ONLINE AUTHORIZATION INTEGRATOR

Date : Jan 3, 2024

Version : 0.1

© 2024 Enctech Services Sdn. Bhd.

TABLE OF CONTENT

© 2024 Enctech Services Sdn. Bhd.

DOCUMENT CONTROL AND VERSIONING

No	Description	Version	Date	Status	Author
1	1st Draft	0.1	Jan 3, 2024	Draft	

INTRODUCTION

This document specifies the function for Online Authorization Integrator for 3rd parties to connect to SnB Online Authorization.

Use cases

1. As middleware between SnB Online Authorization and 3rd parties.
2. Allow information between SnB Online Authorization and 3rd parties to be visualized in a friendly manner.
3. 3rd parties here refers to any external or internal system that is integrating the Online Authorization system.

Document scope and intention

The purpose of this document is to provide information on how to use the Online Authorization Integrator system.

- This document describes how to use the Online Authorization Integrator dashboard to visualize what is happening between 3rd parties and the SnB system.
- This document describes how to configure integration with 3rd parties.
- The overall product scope is SnB Online Authorization and 3rd parties system.
- This document only covers how to configure SnB System integration point, how to configure 3rd parties integration point, visualizing high level information of the system and visualizing the flow of the integration.
- All final data should be referred from 3rd parties and the SnB System.

© 2024 Enctech Services Sdn. Bhd.

OVERVIEW

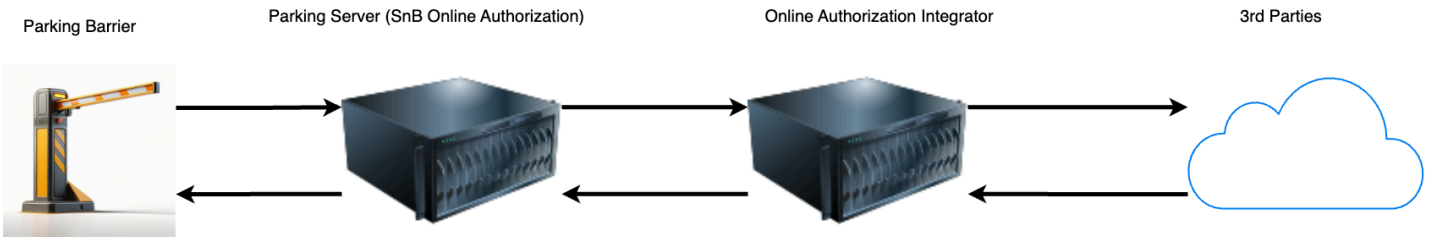


Figure shows the overall architecture of the Online Authorization Integrator system. Main components of the integration is:

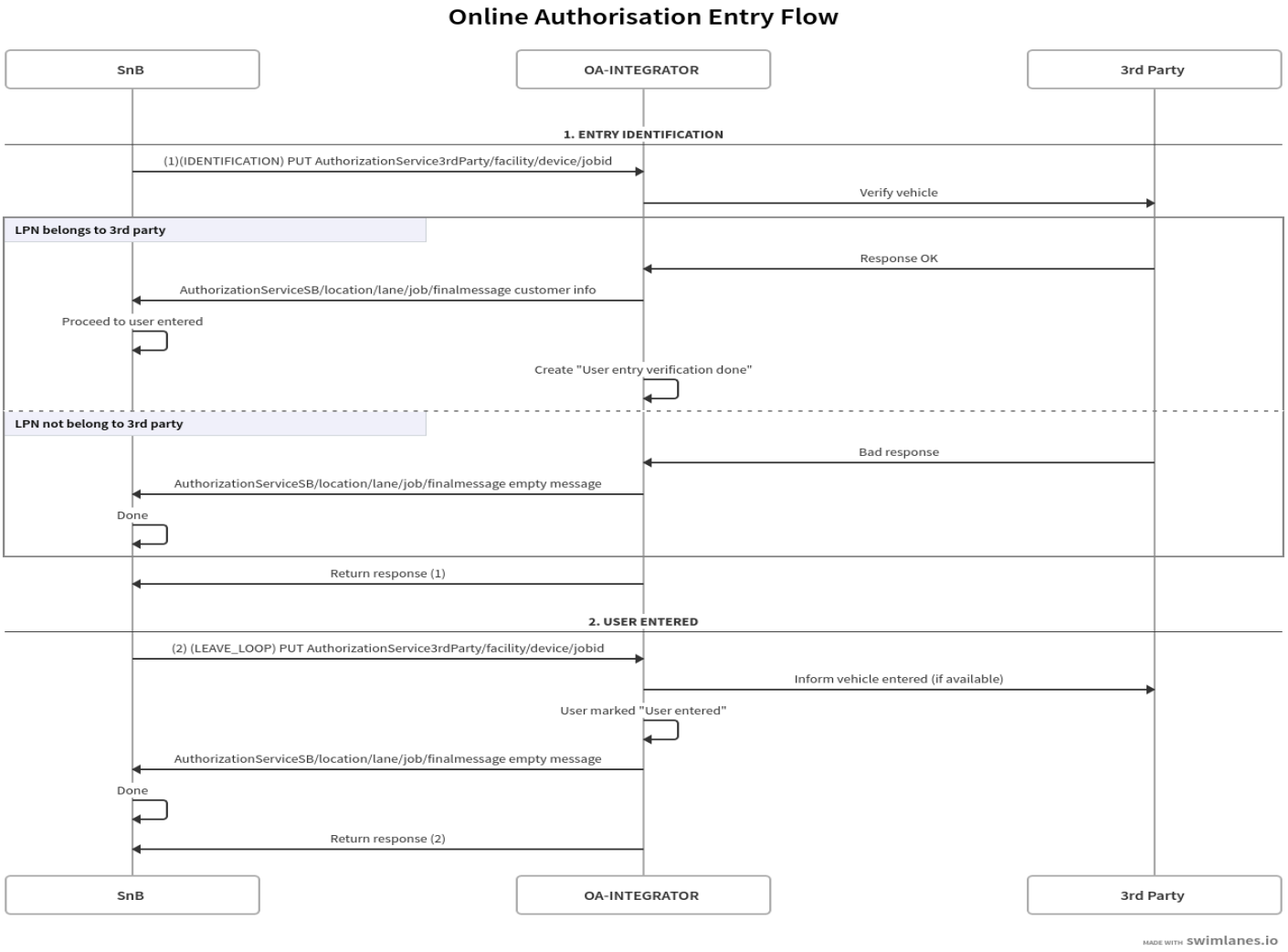
1. Parking Barrier
2. SnB Online Authorization system
3. Online Authorization Integrator system

TERMINOLOGY

Term	Description
3rd parties	Integrators that wants to integrate with premise parking system
OA-integrator	The name of this application
Job	Every entry / exit will trigger a job. Each job will have a specific id defined which is used by SnB
Facility	Parking Location / Premise
Lane	Entry / Exit lane that customer used to enter or exit the premise
Job - IDENTIFICATION	On every entry / exit, SnB will create job for identification to check if customer belongs to any 3rd party
Job - LEAVE_LOOP	Vehicle entered / left the premise
Job - PAYMENT	SnB will create this job to inform OA-integrator to perform payment from the 3rd party
Location code	Location identifier set in SnB system

© 2024 Enctech Services Sdn. Bhd.

ENTRY FLOW



1. As the user entered. SnB will send requests to this service with type **`IDENTIFICATION`**. This is the point where this service will call 3rd parties to verify the user.
2. If the user is confirmed to belong to any 3rd parties, it will send finalMessageCustomer to SnB with all relevant data.
3. If the user is not confirmed to belong to any 3rd parties, it will send an empty message on finalMessageCustomer and the process will end here.
4. Once the user enters the premises, and users are verified belong to 3rd parties, SnB will send a request to this service with type **`LEAVE_LOOP`** indicating that the user is already entered. For users that are not marked under any 3rd parties, SnB will not send this request.

© 2024 Enctech Services Sdn. Bhd.

EXIT FLOW


Online Authorisation Exit Flow
SnB
OA-INTEGRATOR
3rd party
1. EXIT IDENTIFICATION
(1)(IDENTIFICATION) PUT AuthorizationService3rdParty/facility/device/jobid
Verify from database
LPN is managed under oa-integrator
Mark user "User exit identification done"
AuthorizationServiceSB/location/lane/job/finalmessage customer info
Proceed to payment
LPN is not managed under oa-integrator
AuthorizationServiceSB/location/lane/job/finalmessage empty message
Done
Return response (1)
2. PAYMENT
(2) (PAYMENT) PUT AuthorizationService3rdParty/facility/device/jobid
User marked "Initializing payment"
Perform transaction
Transaction success
Response Success
AuthorizationServiceSB/location/lane/job/finalmessage (payment data with amount paid)
Proceed to allow user to exit
Transaction fail
Response Fail
AuthorizationServiceSB/location/lane/job/finalmessage (payment data with amount 0)
Proceed to next payment type
Proceed to allow user to exit (after payment)
Return response (2)
3. EXITTING
(2) (LEAVE_LOOP) PUT AuthorizationService3rdParty/facility/device/jobid
User marked "User left the location"
AuthorizationServiceSB/location/lane/job/finalmessage empty message
Done
SnB
OA-INTEGRATOR
3rd party
MADE WITH swimlanes.io

1. As the user exited. SnB will send requests to this service with type ***IDENTIFICATION***. OA-integrator will check if the user exists in the database.
2. If the user exists, it will send finalMessageCustomer to SnB with all relevant data.
3. If the user does not exist in the database, it will send an empty message on finalMessageCustomer and the process will end here.
4. SnB will then send a request to OA-integrator with type ***PAYMENT*** to request for payment. OA-integrator will then call 3rd parties to request for payment.
5. If payment is successful, OA-integrator will send finalMessageCustomer to SnB with all relevant data.
6. If payment is not successful, OA-integrator will finalMessageCustomer to SnB with all relevant data but paid amount is 0. Indicated that SnB should proceed with other payment methods.
7. User is marked as "**Payment success**" or "**Payment failed**" based on payment status.
8. After the user leaves the premises, the user is marked with "**User left the location**".

© 2024 Enctech Services Sdn. Bhd.

TECH OVERVIEW

This application is designed with separation of backend and frontend application. Backend is written in Go with Echo to manage HTTP routing while frontend is a React application created through CRA(Create React App).

PREREQUISITE

1. Docker https://docs.docker.com/engine/install/ubuntu/
2. Docker compose https://docs.docker.com/compose/install/linux/

TECHNICAL STACKS

BACKEND

Description	Info	Reference
Language	Go	https://golang.org/
Framework	Echo	https://echo.labstack.com/
Database	Postgres	https://www.postgresql.org/

FRONTEND

Description	Info	Reference
Language	Typescript	https://www.typescriptlang.org/
Framework	React	https://reactjs.org/
UI Framework	- Material UI - React Hook Form - Tailwind CSS	- https://material-ui.com/ - https://react-hook-form.com/ - https://tailwindcss.com/

SSL/TLS

1. The application is served over HTTPS (currently using self-signed certificate).
2. Backend and Frontend are served with the same SSL certificate.

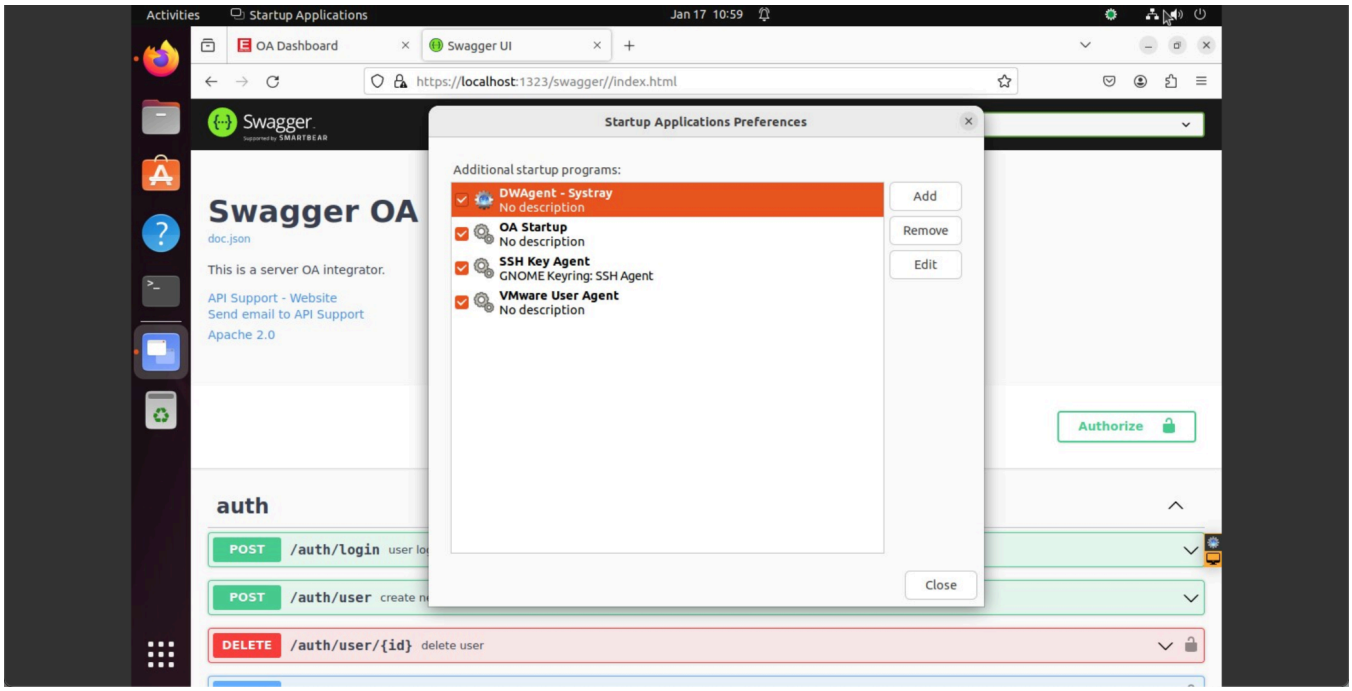
DEPLOYMENT

1. Clone repo (https://github.com/enctech/api-oa-integrator) or download from releases (https://github.com/enctech/api-oa-integrator/releases).
2. Update SSL certificate in `./cert` folder. Create one if there's none.
3. Run `make copy_cert`. This will copy the certificate to the backend and frontend folder.
4. Run `make run_application` to start the application. This can be used as restarting the application for updates as well.
5. Head over to the dashboard at http(s)://localhost:3000 to view the application.
6. API documentation is done through swagger at http(s)://localhost:1323/swagger/index.html#/ and can be viewed here.

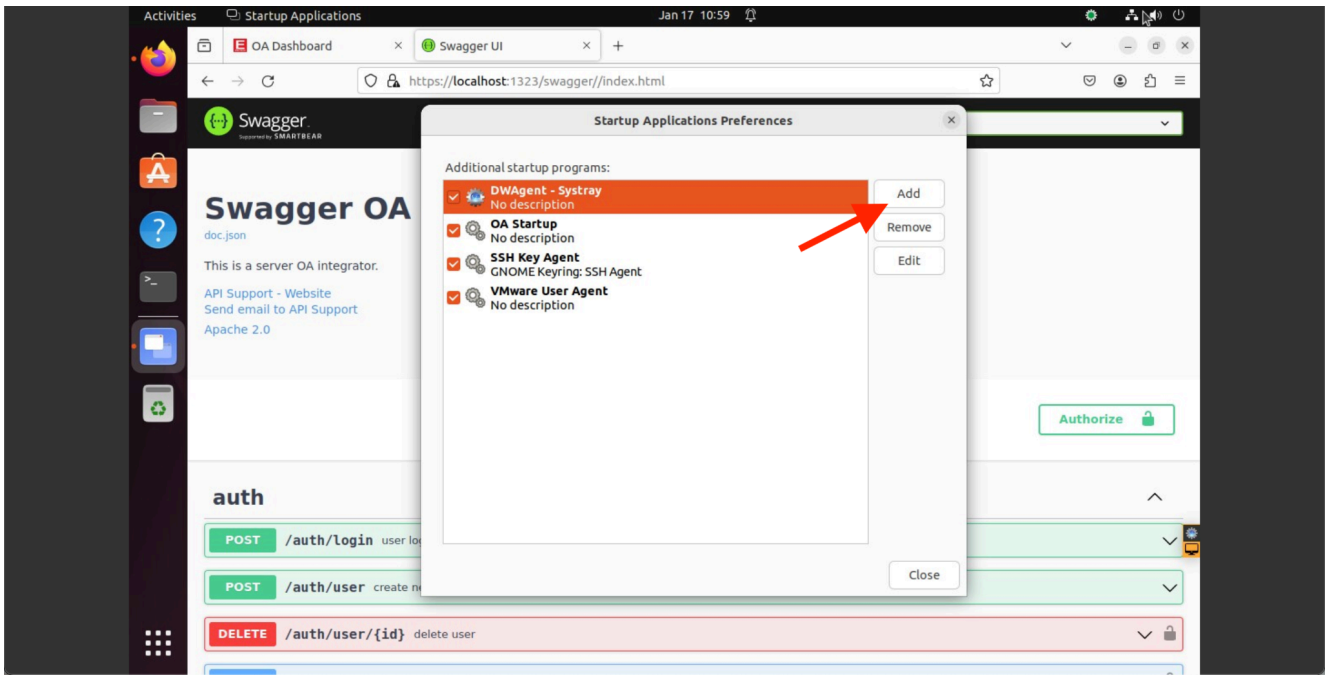
Auto start

There is a simple script to start the app in `./scripts/startup.sh`.
This will practically move to the intended directory and run `docker compose up -d`.
To make this script run after machine start or restart:

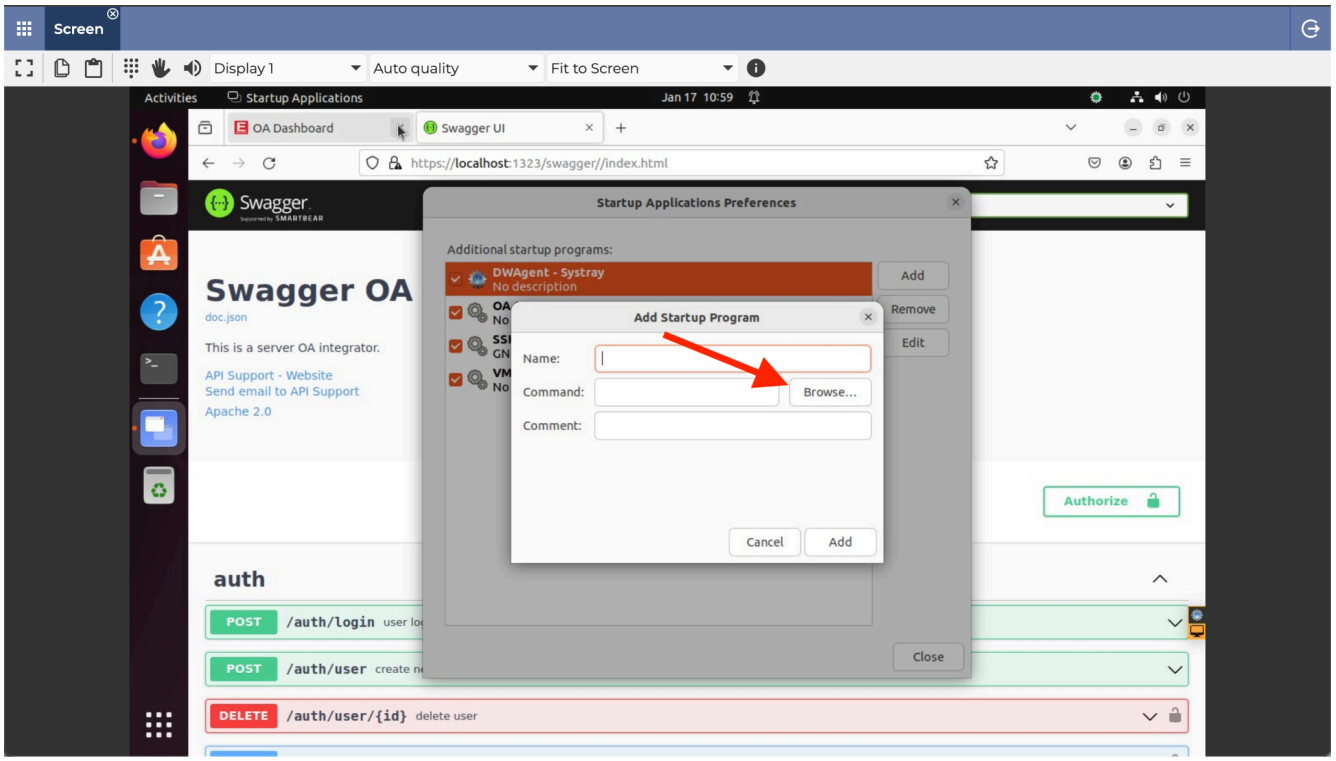
1. Make the script executable:
   `chmod +x /home/tng/dev/api-oa-integrator/scripts/startup.sh`
2. Open `Startup Applications Preferences`.



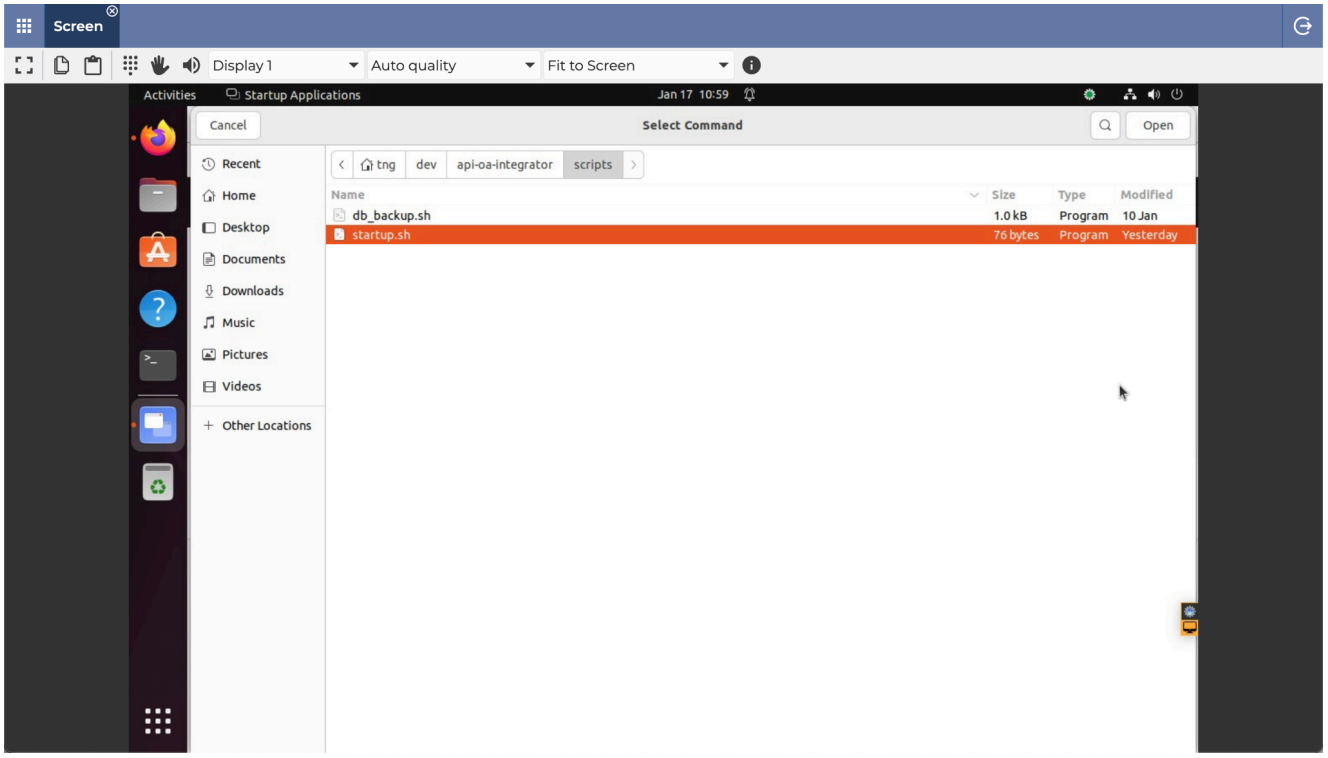
3. Click on Add



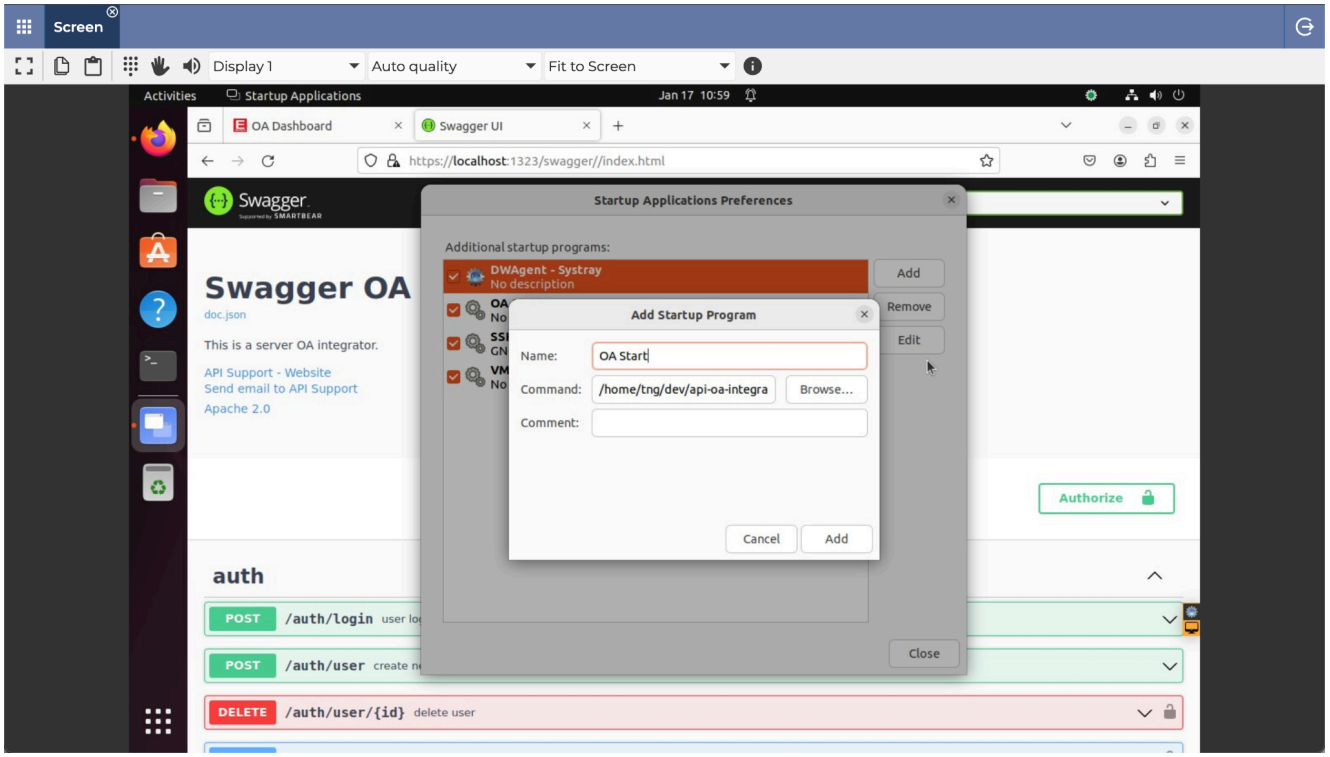
4. This will open a new window. Click on “Browse”



5. Select the script to run.



6. Give the startup program a name, and press “Add”



7. Verify this by restarting your machine.
8. Incase if the auto start not working, verify by running `/home/tng/dev/api-oa-integrator/scripts/startup.sh` script in terminal to check if the right permission is granted. If there is permission denied issue, start with step 1 again.

© 2024 Enctech Services Sdn. Bhd.

DATABASE

This system uses the Relational Database Manage System (RDBMS) with Postgres as database.

BACKUP

1. Database backup script is defined in `./scripts/db_backup.sh`.
2. Suggestion to use ***`crontab`*** to run the script periodically.
3. Run `chmod +x ./scripts/db_backup.sh` to make the script executable.
4. Run `crontab -e` to edit the **`crontab`**.
5. Add the following line to the end of the file (This is for running cron jobs every 12 hours).

```
Unset
0 */12 * * * /path/to/script/db_backup.sh
```

6. The output of the script will be in ***`${HOME}/dev`***
7. The Maximum number of backups currently is set to 100 backups.

RECOVERY

1. Backup will appear in `${HOME}/dev` as a compressed Tar file. For example backup_20240105000001.sql.tar.gz
2. This file is in format YYYYMMDDHHMMSS.sql.tar.gz
3. Untar the file with `tar -xvzf /path/to/your/tar.gz`.
4. As a start, copy the backup file into the running database container. `docker cp /path/to/your/dumpfile.sql <container_name_or_id>:/tmp/dumpfile.sql`
5. Enter container terminal with `docker exec -it postgres_db bash`
6. Restore the database with `psql -U <username> <dbname> < dumpfile.sql`. For example `psql -U postgres postgres < dumpfile.sql`.
7. In case there are problems on recovering, drop all tables and the relations and then run the backup again.

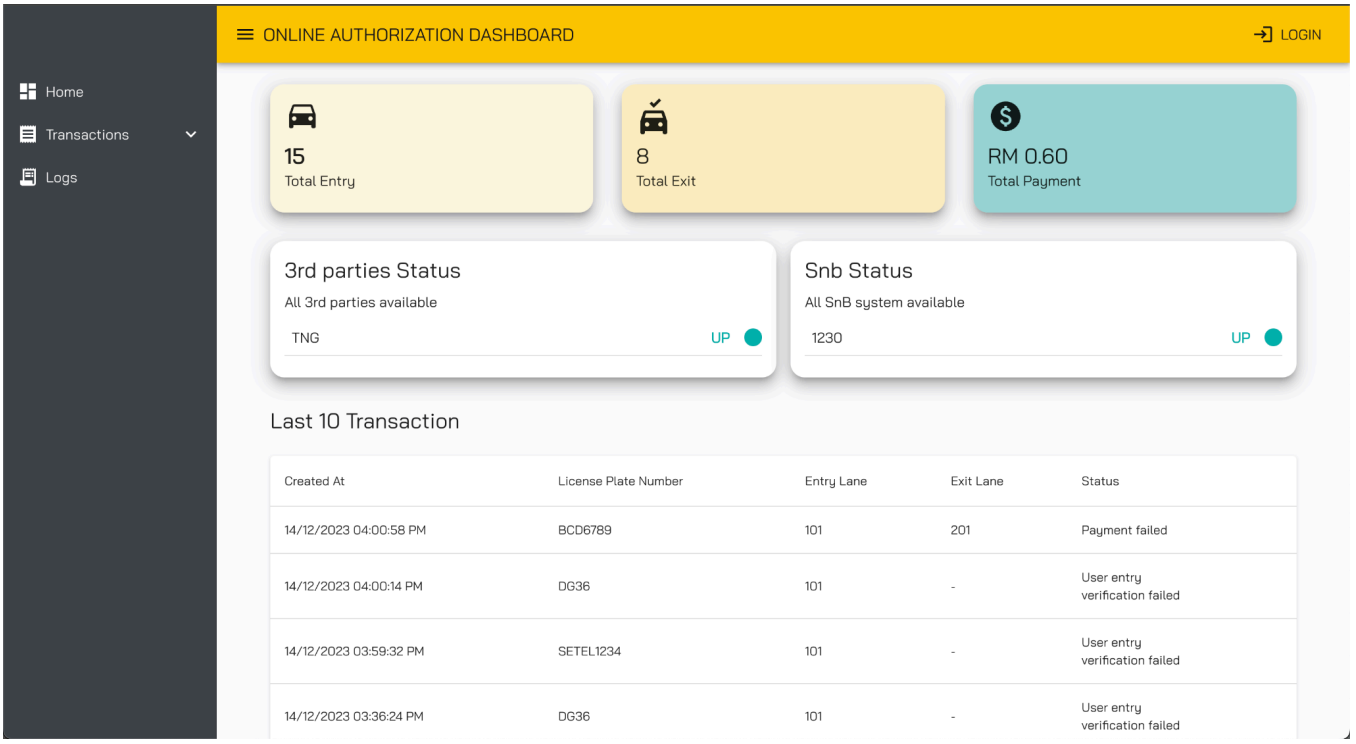
© 2024 Enctech Services Sdn. Bhd.

APPLICATION DASHBOARD

The application dashboard serves as a platform to monitor transactions on both SnB and 3rd Parties. Most of the pages, specifically those that are view only pages do not require login. Admin access is required for configuration purposes.

By default, there is one **default** user created with admin access with username and password **admin**. At first, it is suggested to login with **admin:admin** and later on, create a new admin account (which will be shown in next few pages) and delete the default admin.

HOME PAGE



This is the landing page of the application. This page shows the high level of transactions and system availability. The data shown here is only for the current date and these are not filterable. For more information on transactions, look into the specific transactions. For information on status, only users with admin access can look at the configuration on the 3rd parties and SnB Online Authorizations.

The fields that is shown here are as follows:

1. **Total Entry** indicates the number of success entries (exit included).
2. **Total Exit** indicates the number of sessions that have already marked requesting for exit or user exit.
3. **Total Payment** is total successful payment made to 3rd parties.
4. **3rd Parties Status** indicates the status of all the 3rd parties that are currently connected to the application.
5. **SnB Status** indicates the status of SnB locations. The locations are currently based on location code that is used by SnB to call this service.
6. **Last 10 Transactions** shows the latest 10 SnB transactions.

© 2024 Enctech Services Sdn. Bhd.

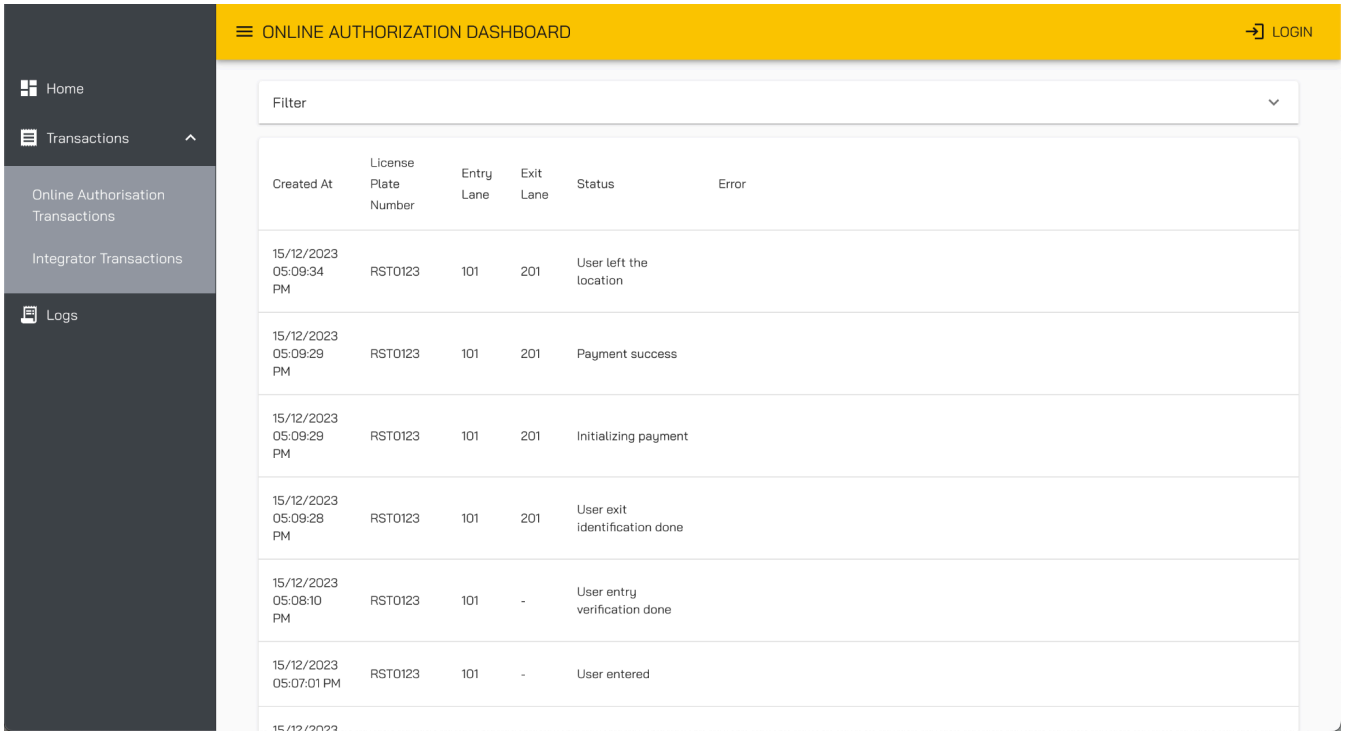
TRANSACTIONS

Transactions here refers to both user flow transactions that are done through SnB Online Authorization as well as 3rd parties payment transactions.

As of now, transactions are stored for 100 days and the data will be deleted through trigger after new data is inserted.

ONLINE AUTHORIZATION

DEFAULT

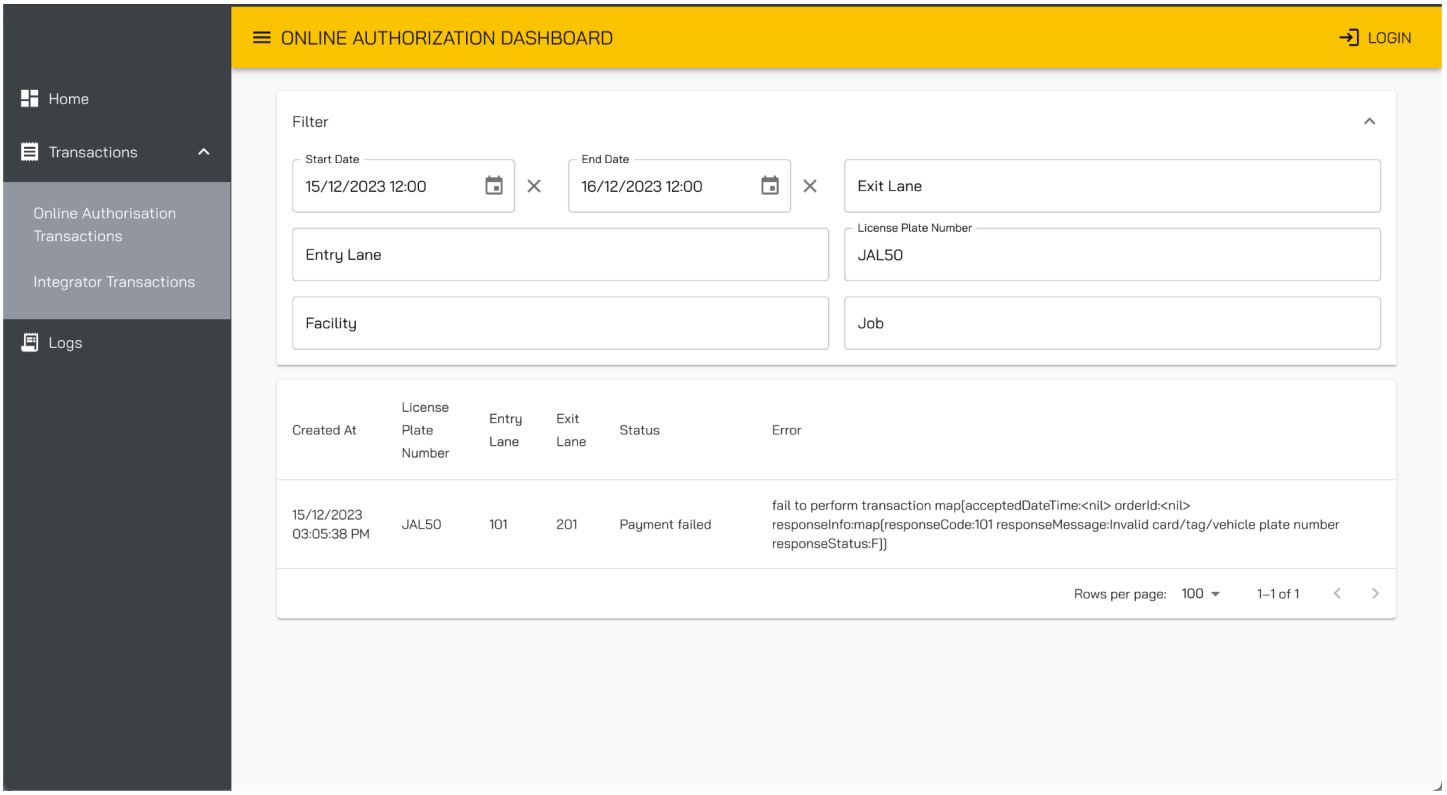


This page shows all transactions that are made through Online Authorization. For more information on the status shown here, refer to Overview. By “all transaction”, it shows **every stage of the transaction**, user entering, verifying, verified, performing payment, payment success or failure and user left the premise. This helps in getting the time when the action is made for troubleshooting.

For any issues, refer to the Error section. Once there are errors by any point of steps, the error will fall through the next step even if the next step is successful. For example, if a user fails to perform payment through Online Authorization Integrator, as the user leaves the premises, the same error should be visible in the same line too.

© 2024 Enctech Services Sdn. Bhd.

FILTER



This page allows filters to scope down the transactions to find specific conditions especially during troubleshooting.

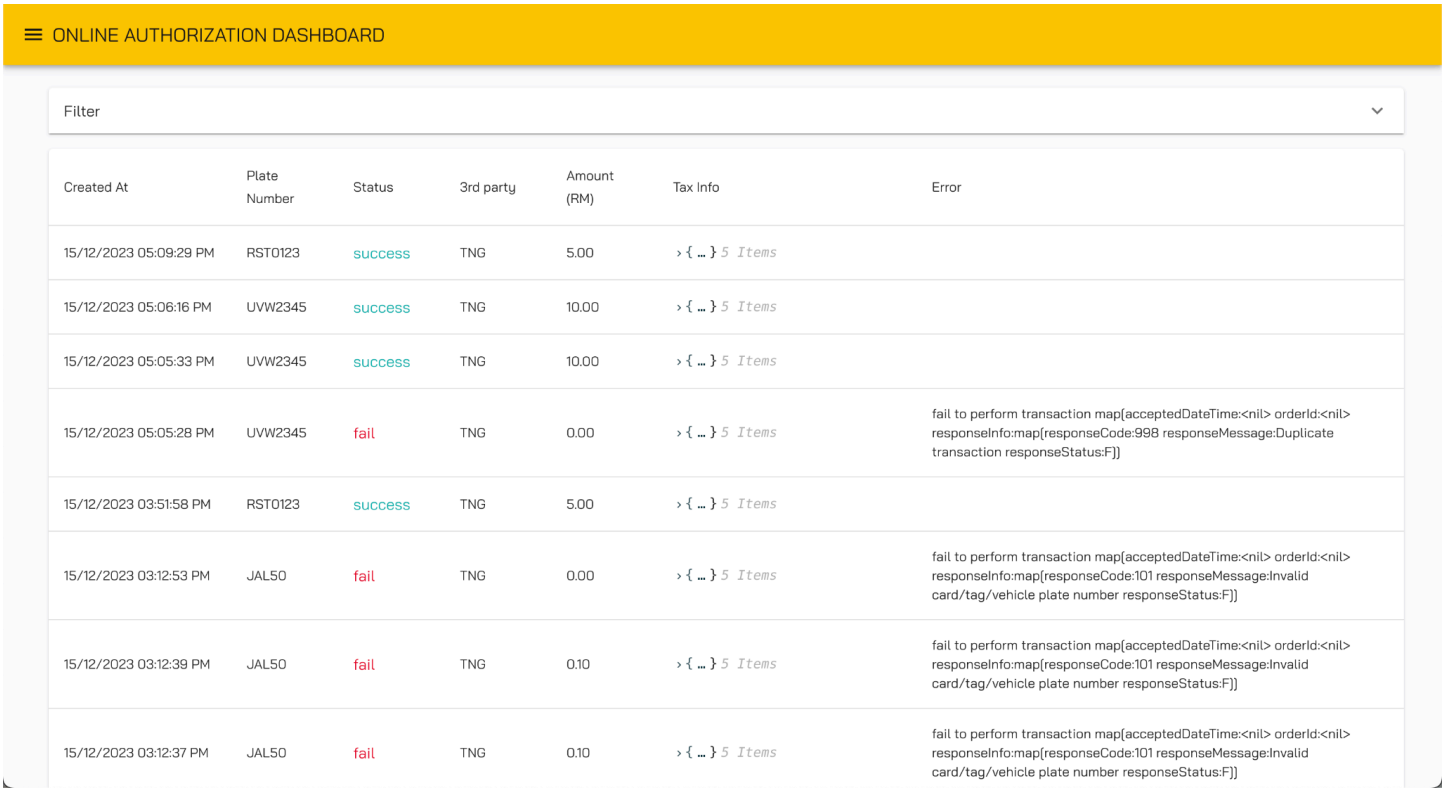
Current filters available are:

a. Date range
b. Entry Lane
c. Exit Lane
d. License Plate Number
e. Facility
f. Job

© 2024 Enctech Services Sdn. Bhd.

3RD PARTY

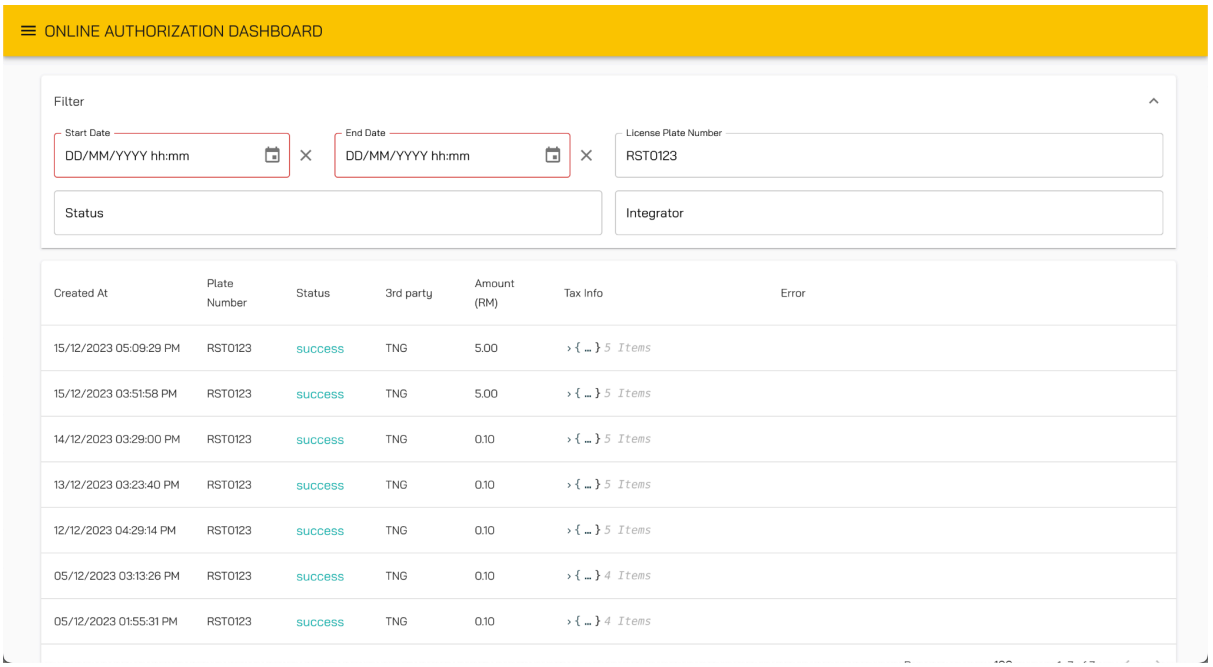
DEFAULT



This page shows all **payment transactions** made to 3rd parties. There is **Status** section that shows the status of the payment. The status is ***success*** or ***fail***. **3rd Party** shows the name of the 3rd party that the payment is made to. As different parties are expected to have different tax mechanisms, in the **Tax** section, the system displays raw expandable json of tax based on the 3rd party requirement. **Error** section shows the error that is returned by 3rd parties.

© 2024 Enctech Services Sdn. Bhd.

FILTER



This page allows filters to scope down the transactions to find specific conditions. This helps for troubleshooting when there are issues.

Current filters available are:

a. Date range
b. License Plate Number
c. Status
d. 3rd Party

© 2024 Enctech Services Sdn. Bhd.

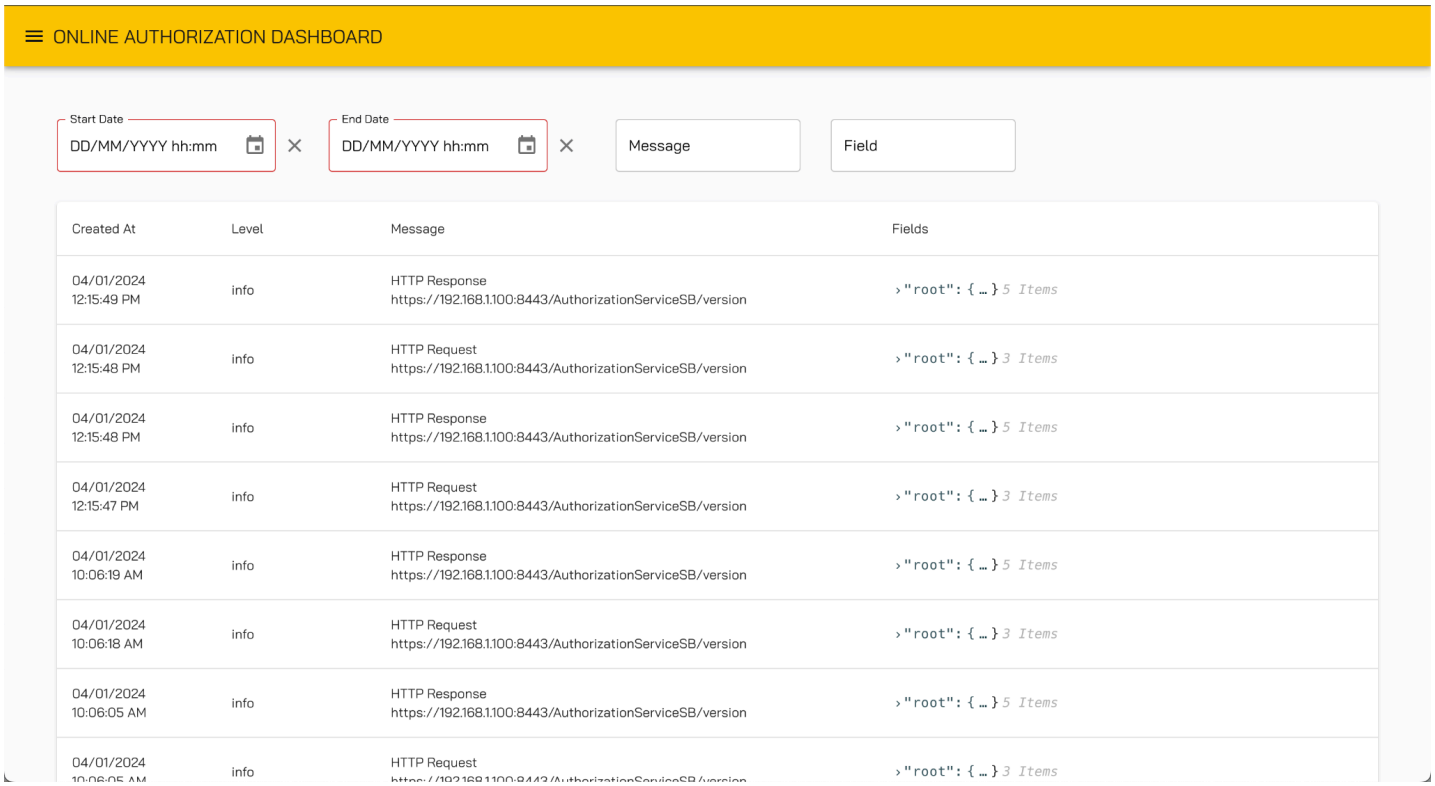
LOGS

As the application runs and emits logs to console, some of the logs are stored as reference. Typically this will be filled with HTTP Request and HTTP Response made to the application as well as application manual log. Errors such as OS, host machine are not covered here.

The most common message here will be HTTP Request <URL> and HTTP Response <URL> as all HTTP requests or responses made from the application to external systems (SnB, 3rd parties) are logged.

Currently, logs are stored for 100 days. After 100 days, the logs will be deleted through triggers upon new data inserted.

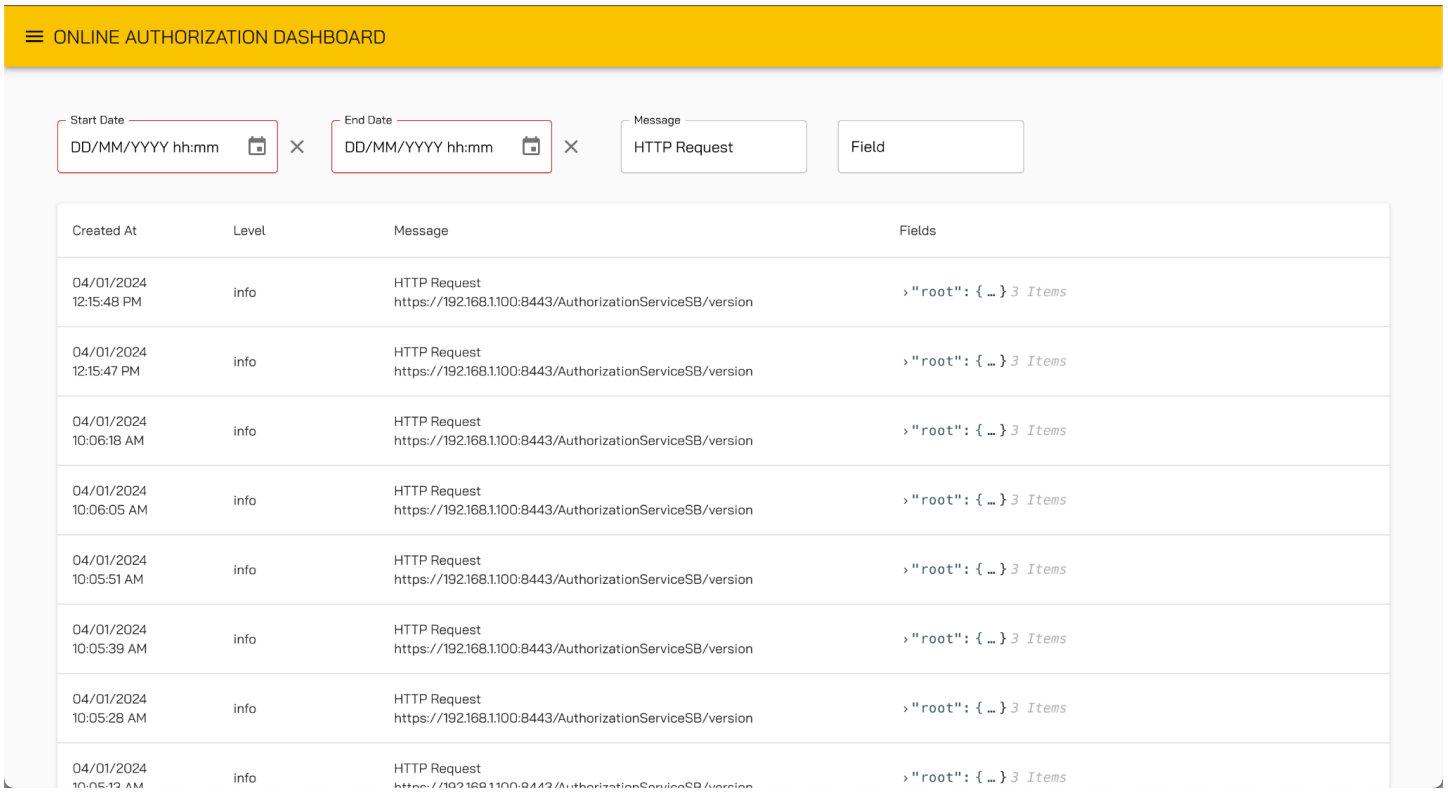
DEFAULT



By default, the start and end date will be empty. This will query all the data until current time, sorted by the latest at the top. Some values are set within the “Fields” section with every message that would be helpful as reference. Expand “Fields” to look into more info that is carried together with the message.

© 2024 Enctech Services Sdn. Bhd.

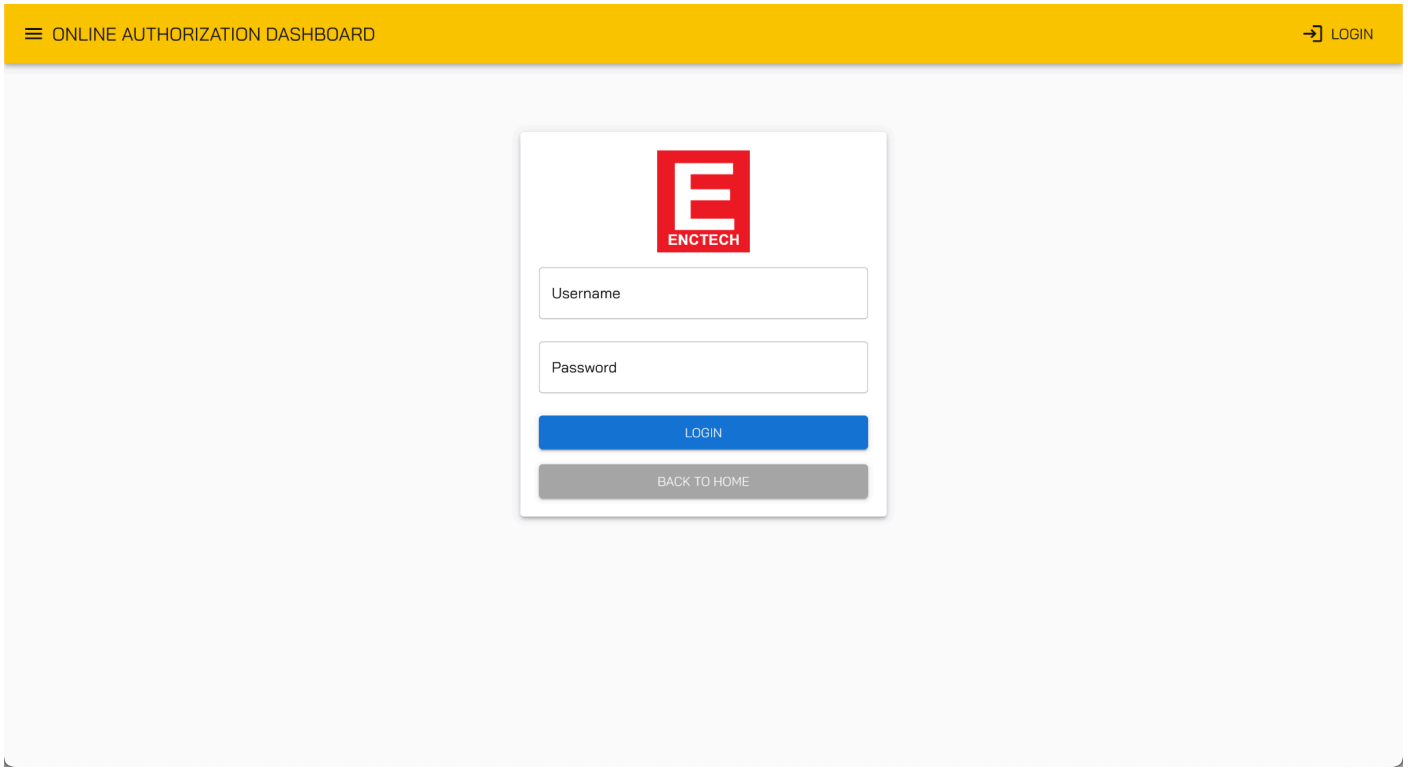
FILTER



As there are lots of logs generated, going through the logs can be overwhelming. This page is built with filter capability as such the logs can be filtered by:

a. Date range
b. Message
c. Fields

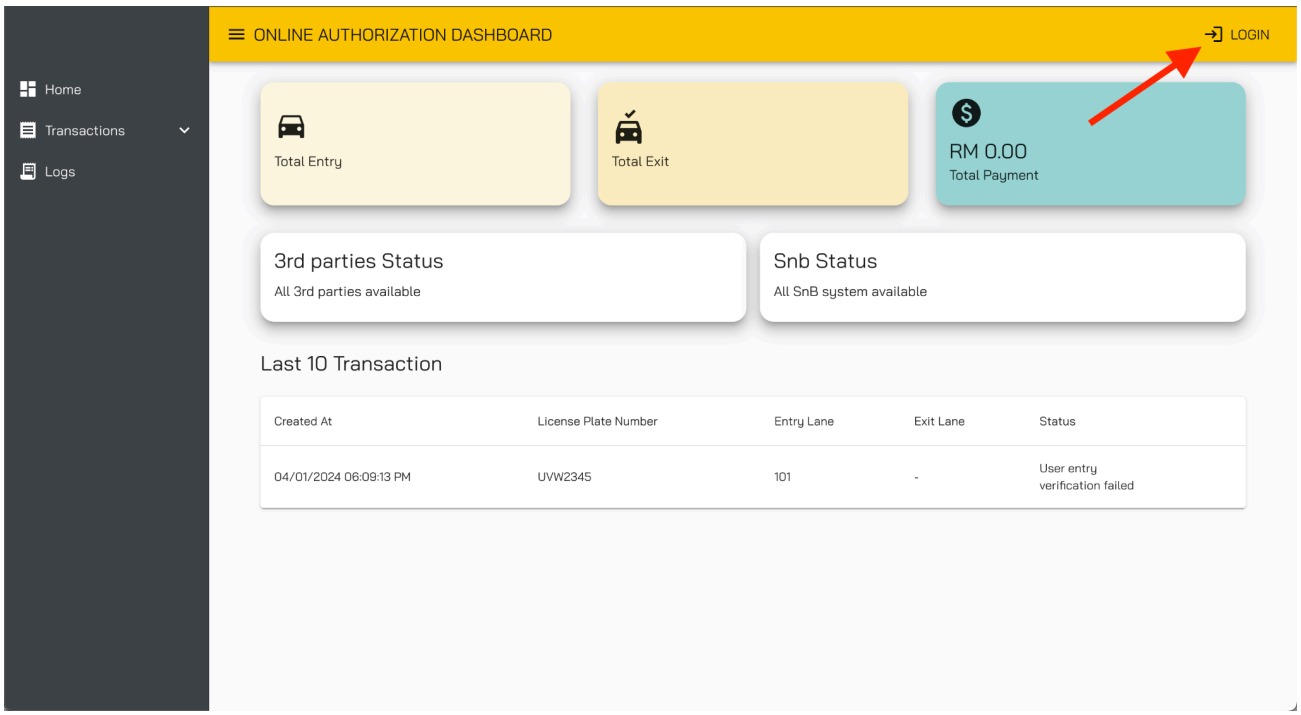
LOGIN PAGE



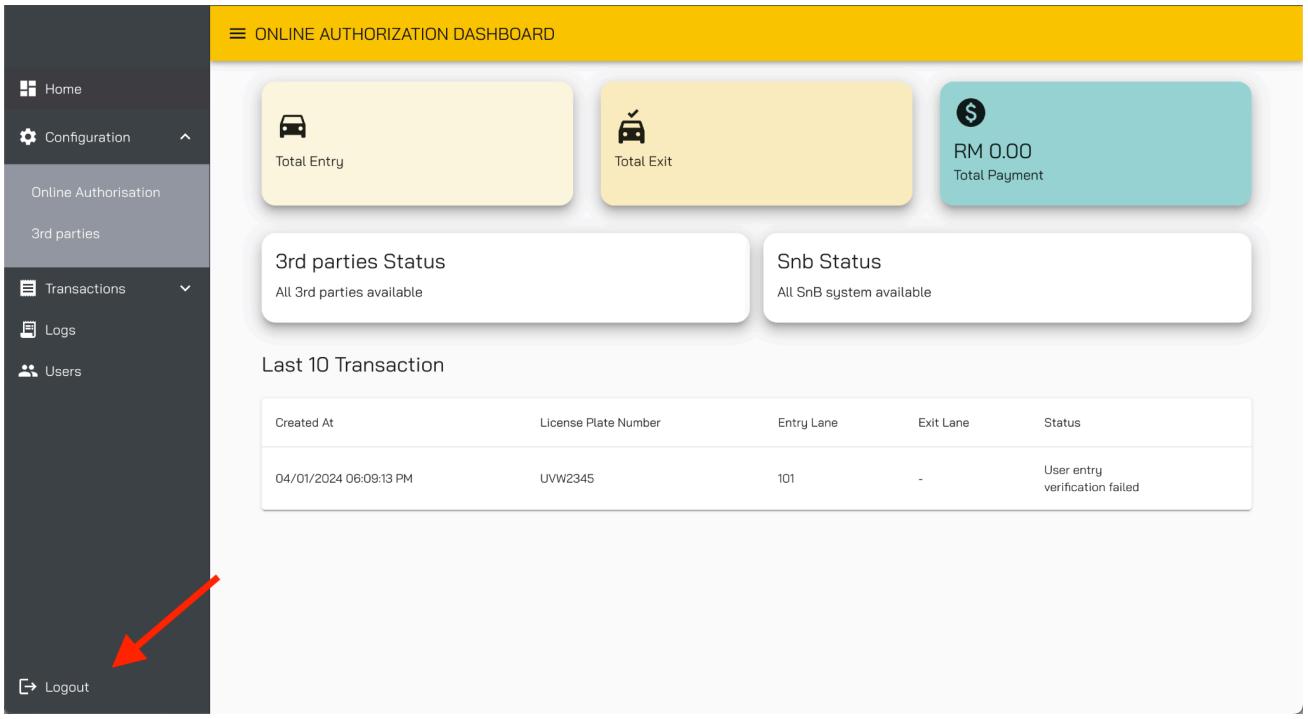
This is the login page for access. At this point, login will determine whether the user is admin or not. Some pages are hidden or viewed only to non-admin while admin users have full access to the dashboard content. Currently, Configuration and User management is accessible by admin only.

Login button can be accessed from the top right corner, and it's always visible on every page.

© 2024 Enctech Services Sdn. Bhd.



Only username and password is required for login. Upon login, the logout button will appear at the bottom left of the page, and it's always visible on every page.

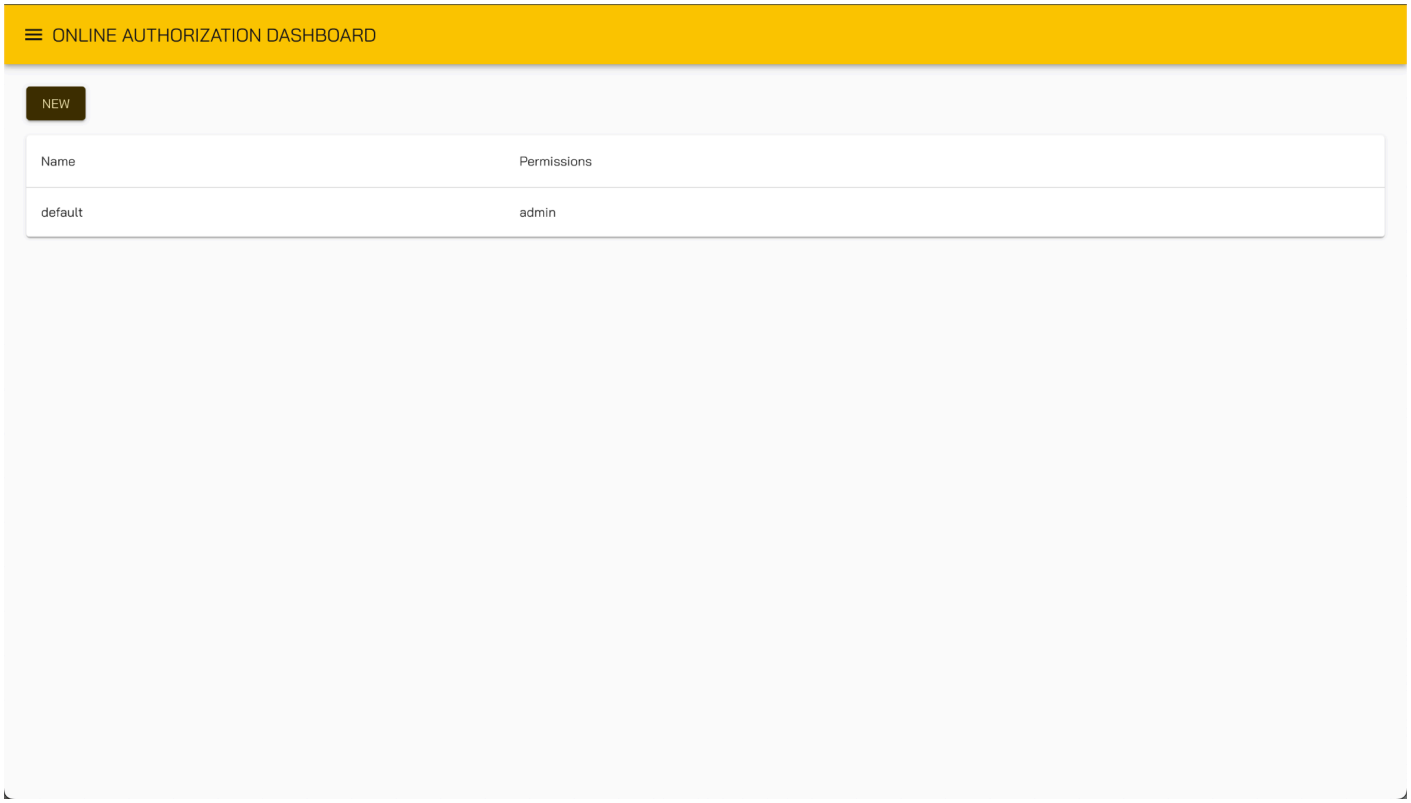


Currently, there is no recovery password page, in case of forgotten password, get admin to recreate the account.

© 2024 Enctech Services Sdn. Bhd.

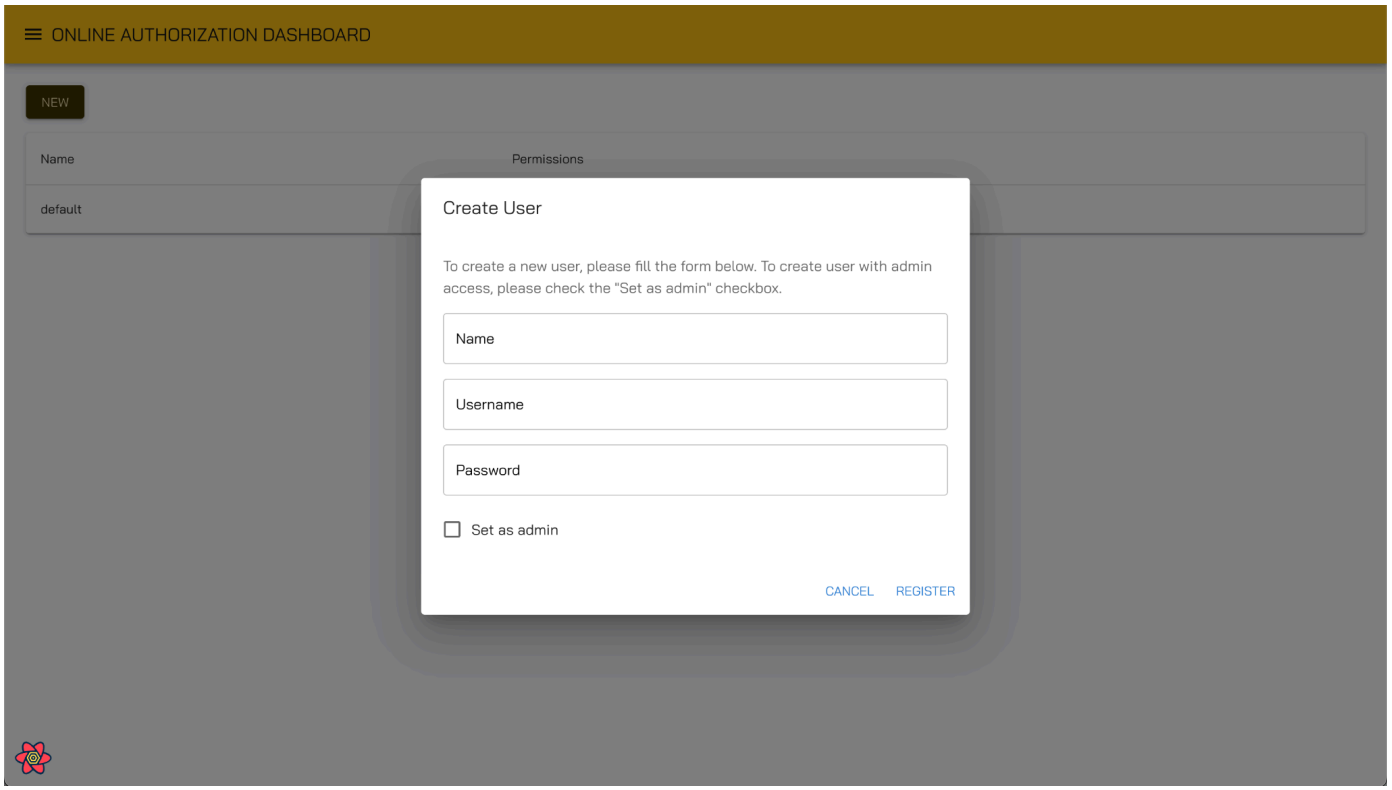
USER MANAGEMENT

As the application currently is meant to be simple - view transactions, set up some configuration, user management is made simple too. The main feature for managing users is to view, create and delete users.



This page initially shows the list of users that are created. By default, the system creates a “default” user with ***admin*** permission for access. Admin *is expected* to create a new user with another admin role. Click on ***New*** to create a new user.

CREATE NEW USER

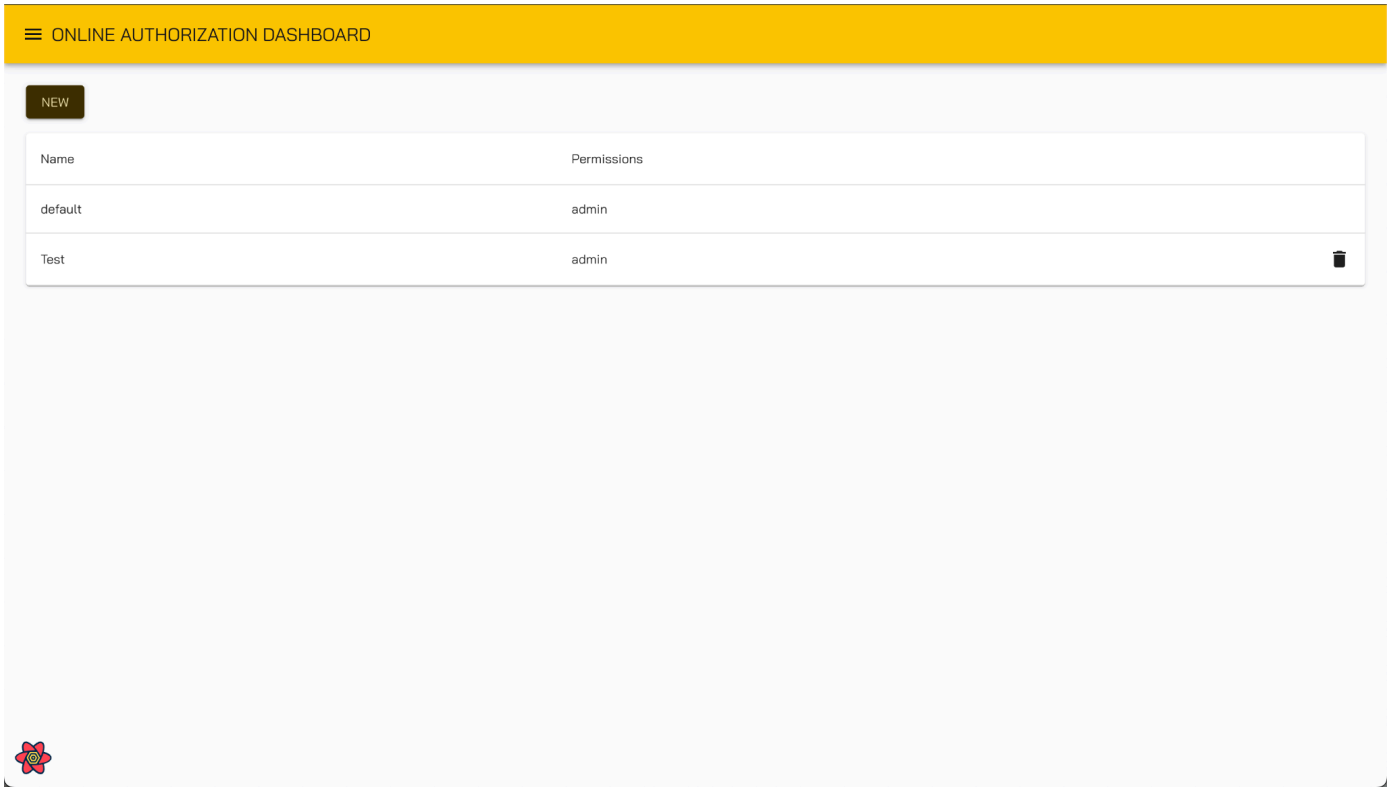


Fill in the appeared form for new user access.

The fields are as follows:

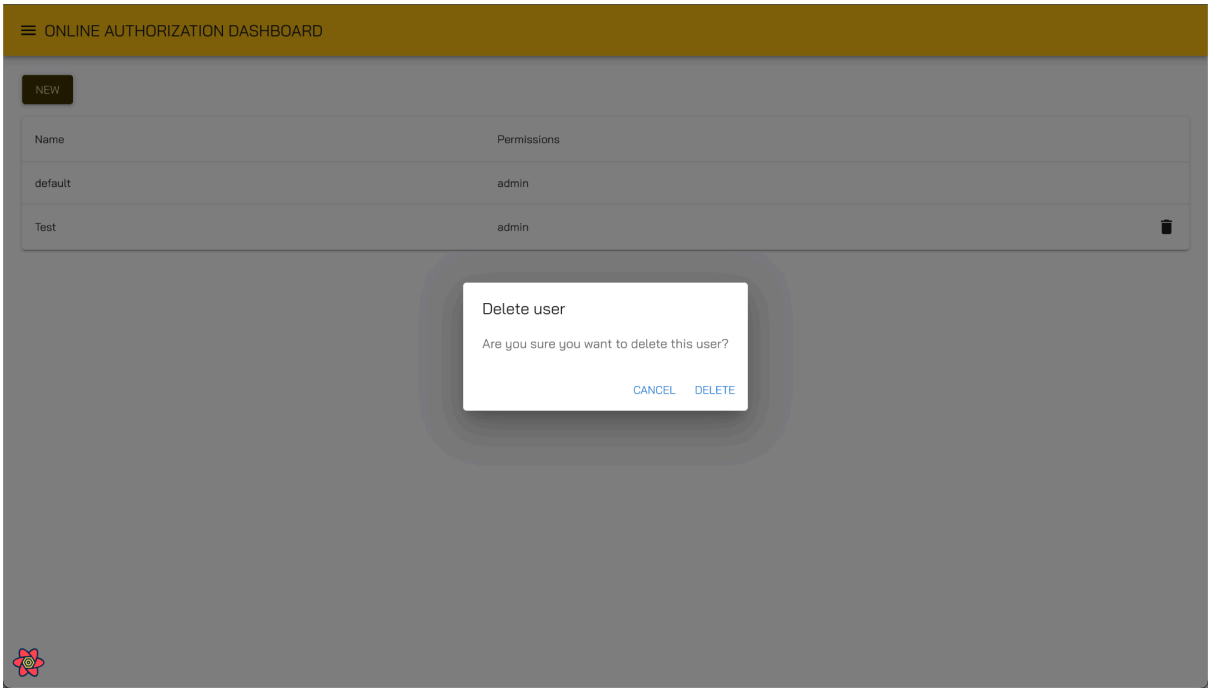
1. **Name** as identifier who the account belongs to.
2. **Username** will be the username used for the user to login.
3. **Password** is for the user's password. This field is obscured by security.
4. **Set as admin** checkbox is to mark the user has admin access.

By clicking register, the new user should be created and the list will be updated.



DELETE USER

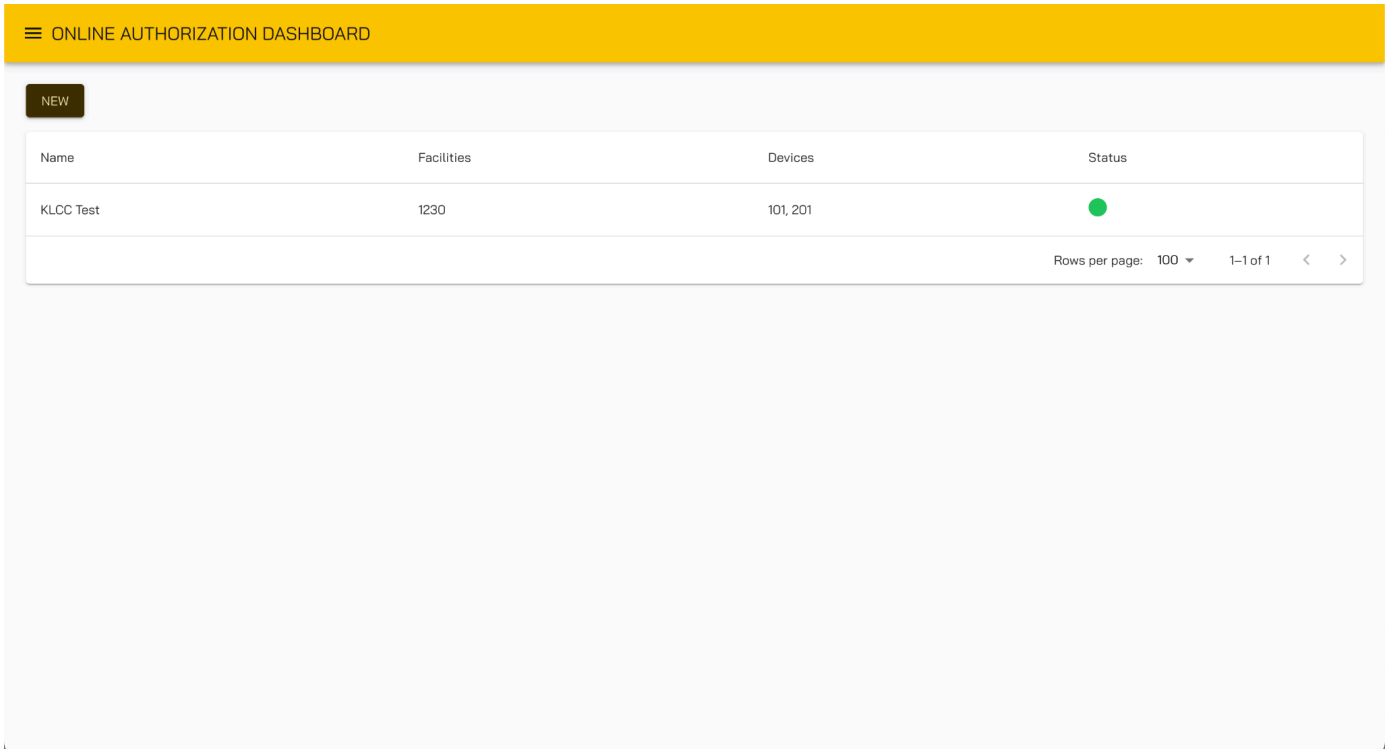
Admins have the capabilities to delete other users. To delete other users, click on icon and a prompt will appear. Click on “DELETE” and the user will be deleted.



CONFIGURATIONS

SNB CONFIGURATION

LISTING

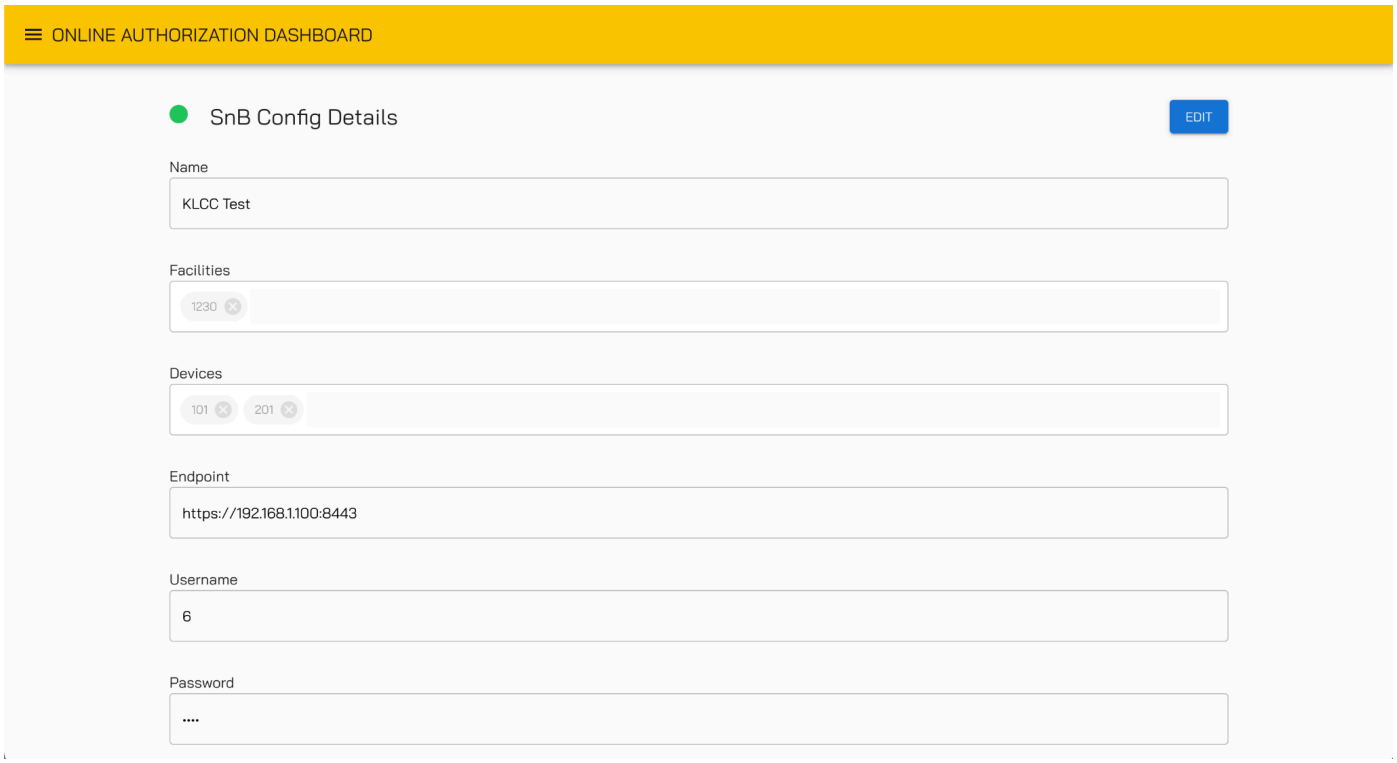


This system is meant to handle multiple SnB configurations defined by Facilities and Lanes. This is to cover servers handling multiple premises.

The default page shows a listing of the SnB configurations set. By default, this will be empty. This page shows all the SNB configurations defined in the system. Status indicates if the SNB system is running. **Green** means the system is **up**, **red** means the system is **down**.

To create a new configuration, click on the **New** button. To edit the configuration, click on the item to view details and edit.

DETAILS



Details page shows a status indicator with the same specification as the previous listing page. **Green** means the system is **up**, **red** means the system is **down**. This is only available during viewing details or editing, but not creating new configuration.

To edit, press on the Edit button and the fields will be editable. There is a **SAVE** button (appears only during edit mode) at the bottom of the form to save the change.

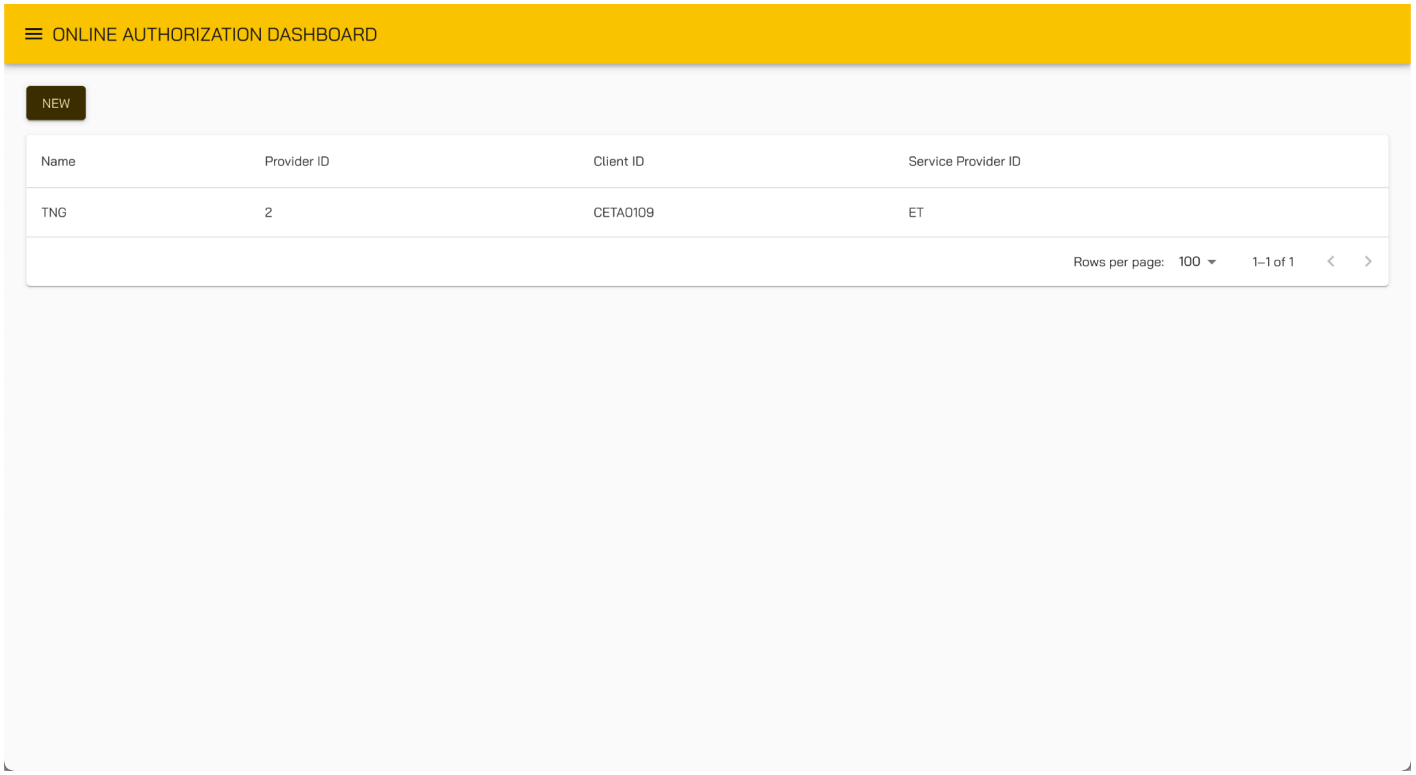
The input fields specifications are as follows:

1. **Name** fields is the name of the configuration, typically the premise name.
2. For **Facilities** and **Devices**, enter each value and press enter as value confirmation.
3. **Facilities** are based on the SnB system.
4. **Devices** are the device ID set at each lane. This typically is also the lane name or number.
5. **Endpoint** field is the endpoint to the SnB system. This usually is the ip or domain of the premise.
6. **Username** is the username set in the SnB system.
7. **Password** is the password set in the SnB system.

© 2024 Enctech Services Sdn. Bhd.

3RD PARTY CONFIGURATION

LISTING

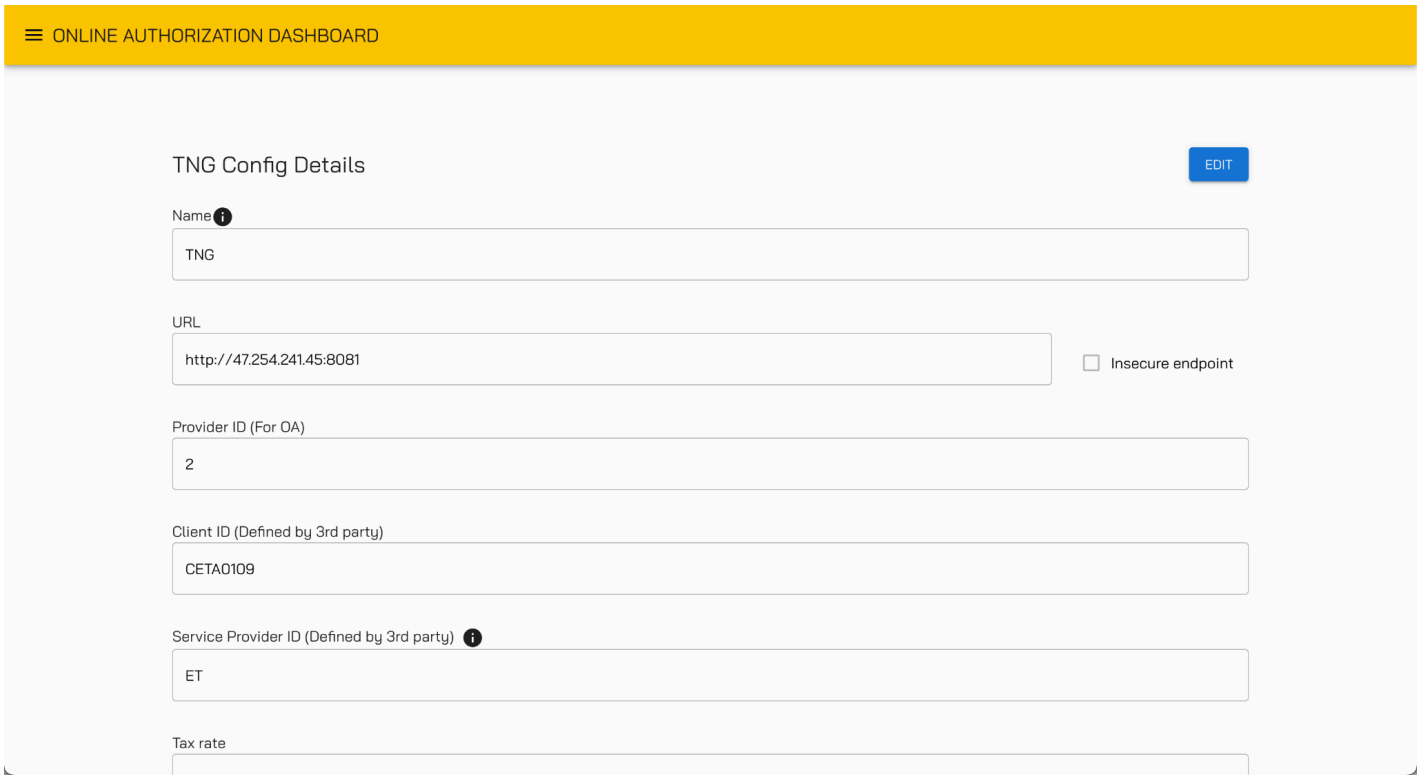


This system is meant to handle multiple 3rd party configurations. However, manual development is required as it is expected to have custom configuration needed by the 3rd party. The vendor selection will also be updated after the custom configuration is implemented.

The default page shows listings of the 3rd party configurations set. By default, this will be empty. Click on the **New** button to create a new configuration or click on the item to edit the configuration.

© 2024 Enctech Services Sdn. Bhd.

DETAILS



Integration to a new 3rd party is done manually by the developer following the spec of the 3rd party system. However, there are also some common configurations that are expected to be provided by 3rd parties. The current page is admittedly tuned to follow the first 3rd party, so it is expected some common fields will be changed after more 3rd parties come.

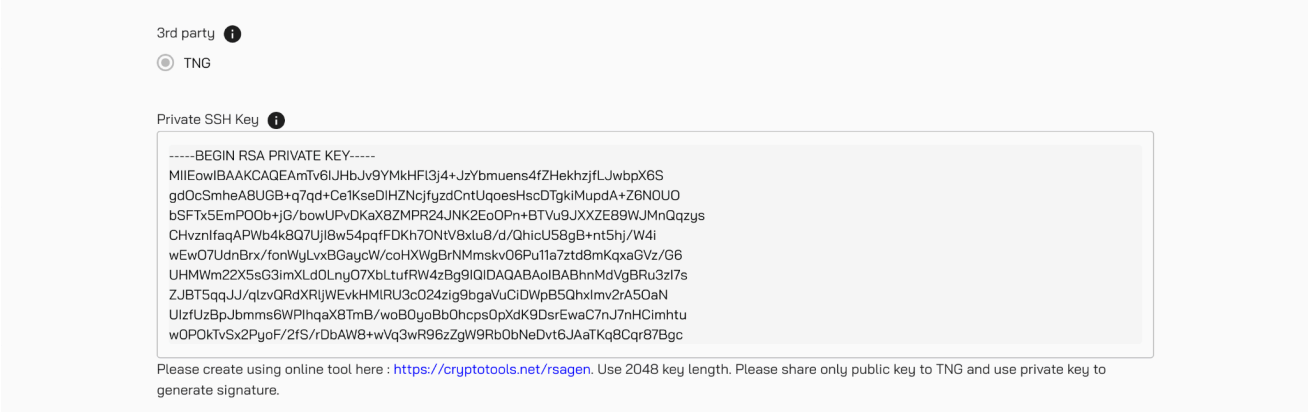
The fields are as follows:

1. **Name** field is the name of the 3rd party.
2. **URL** field is the URL that will be called by this system to the 3rd party.
3. **ProviderID** field is the ID that will be used by SnB to identify the 3rd party.
4. **ClientID** and Service Provider field is an identifier that is used by the 3rd party. This value should be defined by the 3rd party.
5. **Survive Provider ID** and Service Provider field is an identifier that is used by the 3rd party. This value should be defined by the 3rd party.
6. **Tax Rate** and **Surcharge** is defined by the business.
7. **Surcharge** comes with 2 types, which is **percentage** and **fixed amount**. This is defined by the business.
8. **3rd Party** selection is used to select which 3rd party to be used for the configuration. This is defined by the business. The values are pre-defined by the system upon integrating to the 3rd party.
9. **Plaza ID** mapper is for mapping the location id of the 3rd party to the location id of SnB. This is defined by the 3rd party as well as the SnB system.

© 2024 Enctech Services Sdn. Bhd.

VENDOR SPECIFIC CONFIGURATIONS

TNG

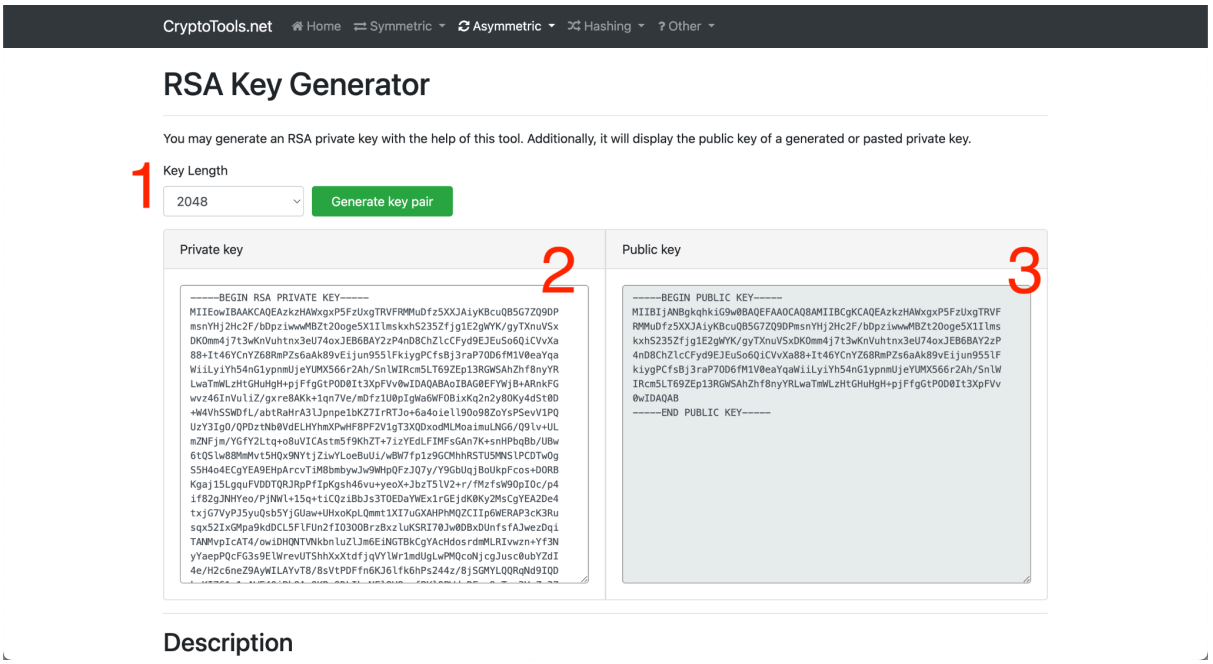


TnG requires a **Private SSH Key** to ensure the request is made from a legit source. As per stated by TnG representative

> *“ Please create using online tool here : https://cryptotools.net/rsagen. Use **2048** key length. Please share only public key to TNG and use private key to generate signature.”*

Step by step guide to create the private key:

1. Open *https://cryptotools.net/rsagen*
2. Ensure Key Length is **2048**.
3. Copy **Private Key** and save it in the configuration page.
4. Send **Public Key** to TnG representative.



REFERENCES

1. SnB Universal Interface Online Authorization.
2. TnG TNG CONSOLIDATED ACCOUNT BASED TRANSACTION IMPLEMENTATION (PARKING).

© 2024 Enctech Services Sdn. Bhd.