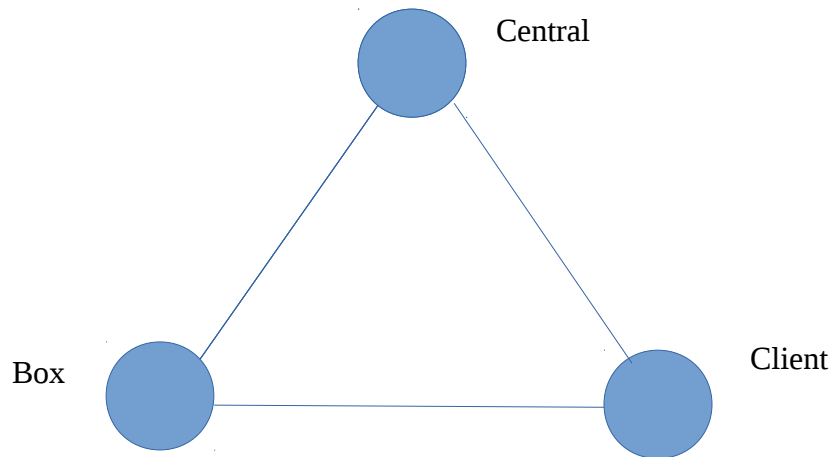# User Management and Device Binding Strategy Proposal

System Overview

Central : Central Server
Box: Box Server
Client: Client

User Managerment

1. Central server side user Model

```
class User{
      String accessId   //generated from username
      String username   //unique
      String password
      String avatar
      int accountType = 1 // inList : [1,2,3,4,5]  // normal, wechat,
facebook,gmail, phone.

      //User Info
      String phoneNo
      String email
      String zipCode
      String country
      String address
      String phoneModel
      String ipAddress
      String os

      String      verificationCode
      Date        verificationCodeTime
      boolean     verified = false

      Date        dateCreated;
      Date        lastUpdated;
}
```

2. User sign up

   There is one sign up view in client only for normal sign up, user require to input username and password etc.   (Client send user info to Central to sign up)

3. User Login

   User can choose to login with their username and password if they already normally signed up, or they can choose to login using their existing third-party account like wechat, facebook, google+, etc. Please kind in mind, no matter which method you choose to login, we need one unique username(it could be wxid, facebook id, google id) to generate accessid.

        a. In the first situation, Client send username and password to Central, then Central need to check the username and password. If this user already existed, Central will retrieve the accessId from database and return it to Client, otherwise return error.

        b. In the second situation, Central server need to use third-party api to get user info including one unique and permanent username. Then, Central will try to retrieve accessid from database based on this unique username. If there is no such user, we need to create an new user in database and return accessid.(just like sign up) Otherwise, retrieve the user info inluding accessId from database and return it to Client.

Here, accessId is our unique id that we used to identify user. And the most important thing Central server need to do is send back the generated accessId

Device Management

1. Central server side device model.

```
class Device {
    //basic info
    String      deviceId
    String      deviceLicense
    String      deviceVersion;
    String      macAddress;
    String      color;
    Date        manufactureDate;
    int         diskSize = 1;        // in TB
    boolean     numDIsk = 1;

    //control info
    Date        activatedDate;
    boolean     activated = false;
    String      deviceOwner
    String      ownerImg

    //network info
    String      locationIp
    String      realIp
    String      port
    String      udpIp
    int         udpStatus;
    int         wanStatus;
```

```
      //time info
      Date        lastHeartbeat;
      Date        lastUpdated;      // system update
      Date        dateCreated;
}
```

2. Box activation

   Box send verify request to Central during its initialization process once the Box powered on. The verify request includes Box info (deviceID, deviceSn, devicelicense, etc), Central can verify it since we have all Boxes info that we sold in our database beforehand.

3. Bind user to one device

   a.   Central side user-device binding info model:

```
class UserDevice {
      User user;
      Device device;
      boolean permission = false  // Whether it is owner

      Date        dateCreated;
      Date        lastUpdated;
}
```

   b. Once the user logged in to Client, user need to use Client to bind with Box before interacting with it. When user send binding request to Box from Client:

   (1) If Box has no owner, this user will bind with this Box as owner directly.

   (2) If Box has owner already, this new user need to acquire operation code from owner first. If the operation code does not match, the binding request will be reject. Only the owner has the permission to request Box to generate the operation code, then tell the new user the operation code offline. Also owner can change the operation code frequently for safety reason.

4. unBind user from one device

   For the unbind request, there are two situation:

   a. User want to unbind itself from one Box, This is straightforward, just simply set his "isAuth" property to false in database. (In the Box's UserModel, "isAuth" indicates user is one granted user, while "permission" indicates whether user is owner)

   b. Owner want to remove one user from the Box. Only owner has this privilege, owner can get user list at Client and select one user to remove. (Box will verify the identity)

5. Change Owner

   Only owner has the permission to change owner, this process is very similar to unbind user from, owner select one user from the users list to transfer ownership to.

   All above actions will be reported Central once finished, and Central will update the database accordingly.