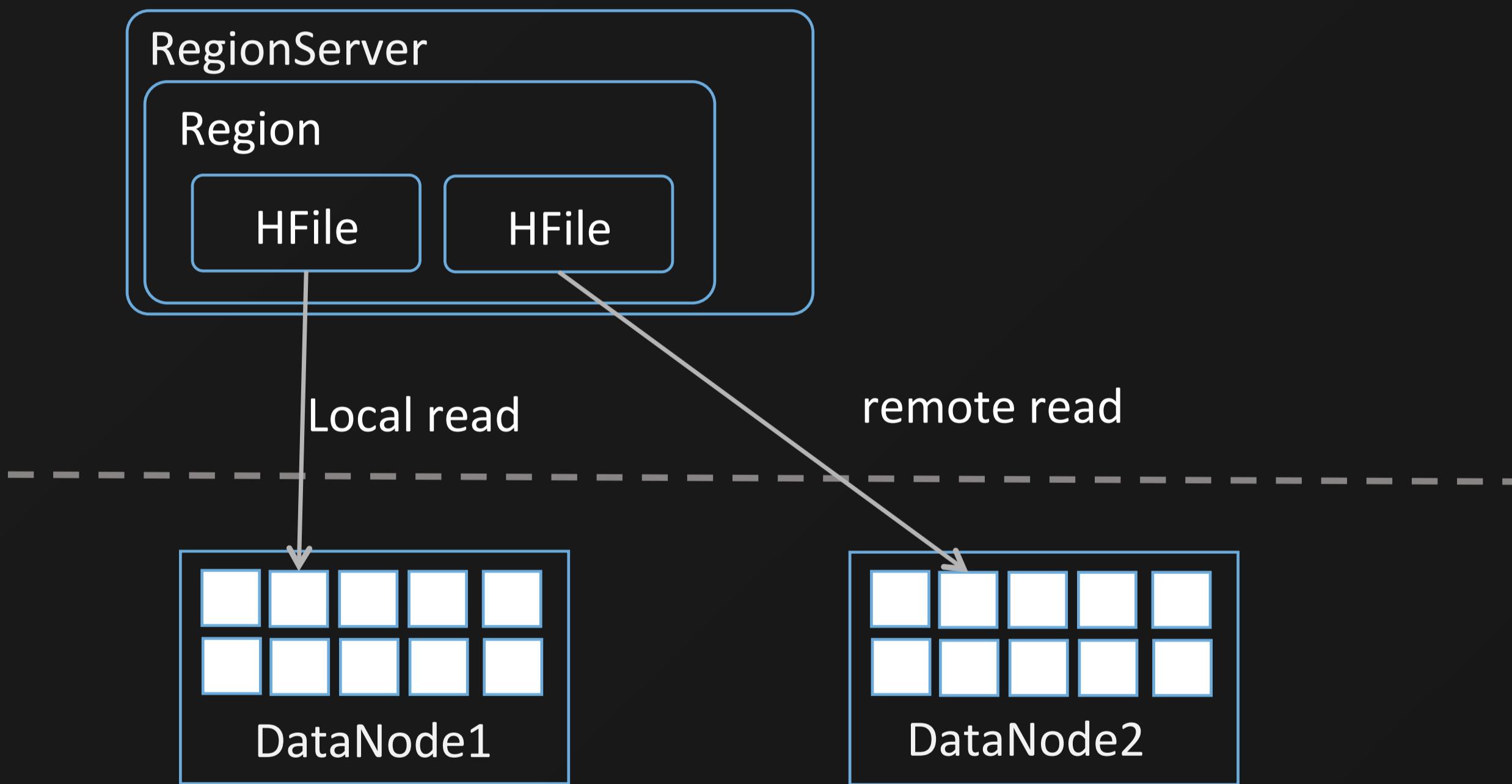
HBase full data migration



HBase full data migration

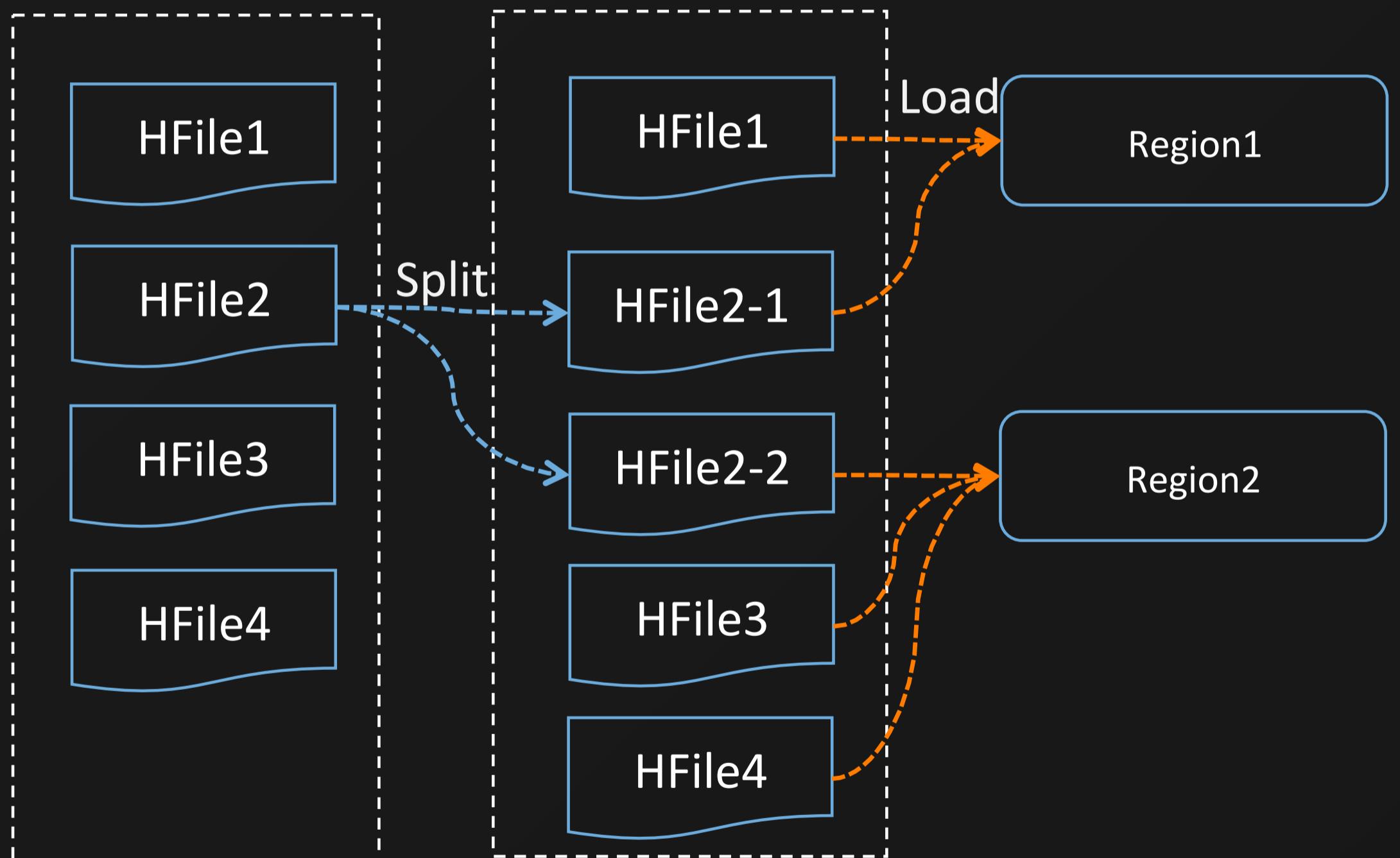
- **Avoid the impact on business**
 - Only access HDFS
 - Dynamic migration rate
 - Decoupled from HBase
- **One-click migration**
 - Create table automatically
 - Perceive changes in region
 - Perceive HFiles compaction
- **Efficient**
 - 100MB/s (single node)
 - Higher scalability

Data localization rate



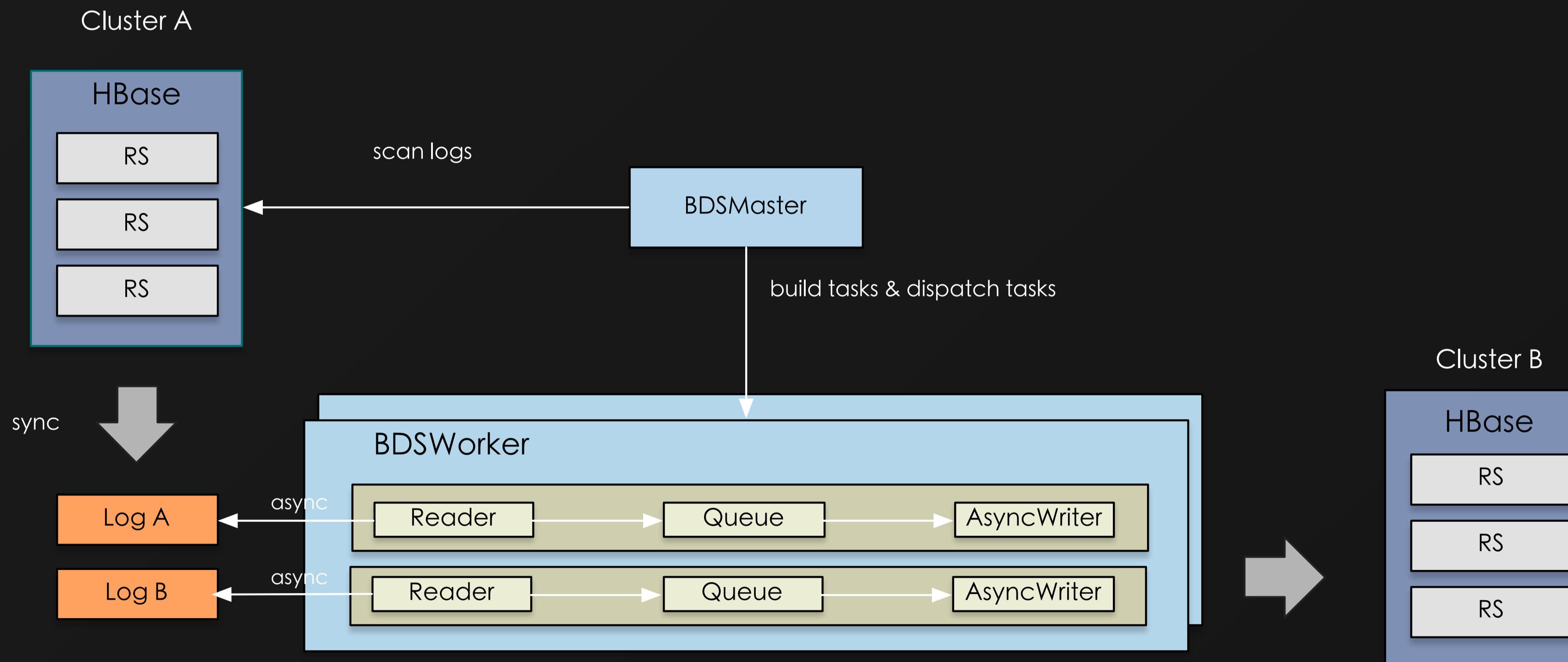
- Data migration takes the issue of data localization rates into account
- Avoid low localization rate after data migration

File split

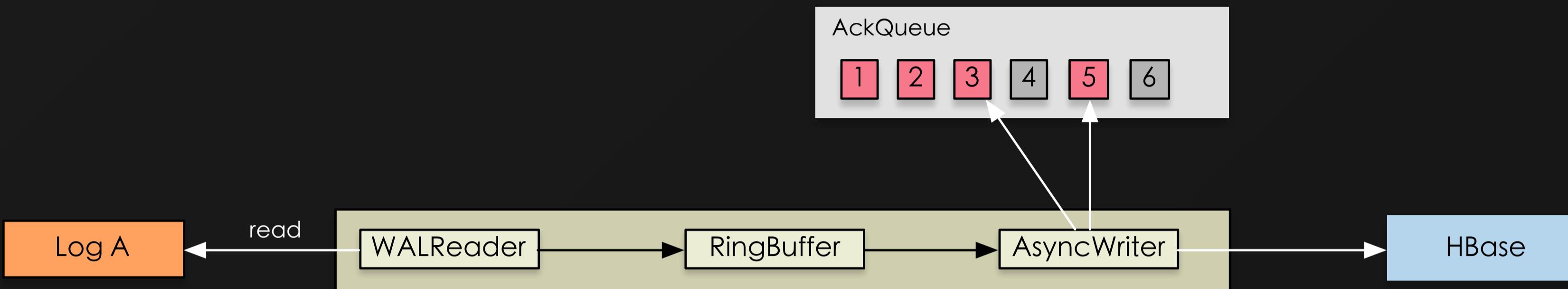


- Migration will split HFiles according to the partitions of the original and target tables
- Increase the speed of bulkload

HBase Real-time Replication



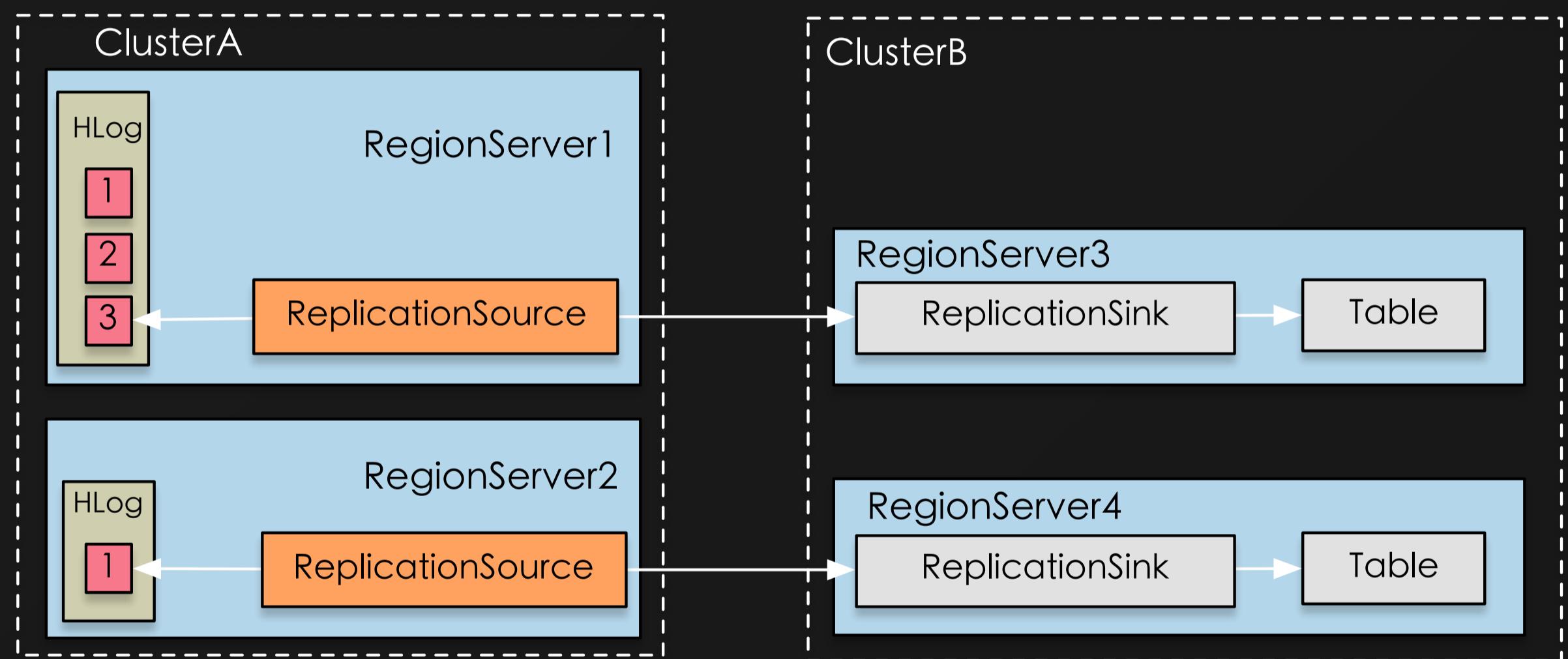
Data pipeline



- Using RingBuffer as a queue
- AckQueue maintains offset
- Write throughput support dynamic configuration

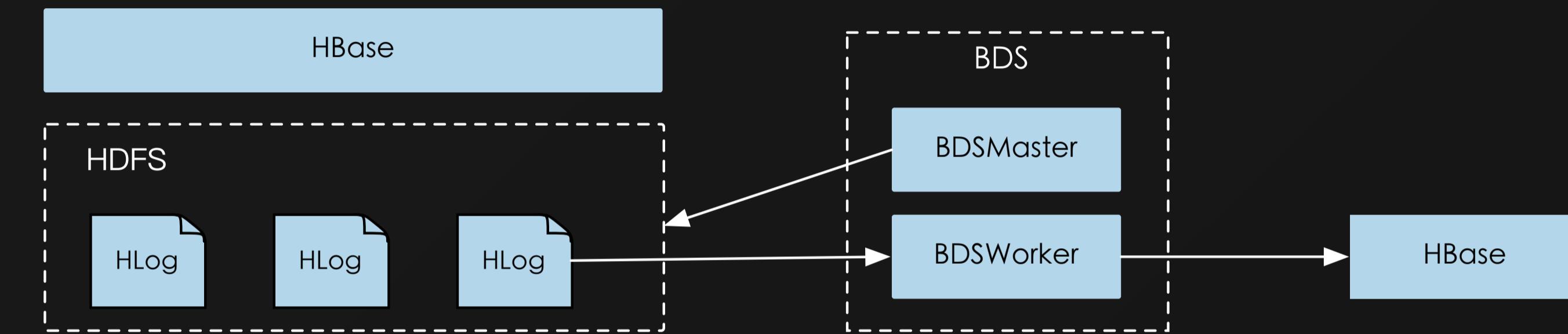
Impact on business

HBASE Replication



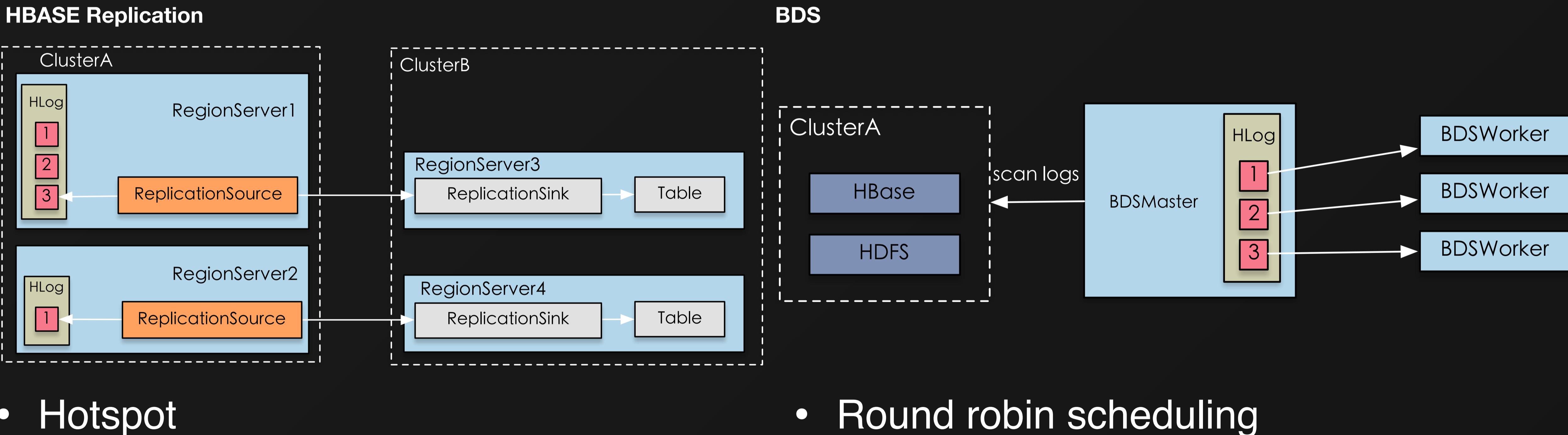
- Read and write affect data replication

BDS



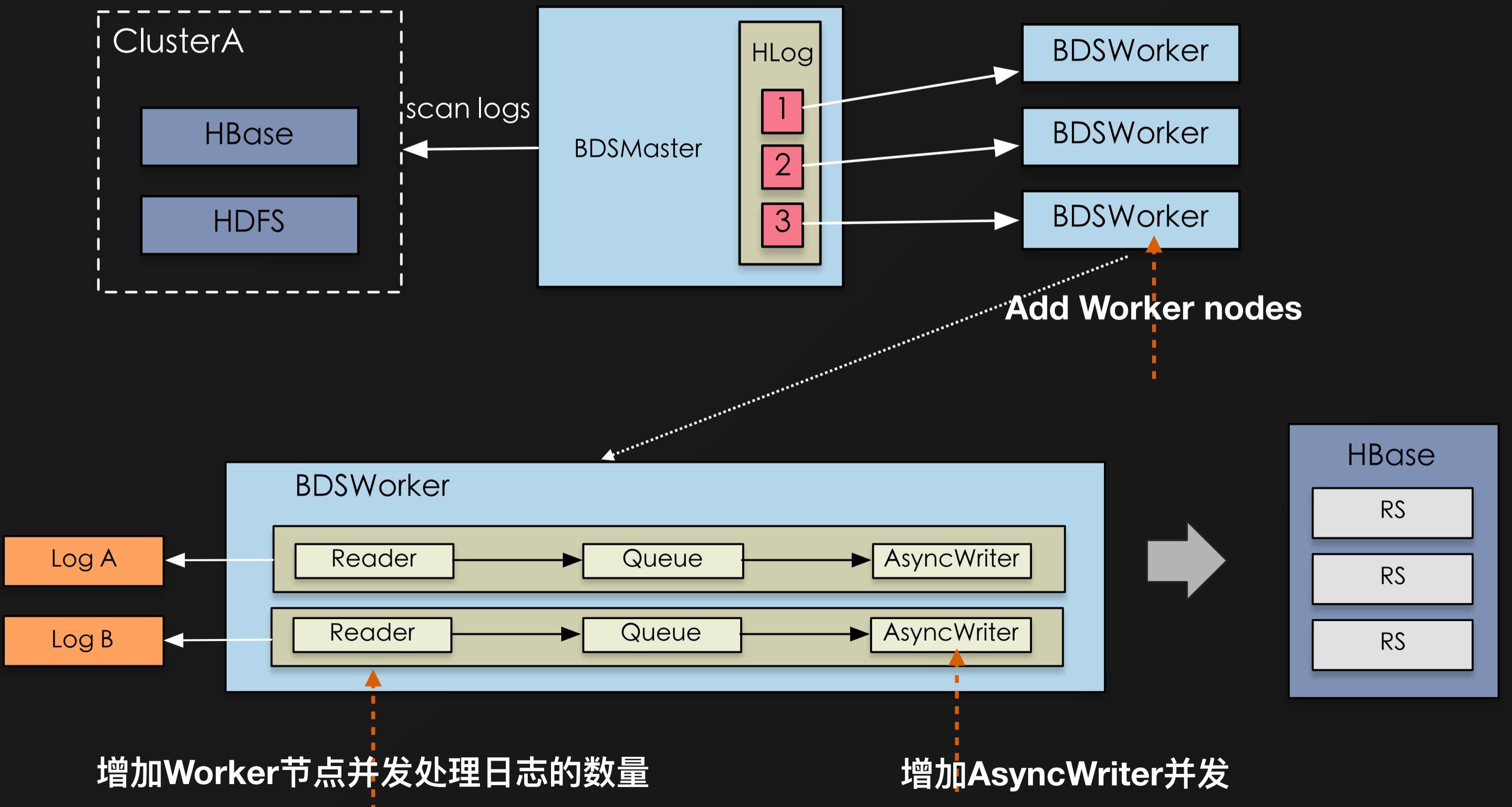
- Decoupled from HBase
- Only access HDFS
- Data Replication is not affected by HBase crash

Hotspot



Replication backlog

BDS



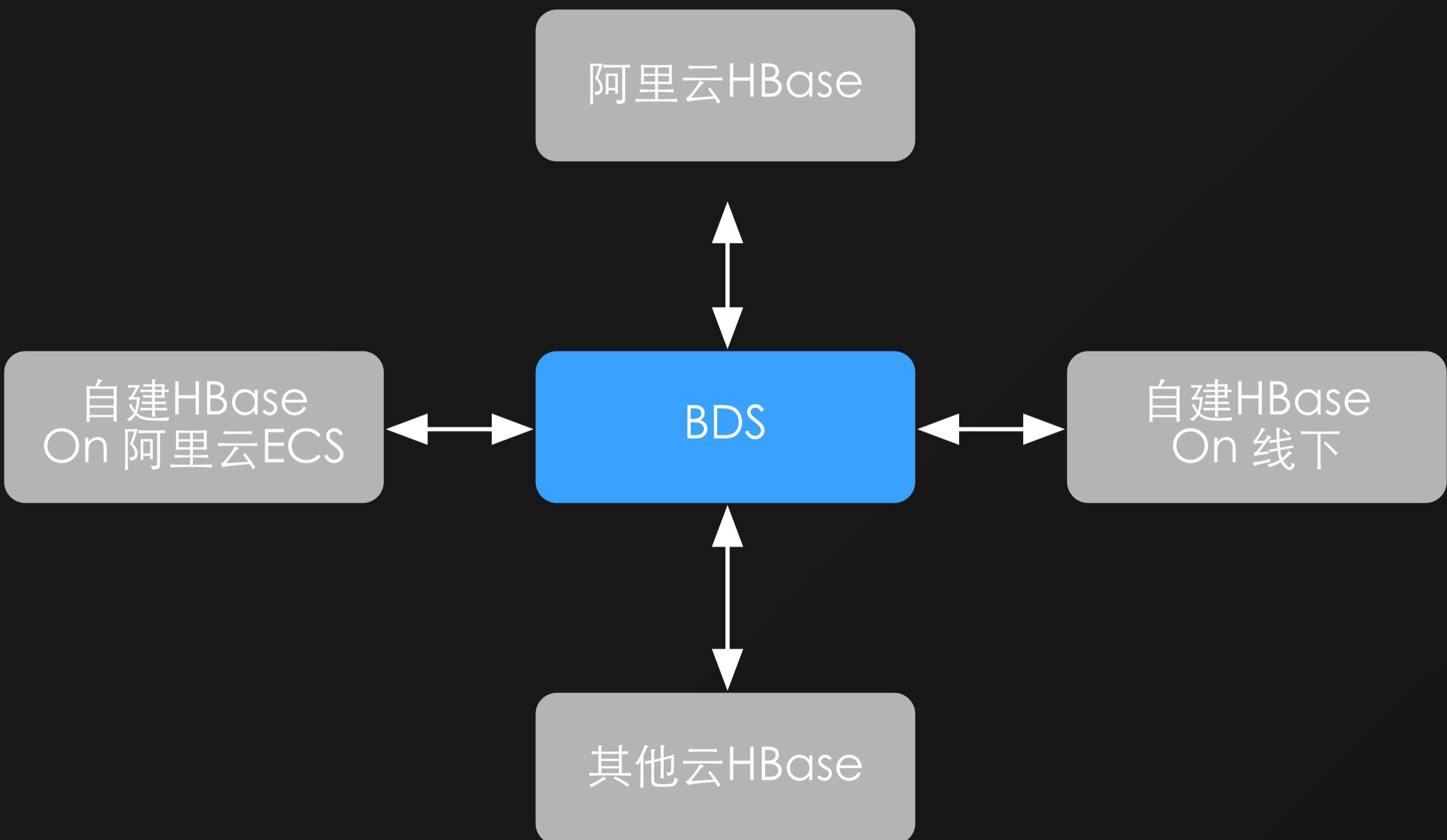
- Add slave nodes
- Slave throughput support dynamic configuration

Operation and maintenance

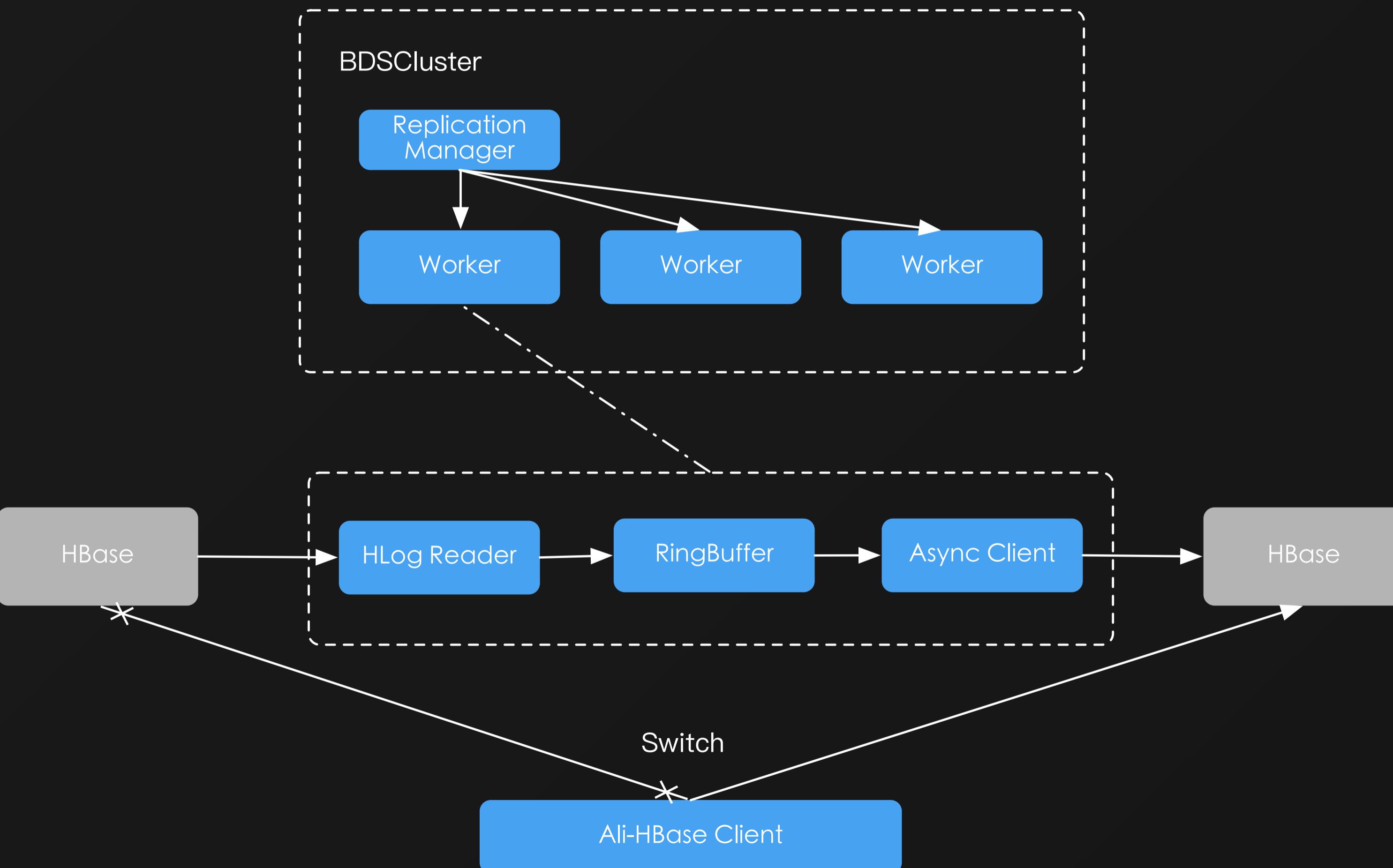
- BDS
 - Easy to expand
 - Easy to upgrade
 - monitor
 - alarm mechanism
- HBase Replication
 - Bug fix
 - No alarm
 - Configuration modification and system upgrade requires RS to restart

BDS in Ali-Cloud

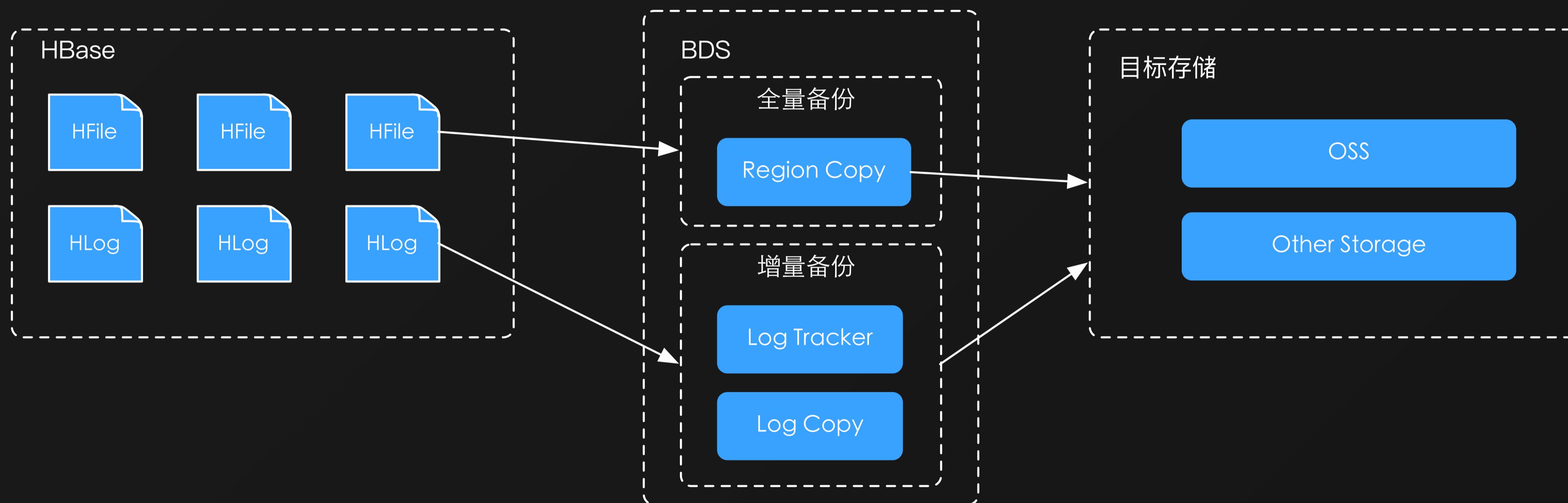
Clusters Migration



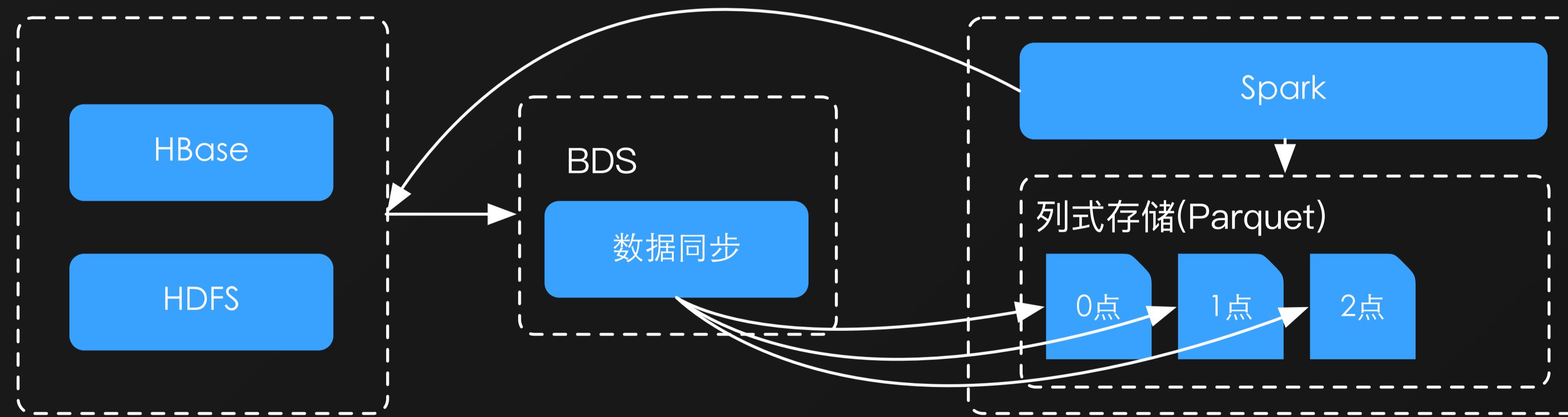
High Availability



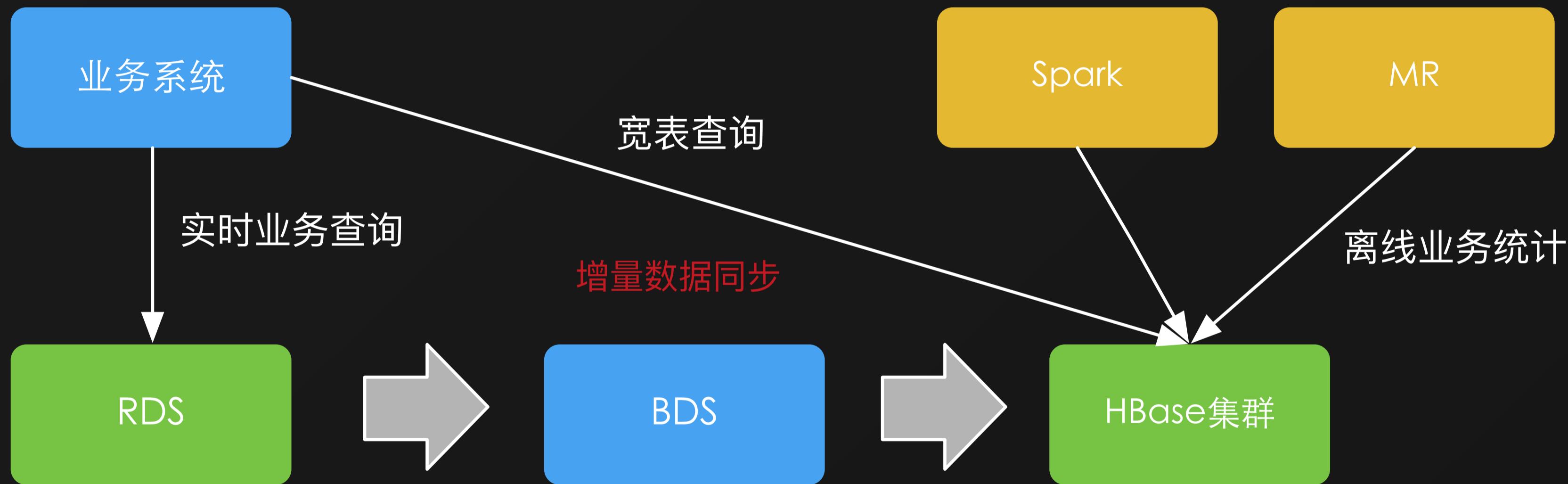
Data Backup



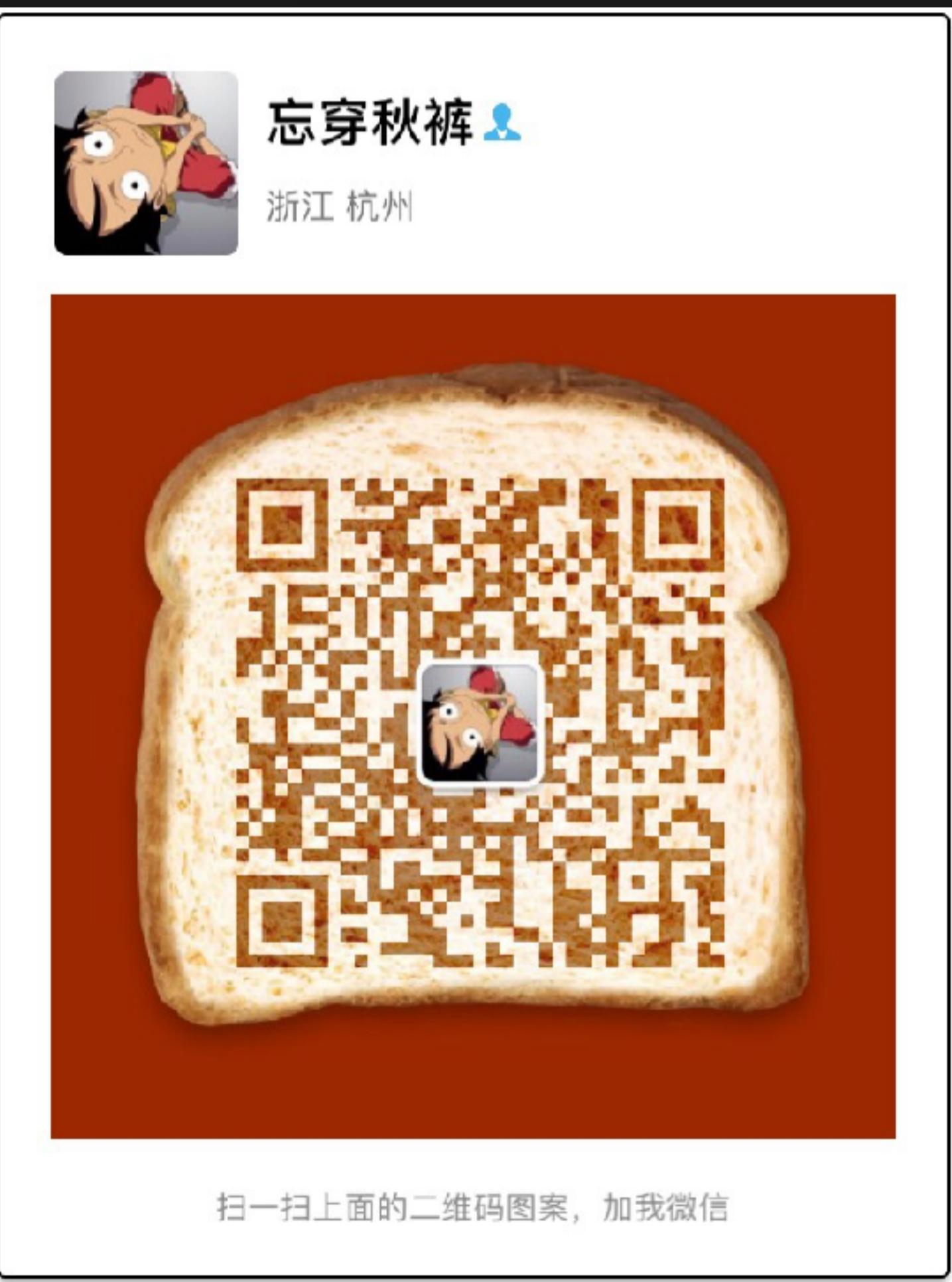
Archive data to Spark



RDS



About me



Thanks!