

查询通话记录

场景：

查询符合用户给定条件的通话记录

- 通话记录按月分表，每表通话记录在600~800万条之间
- 可能存在跨表查询的情况
- 查询条件复杂，存在模糊查询的情况
- 查询结果排序

表结构

```
CREATE TABLE `smdr_v01_201905` (  
  `AutoID` int(11) NOT NULL AUTO_INCREMENT,  
  `VosID` int(11) NOT NULL DEFAULT '0',  
  `DialogID` int(11) NOT NULL DEFAULT '0',  
  `CdrID` char(64) NOT NULL DEFAULT '0_0',  
  `StartTime` int(11) NOT NULL DEFAULT '0',  
  `EndTime` int(11) NOT NULL DEFAULT '0',  
  `CallerUID` char(128) NOT NULL,  
  `CallerDepIDs` varchar(512) NOT NULL,  
  `CallerNumber` char(64) NOT NULL,  
  `InTrunkUID` char(64) NOT NULL,  
  `InTrunkOwNumber` char(64) NOT NULL,  
  `CalleeUID` char(128) NOT NULL,  
  `CalleeDepIDs` varchar(512) NOT NULL,  
  `CalleeDialed` char(64) NOT NULL,  
  `OutTrunkUID` char(64) NOT NULL,  
  `OutTrunkOwNumber` char(64) NOT NULL,  
  `ReplaceCallee` char(64) NOT NULL,  
  `RouteCaller` char(128) NOT NULL,  
  `BusinessCode` char(32) NOT NULL,  
  `TenantID` int(11) NOT NULL DEFAULT '0',  
  `CalledResult` char(32) NOT NULL,  
  `FailCode` int(11) NOT NULL DEFAULT '0',  
  `CallerDevIp` char(32) NOT NULL,  
  `CallType` char(32) NOT NULL,  
  `CommRemarks` varchar(256) NOT NULL DEFAULT '',  
  PRIMARY KEY (`AutoID`),  
  KEY `DialogID_index` (`DialogID`) USING BTREE,  
  KEY `CdrID_index` (`CdrID`) USING BTREE,  
  KEY `StartTime_index` (`StartTime`) USING BTREE,  
  KEY `EndTime_index` (`EndTime`) USING BTREE,  
  KEY `CallerUID_index` (`CallerUID`) USING BTREE,  
  KEY `CallerNumber_index` (`CallerNumber`) USING BTREE,  
  KEY `CalleeUID_index` (`CalleeUID`) USING BTREE,  
  KEY `CalleeDialed_index` (`CalleeDialed`) USING BTREE,
```

```

KEY `TenantID_index` (`TenantID`) USING BTREE,
KEY `RouteCaller_index` (`RouteCaller`) USING BTREE,
KEY `OutTrunkOwNumber_index` (`OutTrunkOwNumber`) USING BTREE,
KEY `FailCode_index` (`FailCode`) USING BTREE,
KEY `CommRemarks_index` (`CommRemarks`) USING BTREE,
KEY `CallerDevIp_index` (`CallerDevIp`) USING BTREE
) ENGINE=MyISAM AUTO_INCREMENT=41 DEFAULT CHARSET=utf8

```

查询语句

```

select AutoID,StartTime,EndTime,CallerUID,CallerNumber,
InTrunkUID,InTrunkOwNumber,CalleeUID,CalleeDialed,
OutTrunkUID,OutTrunkOwNumber,ReplaceCallee,RouteCaller,
TenantID,CalledResult,FailCode,CallType,BusinessCode,CdrID,
CallerDepIDs,CalleeDepIDs,CommRemarks from smdr.smdr_v01_201905
where FailCode>=0 and 302!=FailCode and TenantID='880050' and
(CallerUID like '%u11003%' or CalleeUID like '%u11003%') and
(CallerNumber like '%200%' or CalleeDialed like '%200%') and
(CommRemarks like 'aa%') and AutoID > '20' order by AutoID limit 0,2

```

执行计划

id	select_type	table	type	possible_keys	key	key_len	ref	rows	Extra
1	SIMPLE	smdr_v01_201905	range	PRIMARY,TenantID_index,FailCode_index,CommRemarks_index	CommRemarks_index	386	(N, 2		Using index condition; Using where; Using filesort

生成会议ID

场景：

创建会议时随机生成一个5位的整数作为新建会议的ID，要求该会议ID在最近5天内不重复

- 会议ID记录表记录100万条；
- 随机获取一行

表结构

```

CREATE TABLE `ConfInfo` (
  `ConfIdInt` int(4) NOT NULL DEFAULT '0' COMMENT '会议ID',
  `ConfId` char(16) DEFAULT NULL COMMENT '会议ID',
  `IsOccupied` char(1) DEFAULT '0' COMMENT '是否被占用',
  `AppAccount` char(48) DEFAULT NULL COMMENT '申请者账号',
  `ConfType` int(1) DEFAULT NULL COMMENT '会议类型',
  `ConfTheme` char(64) DEFAULT NULL COMMENT '会议主题',
  `StartTime` char(16) DEFAULT NULL COMMENT '开始时间,类似于YYYYMMDDWWHHMM',
  `Duration` int(2) DEFAULT NULL COMMENT '会议参考持续时间',
  `IsAutoCall` int(1) DEFAULT NULL COMMENT '是否自动呼出',

```

```

`NotifyType` int(1) DEFAULT NULL COMMENT '通知方式',
`IsNeedChairmanEnable` int(1) DEFAULT NULL COMMENT '是否启用主席进入激活',
`IsNeedChairmanPW` int(1) DEFAULT NULL COMMENT '是否需要主席密码',
`ChairmanPW` char(16) DEFAULT NULL COMMENT '主席密码',
`SecurityFlag` int(1) DEFAULT '0' COMMENT '会议安全标志, 0 -- 普通会议, 1 -- 成员独立密码',
`ConfPasswd` char(16) DEFAULT NULL COMMENT '普通成员密码',
`IsStore` int(1) DEFAULT NULL COMMENT '是否存储',
`IsMute` int(1) DEFAULT '0' COMMENT '是否静音',
`IsLock` int(1) DEFAULT '0' COMMENT '是否锁定',
`MediaType` int(1) DEFAULT '1' COMMENT '媒体类型',
`EimGroupId` char(48) DEFAULT NULL COMMENT 'EIM群组ID',
`UserCount` int(1) DEFAULT NULL COMMENT '成员人数',
`MissedRecallFlg` int(1) DEFAULT NULL,
`MissedRecallDuration` int(1) DEFAULT NULL,
`MissedReCallTimes` int(1) DEFAULT NULL,
`ReceivedRecallFlg` int(1) DEFAULT NULL,
`ReceivedRecallDuration` int(1) DEFAULT NULL,
`ReceivedRecallTimes` int(1) DEFAULT NULL,
`PreNotifyTime` int(1) DEFAULT '0',
`ConfRecordId` bigint(20) DEFAULT NULL,
`ConfWireNum` char(48) DEFAULT NULL COMMENT '外线入会总机号码',
`last_used_time` timestamp NOT NULL DEFAULT '0000-00-00 00:00:00' ON UPDATE CURRENT_TIMESTAMP,
`ConfSeq` int(11) DEFAULT NULL COMMENT '会议序号',
`TenantID` int(11) DEFAULT NULL COMMENT '会议创建者所在的企业ID',
`asUserPwdConfSeq` int(11) DEFAULT NULL COMMENT '占用该confid作为用户密码的会议序号',
PRIMARY KEY (`ConfIdInt`),
KEY `IsOccupied_Idx` (`IsOccupied`),
KEY `last_timestamp_INDEX` (`last_used_time`),
KEY `ConfSeq_Index` (`ConfSeq`),
KEY `TenantID_Index` (`TenantID`),
KEY `asUserPwdConfSeq_Idx` (`asUserPwdConfSeq`)
) ENGINE=MyISAM DEFAULT CHARSET=utf8

```

查询语句

```

SELECT ConfIdInt FROM ConfInfo where IsOccupied = 0 AND ConfIdInt < 100000 AND
UNIX_TIMESTAMP(date(last_used_time)) < UNIX_TIMESTAMP(DATE_SUB(date(now()),
INTERVAL 5 DAY)) order by rand() limit 1

```

执行计划

id	select_type	table	type	possible_keys	key	key_len	ref	rows	Extra
1	SIMPLE	ConfInfo	range	PRIMARY,IsOccupied_Idx	PRIMARY	4	NULL	115831	Using index condition; Using where; Using temporary; Using filesort

获取外线号码的应答号码

场景：

外部用户呼入时，服务器需要依据被叫号码获取被叫号码的应答号码，该应答号码由一组外线号码应答时间策略定义

- 需多表联合查询；
- 需对结果过滤和排序

表结构

```
CREATE TABLE `AnsDateStrategy` (  
  `StrategyID` int(11) NOT NULL DEFAULT '0' COMMENT '时间策略ID, 对应  
OutWireStrategy表中ASID',  
  `AnsUserID` char(32) NOT NULL DEFAULT '' COMMENT '应答号码',  
  `CfgDateIndex` int(11) NOT NULL DEFAULT '0' COMMENT '时间配置ID, 对应DatetimeCfg  
表中的AID',  
  `TenantID` int(11) NOT NULL DEFAULT '0' COMMENT '企业ID',  
  `Sequence` int(11) NOT NULL DEFAULT '0' COMMENT '数字越小优先级越高',  
  PRIMARY KEY (`StrategyID`, `AnsUserID`, `CfgDateIndex`, `TenantID`)  
) ENGINE=MyISAM DEFAULT CHARSET=utf8  
  
CREATE TABLE `DatetimeCfg` (  
  `AID` int(11) NOT NULL AUTO_INCREMENT COMMENT '自动递增ID',  
  `TenantID` int(11) NOT NULL DEFAULT '0' COMMENT '企业ID',  
  `CfgName` char(64) NOT NULL DEFAULT '' COMMENT '时间配置项名称',  
  `CfgDateType` char(16) NOT NULL DEFAULT 'day' COMMENT '日期时间类型: day 按日类  
型, week 按周类型, month 按月类型',  
  `TimeStart` char(16) NOT NULL DEFAULT '' COMMENT '时间段开始时间 09:10',  
  `TimeEnd` char(16) NOT NULL DEFAULT '' COMMENT '时间段结束时间 10:23',  
  `CfgContext` text NOT NULL COMMENT '取决于CfgDateType: 1按日: 月/日-月/日 如 10/2-  
11/5; 2按周: 如 0,1,2,3,4,5,6; 3按月: 日日(每月x日) 如 15',  
  PRIMARY KEY (`AID`),  
  UNIQUE KEY `TenantID_CfgName` (`TenantID`, `CfgName`)  
) ENGINE=MyISAM AUTO_INCREMENT=2 DEFAULT CHARSET=utf8
```

查询语句

```
select A.AnsUserID,A.CfgDateIndex,B.CfgName,A.Sequence from  
(select * from AnsDateStrategy where TenantID='880050') A  
left join  
(select * from DatetimeCfg where TenantID='880050') B  
on A.CfgDateIndex=B.AID where A.TenantID='880050' and A.StrategyID='83'  
order by A.Sequence asc
```

执行计划

id	select_type	table	type	possible_keys	key	key_len	ref	rows	Extra
1	PRIMARY	<derived2>	ref	<auto_key0>	<auto_key0>	4	const	4	Using where; Using temporary; Using filesort
1	PRIMARY	<derived3>	ALL	(Null)	(Null)	(Null)	(Null)	6	Using where; Using join buffer (Block Nested Loop)
3	DERIVED	DatetimeCfg	ref	TenantID_CfgName	TenantID_CfgName	4	const	6	(Null)
2	DERIVED	AnsDateStrategy	ALL	(Null)	(Null)	(Null)	(Null)	32	Using where

查询用户

场景：

搜索用户属性中包含特定字符串的用户

- 要匹配的用户属性很多；
- 用户属性分布在多张表中

表结构

```
CREATE TABLE `ofUser` (
  `username` varchar(64) NOT NULL,
  `plainPassword` varchar(32) DEFAULT NULL,
  `encryptedPassword` varchar(255) DEFAULT NULL,
  `name` varchar(100) CHARACTER SET utf8mb4 DEFAULT NULL,
  `email` varchar(100) DEFAULT NULL,
  `phone` varchar(64) DEFAULT NULL,
  `isEmailBind` tinyint(4) NOT NULL DEFAULT '1',
  `isPhoneBind` tinyint(4) NOT NULL DEFAULT '1',
  `tenementId` varchar(64) DEFAULT NULL,
  `role` varchar(32) DEFAULT NULL,
  `status` varchar(64) DEFAULT NULL,
  `clientEnabled` tinyint(4) DEFAULT '1',
  `ntxDomainId` varchar(255) DEFAULT NULL,
  `sipAccount` varchar(255) DEFAULT NULL,
  `creationDate` char(15) NOT NULL,
  `modificationDate` char(15) NOT NULL,
  `customId` varchar(255) DEFAULT NULL,
  `activeDate` bigint(15) DEFAULT '0',
  `deleteDate` bigint(15) DEFAULT '0',
  `platformId` varchar(255) NOT NULL DEFAULT '',
  `mobileAuth` int(2) DEFAULT '1',
  `isMobileAuth` int(2) DEFAULT '1' COMMENT '手机号码认证',
  PRIMARY KEY (`username`),
  KEY `ofUser_cDate_idx` (`creationDate`),
  KEY `ofUser_sipAccount_idx` (`sipAccount`(10)),
  KEY `ofUser_phone_idx` (`phone`(11)),
  KEY `ofUser_email_idx` (`email`(10)),
  KEY `ofUser_customId` (`customId`(32)),
  KEY `ofUser_name` (`name`(16)),
  KEY `ofUser_status_idx` (`status`(4)),
  KEY `ofUser_idx_paltformId` (`platformId`(10))
) ENGINE=InnoDB DEFAULT CHARSET=utf8
```

```

CREATE TABLE `ucTenementMember` (
  `tenementId` varchar(64) NOT NULL,
  `username` varchar(64) NOT NULL,
  `alias` varchar(255) NOT NULL DEFAULT '',
  `role` varchar(64) NOT NULL,
  `status` varchar(64) NOT NULL,
  `createDate` bigint(15) DEFAULT '0',
  `joinedDate` bigint(15) DEFAULT '0',
  PRIMARY KEY (`tenementId`, `username`),
  KEY `ucTenementMember` (`username`) USING BTREE,
  KEY `ucTenementMember_tenementId` (`tenementId`) USING BTREE,
  KEY `alias` (`alias`(32))
) ENGINE=InnoDB DEFAULT CHARSET=utf8

CREATE TABLE `ucVCardItem` (
  `username` varchar(64) NOT NULL,
  `itemId` varchar(64) NOT NULL,
  `tenementId` varchar(64) NOT NULL,
  `value` mediumtext CHARACTER SET utf8mb4 NOT NULL,
  PRIMARY KEY (`username`, `itemId`, `tenementId`),
  KEY `ucVCardItem_itemId_tenementId` (`itemId`(10), `tenementId`(16))
) ENGINE=InnoDB DEFAULT CHARSET=utf8

```

查询语句

```

SELECT distinct t.username
FROM ofUser as t
INNER JOIN (SELECT username
FROM ucTenementMember
WHERE (tenementId IN ('880001')) AS tm ON t.username = tm.username
WHERE (t.username NOT IN (('u1000014', 'u1000148'))
AND (status!='lock')
AND (t.username in(SELECT username
FROM ofUser
WHERE (t.username='查询字符串')
OR (customId='')
OR (phone='')
OR (email='查询字符串')
OR (sipAccount='查询字符串')
OR (name LIKE '查询字符串')
OR (username in(SELECT username
FROM ucVCardItem
WHERE (itemId='extTelephone' AND value='5002' AND tenementId='880006'))))))))
LIMIT 1,10

```

执行计划

id	select_type	table	type	possible_keys	key	key_len	ref	rows	Extra
1	PRIMARY	<derived2>	ALL	(Null)	(Null)	(Null)	(Null)	1700	Using where; Using temporary
1	PRIMARY	t	eq_ref	PRIMARY,ofUser_status_in	PRIMARY	194	tm.username	1	Using where
3	DEPENDENT SUBQUERY	ofUser	unique_subquery	PRIMARY,ofUser_sipAcco	PRIMARY	194	func	1	Using where
4	DEPENDENT SUBQUERY	ucVCardItem	unique_subquery	PRIMARY,ucVCardItem_ib	PRIMARY	582	func,const,const	1	Using where
2	DERIVED	ucTenementMember	ref	PRIMARY,ucTenementMe	ucTenementMember_tenr	194		1699	Using where; Using index