Doris

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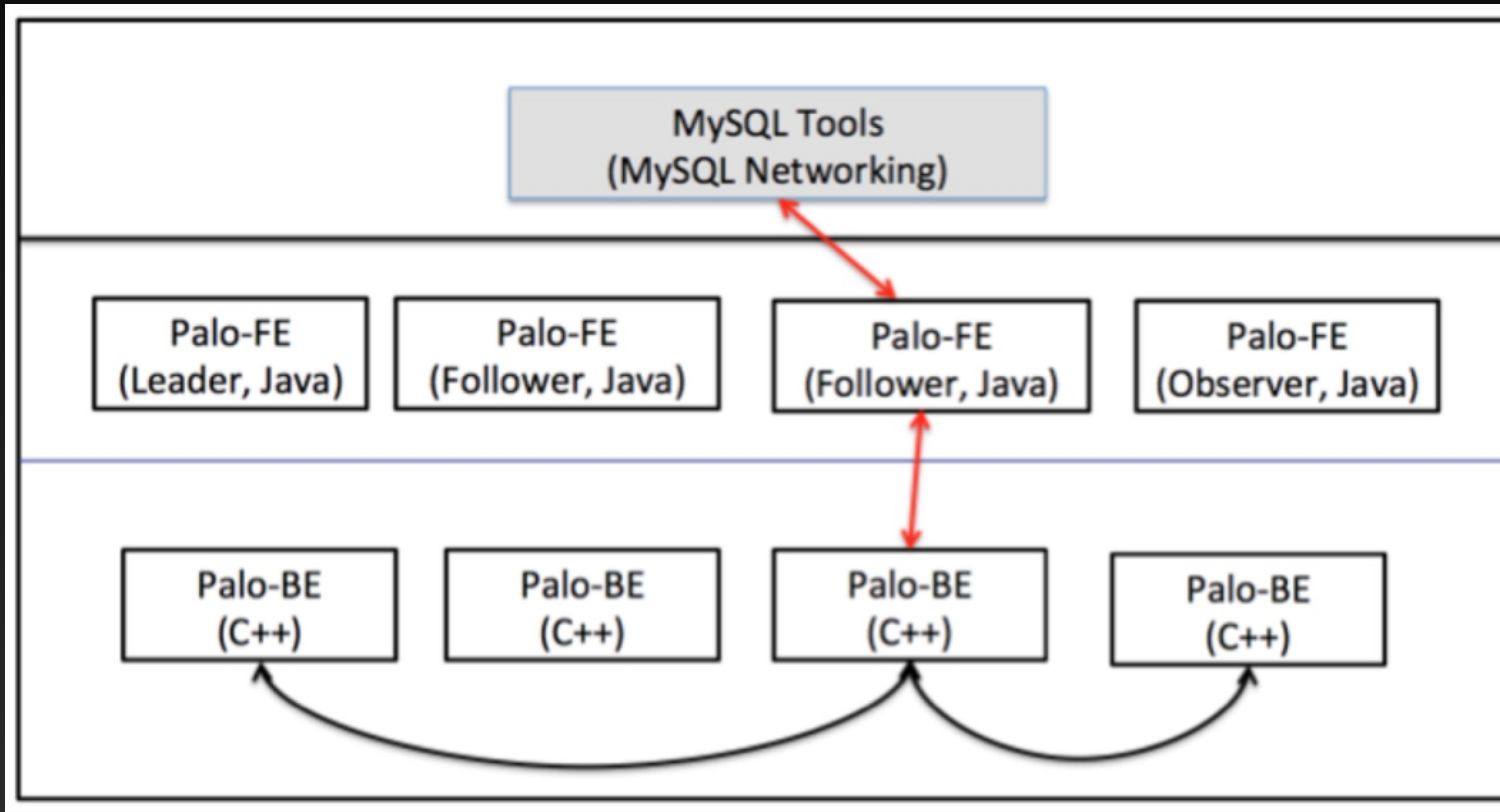
Doris介绍

架构

- Google Mesa（数据模型）
- Apache Impala（MPP查询引擎）
- Apache ORCFile (存储格式，编码和压缩)
- FE(Java) + BE(C++)
    - FE主要负责查询的解析、编译、优化、调度和元数据管理
    - BE主要负责查询的执行和数据存储



Doris介绍

支持场景

- 明细查询和聚合查询
- Aggregate模型，在数据写入时进行聚合(不保留明细数据)
- Rollup，存储对原始表的聚合数据
- 数据导入
  - Broker Load 直接批量读取 HDFS 中的数据插入 Doris
  - Stream Load 通过 Http 调用从文件中读取数据插入 Doris
  - Routine Load 通过消费 Kafka 数据插入 Doris (目前仅支持 csv 格式，Json 格式支持开发中，预计这个月合并)，通过微批方式导入数据，实测延迟在1s以内
  - Insert Into
    - INSERT INTO tbl SELECT …
    - INSERT INTO tbl (col1, col2, …) VALUES (1, 2, …), (1,3, …) ———————-不推荐，Doris 只推荐批量的方式导入数据
- Doris On ES
  - 支持 ES 多表 Join
  - 过滤查询下推 ES
  - 使用 Scroll 流式扫描和过滤
  - Text 类型字段自动映射 Keyword

Doris入门

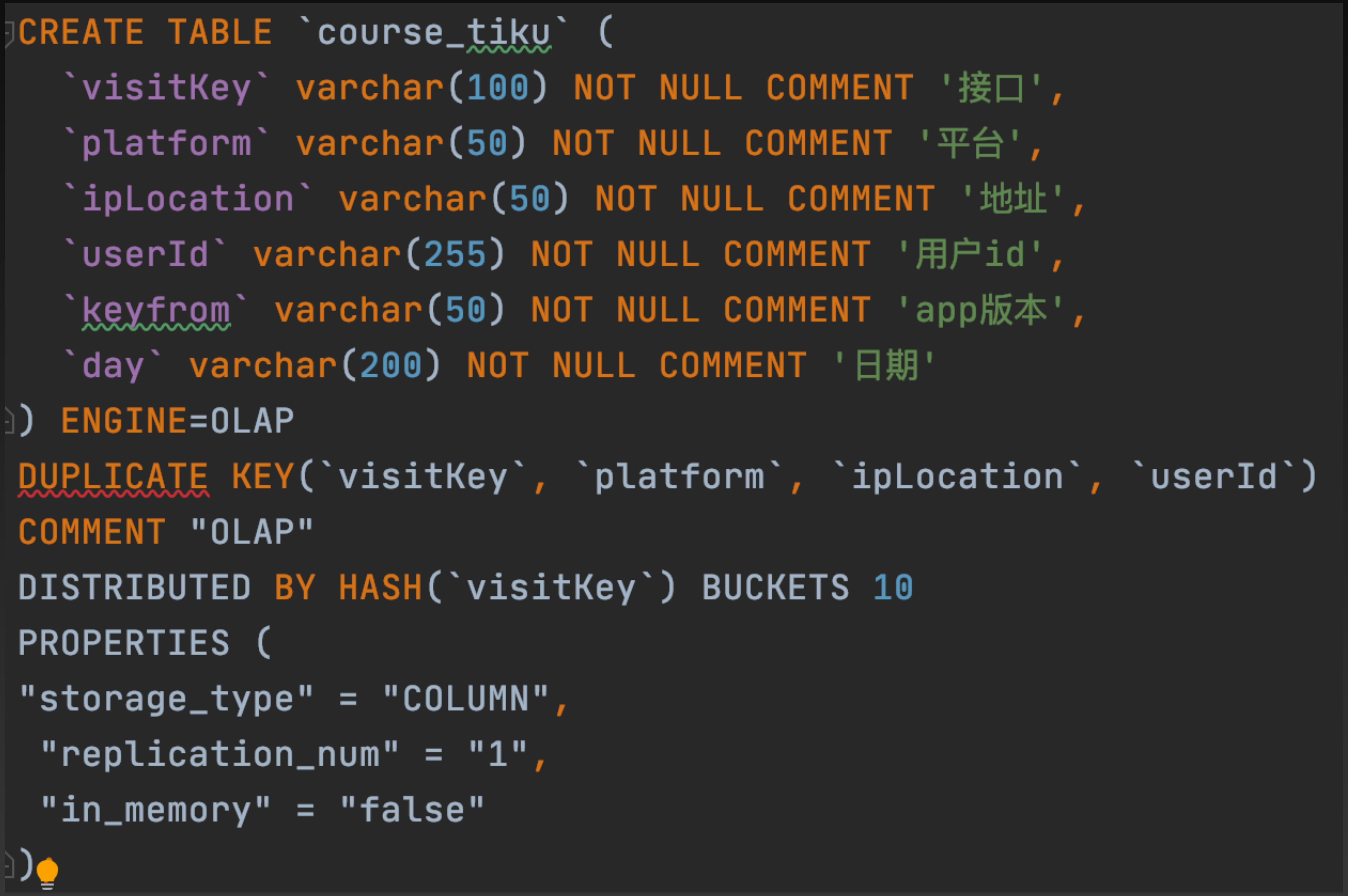
连接与监控

- 使用 Mysql 协议连接
    - mysql -h zj197 -P 9030 -uroot
    - datagrip连接需要修改两个地方
        - Auto sync 关闭
        - Introspect using JDBC metadata 打开
- Doris FE 控制台: http://doris-fe-test.inner.youdao.com/
    - 简单监控
    - 查询日志
    - Job 执行进度
    - FE 日志
    - HA 状态
- Grafana监控: http://course-grafana.corp.youdao.com/d/1fFiWJ4mz/doris-test?orgId=1

Doris入门

建表

- 建立 Duplicate 表



```
CREATE TABLE `course_tiku` (
  `visitKey` varchar(100) NOT NULL COMMENT '接口',
  `platform` varchar(50) NOT NULL COMMENT '平台',
  `ipLocation` varchar(50) NOT NULL COMMENT '地址',
  `userId` varchar(255) NOT NULL COMMENT '用户id',
  `keyfrom` varchar(50) NOT NULL COMMENT 'app版本',
  `day` varchar(200) NOT NULL COMMENT '日期'
) ENGINE=OLAP
DUPLICATE KEY(`visitKey`, `platform`, `ipLocation`, `userId`)
COMMENT "OLAP"
DISTRIBUTED BY HASH(`visitKey`) BUCKETS 10
PROPERTIES (
"storage_type" = "COLUMN",
 "replication_num" = "1",
 "in_memory" = "false"
)
```

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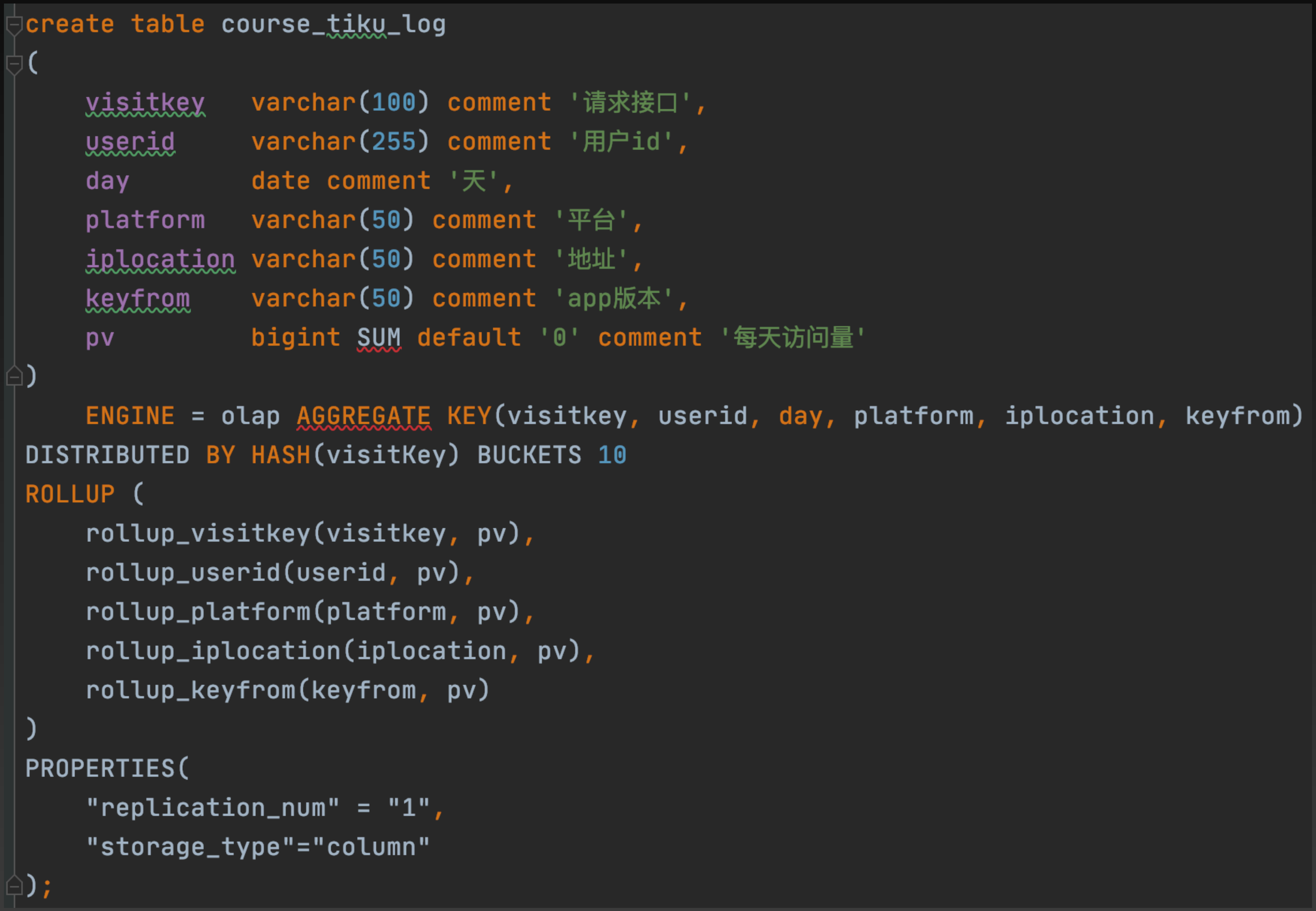
建表

- 建立 Aggregate 表



```
create table course_tiku_log
(
    visitkey   varchar(100) comment '请求接口',
    userid     varchar(255) comment '用户id',
    day        date comment '天',
    platform   varchar(50) comment '平台',
    iplocation varchar(50) comment '地址',
    keyfrom    varchar(50) comment 'app版本',
    pv         bigint SUM default '0' comment '每天访问量'
)
    ENGINE = olap AGGREGATE KEY(visitkey, userid, day, platform, iplocation, keyfrom)
DISTRIBUTED BY HASH(visitKey) BUCKETS 10
ROLLUP (
    rollup_visitkey(visitkey, pv),
    rollup_userid(userid, pv),
    rollup_platform(platform, pv),
    rollup_iplocation(iplocation, pv),
    rollup_keyfrom(keyfrom, pv)
)
PROPERTIES(
    "replication_num" = "1",
    "storage_type"="column"
);
```

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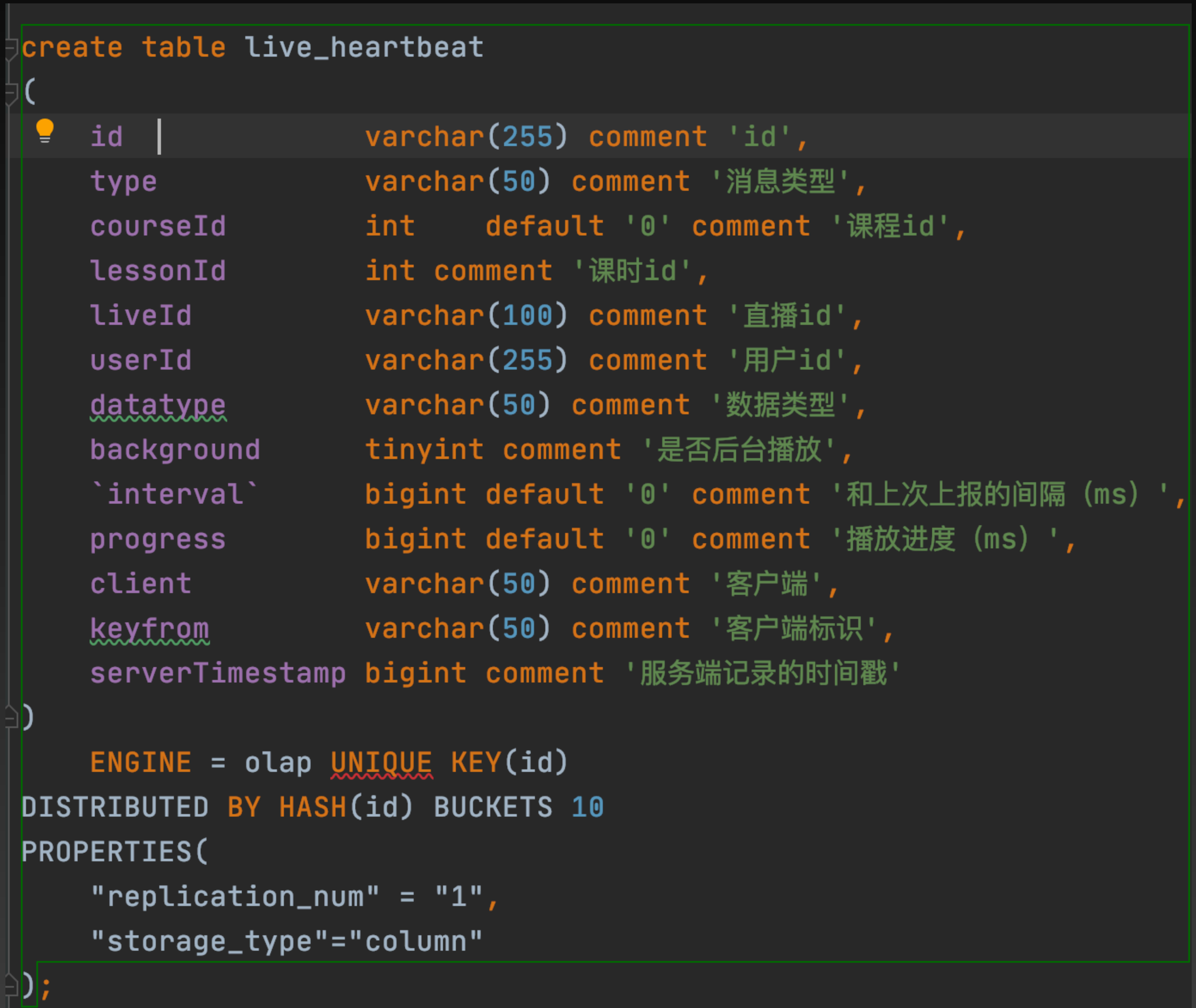
建表

- 建立 Uniq 表



```
create table live_heartbeat
(
    id              varchar(255) comment 'id',
    type            varchar(50) comment '消息类型',
    courseId        int    default '0' comment '课程id',
    lessonId        int comment '课时id',
    liveId          varchar(100) comment '直播id',
    userId          varchar(255) comment '用户id',
    datatype        varchar(50) comment '数据类型',
    background      tinyint comment '是否后台播放',
    `interval`      bigint default '0' comment '和上次上报的间隔（ms）',
    progress        bigint default '0' comment '播放进度（ms）',
    client          varchar(50) comment '客户端',
    keyfrom         varchar(50) comment '客户端标识',
    serverTimestamp bigint comment '服务端记录的时间戳'
)
    ENGINE = olap UNIQUE KEY(id)
DISTRIBUTED BY HASH(id) BUCKETS 10
PROPERTIES(
    "replication_num" = "1",
    "storage_type"="column"
);
```

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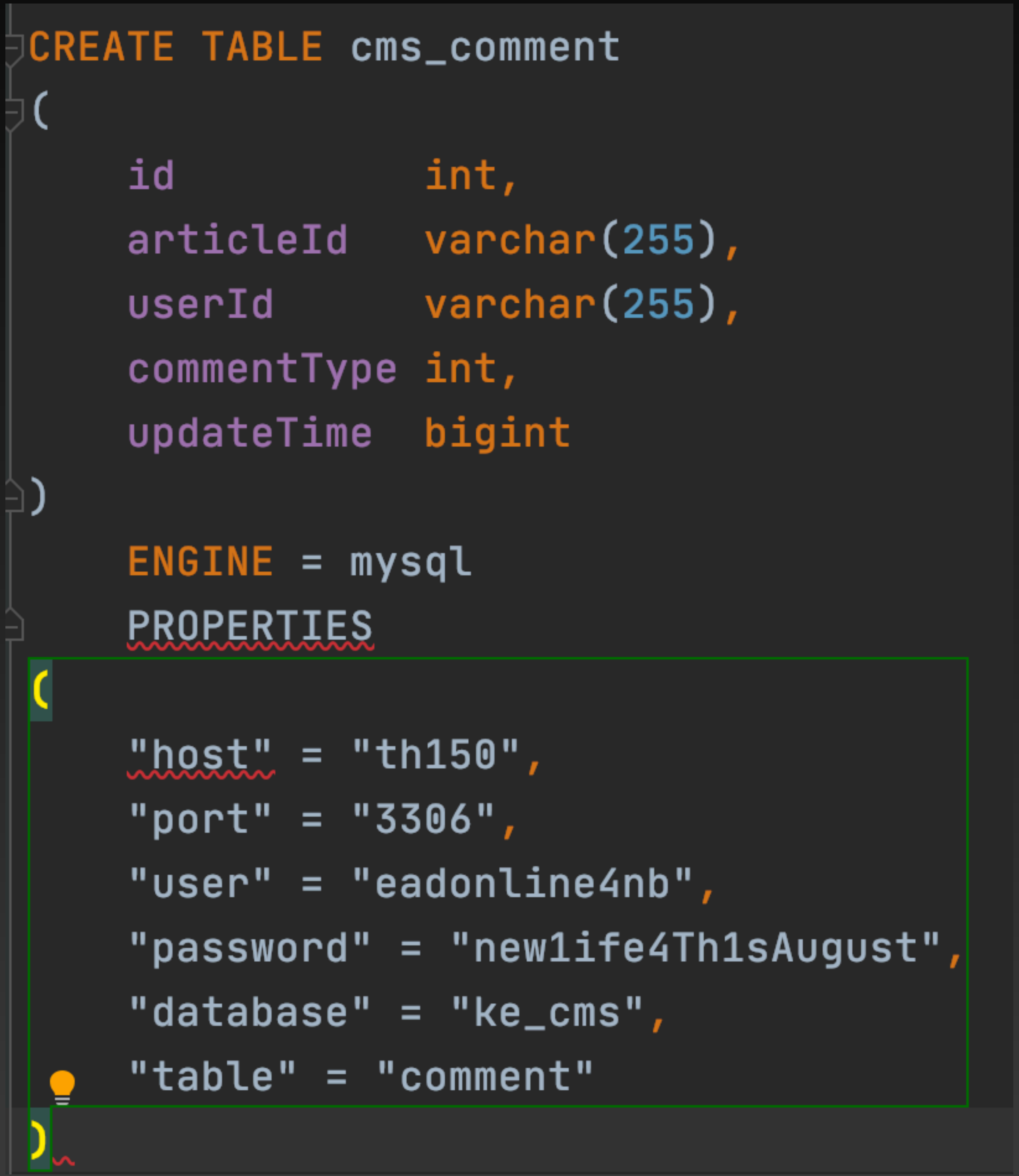
建表

- 建立外部 Mysql 表



```sql
CREATE TABLE cms_comment
(
    id          int,
    articleId   varchar(255),
    userId      varchar(255),
    commentType int,
    updateTime  bigint
)
    ENGINE = mysql
    PROPERTIES
(
    "host" = "th150",
    "port" = "3306",
    "user" = "eadonline4nb",
    "password" = "new1ife4Th1sAugust",
    "database" = "ke_cms",
    "table" = "comment"
)
```

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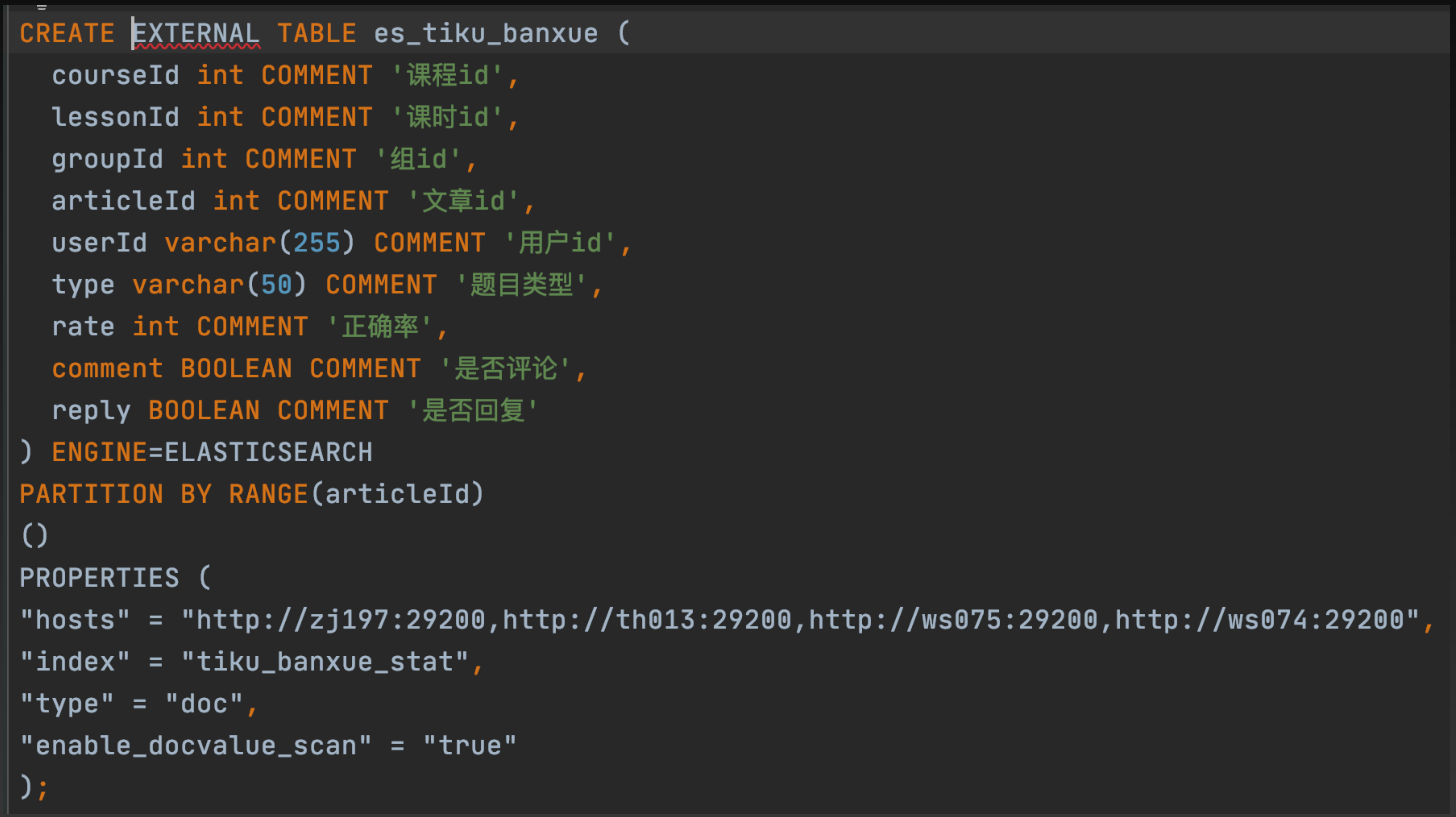
建表

- 建立外部 ES 表



```
CREATE EXTERNAL TABLE es_tiku_banxue (
  courseId int COMMENT '课程id',
  lessonId int COMMENT '课时id',
  groupId int COMMENT '组id',
  articleId int COMMENT '文章id',
  userId varchar(255) COMMENT '用户id',
  type varchar(50) COMMENT '题目类型',
  rate int COMMENT '正确率',
  comment BOOLEAN COMMENT '是否评论',
  reply BOOLEAN COMMENT '是否回复'
) ENGINE=ELASTICSEARCH
PARTITION BY RANGE(articleId)
()
PROPERTIES (
"hosts" = "http://zj197:29200,http://th013:29200,http://ws075:29200,http://ws074:29200",
"index" = "tiku_banxue_stat",
"type" = "doc",
"enable_docvalue_scan" = "true"
);
```

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导入数据

- Stream Load
  - curl --location-trusted -u test:test -T 20200312_083844_02796_eexya.tsv -H "label:tiku-test5" -H "where: userId!='' and visitKey!='visitKey'" -XPUT http://zj197:8030/api/test_db/course_tiku/_stream_load

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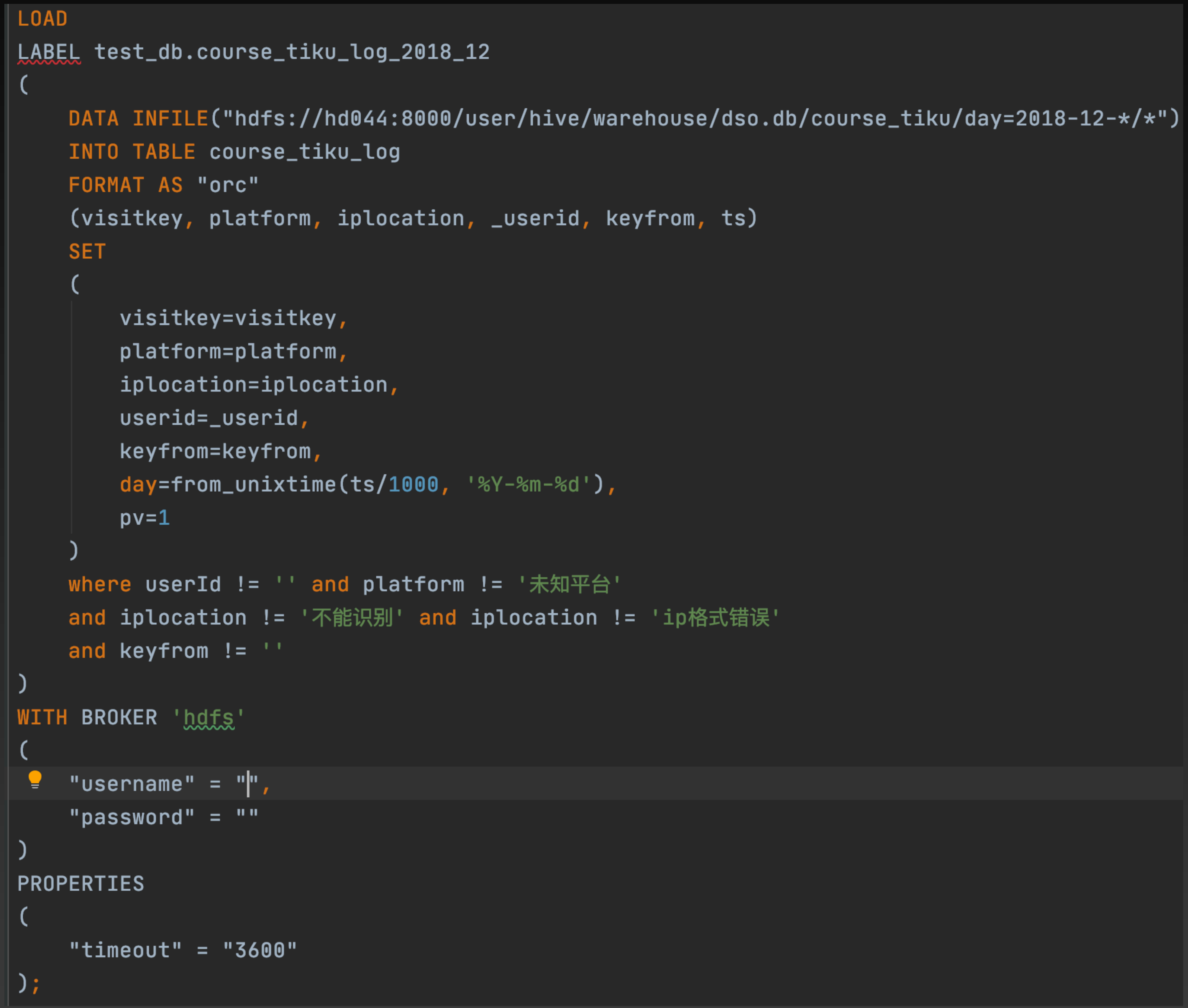
导入数据

- Broker Load
- 查看进度：doris-fe中的brokers



```
LOAD
LABEL test_db.course_tiku_log_2018_12
(
    DATA INFILE("hdfs://hd044:8000/user/hive/warehouse/dso.db/course_tiku/day=2018-12-*/*")
    INTO TABLE course_tiku_log
    FORMAT AS "orc"
    (visitkey, platform, iplocation, _userid, keyfrom, ts)
    SET
    (
        visitkey=visitkey,
        platform=platform,
        iplocation=iplocation,
        userid=_userid,
        keyfrom=keyfrom,
        day=from_unixtime(ts/1000, '%Y-%m-%d'),
        pv=1
    )
    where userId != '' and platform != '未知平台'
    and iplocation != '不能识别' and iplocation != 'ip格式错误'
    and keyfrom != ''
)
WITH BROKER 'hdfs'
(
    "username" = "",
    "password" = ""
)
PROPERTIES
(
    "timeout" = "3600"
);
```

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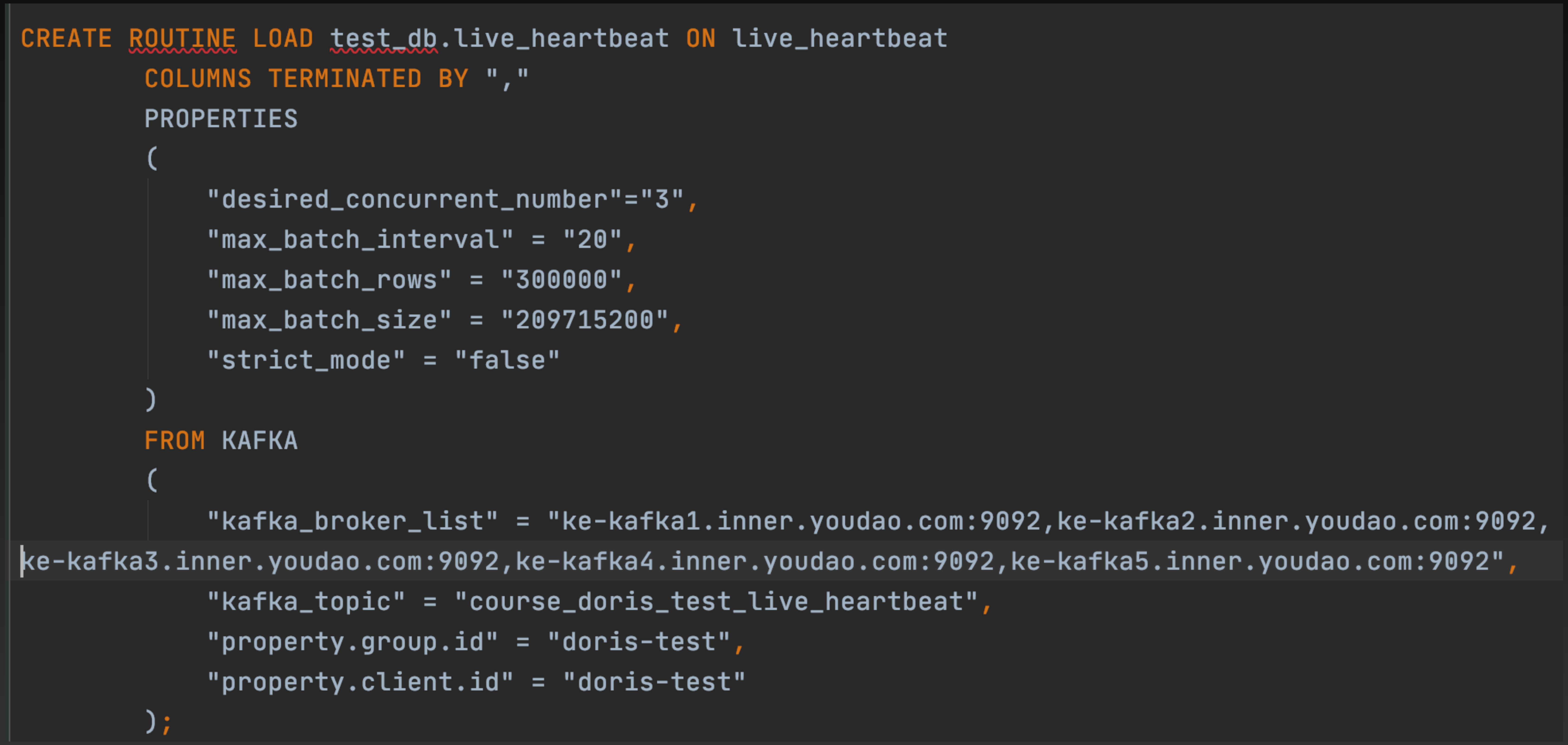
导入数据

- Routine Load
- 查看进度：doris-fe中的routine_loads



```
CREATE ROUTINE LOAD test_db.live_heartbeat ON live_heartbeat
        COLUMNS TERMINATED BY ","
        PROPERTIES
        (
            "desired_concurrent_number"="3",
            "max_batch_interval" = "20",
            "max_batch_rows" = "300000",
            "max_batch_size" = "209715200",
            "strict_mode" = "false"
        )
        FROM KAFKA
        (
            "kafka_broker_list" = "ke-kafka1.inner.youdao.com:9092,ke-kafka2.inner.youdao.com:9092,
ke-kafka3.inner.youdao.com:9092,ke-kafka4.inner.youdao.com:9092,ke-kafka5.inner.youdao.com:9092",
            "kafka_topic" = "course_doris_test_live_heartbeat",
            "property.group.id" = "doris-test",
            "property.client.id" = "doris-test"
        );
```

Doris入门

查询

- 基于前缀索引，需要查询的字段往前放
- ES Join 查询条件两表共存字段使用前表进行查询，目前使用后表有 BUG，导致过滤条件不下推 ES
    - select cc.customerId, userId, name,phone from crm_customer_test cc join crm_leads_test cl on cc.customerId = cl.customerId where cl.customerId=12;
    - Doris On ES 不适合多个大表 Join，只适合存在过滤条件的小数据量 Join 以及点查询