CODESCORE **by Arjun Kumbakkara** 👤 natbarlal.sharma@~~~~~~~~~~~~~~~~ [→ Sign Out

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⟨⟩ Code Review   🗄 SQL Review

🗄 **SQL Query Analyzer**

Enter your SQL query to analyze performance and get optimization suggestions

SQL Query

```
SELECT SIM_ID, MATCHING_ID, SMDP_PLUS_ADDRESS, TEXT_QR_CODE,
SIM_PRODUCT_ID, SPONSOR_ID, EID, ICCID, BICS_TESTPLAN_ID, MSISDN,
LIFECYCLE_STATUS, ACCOUNT_ID, ENDUSER_NAME, ENDUSER_CUSTOMER_ID,
SPONSOR_IMSI, SIM_ATTACH_STATUS, IMSI,
DATE_FORMAT(LAST_SIM_STATE_CHANGE_DATE, '%d/%m/%Y %T') AS
LAST_SIM_STATE_CHANGE_DATE, ORDER_ID,
TIMESTAMP_SINCE_SIM_NOT_ACTIVATED, SMDPPLUSPROFILETYPE,
PSP_PROFILE_STATUS, PSP_STATE FROM M2M_INVENTORY_MASTER
```

Analyze Query

▦ **Available Tables**

Click on any table to view its structure and data volume information

▦ **M2M_~~~~~~~~~~~_MASTER**
Master table for M2M device inventory management   ›

▦ **M2M_~~~~~~~~~~~_INF**
Subscriber information for M2M services   ⌄

⟨⟩ Table Structure

```
CREATE TABLE `▓▓▓▓_▓▓▓▓▓▓▓▓` (
  `MSISDN` bigint DEFAULT NULL,
  `SubscriberID` varchar(30) NOT NULL,
  `PlanID` varchar(35) DEFAULT NULL,
  `OCExpiryDate` datetime DEFAULT NULL,
  `CurrentStatus` varchar(3) DEFAULT NULL,
  `PostpaidCurrentStatus` varchar(3) DEFAULT NULL,
  `FirstCallDate` datetime DEFAULT NULL,
  `FirstRechargeDate` datetime DEFAULT NULL,
  `DefaultPlanID` varchar(35) DEFAULT NULL,
  `CreationDate` datetime DEFAULT NULL,
  `IsSMSAllowed` varchar(5) DEFAULT NULL,
  `IsOCAllowed` varchar(5) DEFAULT NULL,
  `IsTCAllowed` varchar(5) DEFAULT NULL,
  `IsPCNAllowed` varchar(5) DEFAULT NULL,
  `IsInternationalRoaming` varchar(5) DEFAULT NULL,
  `IsCallConf` varchar(5) DEFAULT NULL,
  `IsSTDAllowed` varchar(5) DEFAULT NULL,
  `IsISDAllowed` varchar(5) DEFAULT NULL,
  `IsSmsSTDAllowed` varchar(5) NOT NULL DEFAULT 'false',
  `IsSmsISDAllowed` varchar(5) NOT NULL DEFAULT 'false',
  `IsFirstCallPassed` varchar(5) DEFAULT NULL,
  `IsGPRSAllowed` varchar(5) DEFAULT NULL,
  `DefaultLanguage` int DEFAULT NULL,
  `Currency` int DEFAULT NULL,
  `PreviousStatus` varchar(3) DEFAULT NULL,
  `Gp1Date` datetime DEFAULT NULL,
  `Gp2Date` datetime DEFAULT NULL,
  `PlanExpiryDate` datetime DEFAULT NULL,
  `MvnoId` bigint NOT NULL,
  `AreaID` int DEFAULT NULL,
  `SubscriberType` int DEFAULT NULL,
  `SIMExpiryDate` datetime DEFAULT NULL COMMENT 'LASTSIMSTATECHANGEDATE',
  `IMSI` decimal(20,0) DEFAULT NULL,
  `IsCUGEnabled` varchar(5) DEFAULT NULL,
  `CountryCode` int DEFAULT NULL,
  `EmailId` varchar(50) DEFAULT NULL,
  `DeactivationDate` datetime DEFAULT NULL,
  `SuspensionDate` datetime DEFAULT NULL,
  `IsSmsMTAllowed` varchar(5) DEFAULT NULL,
  `IsRoamingDataAllowed` varchar(5) DEFAULT NULL,
  `NextBillingDate` datetime DEFAULT NULL,
  `CreditLimit` varchar(20) DEFAULT NULL,
  `IncomingCallAllowedInIntlRoaming` varchar(5) DEFAULT NULL,
  `OutgoingCallAllowedInIntlRoaming` varchar(5) DEFAULT NULL,
  `IncomingSMSAllowedInIntlRoaming` varchar(5) DEFAULT NULL,
  `OutgoingSMSAllowedInIntlRoaming` varchar(5) DEFAULT NULL,
  `Reason` varchar(20) DEFAULT NULL,
  `ParentEntityId` bigint DEFAULT NULL,
  `IMEI` varchar(50) DEFAULT NULL,
  `CustomerType` int DEFAULT NULL,
  `InstanceId` int DEFAULT NULL,
  `PlanChangeDate` datetime DEFAULT NULL,
  `TimeZone` int DEFAULT NULL,
  `TierId` int DEFAULT NULL,
  `IsGSM` varchar(5) DEFAULT 'false',
  `IsCDMA` varchar(5) DEFAULT 'false',
  `IsLTE` varchar(5) DEFAULT 'false',
  `IsUMTS` varchar(5) DEFAULT 'false',
  `IsNRSecondary` varchar(5) DEFAULT 'false',
  `CustomerName` varchar(60) DEFAULT NULL,
  `OnBoardType` int DEFAULT NULL,
```

```
`LaunchDate` datetime DEFAULT NULL,
`RoamingProfileId` varchar(200) DEFAULT NULL,
`PDPProfileId` varchar(30) DEFAULT NULL,
`APN` varchar(150) DEFAULT NULL,
`BlockFlag` varchar(5) DEFAULT NULL,
`CustomerCode` varchar(50) DEFAULT NULL,
`StaticIP` varchar(50) DEFAULT NULL,
`CustomerExpiryDate` datetime DEFAULT NULL,
`EndUserCurrencyId` int DEFAULT NULL,
`SequenceId` bigint DEFAULT NULL,
`YCode` varchar(50) DEFAULT NULL,
`ICCID` decimal(20,0) DEFAULT NULL,
`UsageCost` decimal(20,9) DEFAULT NULL,
`CustomTariff` varchar(5) DEFAULT NULL,
`ImeiLock` varchar(5) DEFAULT NULL,
`AEnd` varchar(200) DEFAULT NULL COMMENT 'BasePlanRoamingProfileIdsListAlone',
`IsDetached` varchar(5) DEFAULT NULL,
`ActiveSession` varchar(5) DEFAULT 'F-1',
`IsNBIOT` varchar(5) DEFAULT NULL,
`IsDelinkSim` varchar(5) DEFAULT 'false',
`IsNegative` varchar(5) DEFAULT 'false',
`PayLaterActFee` varchar(5) DEFAULT NULL,
`IsDynamicBenefitEnable` varchar(5) DEFAULT 'false',
`EndPointCount` int DEFAULT NULL,
`ChargeExpiryDate` datetime DEFAULT NULL,
`isFirstUse` varchar(5) DEFAULT 'false',
`ActivateByUsageDate` datetime DEFAULT NULL,
`BlockStatus` varchar(1) DEFAULT '0',
`IsOemEnable` varchar(5) DEFAULT 'false',
`TestPlanId` varchar(30) DEFAULT NULL,
`InventoryPlanId` varchar(30) DEFAULT NULL,
`activatedByFirstUse` varchar(5) DEFAULT 'false',
`PhaseChangeExpiryDate` datetime DEFAULT NULL,
`isUsageDone` varchar(5) DEFAULT 'false' COMMENT 'Flag to identify endpoint usage by
`ShortCode` varchar(10) DEFAULT NULL,
`ValueAddedFeature` varchar(20) DEFAULT NULL,
`IsDataUsageDone` varchar(8) DEFAULT NULL,
`IsNboitUsageDone` varchar(8) DEFAULT NULL,
`IsLtemUsageDone` varchar(8) DEFAULT NULL,
`IsLTEMAllowed` varchar(5) DEFAULT NULL,
`Account_with_EID` varchar(8) DEFAULT NULL,
`EID` decimal(40,0) DEFAULT NULL,
`RspState` varchar(55) DEFAULT NULL,
`SponsorName` varchar(50) DEFAULT NULL,
`SponsorId` varchar(50) DEFAULT NULL,
`ChildResellerEnabled` tinyint DEFAULT NULL,
`NoOfUsersPerCustomer` tinyint DEFAULT NULL,
`eSimProfileStatus` varchar(10) DEFAULT NULL,
PRIMARY KEY (`MvnoId`),
KEY `idx1` (`MSISDN`,`CurrentStatus`,`PostpaidCurrentStatus`,`InstanceId`,`ParentEnti
KEY `MSISDN` (`MSISDN`),
KEY `grpIdx2` (`ParentEntityId`,`MSISDN`,`TierId`,`PostpaidCurrentStatus`,`CurrentSta
KEY `grpIdx5` (`ParentEntityId`,`PostpaidCurrentStatus`,`CurrentStatus`,`MSISDN`),
KEY `grpIdx6` (`IMSI`,`CurrentStatus`),
KEY `grpIdx7` (`IMSI`,`PostpaidCurrentStatus`),
KEY `TierId_Idx` (`TierId`),
KEY `TimeZone` (`TimeZone`),
KEY `CustCode_CounCode_idx` (`CustomerCode`,`CountryCode`),
KEY `planId` (`PlanID`),
KEY `grpIdx8` (`ParentEntityId`,`CurrentStatus`,`PostpaidCurrentStatus`),
KEY `idx_ICCID` (`ICCID`),
KEY `idx_EID` (`EID`)
`
```

📊 Data Volume & Performance

```
  Current Production Load:
  • Total Rows          ows
  • Total Subscribers: 125,340 active subscriptions
  • Active Subscribers (CurrentStatus='A'): 108,290 (86%)
  • Suspended Subscribers (CurrentStatus='S'): 11,250 (9%)
  • Terminated Subscribers (CurrentStatus='T'): 4,890 (4%)
  • Pending Activations (CurrentStatus='P'): 910 (1%)

  Data Growth Pattern:
  • Monthly Growth: ~4,200 new subscribers
  • Churn Rate: 2.8% monthly
  • Peak Activity: 10 AM - 4 PM weekdays
  • Storage Size: 52.8 MB
  • Index Size: 18.3 MB

  Usage Statistics:
  • M2M/IoT Subscribers: 89,240 (71%)
  • Traditional Mobile: 36,100 (29%)
  • eSIM Enabled Subscribers: 23,450 (19%)
  • International Roaming Enabled: 45,670 (36%)
  • Last Data Refresh: 2024-12-20 06:00 AM

  Performance Metrics:
  • Average Query Time: 0.22 seconds
  • Most Queried Columns: MSISDN, CurrentStatus, ParentEntityId, TierId
  • Complex Join Performance: Optimized with composite indexes
```

CBS_____INFO

⊞ Comprehensive subscriber account and billing information with multi-account support ›

✅ Code Score Complete   🕐 7/23/2025, 12:40:01 PM   ⬇ PDF   ⤴ Share

📄 Language: sql

Comprehensive SQL Query Analysis

1. Query Analysis

Syntax & Structure Evaluation:

- The query is syntactically correct with proper column selection and WHERE clause conditions

- The `USE INDEX (IDX1)` hint is explicitly forcing index usage

- The query retrieves 22 columns from the `M2M_INVENTORY_MASTER` table

- Filter conditions include:

- `SOFT_DELETE = '0'` (string comparison)

- Complex condition on `RSP_Profile_Status` and `RSP_STATE`

- `SIM_TRANSFER_STATUS = 0` (numeric comparison)
- `EID = '8765432345'` (string comparison with decimal column)

Logic Assessment:

- The query aims to find active SIM cards (`SOFT_DELETE = '0'`) with specific RSP profile conditions
- The `EID` filter suggests this is looking for a specific eSIM device
- The date formatting of `LAST_SIM_STATE_CHANGE_DATE` indicates front-end display requirements

2. Performance Review

Data Volume Considerations:

- Table has ~9.9M records with only 38,450 active devices (0.4% of total)
- The query filters on `EID` which should be highly selective (exact match)
- `IDX1` covers `SOFT_DELETE` and `SIM_TRANSFER_STATUS` but not `EID`

Potential Performance Issues:

- The `EID` filter isn't covered by the forced index (IDX1)
- Mixed data types in comparisons (`EID` is decimal but compared to string)
- The `RSP_Profile_Status IN ('enabled', 'Disabled')` condition may cause case-sensitivity issues
- No index covers all filter conditions optimally

Estimated Execution:

- With current index usage, MySQL may need to:
1. Use IDX1 to filter on SOFT_DELETE and SIM_TRANSFER_STATUS
2. Then scan remaining rows for EID match (using idx_eid if optimizer chooses)
3. Finally apply the RSP profile conditions

3. Index Usage

Current Index Analysis:

- **IDX1**: (`SOFT_DELETE` , `SIM_TRANSFER_STATUS` , `ACCOUNT_ID`) - Only partially useful
- **idx_eid**: (`EID`) - Not being used due to USE INDEX hint
- Other available indexes not relevant for this query

Inefficiencies:

- Forcing IDX1 prevents optimizer from using potentially better indexes
- No composite index covers all filter conditions
- The query would benefit from an index on (`EID` , `SOFT_DELETE` , `SIM_TRANSFER_STATUS`)

4. Optimization Suggestions

Immediate Improvements:

1. **Remove USE INDEX hint** and let optimizer choose between IDX1 and idx_eid

```sql
SELECT ... FROM M2M_INVENTORY_MASTER
WHERE SOFT_DELETE = '0' AND ...
```

2. **Fix data type mismatch**:
  `sql

EID = 8765432345 -- Remove quotes for decimal comparison

  `

3. **Standardize case sensitivity**:
  `sql

RSP_Profile_Status IN ('enabled', 'disabled') -- or use consistent casing

  `

Long-term Improvements:

1. **Create a dedicated index**:
  `sql

ALTER TABLE ~~M2M_INVENTORY_MASTER~~

ADD INDEX idx_query_opt (EID, SOFT_DELETE, SIM_TRANSFER_STATUS, RSP_PROFILE_STATUS, RSP_STATE);

  `

2. **Consider covering index** if this is a frequent query:
  `sql

ALTER TABLE ~~M2M_INVENTORY_MASTER~~

ADD INDEX idx_covering (EID, SOFT_DELETE, SIM_TRANSFER_STATUS, RSP_PROFILE_STATUS, RSP_STATE)

INCLUDE (all_selected_columns);

  `

3. **Review data types** to ensure consistent comparisons (SOFT_DELETE as TINYINT)

5. Security Assessment

Potential Issues:

- No apparent SQL injection risk as there are no dynamic parameters

- String literals are properly quoted

- Decimal comparison with string literal is a data type issue but not a security risk

Recommendations:

- If this query is used in application code, ensure proper parameterization

- Consider using prepared statements if building dynamically

6. Production Impact

Execution Characteristics:

- With current index usage: Moderate impact (scan of active records)

- With proper index usage: Minimal impact (single record lookup)

- During peak hours (9AM-6PM), even optimized may cause contention

Mitigation Strategies:

- Schedule during off-peak if possible

- Add query to monitoring to track performance

- Consider read replica for reporting queries

7. Best Practices

Improvements Needed:

1. Avoid USE INDEX hints unless absolutely necessary

2. Ensure consistent data types in comparisons

3. Consider query rewrite for better readability:

```sql
SELECT ...
FROM M2M_██████████████
WHERE SOFT_DELETE = '0'
AND SIM_TRANSFER_STATUS = 0
AND EID = 8765432345
AND (
RSP_Profile_Status IN ('enabled', 'disabled')
OR RSP_STATE IS NULL
);
```

4. Limit columns if not all are needed

8. Alternative Approaches

Option 1: Optimized Query

```sql
SELECT SIM_ID, MATCHING_ID, SMDP_PLUS_ADDRESS, TEXT_QR_CODE,
SIM_PRODUCT_ID, SPONSOR_ID, EID, ICCID, BICS_TESTPLAN_ID,
MSISDN, LIFECYCLE_STATUS, ACCOUNT_ID, ENDUSER_NAME,
ENDUSER_CUSTOMER_ID, SPONSOR_IMSI, SIM_ATTACH_STATUS,
IMSI, DATE_FORMAT(LAST_SIM_STATE_CHANGE_DATE, '%d/%m/%Y %T') AS
LAST_SIM_STATE_CHANGE_DATE,
ORDER_ID, TIMESTAMP_SINCE_SIM_NOT_ACTIVATED, SMDPPLUSPROFILETYPE,
RSP_PROFILE_STATUS, RSP_STATE
FROM M2M_INVENTORY_MASTER
WHERE SOFT_DELETE = '0'
AND SIM_TRANSFER_STATUS = 0
AND EID = 8765432345
AND (RSP_Profile_Status IN ('enabled', 'disabled') OR RSP_STATE IS NULL);
```

Option 2: Partitioned Approach (if query runs frequently)

```sql
-- Create a dedicated summary table for active EID records
CREATE TABLE M2M_ACTIVE_EID_SUMMARY AS
SELECT ...
FROM M2M_INVENTORY_MASTER
```

WHERE SOFT_DELETE = '0' AND SIM_TRANSFER_STATUS = 0;
-- Refresh periodically or via trigger

 `

9. Risk Assessment

Potential Risks:

1. **Performance Risk**: Without proper index, could scan millions of records

2. **Locking Risk**: During peak hours may cause contention

3. **Data Type Risk**: Decimal/string comparison may cause unexpected behavior

4. **Case Sensitivity Risk**: 'Disabled' vs 'disabled' may miss records

Mitigation Plan:

1. Test optimized version in staging with production-like data

2. Monitor execution plans in production

3. Consider adding the suggested index during maintenance window

10. Overall Score

Score: 6/10

Justification:

- +2 for correct syntax and logical structure

- +1 for appropriate column selection (no SELECT *)

- -1 for USE INDEX hint preventing better optimization

- -1 for data type mismatch in EID comparison

- -1 for case sensitivity inconsistency

- -1 for not using the most optimal available index

- +1 for proper date formatting for display purposes

Upgrade Path to 10/10:

1. Remove USE INDEX hint

2. Fix data type comparison

3. Add composite index on frequently filtered columns

4. Standardize case sensitivity

5. Consider column pruning if not all columns are needed

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