Mysql索引使用问题

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有索引但没走

Sql案例

```
DELETE FORM testtable WHERE biz_date <= '2017-08-21 00:00:00' AND status = 2 limit 500
```

表大小200M左右,数据100w,biz_date和status有联合索引

Sql案例

```
mysql > desc  select * from testtable   WHERE biz_date <= '2017-08-21
00:00:00';
+----+-------------+-----------+------+---------------+------+---------+------+--------+----------
---+
| id | select_type | table     | type | possible_keys  | key  | key_len | ref  | rows   |
Extra       |
+----+-------------+-----------+------+---------------+------+---------+------+--------+----------
---+
|  1 | SIMPLE      | testtable | ALL  | idx_bizdate_st | NULL | NULL    | NULL |
980626 | Using where |
+----+-------------+-----------+------+---------------+------+---------+------+--------+----------
---+
1 row in set (0.00 sec)

-- 只查询biz_date
-- 关键点：rows:980626;type:ALL
```

Sql案例

```
mysql > desc  select * from testtable   WHERE biz_date <= '2017-08-21
00:00:00' and status = 2;
+----+-------------+-----------+------+---------------+------+---------+------+--------+----------
---+
| id | select_type | table     | type | possible_keys  | key  | key_len | ref  | rows   |
Extra       |
+----+-------------+-----------+------+---------------+------+---------+------+--------+----------
---+
|  1 | SIMPLE      | testtable | ALL  | idx_bizdate_st | NULL | NULL    | NULL |
980632 | Using where |
+----+-------------+-----------+------+---------------+------+---------+------+--------+----------
---+
1 row in set (0.00 sec)

-- 查询biz_date + status
-- 关键点：rows:980632;type:ALL
```

Sql案例

```
mysql > desc  select * from testtable   WHERE biz_date <= '2017-08-21
00:00:00' and status = 2 limit 100;
+----+-------------+-----------+-------+---------------+---------------+---------+------+--------
+----------------------+
| id | select_type | table     | type  | possible_keys  | key           | key_len | ref  |
rows   | Extra                |
+----+-------------+-----------+-------+---------------+---------------+---------+------+--------
+----------------------+
|  1 | SIMPLE      | testtable | range | idx_bizdate_st | idx_bizdate_st | 6       |
NULL | 490319 | Using index condition |
+----+-------------+-----------+-------+---------------+---------------+---------+------+--------
+----------------------+
1 row in set (0.00 sec)

-- 查询biz_date + status+ limit
-- 关键点：rows:490319;
```

Sql案例

```
mysql > select count(*)  from testtable   WHERE biz_date <= '2017-08-21
00:00:00' and status = 2;
+----------+
| count(*) |
+----------+
|        0 |
+----------+
1 row in set (0.34 sec)
mysql > select count(*)  from testtable   WHERE biz_date <= '2017-08-21
00:00:00';
+----------+
| count(*) |
+----------+
|   970183 |
+----------+
1 row in set (0.33 sec)
```

Sql案例

```
mysql > select count(*)  from testtable;
+----------+
| count(*) |
+----------+
|   991421 |
+----------+
1 row in set (0.19 sec)

mysql > select distinct biz_status from testtable;
+------------+
| biz_status |
+------------+
|          1 |
|          2 |
|          4 |
+------------+
```

Sql案例-结论

通过 biz_date 预估出来的行数 和 biz_date + status=2 预估出来的行数几乎一样，为98w。实际查询表 biz_date + status=2 一条记录都没有。整表数据量达到了99万，MySQL发现通过索引扫描需要98w行（预估）

因此，MySQL通过统计信息预估的时候，发现需要扫描的索引行数几乎占到了整个表，放弃了使用索引，选择了走全表扫描

那是不是他的统计信息有问题呢？我们重新收集了下表统计信息，发现执行计划的预估行数还是一样，猜测只能根据组合索引的第一个字段进行预估

Sql案例

```
mysql > select * from testtable   WHERE biz_date <= '2017-08-21 00:00:00' and
status = 2;
Empty set (0.79 sec)
```

```
mysql > select * from testtable force index(idx_bizdate_st)  WHERE biz_date <=
'2017-08-21 00:00:00' and status = 2;
Empty set (0.16 sec)
```

Sql案例-思考

- 强制指定索引后，查询耗时和没有强制索引比较，的确执行速度快了很多，因为没有强制索引是全表扫描嘛！但是！依然非常慢
- 那么还有什么办法去优化这个本来应该很快的查询呢？
- 重新建个索引?
- 控制下范围?

Sql案例

```
mysql > select * from testtable WHERE biz_date >= '2017-08-20 00:00:00' and biz_date <=
'2017-08-21 00:00:00' and status = 2;
Empty set (0.00 sec)

mysql > desc select * from testtable WHERE biz_date >= '2017-08-20 00:00:00' and
biz_date <= '2017-08-21 00:00:00' and status = 2;
+----+-------------+-----------------+-------+---------------+---------------+---------+------+------+----------
-------------+
| id | select_type | table           | type  | possible_keys | key           | key_len | ref  | rows |
Extra                |
+----+-------------+-----------------+-------+---------------+---------------+---------+------+------+----------
-------------+
|  1 | SIMPLE      | testtable       | range | idx_bizdate_st | idx_bizdate_st | 6       | NULL |  789
| Using index condition |
+----+-------------+-----------------+-------+---------------+---------------+---------+------+------+----------
-------------+
1 row in set (0.00 sec)
```

Sql案例-小结

1. 结合业务去优化sql

走了索引但不是你想要的

Sql案例

```
SELECT count(*) FROM
`qcp_ad_monitor_info`  WHERE status='2'
and updated_at >= '2020-07-14' and
updated_at <= '2020-07-14 23:59:59' and
channel='ayj01'    order by id desc
```

数据100w,updated_at和channel有单独的索引

Sql案例-分析

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	qcp_ad_monitor_info	-	range	channel,idx_updated_at	channel	202	-	116768	0.29	Using index condition; Using where

Sql案例-分析

```
select * from `qcp_ad_monitor_info`  where status='2' and updated_at >= '2020-07-14' and updated_at <= '2020-07-14 23:59:59' and channel='ayj01'    order by updated_at desc limit 0,10
```

Sql案例-分析

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	qcp_ad_monitor_info	-	range	channel,idx_updated_at	idx_updated_at	4	-	26214	1.3	Using index condition; Using where

显示第 1 到第 1 条记录，总共 1 条记录