



# API Management Portal

TRUSTED SOURCE REGISTRATION, TRUSTED SOURCE API  
CONSUMPTION MAPPING & API THROTTLING POLICIES

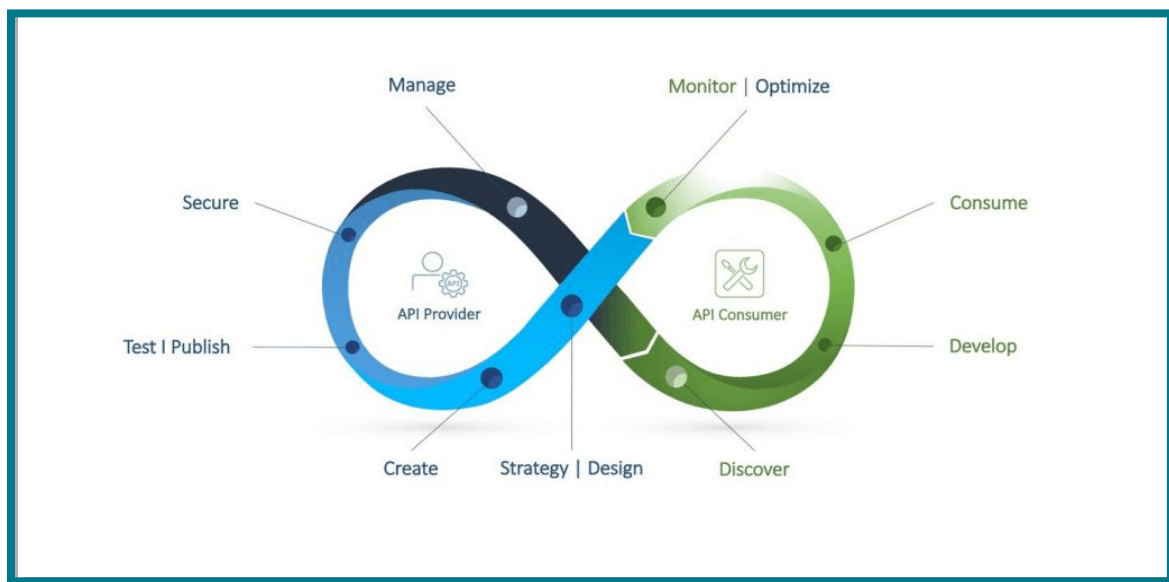
*UNDER THE GUIDANCE OF ABHISHEK GUPTA*

Shivam Gupta | Nucleus Software | 29<sup>th</sup> May, 2018 – 20<sup>th</sup> July, 2018

## Aim of the Project

The main objective of the project was to help the bank to make its API exposed to some of its users and at the same time, monitor its usage and control the number of hits and activation state of the API.

1. Developing a web application project using Spring Boot.
2. The application has 3 faces: Admin View, Maker View, and Checker View.



General API Management Portal Schema

## Requirements

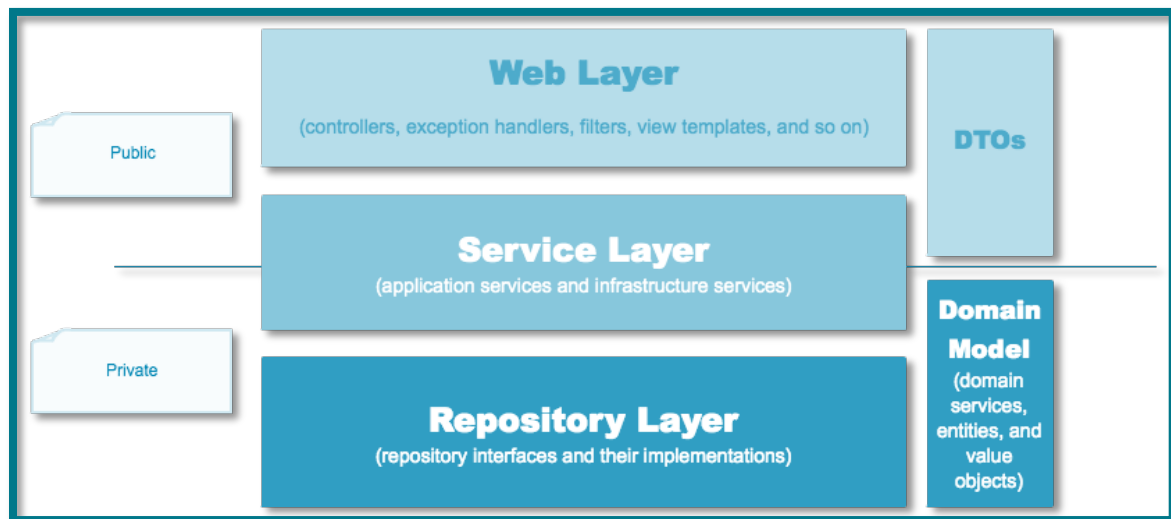
1. Eclipse
2. JDK 1.8 or above
3. Apache Maven (automated build and dependency manager)
4. Spring Boot
5. My SQL
6. Spring JPA

## FRONTEND

The frontend of the application is designed with the help of HTML, CSS, and JavaScript.

The plugins are as follows:

1. Bootstrap plugin
2. DataTable plugin
3. DateTimePicker plugin
4. jQuery plugin
5. Font Awesome Icon plugin



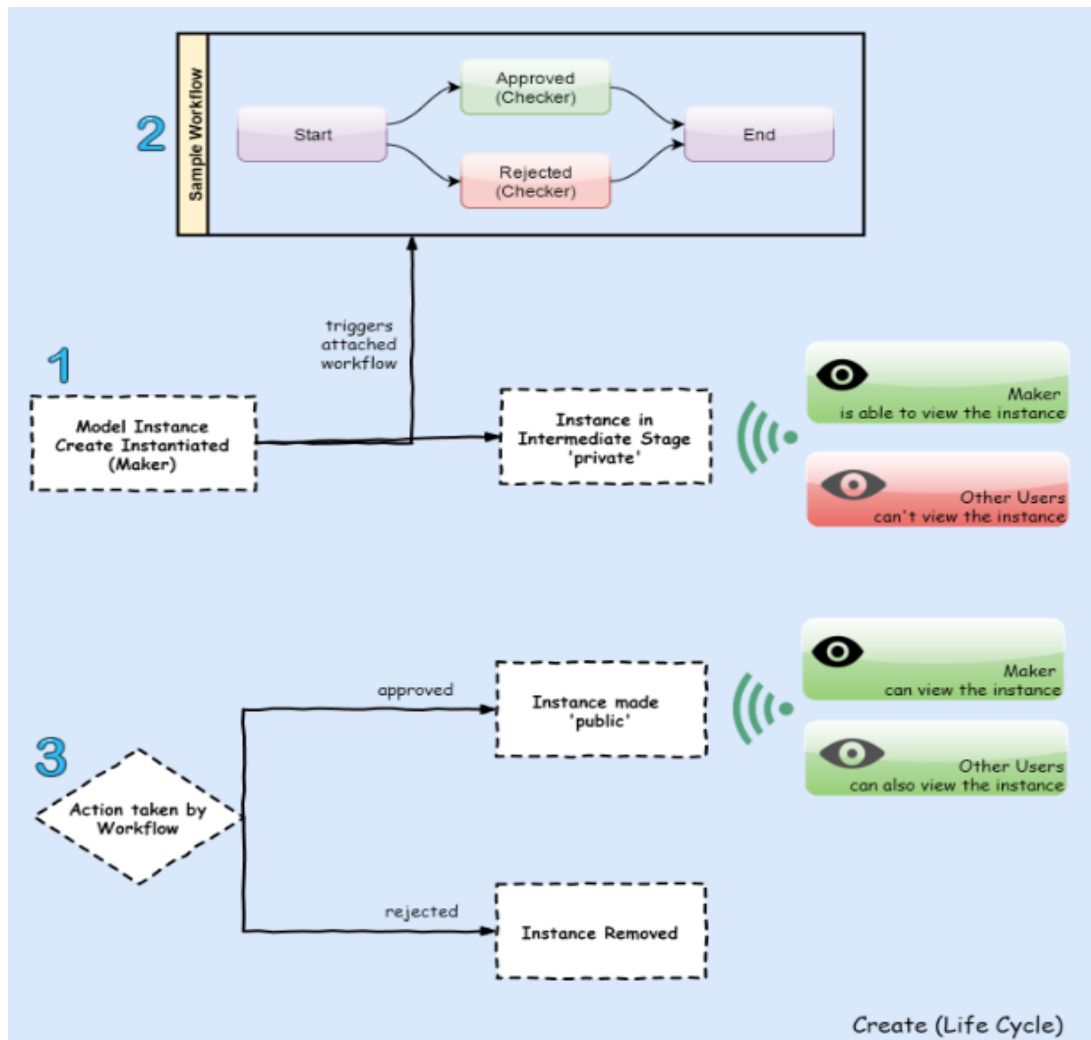
Spring MVC Layer Structure

# Maker Checker Basics

## WHAT IS MAKER-CHECKER?

As stated in Wikipedia:

"Maker-checker (or Maker and Checker, or 4-Eyes) is one of the central principles of authorization in the information systems of financial organizations. The principle of maker and checker means that for each transaction, there must be at least two individuals necessary for its completion. While one individual may create a transaction, the other individual should be involved in confirmation/authorization of the same. Here the segregation of duties plays an important role. In this way, strict control is kept over system software and data, keeping in mind functional division of labor between all classes of employees."



For maker:

1. Maker submits a transaction to the system.
2. System determines submitted transaction to be under the maker-checker policy.
3. System stores submitted transaction as "for checking".
4. System displays list of "for checking", "accepted", and "rejected" transactions.

For checker:

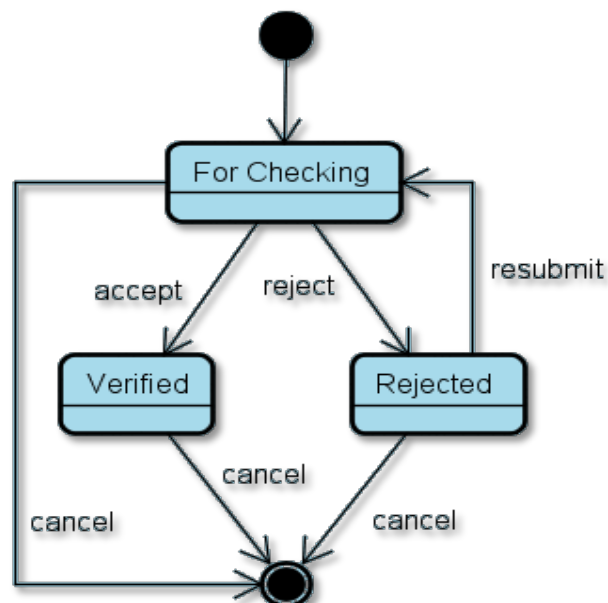
1. Checker retrieves list of transactions "for checking".
2. System displays list of transactions "for checking".
3. Checker selects a transaction.
4. System shows the transaction.
5. Checker *accepts* the transaction.
6. System records "accepted" transaction.

The alternative flow is when the checker rejects the transaction.

5. Checker *rejects* the transaction.
6. System records "rejected" transaction.

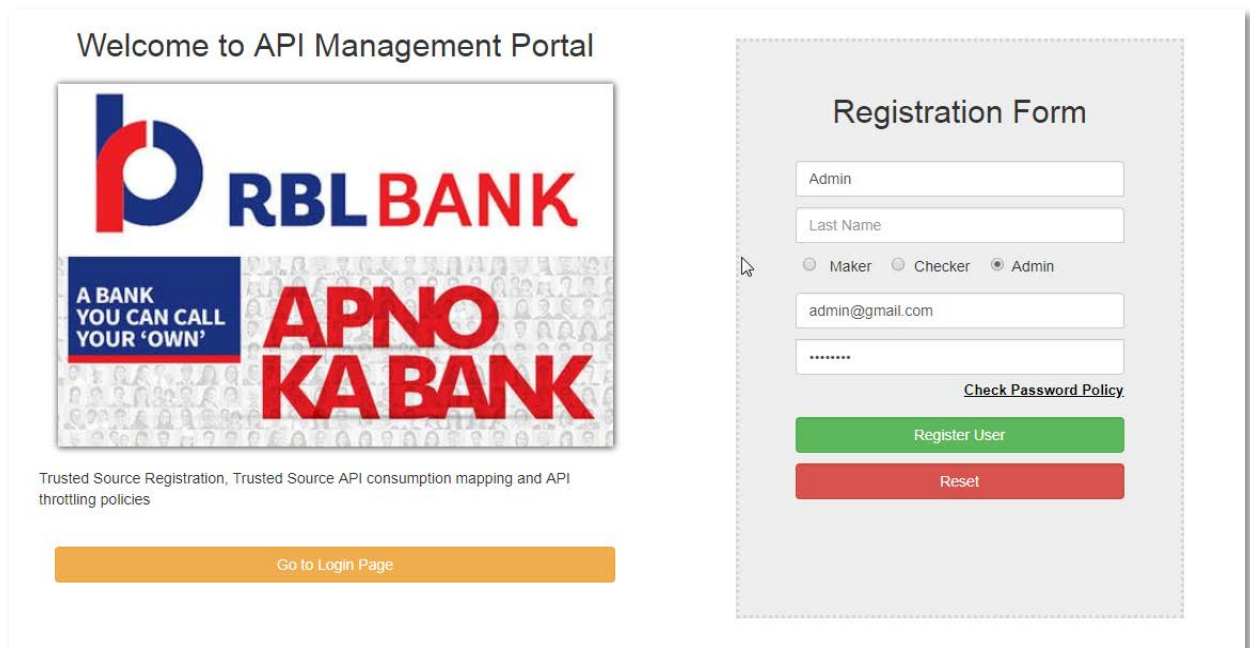
Our analysis shows that the transaction entry can have the following states:

1. for checking,
2. verified,
3. And rejected.



# SCREENSHOTS

## Registration Page



Welcome to API Management Portal

**RBL BANK**

A BANK YOU CAN CALL YOUR 'OWN'

**APNO KA BANK**

Trusted Source Registration, Trusted Source API consumption mapping and API throttling policies

[Go to Login Page](#)

**Registration Form**

Admin

Last Name

☐ Maker ☐ Checker ☒ Admin

admin@gmail.com

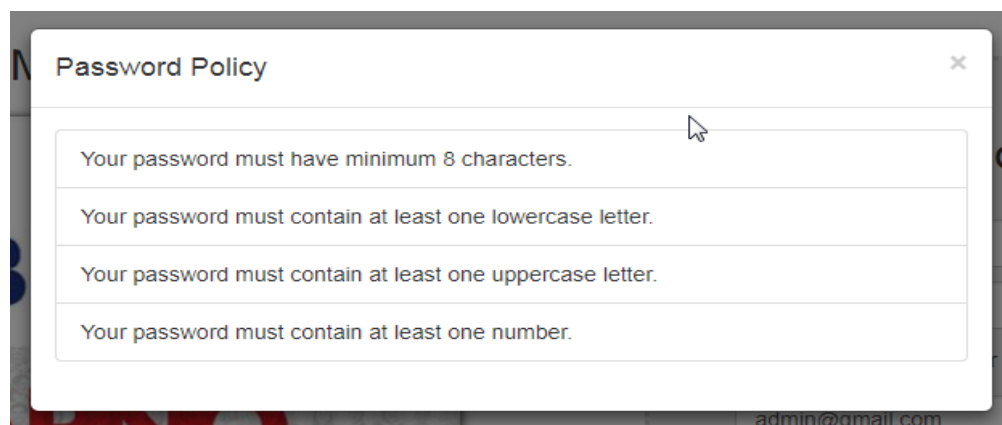
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[Check Password Policy](#)

[Register User](#)

[Reset](#)

The user can register any one of the three privileges: Maker; Checker; Admin



**Password Policy**

Your password must have minimum 8 characters.

Your password must contain at least one lowercase letter.

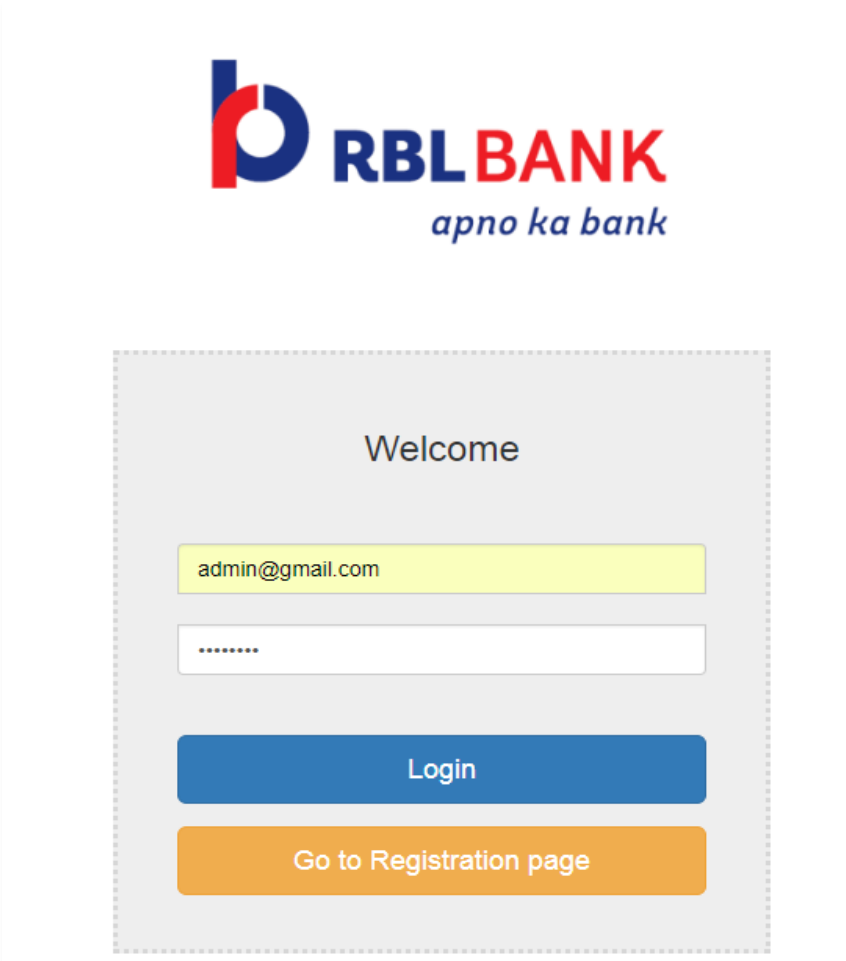
Your password must contain at least one uppercase letter.

Your password must contain at least one number.

admin@gmail.com

The password policy is strictly followed and user can't register without following it.

## Login Page



The image shows a mockup of the RBL Bank login page. At the top, the RBL Bank logo is displayed, consisting of a stylized 'b' in blue and red, followed by the text 'RBL BANK' in blue and red, and the tagline 'apno ka bank' in blue. Below the logo, there is a light gray rectangular area with a dashed border. Inside this area, the word 'Welcome' is centered at the top. Below 'Welcome', there are two input fields: the first contains the email address 'admin@gmail.com' and the second contains a series of dots representing a password. Below the input fields, there are two buttons: a blue button labeled 'Login' and an orange button labeled 'Go to Registration page'.

The user will be redirected to Admin/Maker/Checker page, corresponding to the role, he/she has chosen at the time of registration if credentials are correct.

## Maker Welcome Screen

User Account

Add clientLogout

Welcome, Maker

Pending Requests

Show 10 entries

Search:

#ID	Client ID	Verified	Secret Key	Action
1	Shivin	false	e44c92dbe9f17a2d60c51331e88a2253ec4f098787050816f6ff1dabb126666e	<a href="#">Query</a> <a href="#">Update</a> <a href="#">Delete</a>
2	Mohit	false	69e390d0d61512a64ebeb65a1a6a16890cd538cce5c95ba7d0fc5f5668fb52a1	<a href="#">Query</a> <a href="#">Update</a> <a href="#">Delete</a>
3	Jatin	false	fca654325b494915be40444a66bfac625876dc1e22f86a3e47028c008ed1b529	<a href="#">Query</a> <a href="#">Update</a> <a href="#">Delete</a>

Showing 1 to 3 of 3 entries

Previous1Next

Authorized Requests

Show 10 entries

Search:

#ID	Client ID	MC Flag	Secret Key	Action
No data available in table				

Showing 0 to 0 of 0 entries

PreviousNext

Rejected Requests

Show 10 entries

Search:

Maker can see all the records of queries, categorized as

- Pending, requests which are awaiting authorization from Checker
- Authorized, requests which have been approved from Checker
- Rejected, requests which are rejected by Checker



## Add Client Page

### Add client

User Details

Client Name

Shivam

Client Email

shivam@gmail.com

Client Preference

Preferred

Client Secret Key

\*\*\*\*\*

Authority info

Roles

Role 1, Role 3

API Info

API Selection

API 1, API 4, API 6

Burst Count (%)

20

Concurrency Info

Concurrent Connections Limit

3

Throttling Process

Rate-Limit Throttling

Based on Time Period

101

Maximum number of Concurrent Hits

10

IP-Level Throttling

Whitelist IP

10.54.1.52-80

Mac Address

11:11:11:11:11:11

Add Client

## Record View of Client

User Account

Add clientLogout

Client added successfully! Verification Email sent to shivam@gmail.com

### Client's Details

Label	Value
Client's ID	5
Client's Name	Shivam
Client's Email	shivam@gmail.com
Preference Type	Preferred
Client's Secret key	21dfe0cd1f7918b8cfa74a89953d09ad2c5963d042c063a2bd0e730af362e0cb
API Selection	API 1,API 4,API 6
Burst Count	20%
Max Concurrent Users	3
Based on Time Period	101
Maximum number of Concurrent Hits	10
Whitelist IP	10.54.1.52:80
MAC Address	11:11:11:11:11:11
Roles	role1,role3

A verification email is sent to each new added client & client has to click on the link, provided in the mail to complete the registration process.

The maker can view and update any record that has been created by him/her.

## Checker Home Screen

Checker Account

Logout

Welcome, Checker

Pending Requests

#ID	Client ID	MC Flag	Secret Key	Action
1	Shivin	C	e44c92dbe9f17a2d60c51331e88a2253ec4f098787050816f6ff1dabb126666e	<a href="#">View</a> <a href="#">Authorize</a> <a href="#">Reject</a>
2	Mohit	C	69e390d0d61512a64ebeb65a1a6a16890cd538cce5c95ba7d0fc5f5668fb52a1	<a href="#">View</a> <a href="#">Authorize</a> <a href="#">Reject</a>
3	Jatin	C	fca654325b494915be40444a66bfac625876dc1e22f86a3e47028c008ed1b529	<a href="#">View</a> <a href="#">Authorize</a> <a href="#">Reject</a>
4	Samarth	C	4bca9fd86a0170f038538dc79c34dd8b92cedff421bef5c691b741f363cd83d	<a href="#">View</a> <a href="#">Authorize</a> <a href="#">Reject</a>
5	Shivam	C	21dfe0cd1f7918b8cfa74a89953d09ad2c5963d042c063a2bd0e730af362e0cb	<a href="#">View</a> <a href="#">Authorize</a> <a href="#">Reject</a>

Authorized Requests

#ID	Client ID	MC Flag	Secret Key
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Rejected Requests

#ID	Client ID	MC Flag	Secret Key
-----	-----------	---------	------------

Checker has the authority of Viewing and Authorize or Reject the client. Checker can perform any action once the client has registered using the link in email.

AFTER VALUABLE FEEDBACK FROM PMG, WE HAD TO DISCOURAGE OUR MAKER CHECKER CONCEPT AND WORK ON THE ADMIN PANEL WAS EXTENSIFIED.

## ADMIN PANEL

- View Only Mode

Admin Account

API InfoLogout

API Administration

Module : All ModuleAccess Mode : View

S. No.	API Code	API Name	Description	Service Status	Active Since	Downtime	Message Configuration	Module	Active Subscriber	Details
1	Code #1	API 1		Active				Payment	4	
2	Code #2	API 2		Active				FSCM	2	
3	Code #3	API 3		Active				Trade	2	
4	Code #4	API 4		Maintenance				Receivables	3	
5	Code #5	API 5		Maintenance				FSCM	2	
6	Code #6	API 6		Blocked				Payment	4	

Showing 1 to 6 of 6 entries

Previous1Next

Total Services: #6Active Services: #3Down Services: #2Blocked Services: #1

View Mode allows admin to see the all the current APIs and all type of sorting options are available.

Message Configuration

Response Code  
Five

Response Description  
Response Five

Message Configuration for each API in view only mode.

- Edit Mode

API Administration

Module : All Module
Access Mode : Edit

Select	S. No.	API Code	API Name	Description	Service Status	Active Since	Downtime	Message Configuration	Module	Active Subscriber	Details
<input type="radio"/>	1	Code #1	API 1		Active				Payment	4	
<input type="radio"/>	2	Code #2	API 2		Active				FSCM	2	
<input type="radio"/>	3	Code #3	API 3		Active				Trade	2	
<input type="radio"/>	4	Code #4	API 4		Maintenance				Receivables	3	
<input type="radio"/>	5	Code #5	API 5		Maintenance				FSCM	2	
<input type="radio"/>	6	Code #6	API 6		Blocked				Payment	4	

Showing 1 to 6 of 6 entries

Previous
1
Next

Save

Customer API Mapping

Throttle Setting

Add User

Usage Statistics

Total Services: #6
Active Services: #3
Down Services: #2
Blocked Services: #1

Also, the edit mode allows to change the activation status of any API. Also, it further leads to Customer API Mapping and Throttle Setting for each selected API.

Message Configuration

Response Code

One

Response Description

Response One

Update

Edit Mode allows admin to configure the message and update it.

## Customer API Mapping

**API Name:** API 4      **API Code:** Code #4      **Current Status:** ✖      [Back](#)

Show  entries

S.No.	#ID	Client ID	Client Email	Action
1	2	Mohit	mohit@gmail.com	<a href="#">Add</a>
2	4	Samarth	samarth@gmail.com	<a href="#">Add</a>
3	6	Abhishek	abhishek@gmail.com	<a href="#">Add</a>

Showing 1 to 3 of 3 entries      [Previous](#) [1](#) [Next](#)

**Subscribers of API 4**

Show  entries

S.No.	#ID	Client ID	Client Email	Secret Key	Valid from	Valid till
1	1	Shivin	shivin@gmail.com	e44c92dbe9f17a2d60c51331e88a2253ec4f098787050816f6ff1dabb126666e		
2	3	Jatin	shivin@gmail.com	fca654325b494915be40444a66bfac625876dc1e22f86a3e47028c008ed1b529		
3	5	Shivam	shivam@gmail.com	21dfe0cd1f7918b8cfa74a89953d09ad2c5963d042c063a2bd0e730af362e0cb		


Showing 1 to 3 of 3 entries      [Previous](#) [1](#) [Next](#)

This option helps us to map an API to the remaining clients.

## Add User Window

Admin Account      [API Info](#)      [Logout](#)

### Add New User

  
[Add Photo](#)

✖ Enter User id:

✖ Enter Email:

✖ Valid from:

Status:

✖ Valid till:

[Back](#)      [Save](#)

## Throttle Setting Configuration per API

**API Throttling Configuration**

API Name: API 3

API Code: Code #3

Current Status:

Activation Date: 07/01/2018 5:15 PM

Termination Date: 07/31/2018 8:17 PM

Limit Type: ☐ Per API ☒ Per User API

On Breach: ☒ Stop ☐ Allow

Threshold:

☐ Cumulative HIT Limits/Day 10 Volume Cap 100

☒ Day Range

S. No.	Weekday	From time	To time	HIT Limits/Day	Volume Cap
1	MONDAY	5:17 AM	5:17 PM	9	1
2	TUESDAY	5:17 AM	6:18 PM	10	10
3	WEDNESDAY	5:17 AM	6:17 PM	10	10
4	THURSDAY	5:17 AM	6:18 PM	10	10
5	FRIDAY	5:18 AM	6:18 PM	10	10
6	SATURDAY	5:18 AM	6:18 PM	8	10
7	SUNDAY	5:18 AM	6:18 PM	12	10

Back

Save

## Subscribers of each API

**Subscribers of API 1**

API Name: API 1

API Code: Code #1

Current Status:

Show 10 entries

#ID	Client ID	MC Flag	Secret Key	Valid from	Valid till	Verification
1	Shivin	C	e44c92dbe9f17a2d60c51331e88a2253ec4f098787050816f6ff1dabb126666e			
2	Mohit	C	69e390d0d61512a64ebeb65a1a6a16890cd538cce5c95ba7d0fc5f5668fb52a1			
3	Jatin	C	fca654325b494915be40444a66bfac625876dc1e22f86a3e47028c008ed1b529			
5	Shivam	C	21dfe0cd1f7918b8cfa74a89953d09ad2c5963d042c063a2bd0e730af362e0cb			

Showing 1 to 4 of 4 entries

Previous

1

Next

Back

The option of resending the verification email is also provided.

