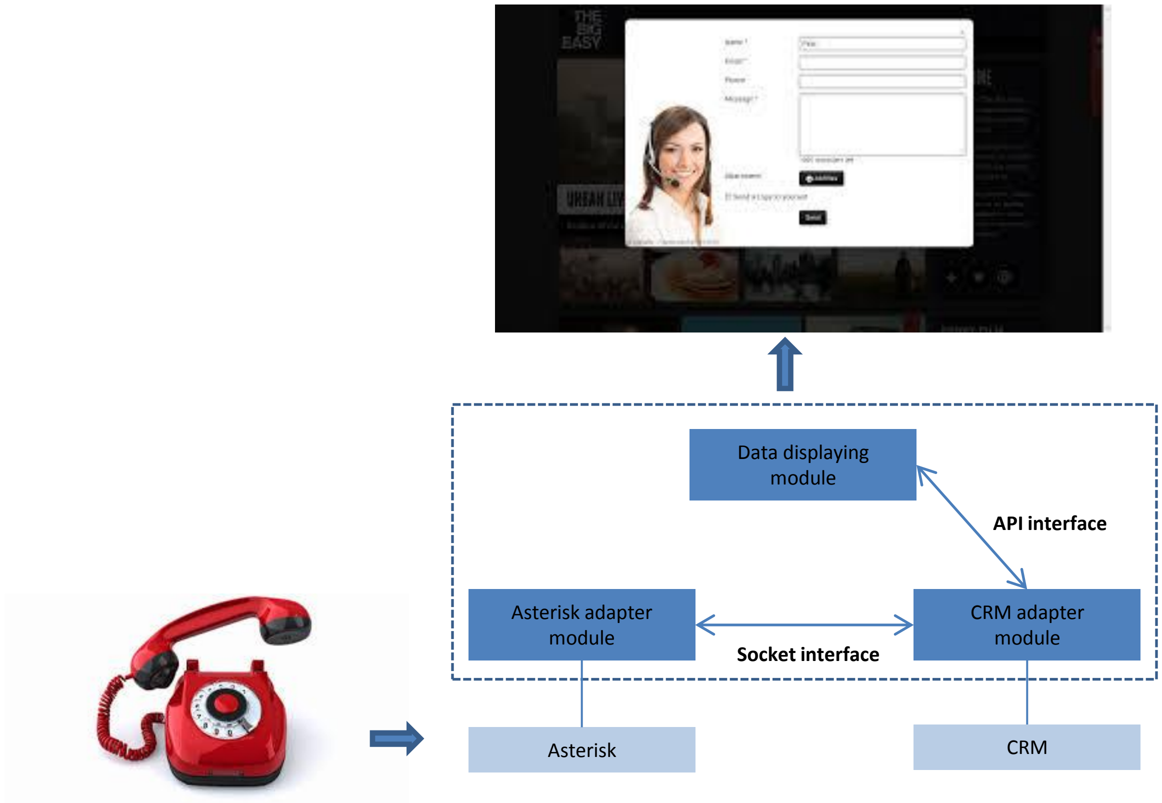
General diagram



<u>SOME REMARKS</u>

1) Asterisk adapter module

This module should run on server side, the machine at which Asterisk is deployed.

2) CRM adapter module

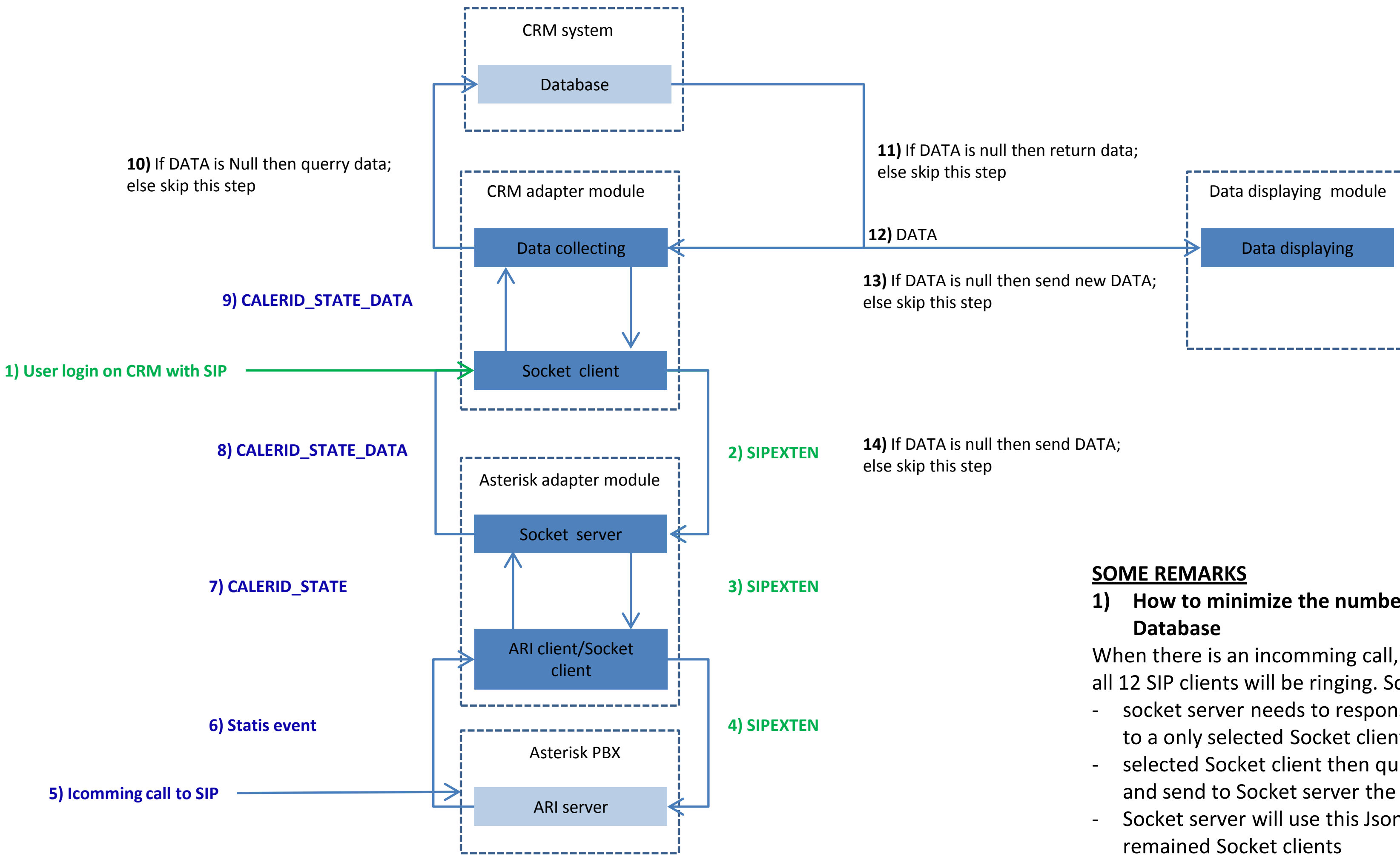
This module run on browser

3) Data displaying module

This module run on browser

4) Number of max calls is 12

Flow to retrieve customer info by by CallerID of a SIP client



SOME REMARKS

1) **How to minimize the number of querries to Database**

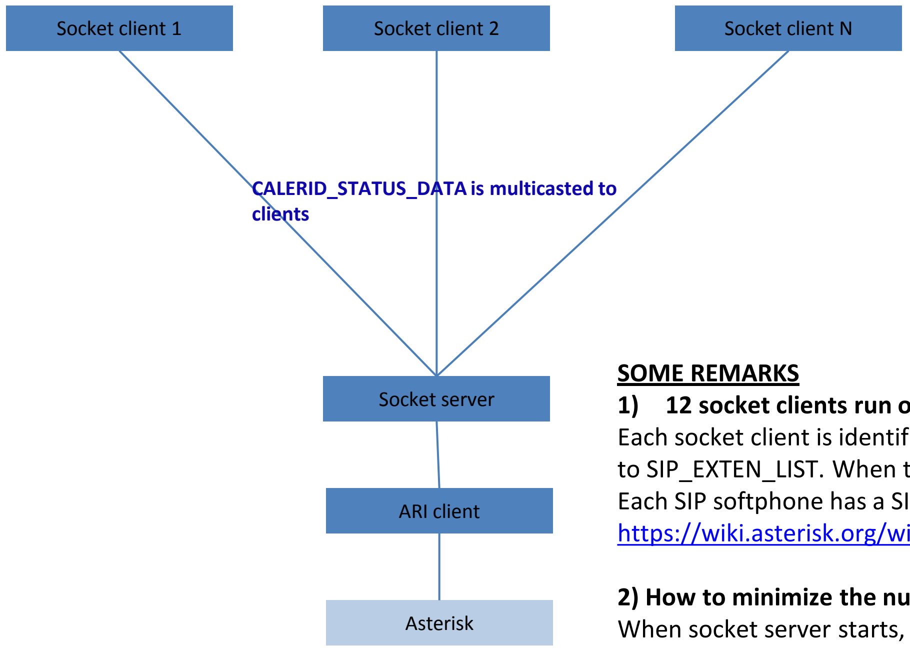
When there is an incomming call, in case of Onepas, all 12 SIP clients will be ringing. So :

- socket server needs to response CallerID & status to a only selected Socket client
- selected Socket client then querries data from DB and send to Socket server the Json data
- Socket server will use this Json data to response 11 remained Socket clients

2) How to choose a selected Socket client

- Preselect
- Or randomly

How to minimize the number of connections to Asterisk and the number of Stasis apps as well



SOME REMARKS

1) 12 socket clients run on 12 Web Browsers

Each socket client is identified by its SIP exten number; When a client connects, server adds its SIP exten to SIP_EXTEN_LIST. When that client disconnects, its SIP exten is removed.
Each SIP softphone has a SIP outbound channel, when receiving incomming calls, according to https://wiki.asterisk.org/wiki/display/AST/Channels

2) How to minimize the number of callings to Asterisk ARI

When socket server starts, it creates 01 ARI client and 01 Stasis application

3) Socket server creates only 1 ARI client

Server should maintain a Outbound channel status tables
The Outbound channel status could be collected by wscat -c ws://localhost:8088/ari/channels?api_key=asterisk:asterisk
Status table:
[SIP extension][Outbound channel id][Outbound channel status]
Channel status are included in https://www.voip-info.org/wiki/view/channel+status:

- 2 Channel is off hook
- 4 Line is ringing

Server regularlty multicast CALLERID_STATUS_DATA to connected clients

4) On Asterisk, there is only 1 running Stasis application for all SIP extensions

Stasis app will return the information of the Inbound channel, which is clarified at https://wiki.asterisk.org/wiki/display/AST/Channels

CALERID_STATE_DATA

Each incomming call will have a CALLERID_STATE_DATA
Extens in CALLERID_STATE_DATA must be existed in SIP_EXTEN_LIST


```
{ “callerId”: “84904859696”,
 “state”:[
          {“exten”:”1000”, “outboundChannelId”:”1234567.89”, “outboundChannelState”:”Ringing”},
           ...
          {“exten”:”2000”, “outboundChannelId”:”7654321.98”, “outboundChannelState”:”Up”},,
         ],
 “data”:{
         “phone”:”+84904958686”
         “name”:”Nguyễn Văn A”,
          “lastBooking”:{“info”:”Ngày 10/08/2017, 2 người lớn, 2 trẻ em, tại nhà hàng Song Dương Văn Cao”, “state”:”Chờ xác nhận”},
          “totalBookingTimes”:{“info”:”20”, “linkDetails”:” https://partner.onepas.vn/abdefgh”},
          “totalCancelingTimes”:{“info”:”2”},
        },
 ”outboundChannelId”:”9999999.999”,
“duration”:{“start”:” 2017/09/18 06:12:42”, “end”:” 2017/09/18 06:12:42”},
}
```

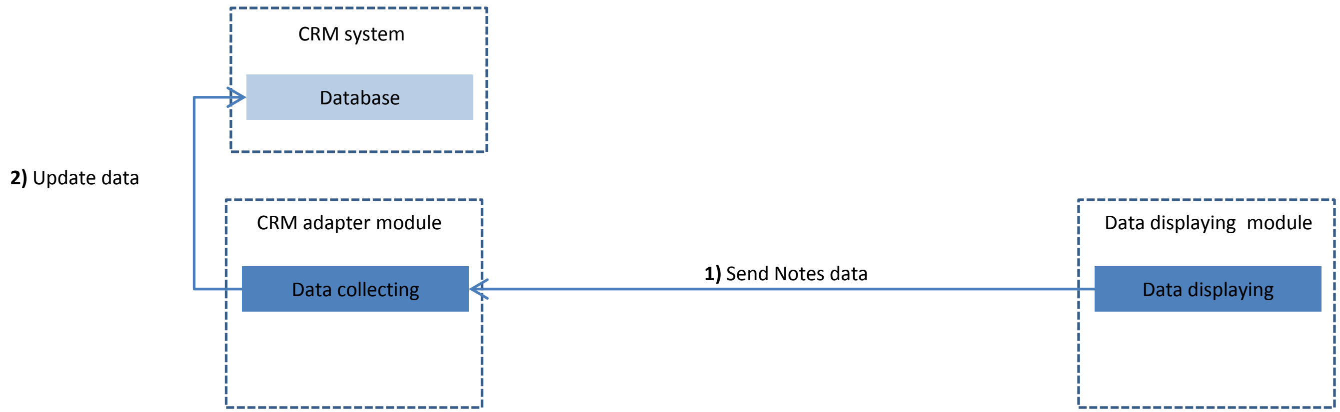

SIP_EXTEN_LIST

All socket clients, which have extens in SIP_EXTEN_LIST, must be connected

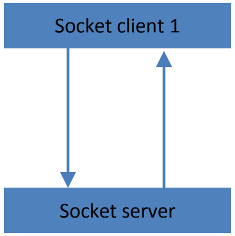
to socket server


```
[
  {'exten':1000, 'pingCounter':0, 'socket':socket1},
  {'exten':2000, 'pingCounter':0, 'socket':socket2},
  ...
]
```

Update notes to DB



Connections between Socket clients, Socket server, ARI client



3) Client replies PONG

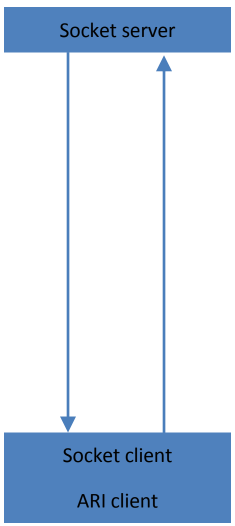
0) when user login, client sends EXTEN

1) Server starts sending a PING frequently, when a client send a EXTEN

2) Server waits for a PONG every PING sent

4) If 3 PINGs without a PONG, sever disconnect with client

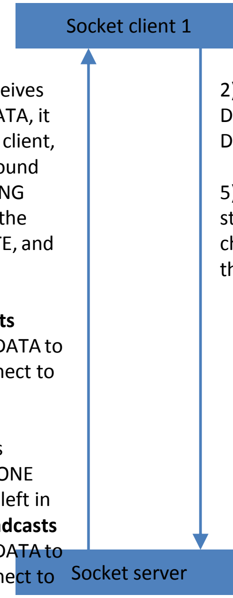
5) Basing on PING/PONG server maintains **SIP_EXTEN_LIST**



1) ARI client maintains CALLERID and STATE in **CALLERID_STATE_DATA**
2) Each incomming call will have a **CALLERID_STATE_DATA**

3) ARI client syncs SIP outbound channel states , STATE in **CALLERID_STATE_DATA** with **SIP_EXTEN_LIST**

3) Whenever ARI client update CALLERID_STATE_DATA, it starts a Socket client emit to send updated data to server



1) When server receives CALLERID STATE DATA, it randomly selects a client, that have SIP outbound channels with RINING state, and it sends the client CALLID, STATE, and DATA NULL

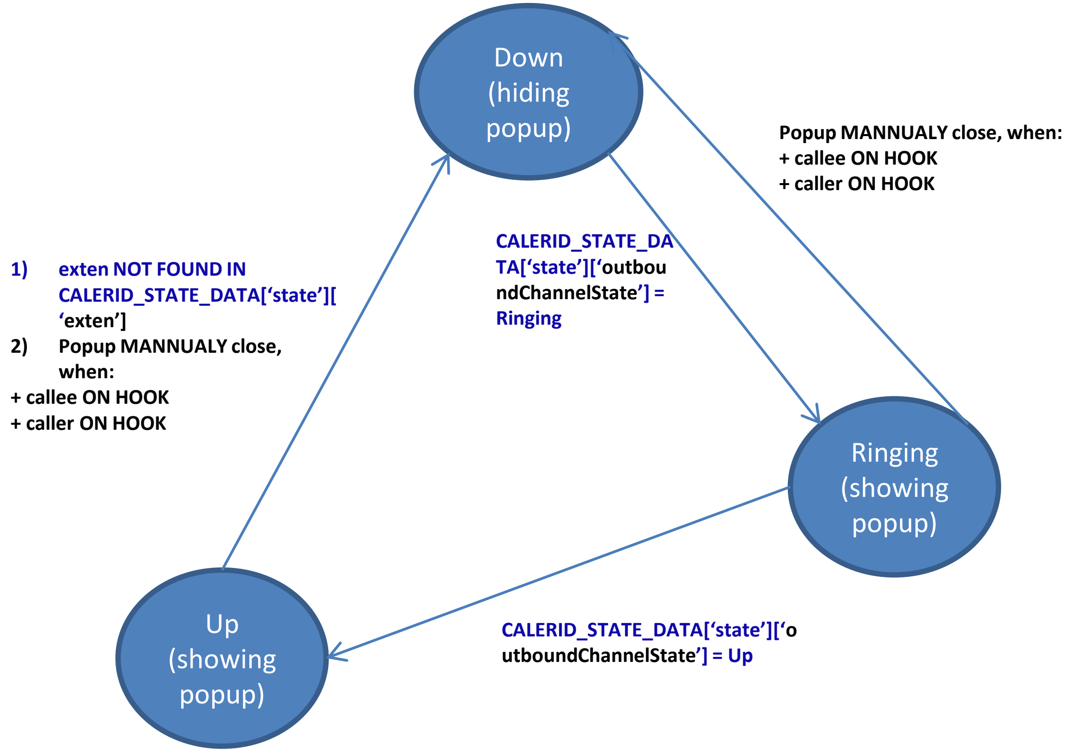
3) Server **Broadcasts** CALLERID_STATE_DATA to all clients that connect to it

4) When a phone is pickedup, there is ONE outbound channel left in the SATE, and **Broadcasts** CALLERID_STATE_DATA to all clients that connect to it

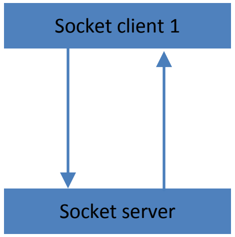
2) Client fetches DATA from DB, and replies with the DATA

5) Clients must maintain state of its outbound SIP channel to open and close the popup

Socket client states



Socket clients, Socket server authentication



1) when user login, client sends EXTEN

```
EXTEN =
{
   'exten':'2000',
   'secretKey':'onepas012017'
}
```

2) Server will check

```
if (secretKey != STASIS_APP_NAME){
   socket.disconnect(true);
   }else{

}
```