京东弹性数据库

戴东东

数据库技术部

京东弹性数据库

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京东MySQL发展历程

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BinLake日志订阅服务

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一站式MySQL BinLog日志实时采集、统一分发、消费订阅和监控服务

BinLake日志订阅服务

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BinLake日志订阅服务-软件架构设计

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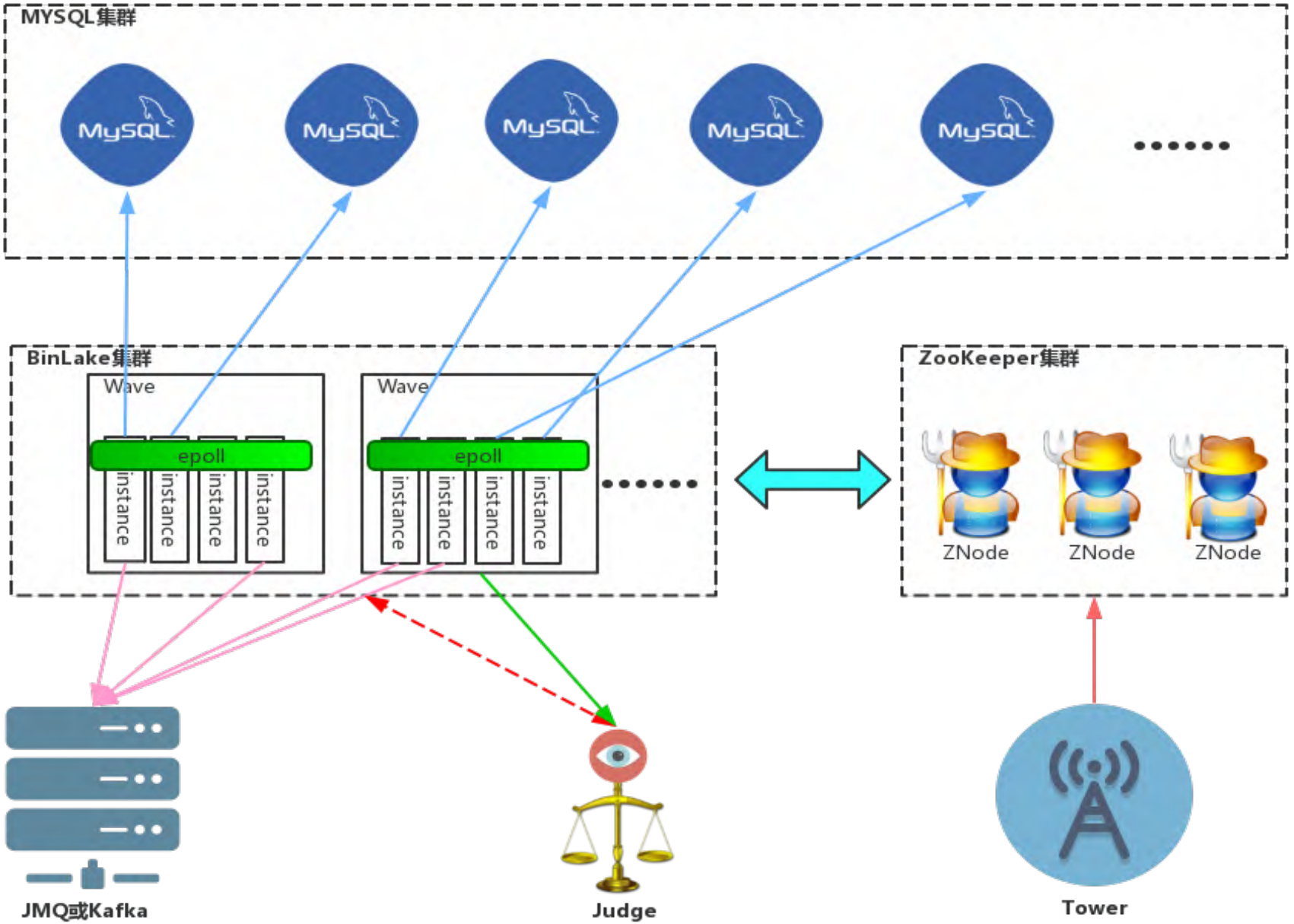

BinLake日志订阅服务-网络架构

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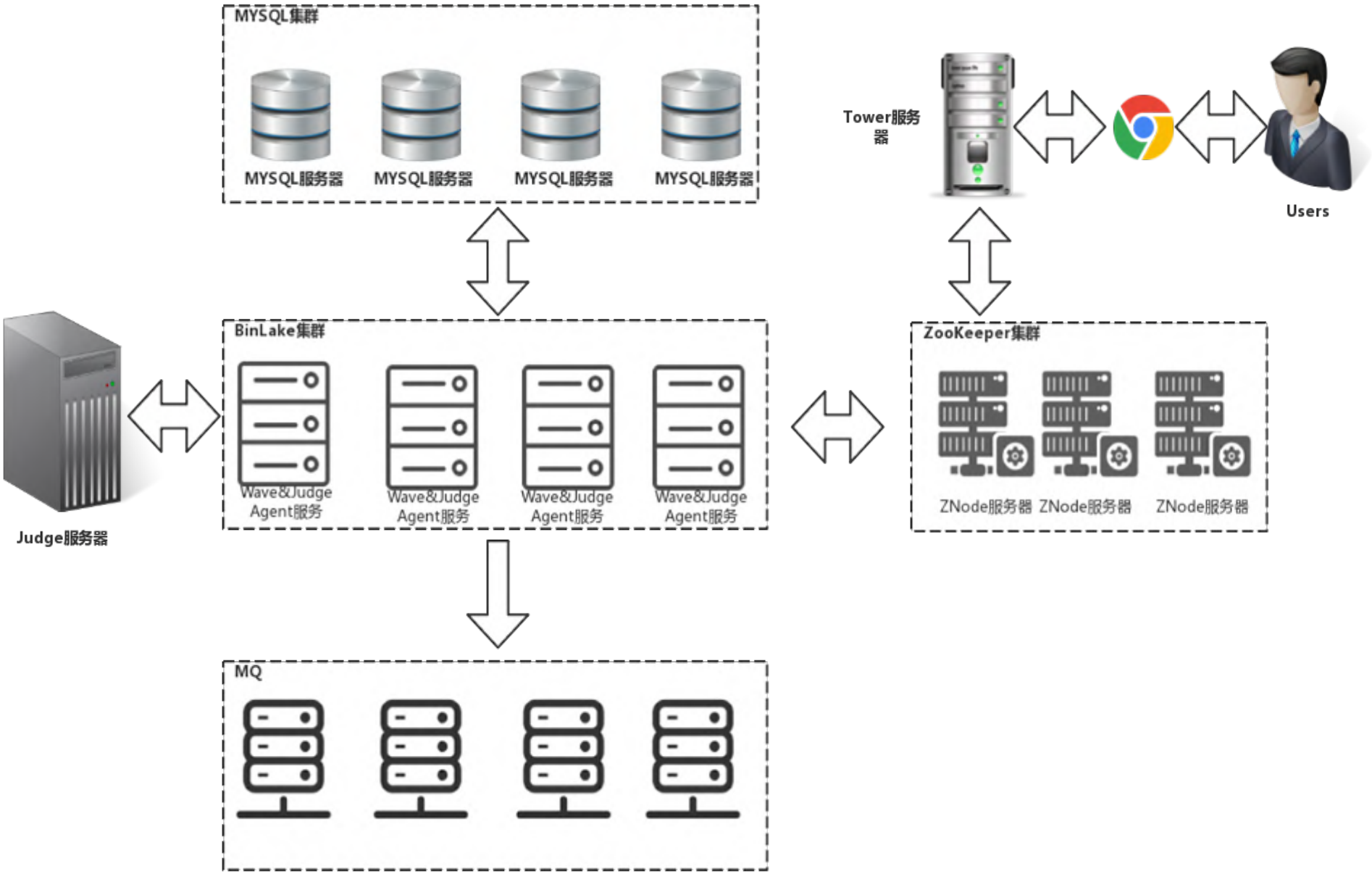

BinLake日志订阅服务-资源复用逻辑

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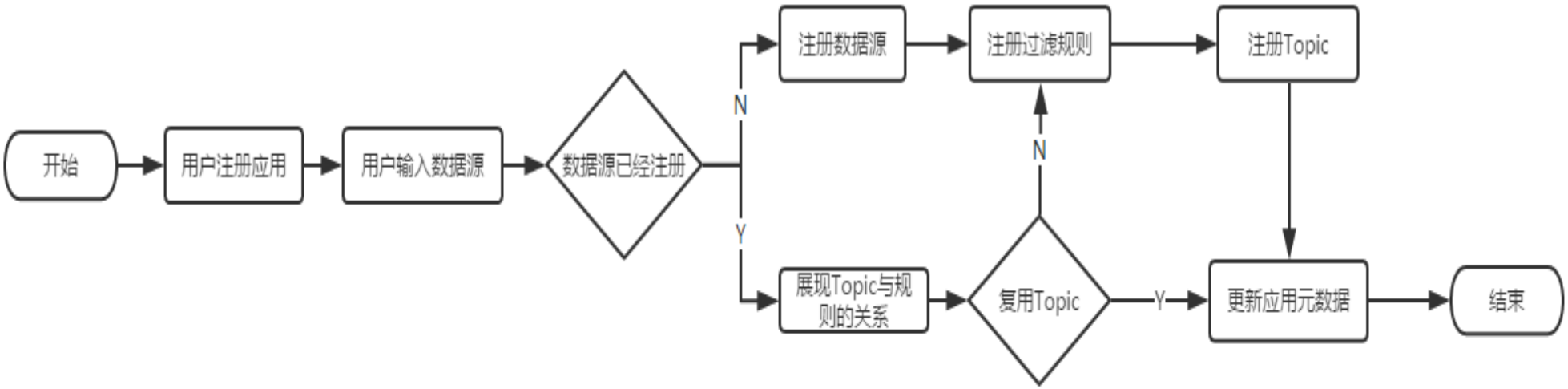

BinLake日志订阅服务-instance复用与日志过滤

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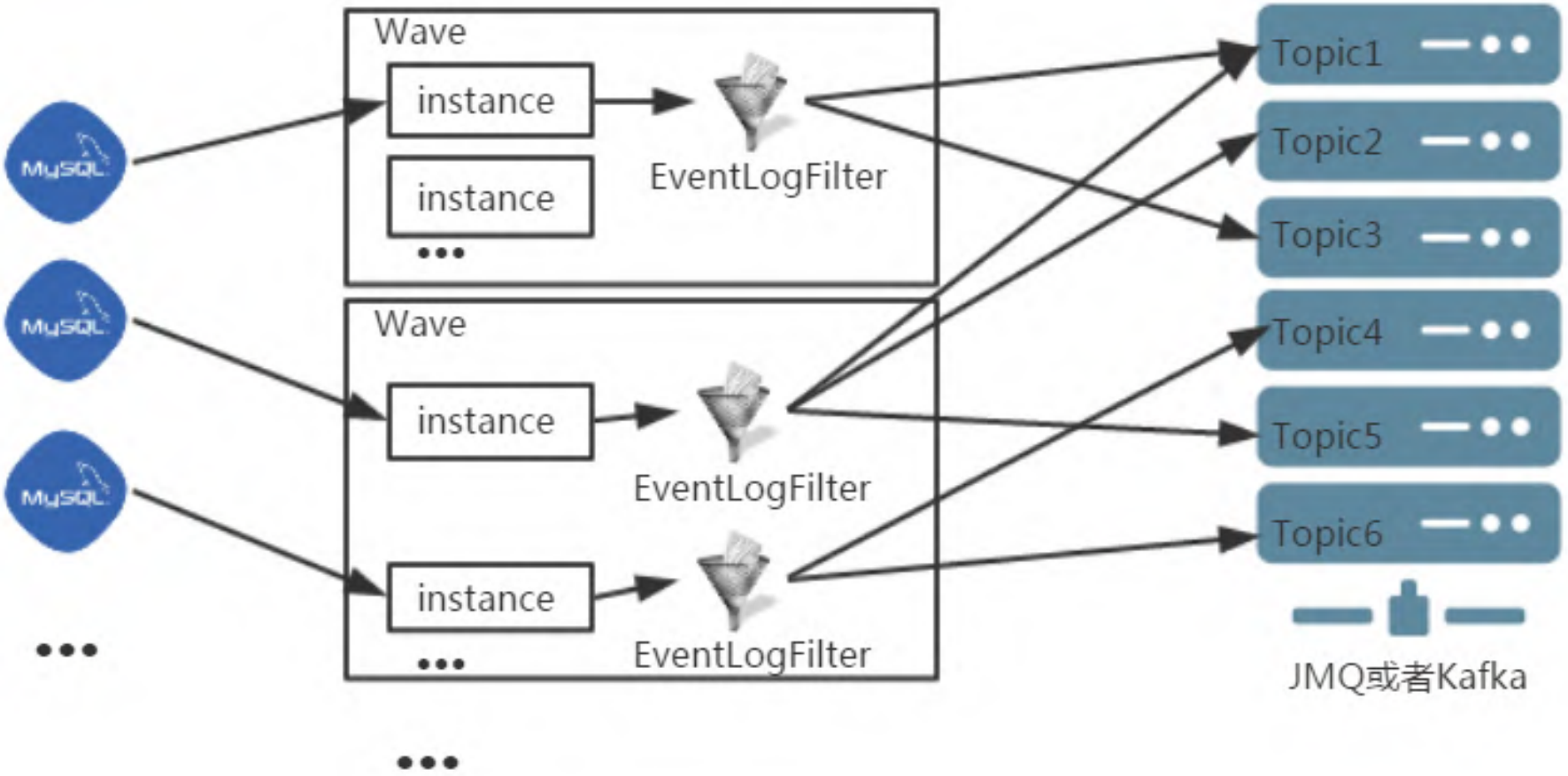

弹性数据库-系统优势

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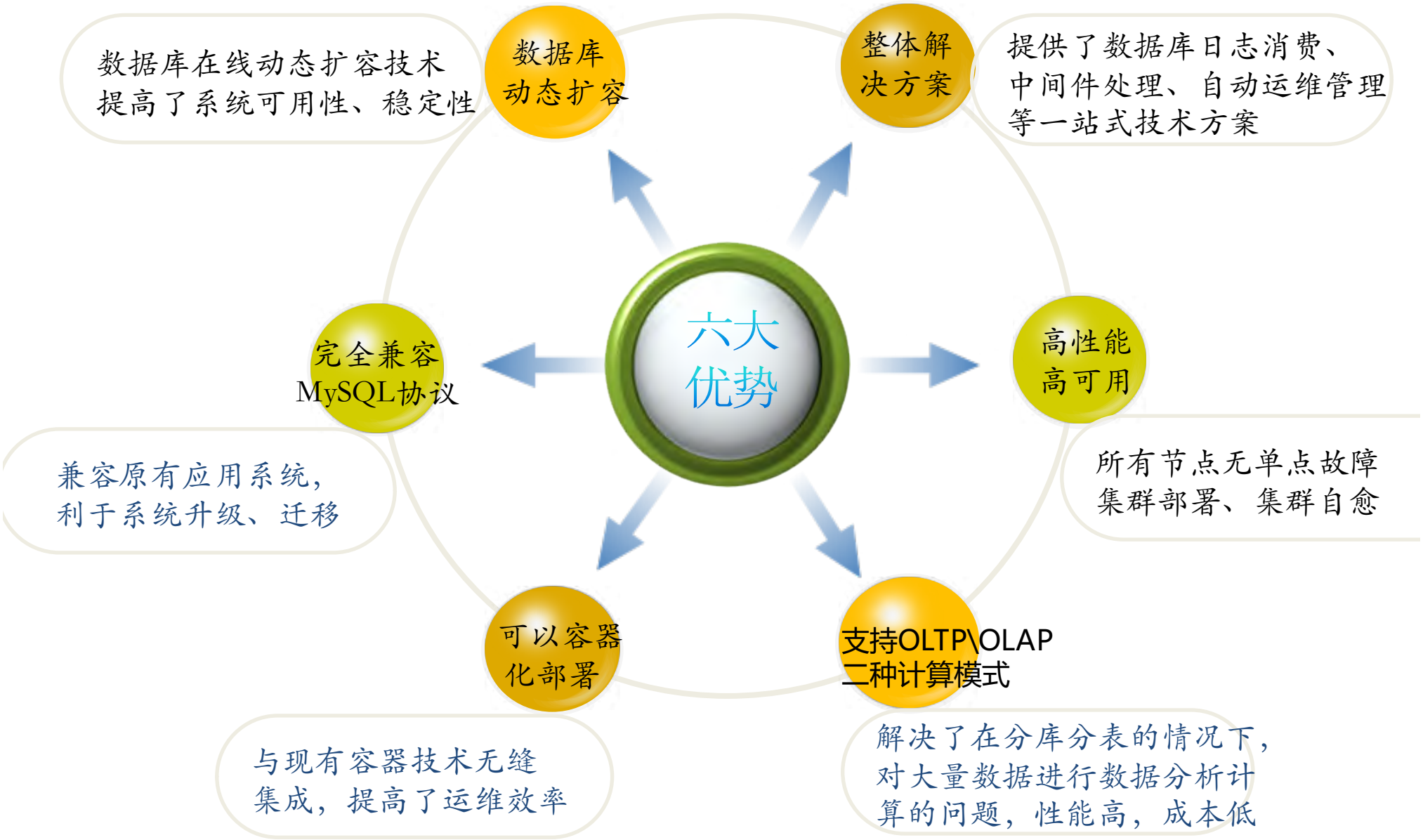

弹性数据库-系统架构

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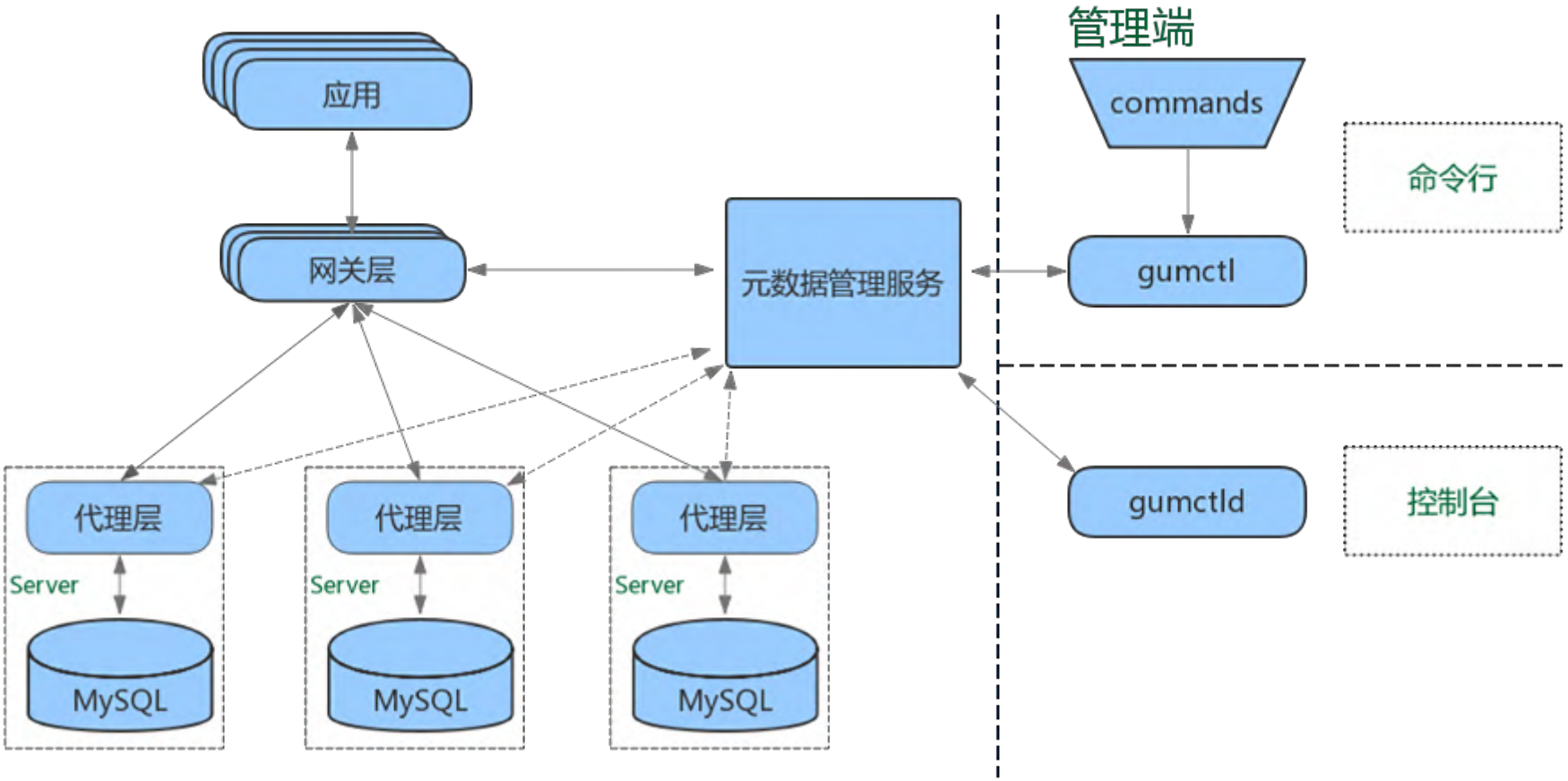
系统架构



弹性数据库- Resharding-KeyRange

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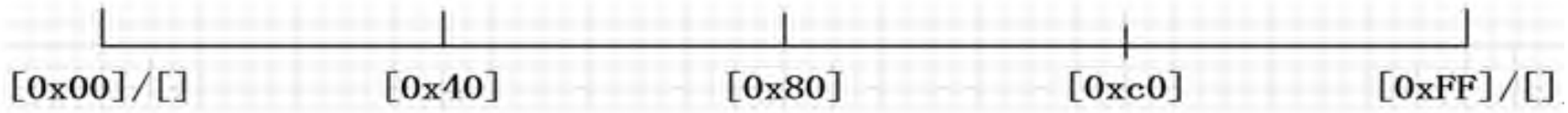

Start=[0x00], End=[0xFF]: 整个Key Range，也可以用空值表示，比如

Start=[], End=[]

Start=[0x00], End=[0x80]:小于0x80的 Key Range， 整个Range的前1/2

Start=[0x80], End=[0xFF]:大于0x80的 Key Range， 整个Range的后1/2

Start=[0x40], End=[0x80]: 第二个1/4 Key Range.， 整个Range的1/4

弹性数据库- Resharding

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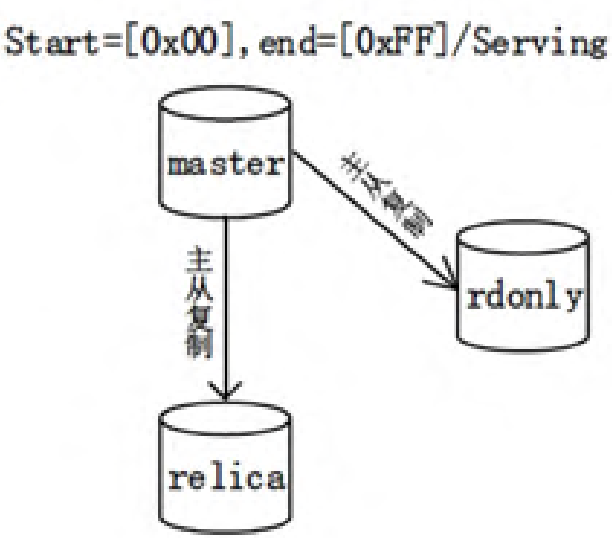
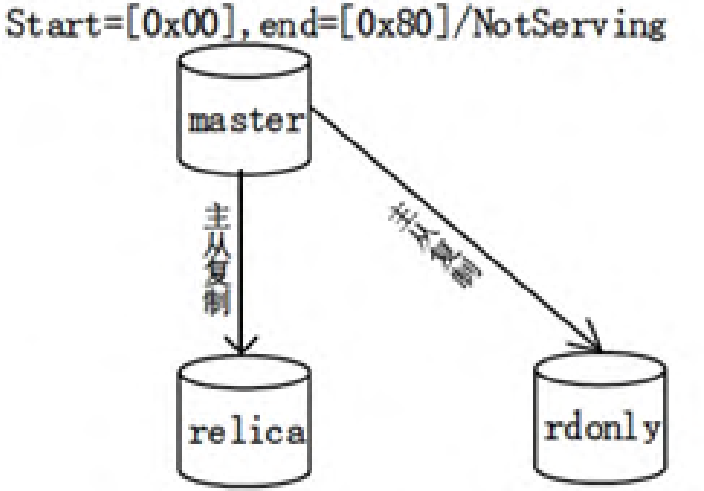
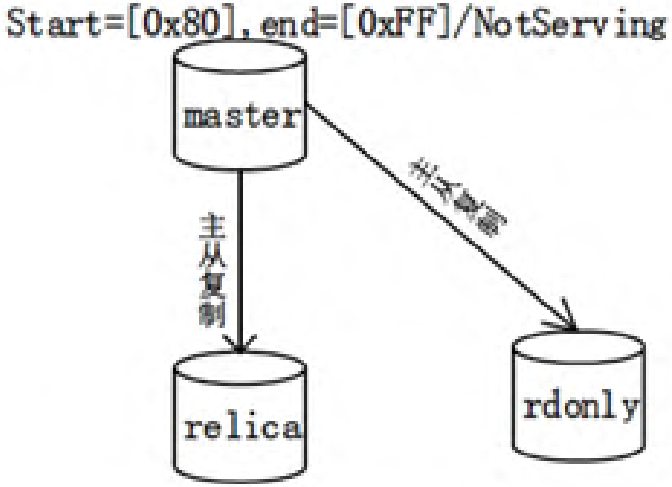
启动新的Shard并初始化master







弹性数据库- Resharding

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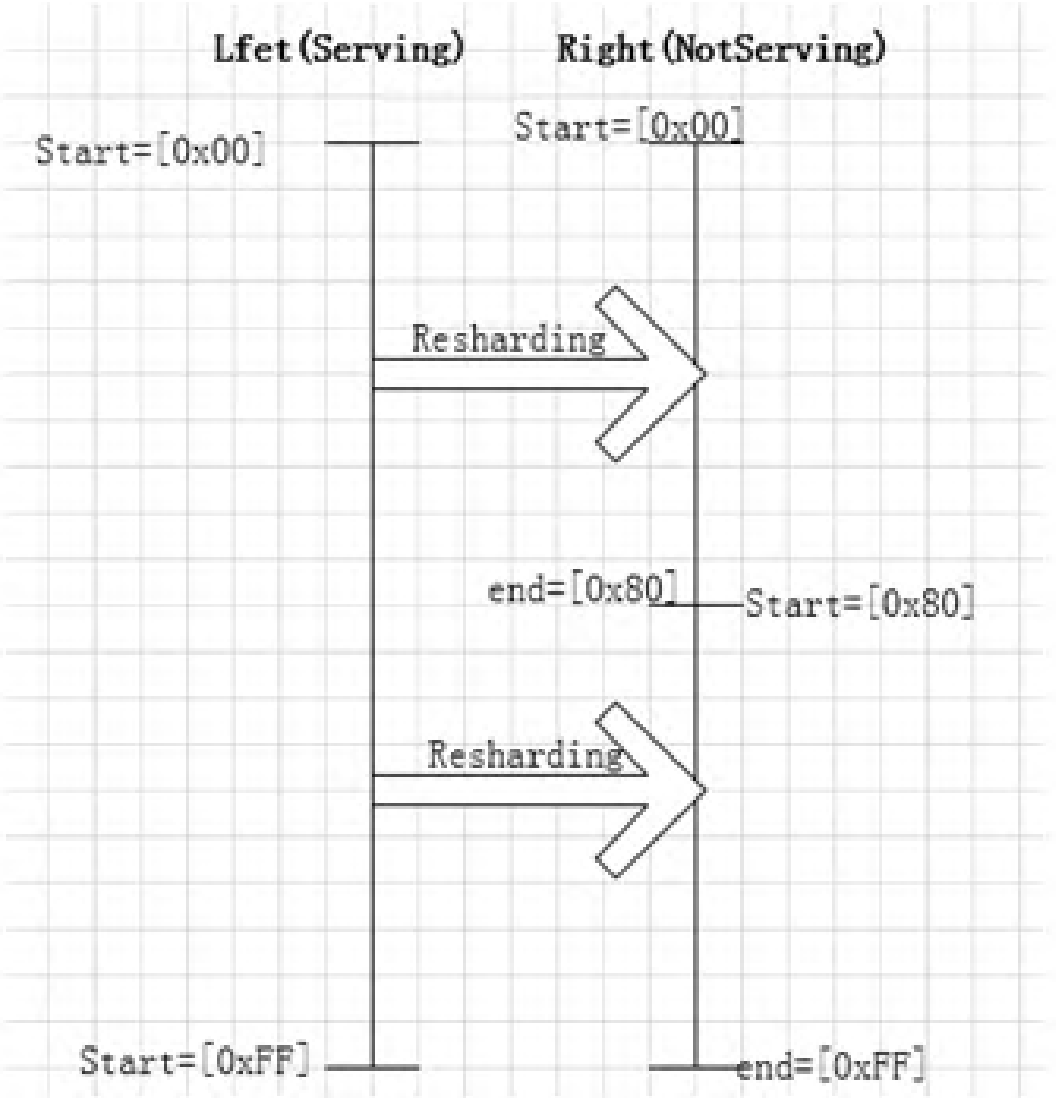
KeyRange检查

-



弹性数据库- Resharding

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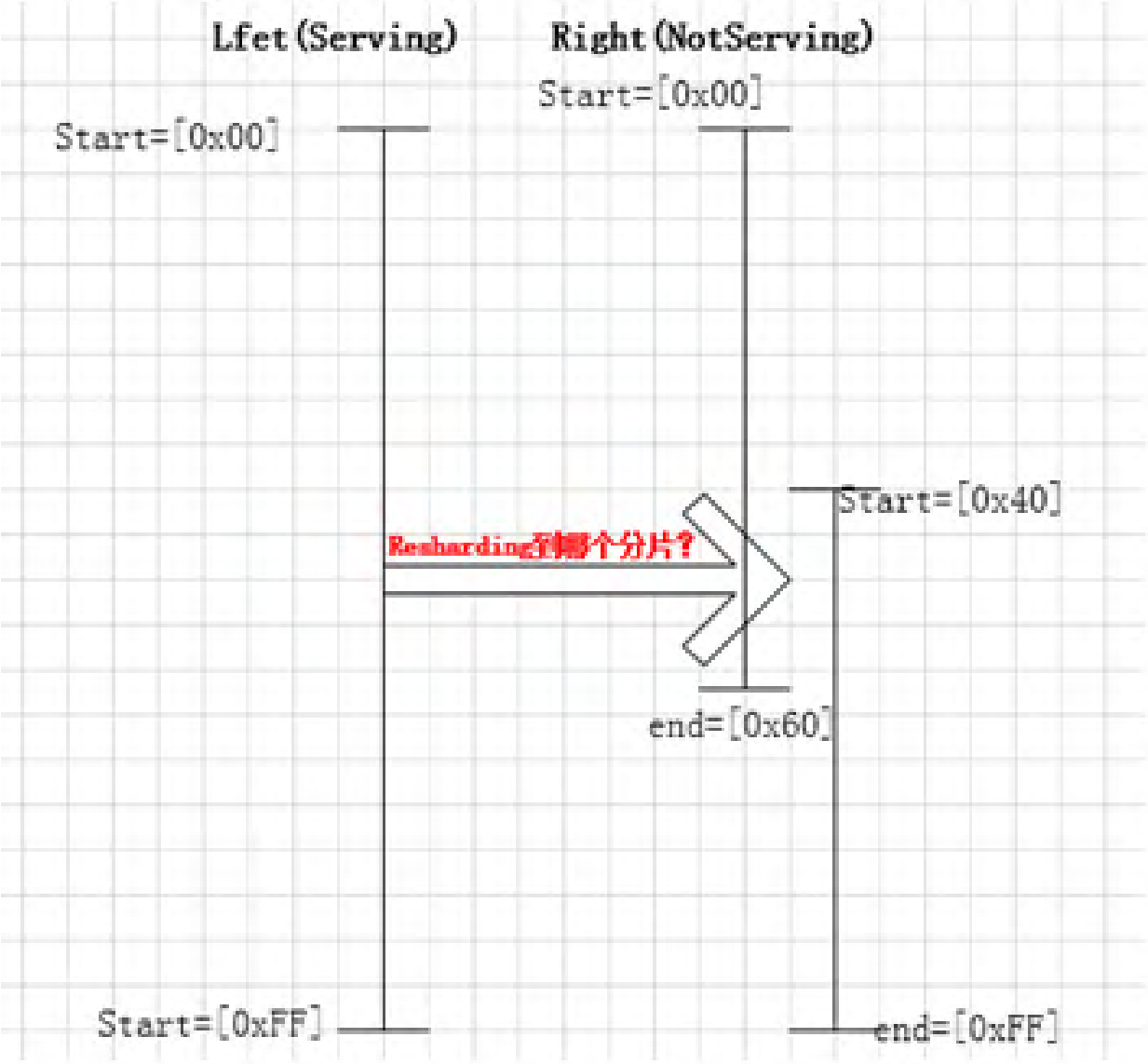
KeyRange检查

-



弹性数据库- Resharding

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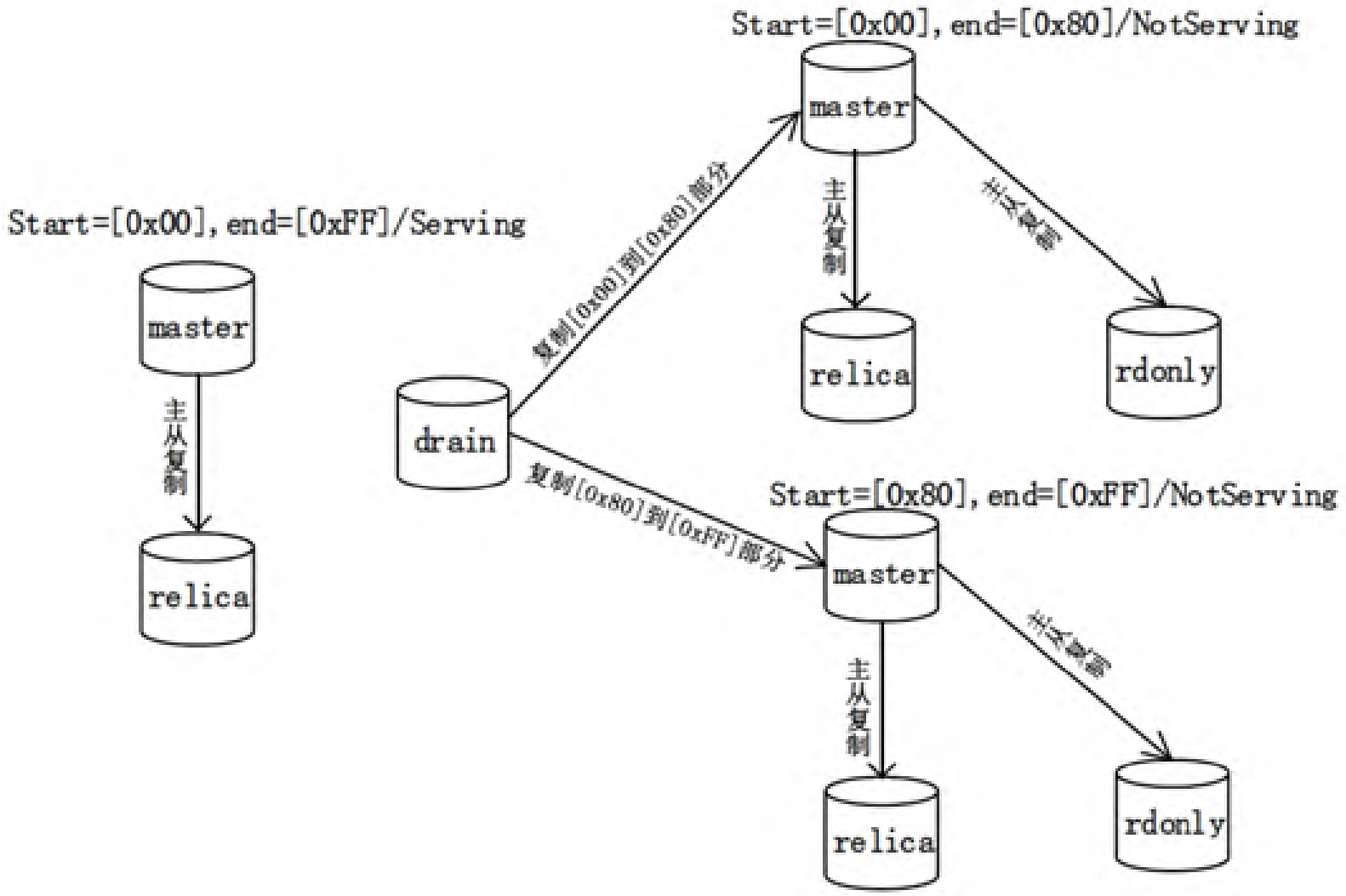
拷贝数据

-



弹性数据库- Resharding

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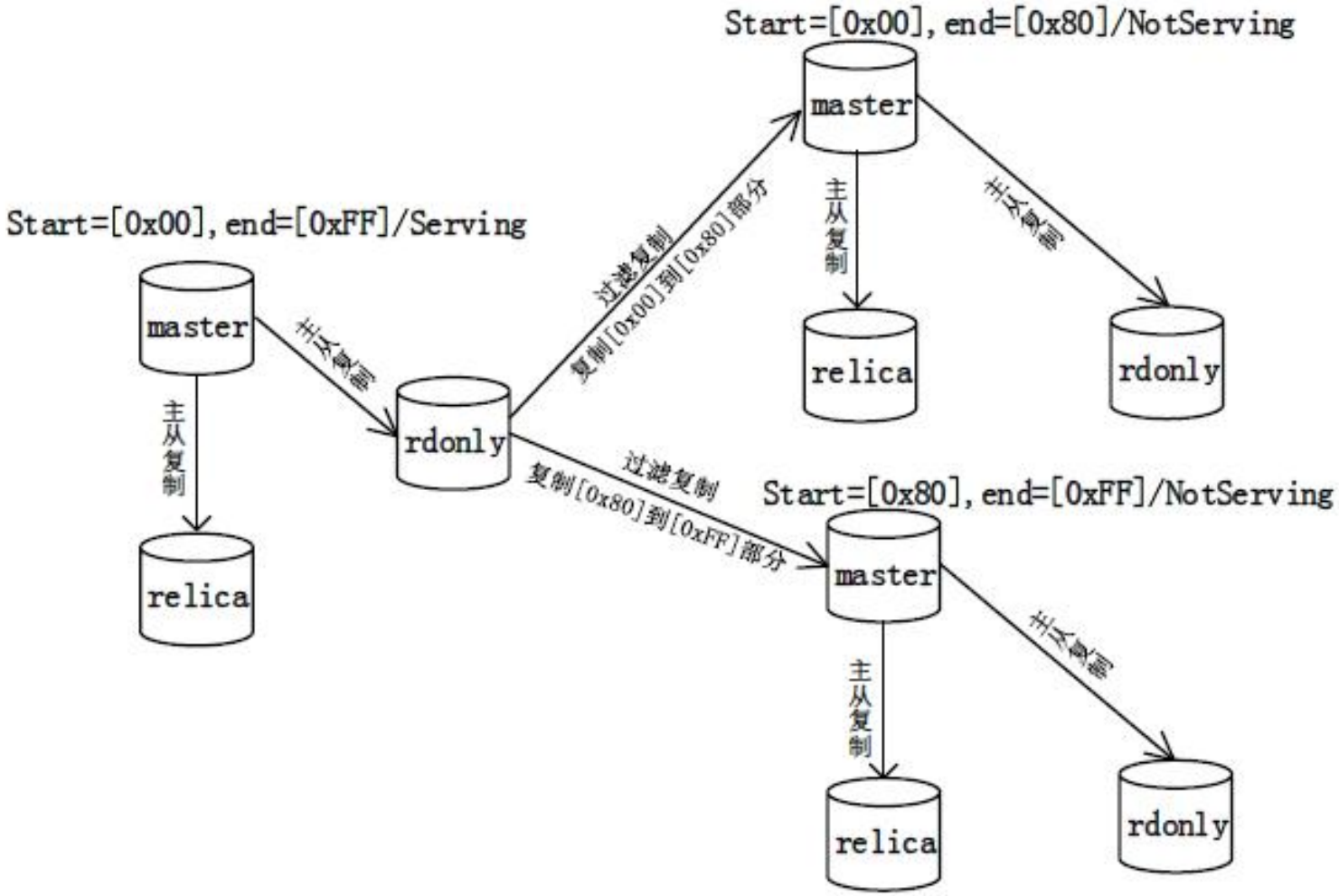
开启过滤复制



弹性数据库- Resharding

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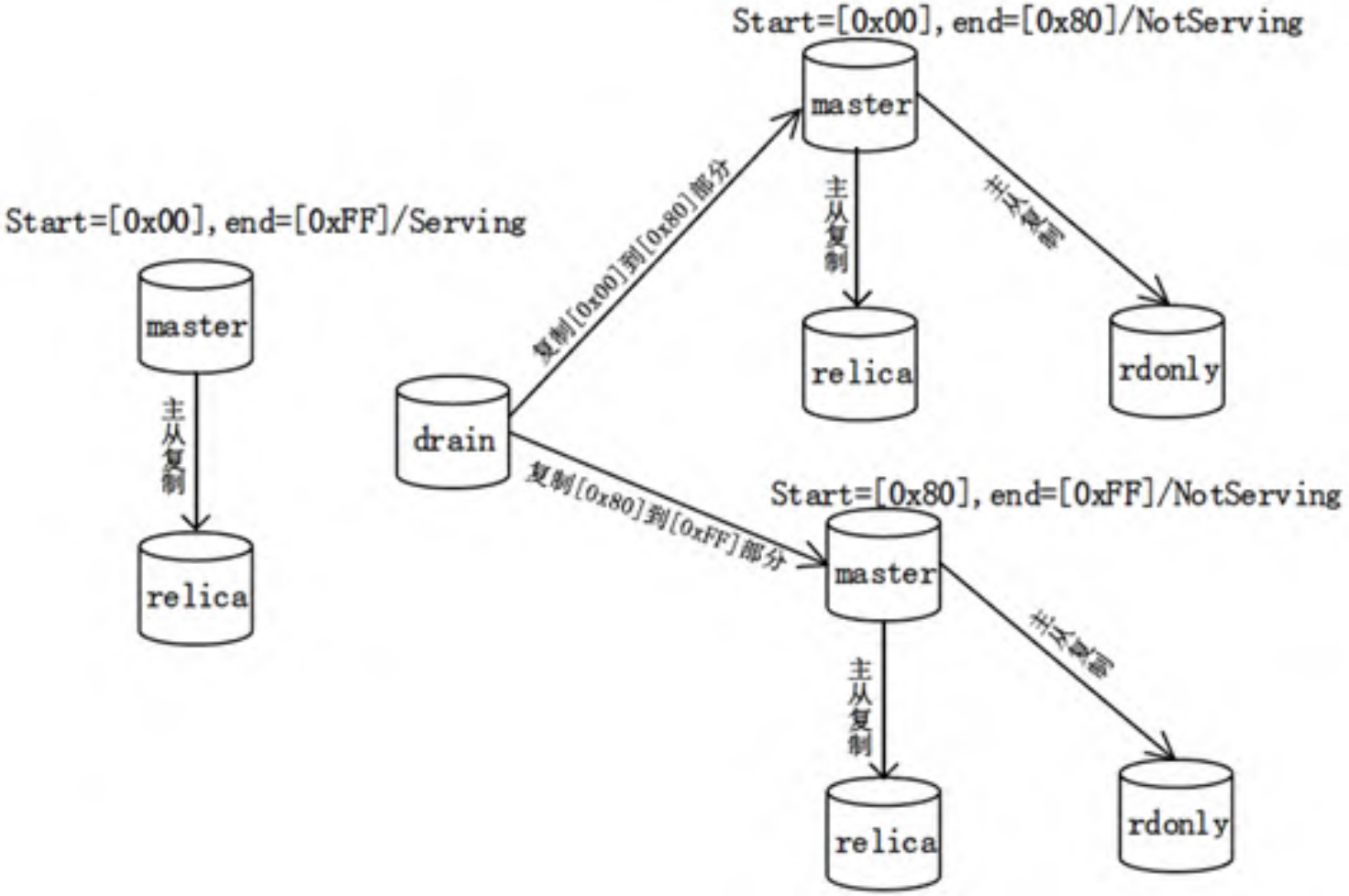
校验数据一致性

-



弹性数据库- Resharding

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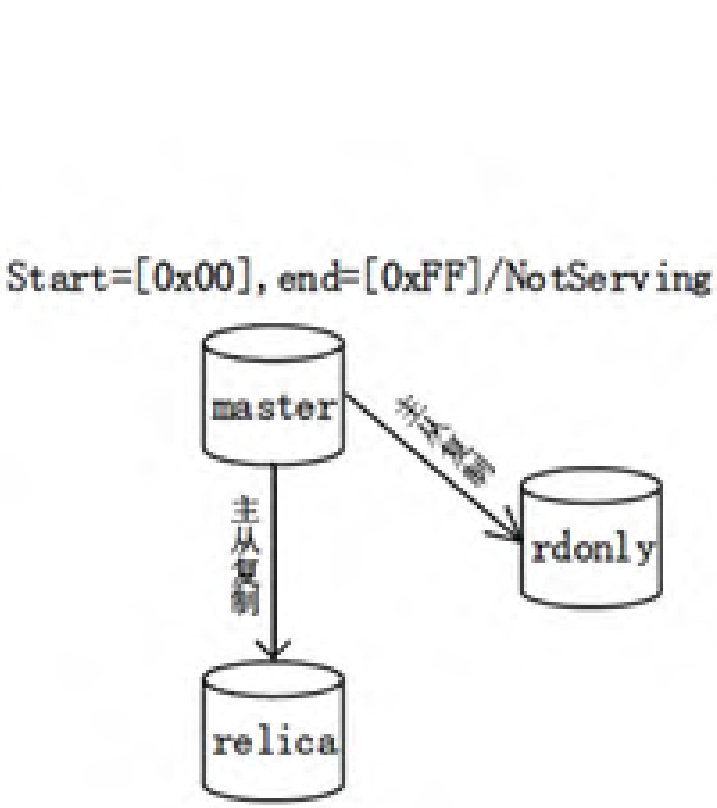
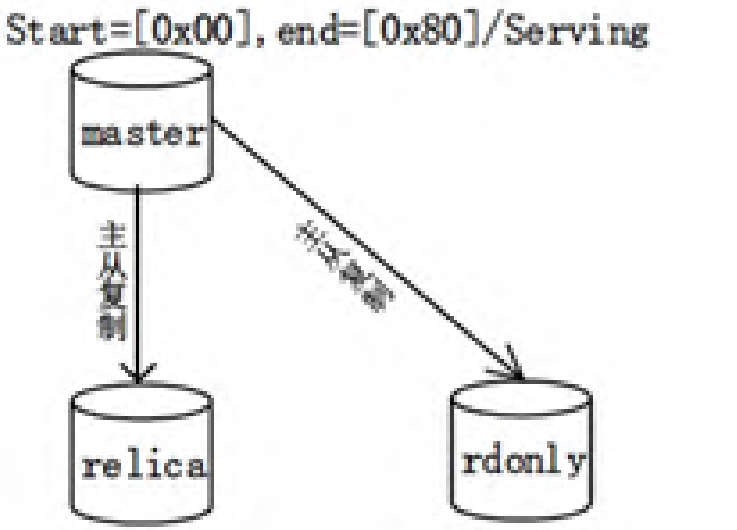
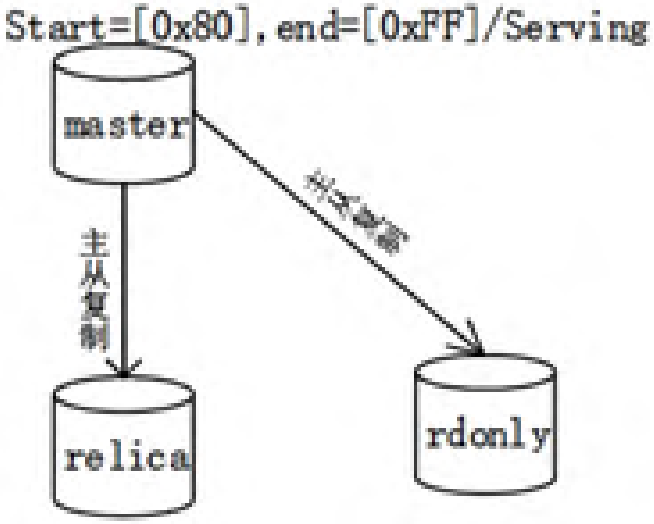
切换到新的Shard、停止过滤复制







弹性数据库- 线性扩展对性能的影响

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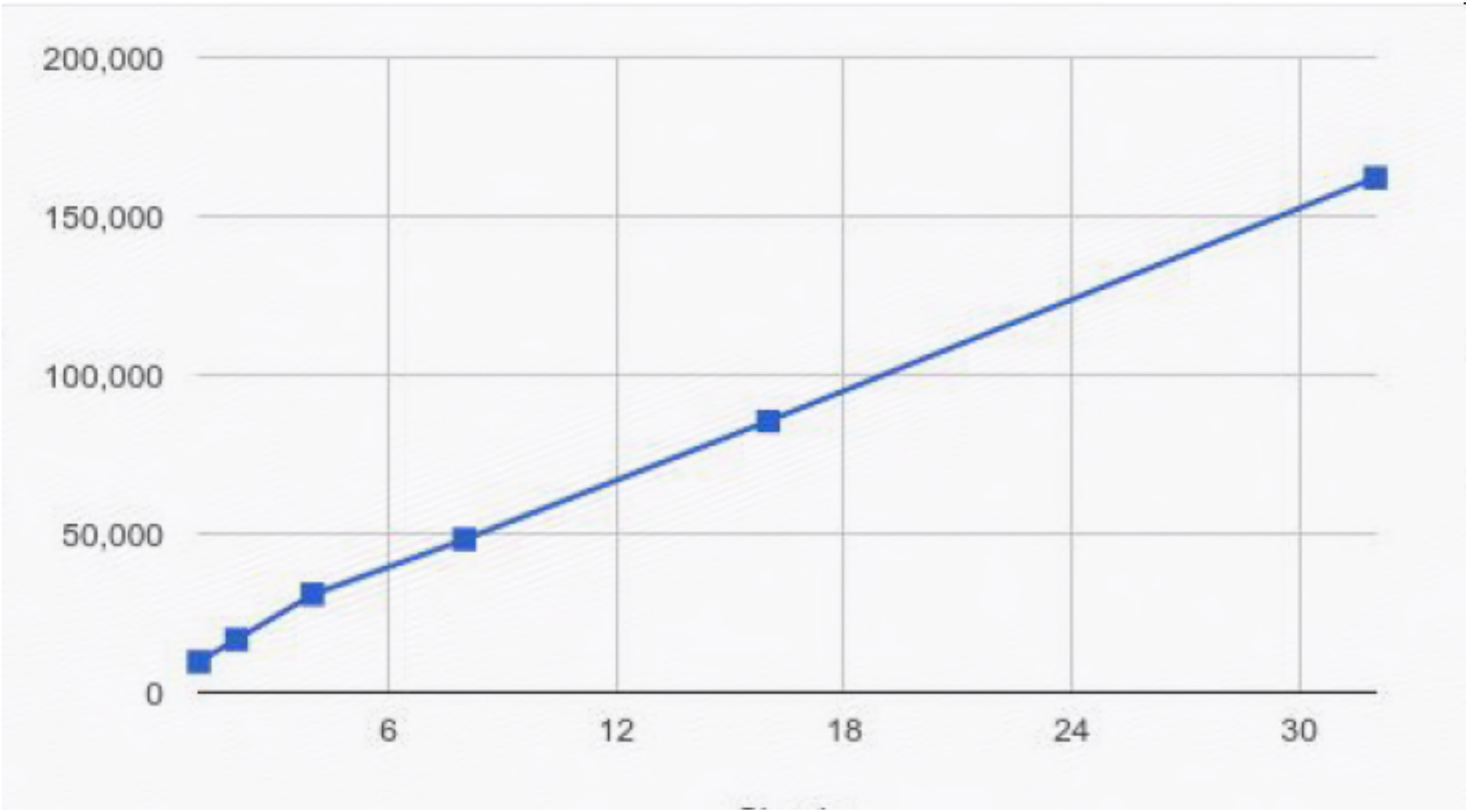

弹性数据库- 聚合查询

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支持 SUM、COUNT、 AVG、 MIN、MAX聚合函数

支持ORDER BY、GROUP BY、单字段、多字段支持

支持LIMIT语法

例子:

```
SELECT DEPT, AVG(SALARY) FROM USER GROUP BY DEPT;

SELECT * FROM USER ORDER BY SALARY DESC LIMIT 10， 10;

SELECT * FROM USER ORDER BY SALARY DESC, AGE ASC LIMIT 10， 10;

SELECT MAX(SALARY), MIN(SALARY), AVG(SALARY) FROM USER GROUP
BY DEPT LIMIT 10， 10;

SELECT MAX(SALARY), MIN(SALARY), AVG(SALARY) FROM USER GROUP
BY DEPT, SEX LIMIT 10， 10;

SELECT COUNT(*) FROM USER;
```

弹性数据库- 聚合查询

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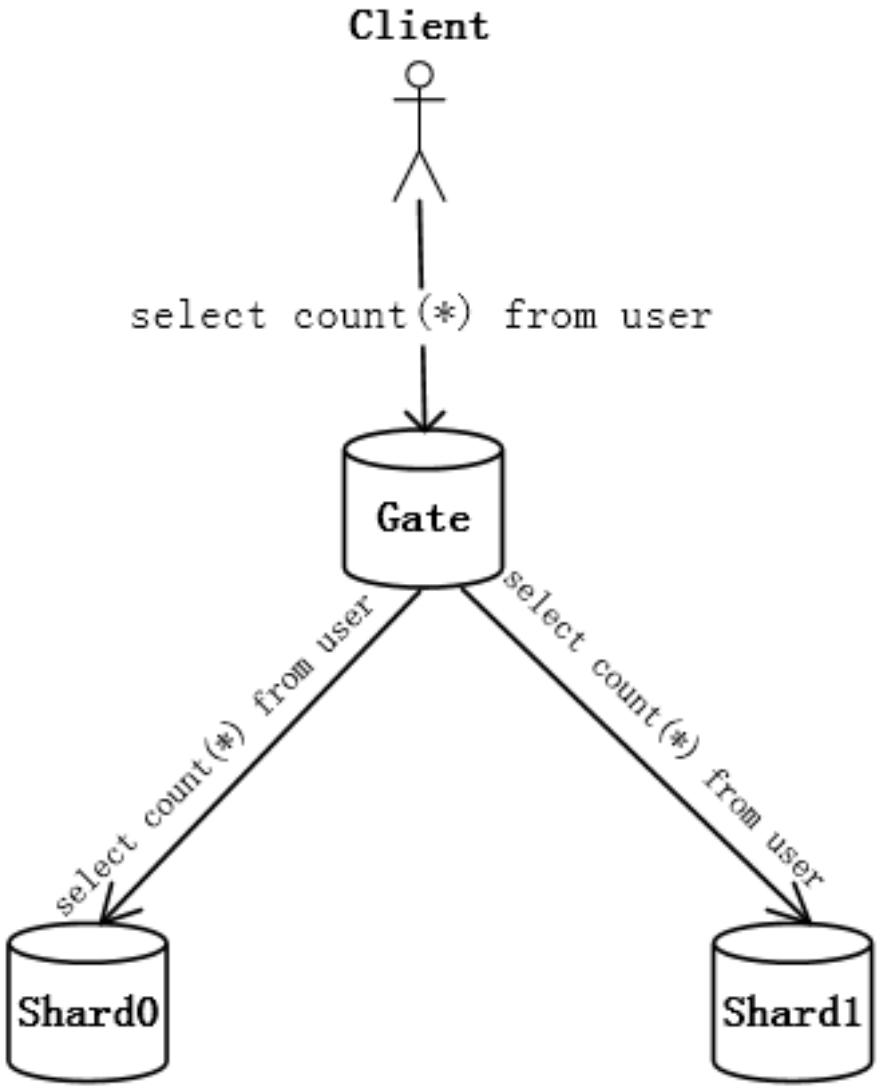

弹性数据库- 流式处理

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支持流式查询操作，避免占用过多内存

流式的聚合查询OrderBy 、 GroupBy

```
select * from t order by age;
```

[ ]← shard0: [1, 3, 7, 9, 11, ……]
shard1: [2, 4, 6, 8,10,……]

[1,2,3,4]← shard0: [7, 9, 11, 13,15,…]
shard1: [6, 8, 10,12, 14,…]

[3,4, 6,7]← shard0: [9, 11, 13,15, EOF]
shard1: [8,10,12, 14, 16…]

弹性数据库- 支持跨Shard Join查询

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- select emp.name, depart.dpname from emp left join depart on emp.depart = depart.dpno;
- select emp.name, depart.dpname from emp right join depart on emp.depart = depart.dpno;
- select emp.name, depart.dpname from emp inner join depart on emp.depart = depart.dpno;
- select emp.name, depart.dpname, emp.depart, depart.dpno from emp left join depart on emp.depart = depart.dpno where emp.depart > 10;

备份恢复

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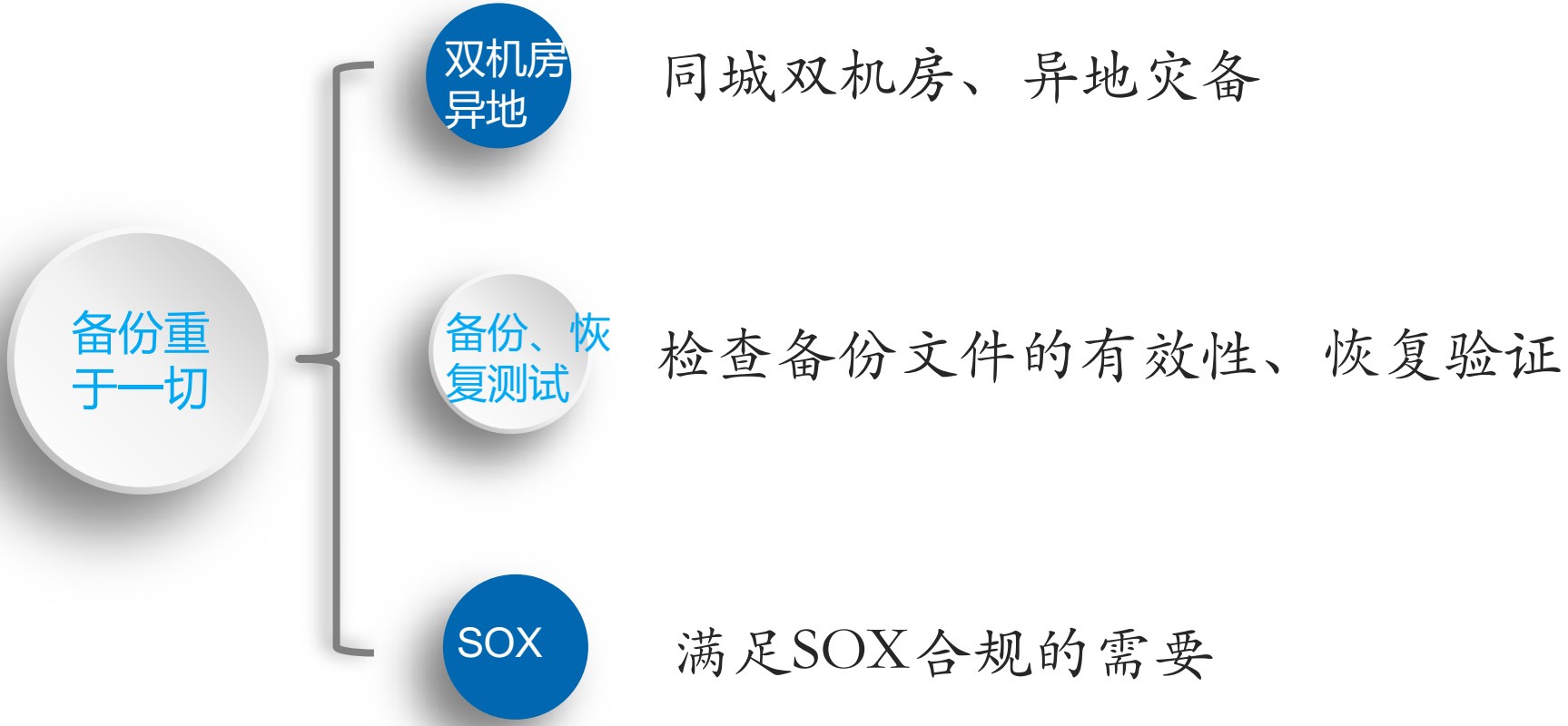

管理平台

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谢谢！

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