Bucket Map- Side Join + оптимизации

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Join Options

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Пример partitioning

```
hdfs:///data/access_logs/
…
– 2017_01_20
– 2017_01_21
– 2017_01_22
…
– "today"
```

```
CREATE TABLE partitioned_access_log (
    ip STRING,
    …
)PARTITIONED BY request_date STRING)
…;
```

Bucket Map- Side Join

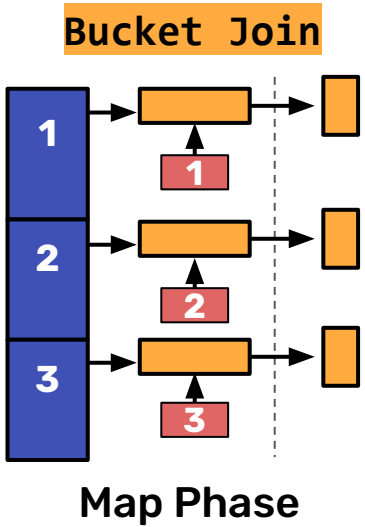
```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    INTO 128 BUCKETS
...;
```

Bucket Map- Side Join

```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    INTO 128 BUCKETS
...;

CREATE TABLE geo_base (
    ...
)
CLUSTERED BY (ip)
    INTO 128 BUCKETS
...;
```

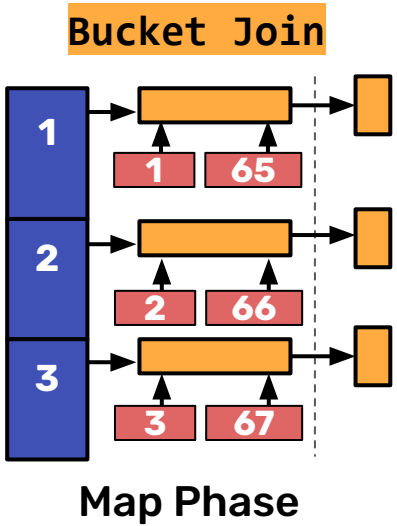
Bucket Map- Side Join

```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    INTO 128 BUCKETS
...;

CREATE TABLE geo_base (
    ...
)
CLUSTERED BY (ip)
    INTO 128 BUCKETS
...;
```



Bucket Map- Side Join

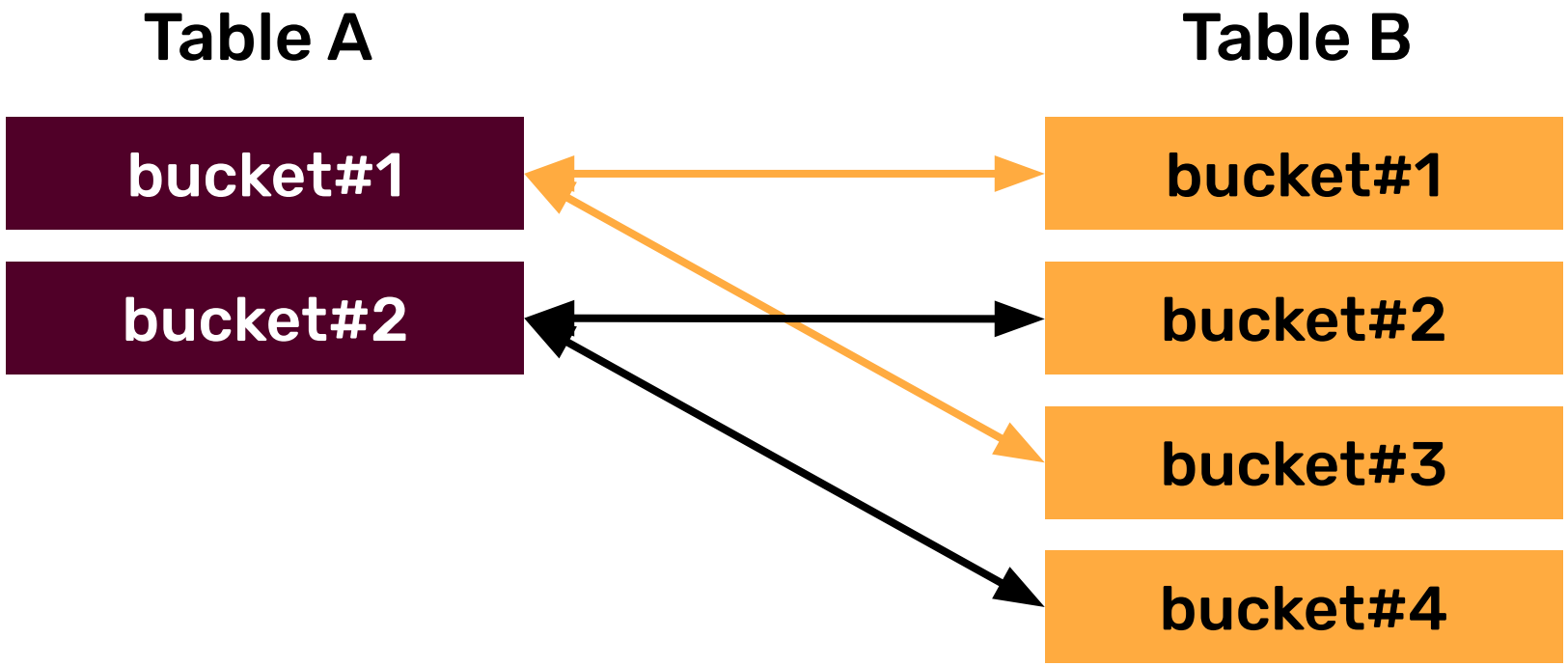
```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    INTO 64 BUCKETS
...;

CREATE TABLE geo_base (
    ...
)
CLUSTERED BY (ip)
    INTO 128 BUCKETS
...;
```



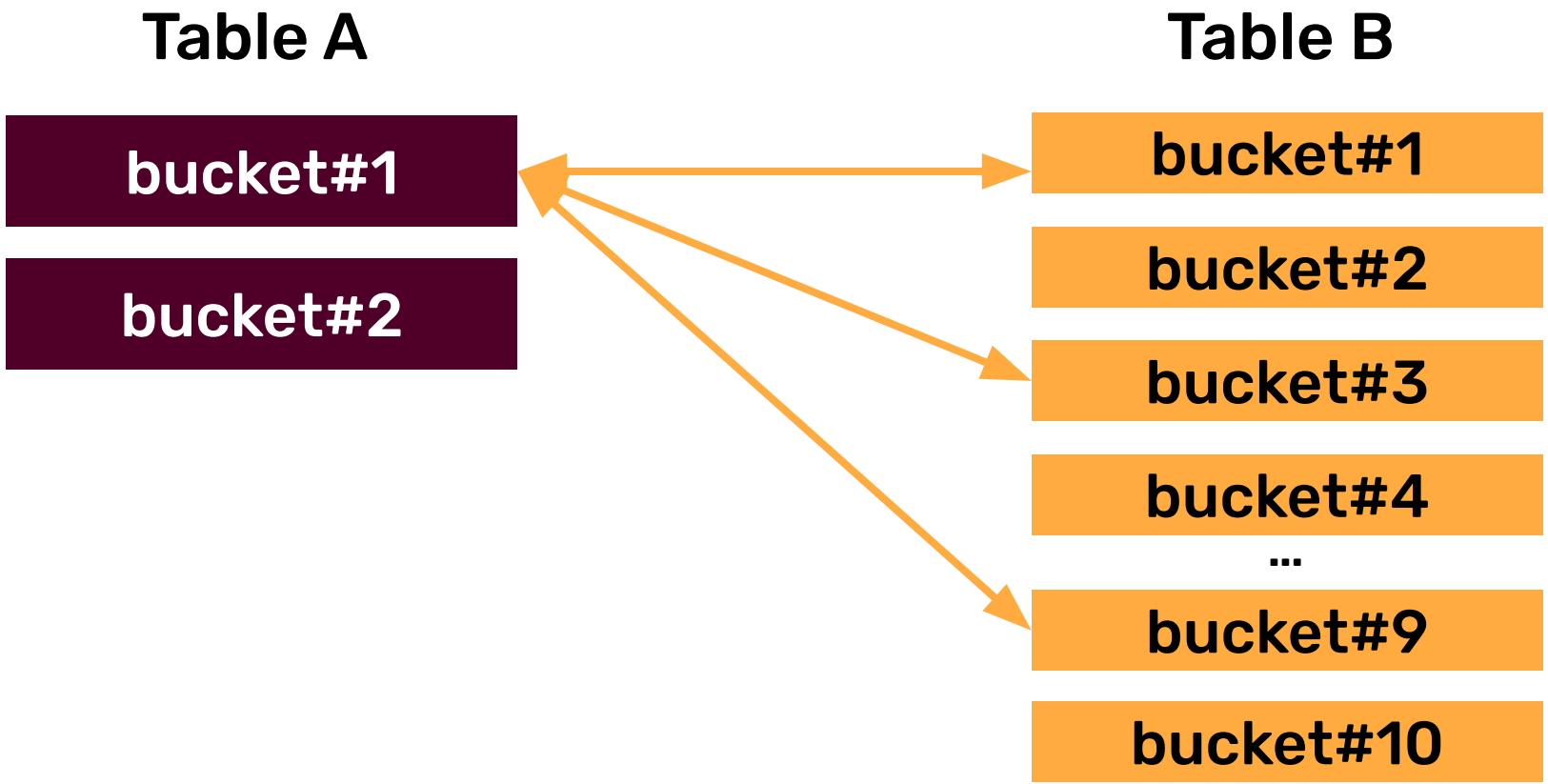
`hash(ip) % 64 == 1`

`hash(ip) % 128 == 1,65`

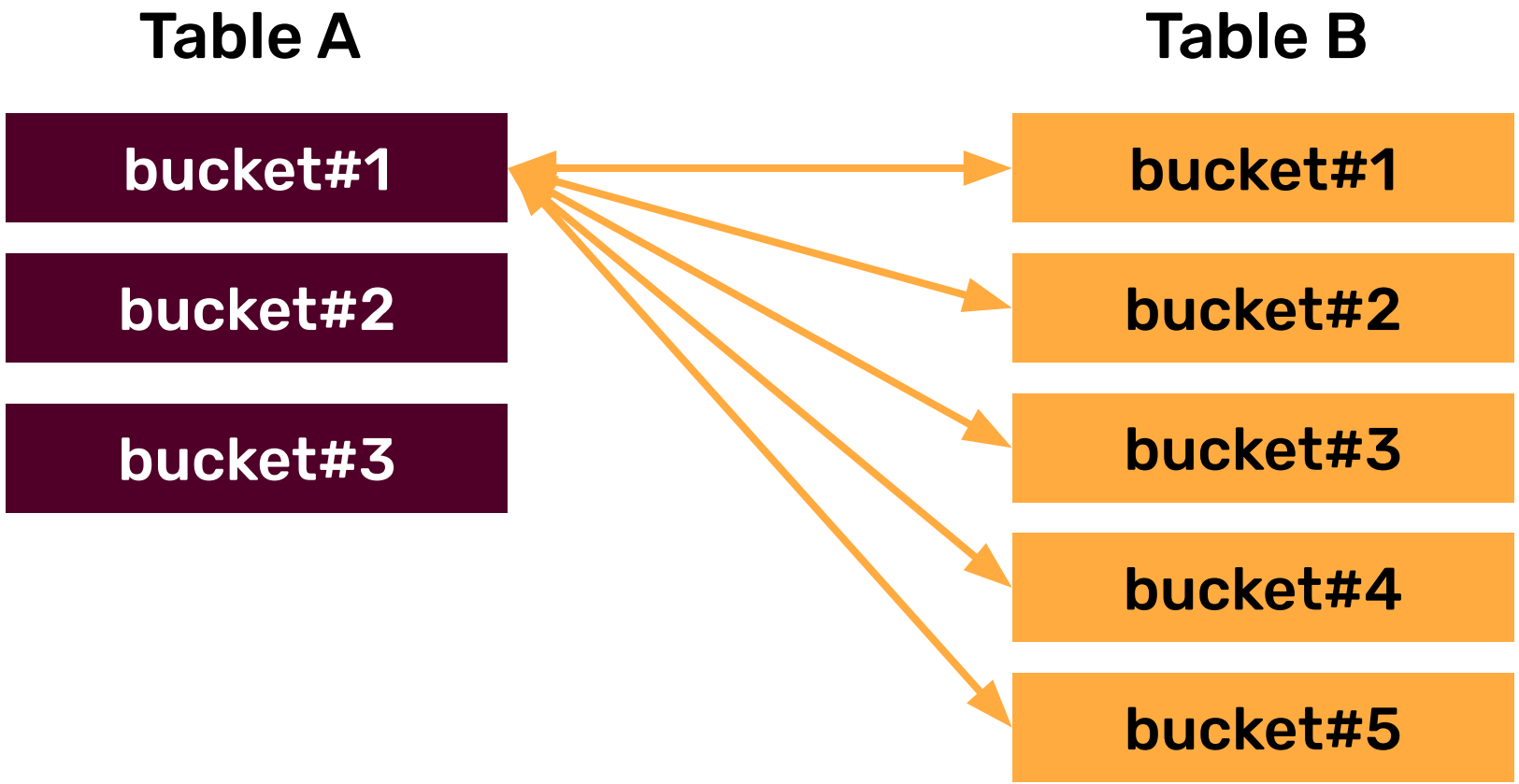
Bucket Map- Side Join



Bucket Map- Side Join

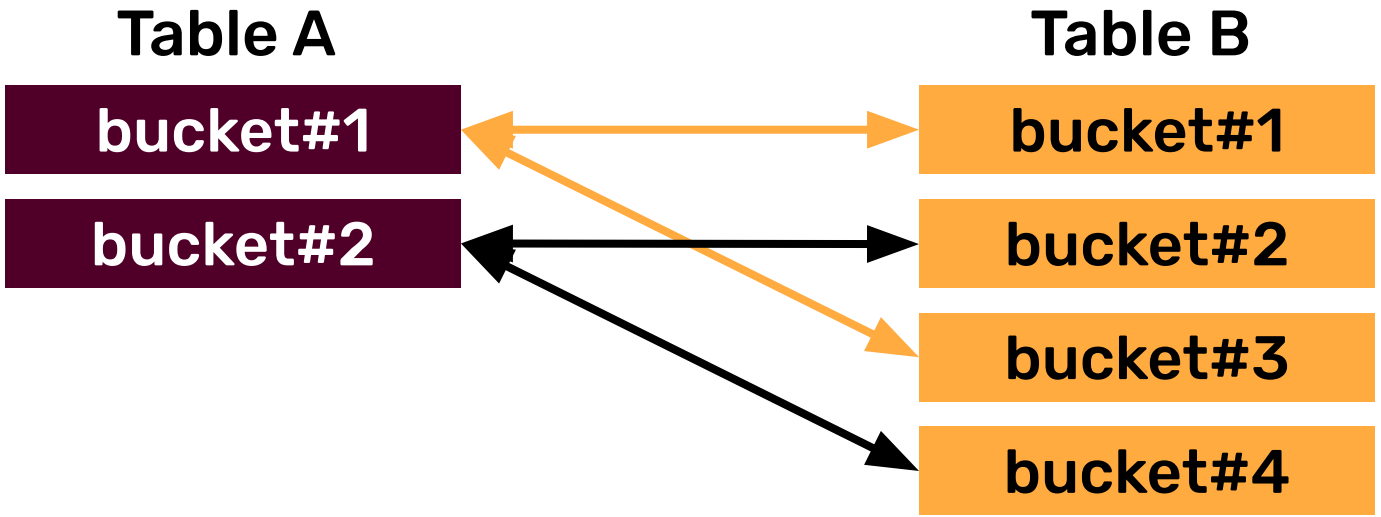


Bucket Map- Side Join



Bucket Map- Side Join

совет: использовать степени двойки



1. Если повезет, запустится Bucket Map-Side Join
2. Наиболее эффективно использует Namenode RAM

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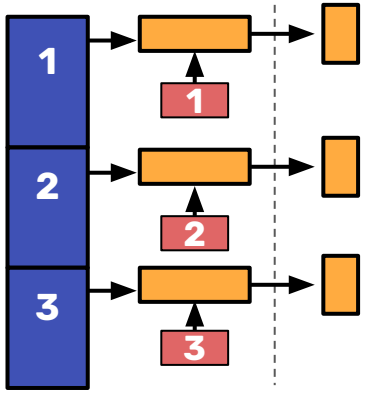
Оптимизация Bucket Map- Side Join

```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    SORTED BY (ip)
    INTO 128 BUCKETS
...;
```

Bucket Join limitations?



Map Phase

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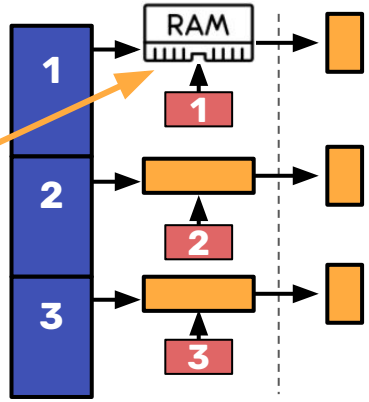
Bucket Map- Side Join Optimization

```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    SORTED BY (ip)
    INTO 128 BUCKETS
...;
```

Bucket Join limitations?



Map Phase

RAM limitations

- https://en.wikipedia.org/wiki/Merge_sort
- https://en.wikipedia.org/wiki/External_sorting

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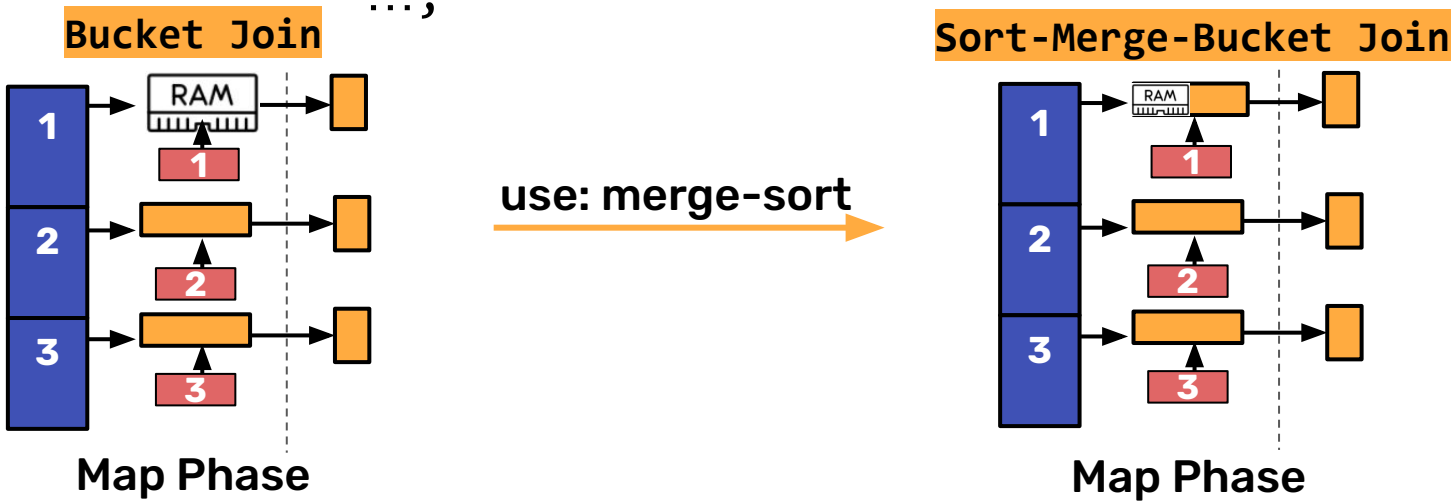
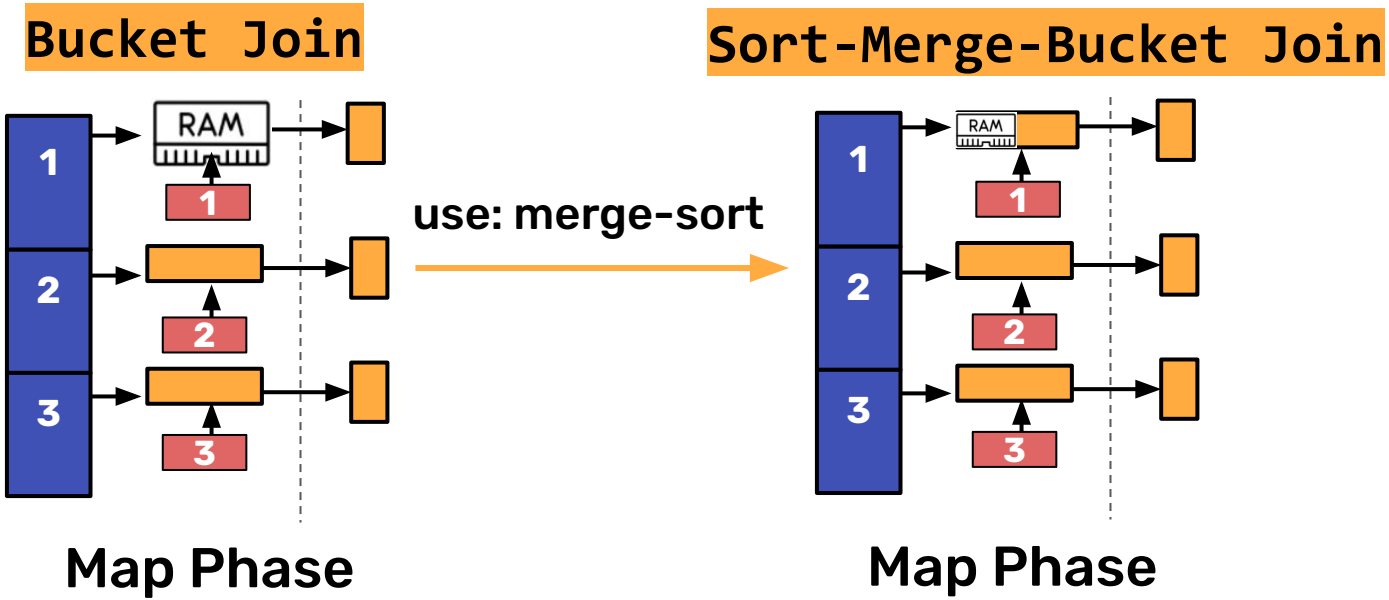
Sort-Merge-Bucket Join

```
CREATE TABLE access_log (
    ...
)
CLUSTERED BY (ip)
    SORTED BY (ip)
    INTO 128 BUCKETS
...;
```



Sort-Merge-Bucket Join




```
hive> SET hive.auto.convert.sortmerge.join=true;
...
```