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Sign Up Channel

Description

- Request: Driver
 - Respond: Business Server
 - This channel is used to make a new account.
-

Request

Topic

```
/user/sign_up
```

Body

```
{
  'email': 'reshout@gmail.com',
  'password': 'xxxxxxx',
  'card_number': '0000-0000-0000-0000',
  'card_expiration': '00/00'
}
```

Response

Topic

```
/user/sign_up/#
```

Body

Success

```
{
  'success': 1
}
```

Failed

```
{
```

```
'success': 0,  
'cause': 'EXISTENT_USER'  
}
```

```
{  
  'success': 0,  
  'cause': 'INVALID_CARD_INFORMATION'  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Login Channel

Description

- Request: Driver, Attendant and Owner
 - Respond: Business Server
 - This channel is used to login into the system.
-

Request

Topic

/login

Body

```
{
  'email' : 'email@adress.com'
  'password' : 'password'
}
```

Response

Topic

/login/#

Body

Success

```
{
  'success': 1
  'id' : 39,
  'card_number' :
'D33E764D6937B8A2DB6FFB46BB8A35C8C65BFAFCD68D35CF43955297A8831EAD',
// driver only
  'card_expiration' : '6C9F8F63B25F1596E8570910B7847ECA // driver
only
  'session_key' : 'c3767482-e3a3-448e-9659-6049fb'
```

```
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INVALID_EMAIL_PASSWORD'  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Logout Channel

Description

- Request: Driver, Attendant and Owner
 - Respond: Business Server
 - This channel is used to logout from the system.
-

Request

Topic

```
/logout
```

Body

```
{  
  'session_key': 'f4e7229b-2ce5-4834-86c9-ae39f1'  
}
```

Response

Topic

```
/login/#
```

Body

Success

```
{  
  'success': 1  
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Get Reservation Channel

Description

- Request: Driver
 - Respond: Business Server
 - This channel is used to get reservation information.
-

Request

Topic

```
/reservation/get
```

Body

```
{  
  'session_key' : 'xxxxx' // driver's session_key  
}
```

Response

Topic

```
/reservation/get/#
```

Body

Success

```
{  
  'success': 1  
  'id' : 1,  
  'reservation_ts' : 1466460, // epoch in seconds  
  'confirmation_no' : 7705,  
  'user_id' : 1,  
  'user_email' : "reshout@gmail.com",  
  'slot_id' : 3,  
  'slot_no' : 3,  
  'controller_id' : 6,
```

```
'controller_physical_id' : "p1",
'facility_id' : 1,
'facility_name':"ShadySide",
'fee' : 10.75
'fee_unit' : 60
'expiration_ts': 1466640
'begin_ts' : 'null'
'end_ts': 'null'
}
```

Failed

```
{
  'success': 0,
  'cause': 'INVALID_SESSION'
}
```

```
{
  "success": 0,
  "cause": "NO_AUTHORIZATION",
}
```

```
{
  'success': 0,
  'cause': 'INTERNAL_SERVER_ERROR'
}
```

```
{
  'success': 0,
  'cause': 'NO_RESERVATION_EXIST'
}
```


Get Facilities Channel

Description

- Request: Attendant or Owner
 - Respond: Business Server
 - This channel is used to request facility list which is assigned to attendant or belong to owner.
-

Request

Topic

```
/facilities/get
```

Body

```
{  
  'session_key': 'f4e7229b-2ce5-4834-86c9-ae39f1'  
}
```

Response

Topic

```
/facilities/get/#
```

Body

Success

```
{  
  'success': 1  
  'facilities' : [  
    {  
      "id":1,  
      "name":"Shadyside Parking Lot",  
      "fee":5.75,  
      "fee_unit":3600,  
      "grace_period":1800  
    }  
  ]  
}
```

```
    },  
    ...  
  ]  
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INVALID_SESSION'  
}
```

```
{  
  "success": 0,  
  "cause": "NO_AUTHORIZATION",  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Get Reservable Facilities Channel

Description

- Request: Driver
 - Respond: Business Server
 - This channel is used to get all facility list which is available to make a reservation.
-

Request

Topic

```
/facilities/reservable_list
```

Body

```
{
  'session_key' : 'xxxxxx' // driver's session key
}
```

Response

Topic

```
/facilities/reservable_list/#
```

Body

Success

```
{
  'success': 1
  'facilities' : [
    {
      'id' : 1,
      'name' : 'Shady Side Parking Lot'
    },
  ],
}
```

```
{
  {
    ...
  },
  ...
]
}
```

Failed

```
{
  'success': 0,
  'cause': 'INVALID_SESSION'
}
```

```
{
  "success": 0,
  "cause": "NO_AUTHORIZATION",
}
```

```
{
  'success': 0,
  'cause': 'INTERNAL_SERVER_ERROR'
}
```

Get Slots Channel

Description

- Request: Attendant
 - Respond: Business Server
 - This channel is used to get slot lists which is belong to a facility managed by the attendant.
-

Request

Topic

```
/facility/{facility_id}/slots/get
```

Body

```
{  
  'session_key' : 'xxxxxx' // attendant's session key  
}
```

Response

Topic

```
/facility+/slots/get
```

Body

Success

```
{  
  "success": 1  
  "slots" : [  
    {  
      "activated" : null  
      "controller_id": 2,  
      "controller_physical_id": "arduino2",  
      "available" : 1  
      "id": 5,  
    }  
  ]  
}
```

```
    "number": 1,  
    "parked": 0,  
    "parked_ts": null,  
    "reserved": 1,  
    "reservation_id": 31,  
    "reservation_ts": 1466349,  
    "email": "reshout@naver.com"  
  },  
  ...  
]  
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INVALID_SESSION'  
}
```

```
{  
  "success": 0,  
  "cause": "NO_AUTHORIZATION",  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Make Reservation Channel

Description

- Request: Driver
 - Respond: Business Server
 - This channel is used to make a reservation.
-

Request

Topic

```
/facility/{facility_id}/make_reservation
```

Body

```
{
  'session_key' : 'session_value' // driver's session key
  'reservation_ts' : {reservation epoch / 1000}
}
```

Response

Topic

```
/facility/{facility_id}/make_reservation/#
```

Body

Success

```
{
  'success': 1
  'id' : 1,
  'reservation_ts' : 1466460, // epoch in seconds
  'confirmation_no' : 7705,
  'user_id' : 1,
  'user_email' : "reshout@gmail.com",
  'slot_id' : 3,
  'slot_no' : 3,
```

```
{
  'controller_id' : 6,
  'controller_physical_id' : "p1",
  'facility_id' : 1,
  'facility_name':"ShadySide",
  'fee' : 10.75
  'fee_unit' : 60
  'expiration_ts': 1466640
}
```

Failed

```
{
  'success': 0,
  'cause': 'INVALID_SESSION'
}
```

```
{
  "success": 0,
  "cause": "NO_AUTHORIZATION",
}
```

```
{
  "success": 0,
  "cause": "NO_AVAILABLE_SLOT",
}
```

```
{
  'success': 0,
  'cause': 'INTERNAL_SERVER_ERROR'
}
```


Cancel Reservation Channel

Description

- Request: Driver
 - Respond: Business Server
 - This channel is used to cancel parking reservation by driver.
-

Request

Topic

```
/reservation/{reservation_id}/cancel
```

Body

```
{  
  'session_key': 'f4e7229b-2ce5-4834-86c9-ae39f1'  
}
```

Response

Topic

```
/reservation/+/cancel/#
```

Body

Success

```
{  
  'success': 1  
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INVALID_SESSION'  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

```
{  
  "success": 0,  
  "cause": "NO_AUTHORIZATION",  
}
```

```
{  
  'success': 0,  
  'cause': 'NO_RESERVATION_EXIST'  
}
```

Confirm Reservation Channel

Description

- Request: Facility
 - Respond: Business Server
 - This channel is used to request to validate reservation number and open entry gate when a car is arrived at entry gate.
-

Request

Topic

```
/controller/{physical_id}/confirm_reservation/request/{req_id}
```

Body

```
{  
  'confirmation_no' : 8341, /* 4 digits */  
}
```

Response

Topic

```
/controller/{physical_id}/confirm_reservation/response/{req_id}
```

-
- Subscribe : (Server side) */controller/+/confirmreservation/# (Client side)*
/controller/{physicalid}/confirm_reservation/response/#
-

Body

Success

```
{  
  'success': 1  
  'slot_no': 1  
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INVALID_CONFIRMATION_NO'  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Confirm Exit Channel

Description

- Request: Facility
 - Respond: Business Server
 - This channel is used to request to open exit gate and charge on driver's credit card.
-

Request

Topic

```
/controller/{physical_id}/confirm_exit/request/{req_id}
```

Body

```
{
  'slot_no' : 1
}
```

Response

Topic

```
/controller/{physical_id}/confirm_exit/response/{req_id}
```

Subscribe

- (Server side) /controller/+/confirm_exit/#
 - (Client side) /controller/{physical_id}/confirm_exit/response/#
-

Body

Success

```
{
  'success': 1
}
```

```
}
```

Failed

```
{  
  'success': 0,  
  'cause': 'INVALID_CARD_INFORMATION'  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Get Statistics Channel

Description

- Request: Owner
 - Respond: Business Server
 - This channel is used to request to statistics about the owner's facilities.
-

Request

Topic

```
/facility/statistics/get
```

Body

```
{
  'session_key' : 'session_value' // owner's session key
  'dbquery_key' : 'sql_query' // SQL Query statement to be executed
}
```

Response

Topic

```
/facility/statistics/get/#
```

Body

Success

```
{
  'success': 1
  'columnnames': [ 'col1', 'col2', ... ],
  'values': [ [ 'value11', 'value12', ... ], [ ... ] ]
}
```

Failed

```
{
```

```
'success': 0,  
'cause': 'INVALID_SESSION'  
}
```

```
{  
  "success": 0,  
  "cause": "NO_AUTHORIZATION",  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```


Update Facility Channel

Description

- Request: Owner
 - Respond: Business Server
 - This channel is used to configure parking fee and grace period time.
-

Request

Topic

```
/facility/{facility_id}/update
```

Body

```
{  
  "name": "Shadyside Parking Lot",  
  "fee": 3.50,  
  "fee_unit": 3600, // second  
  "grace_period": 1800 // second  
}
```

Response

Topic

```
/facility/{facility_id}/update/#
```

Body

Success

```
{  
  "success": 1  
}
```

Failed

```
{
```

```
'success': 0,  
'cause': 'INVALID_SESSION'  
}
```

```
{  
  "success": 0,  
  "cause": "NO_AUTHORIZATION",  
}
```

```
{  
  'success': 0,  
  'cause': 'INTERNAL_SERVER_ERROR'  
}
```

Controller Status Channel

Description

- Publish: Facility
 - Subscribe: Business Server, Attendant, Driver
 - This channel is used to notify controller's available status.
-

Publish

Topic

```
/controller/{controller_physical_id}
```

Body

When status updated

```
{  
  'updated': 1  
}
```

When connected

```
{  
  'available': 1,  
}
```

When disconnected (Will Message)

```
{  
  'available': 0  
}
```

Controller Error Report Channel

Description

- Publish: Facility
 - Subscribe: Attendant
 - This channel is used to notify controller's error status to attendant
-

Publish

Topic

```
/controller/{controller_physical_id}/error
```

Body

```
{  
  'message': error message  
}
```

Slot Status Channel

Description

- Publish: Controller
 - Subscriber: Business Server, Attendant
 - This channel is used to notify slot status when is occupied or empty.
-

Publish

Topic

```
/controller/{physical_id}/slot/{slot_number}
```

Body

When car is parked at slot

```
{  
  'parked': 1,  
  'confirmation_no': 5123  
}
```

When car is leaving from slot

```
{  
  'parked': 0,  
}
```

Reservation Status Channel

Description

- Publish: Business Server
 - Subscriber: Driver
 - This channel is used to notify reservation status when driver is arrived at parking facility, leaving or grace period is timed out.
-

Publish

Topic

/reservation/%d

Body

When car is arrived and passed the entry gate

```
{
  "id":68,
  "slot_id":2,
  "slot_number":2,
  "fee":10.75,
  "fee_unit":60,
  "expiration_ts":1466628600,
  "begin_ts":1466628560,
  "end_ts":null,
  "revenue":null,
  "controller_physical_id":"1",
  "transaction":1
}
```

When car is leaving and passed the exit gate

```
{
  "id":68,
  "slot_id":2,
  "slot_number":2,
  "fee":10.75,
  "fee_unit":60,
```

```
"expiration_ts":1466628600,  
"begin_ts":1466628560,  
"end_ts":1466628792,  
"revenue":43.00,  
"controller_physical_id":"1",  
"transaction":0  
}
```

When grace period is timed out

```
{  
  'expired': 1  
}
```

Note

If you use MQTT connection, following key/value is added in body automatically while exchanging data. But when you received the message from channel, it does not exist. Hence, you have to add and remove following pair to communicate with other library or entity. i.e. Arduino MQTT library. If there is no this pair, the received element regards it as notification.

Additional body for MQTT

Notification (Publish/Subscribe) type message

```
{
  '_msg_type_' : 0 // Notification for publish message
}
```

Request/Response type message

```
{
  '_msg_type_' : 1, or 2 // 1 : Request, 2 : Response.
}
```