



GOVERNMENT OF UGANDA DIGITALIZATION AND DATA INTEGRATION AGENDA FOR THE PRIVATE SECTOR



Training and User Manual

August 2022



**PRIVATE SECTOR AND THE GOVERNMENT
OF UGANDA DIGITALIZATION AND
DATA INTEGRATION AGENDA**

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September 2022

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Foreword

Information access has time and again been at the core of the challenges surrounding the environment for conducting business in Uganda. The government has over time, in a bid to address this challenge introduced a number of electronic government services to enhance effectiveness and efficiency in public service delivery for the business community. This is in light of the fact that the entire world is going *e-Business* and government service delivery, the world over is being digitalized, while automation seems to be the new way of life. Accordingly, Digitalization and data integration are potential game changers in service delivery and can go a long way in contributing to the improvement of the business environment.

Over the years, NITA-U, working with actors like the Private Sector Foundation (PSFU), has successfully championed the government digitalization and data integration agenda. For instance, through the Skills, Attitudes, Governance and Anti-Corruption (SG+) project, PSFU and NITA-U are working on efforts to bolster Private sector understanding as well as uptake of government digital services. Focusing on the 4 sectors: ICT, Construction, Manufacturing and Agro-processing, and Tourism and Hospitality Management, this project comes in handy to address two of the most critical challenges affecting doing business in Uganda; Skills and attitudes, and governance and corruption. As part of addressing the governance and corruption challenges, PSFU and NITA-U have partnered to expand the awareness of the government e services, and increase the uptake of the government digital services, as well as onboarding of private sector actors on the data integration platform.

The SG+ intervention will primarily facilitate information sharing among private sector actors as well as members of the general public, through introduction of tools, building capacity and ensuring the views of the private sector are reflected in policy discussions. This would go a long way in imparting necessary skills amongst sector players on how to use the available systems for ease of business as well as creating a more enabling environment for private sector investments in both domestic & European businesses for sustainable economic development.

This manual is developed as part of the joint work between PSFU, and NITA-U under the SG+ project. It is designed to guide data integration champions when training individuals within the private sector on the uptake of the government digital services, as well as use of the UG hub, the government data integration platform. These champions are carefully selected individuals within the private sector with a passion for the government Data integration and digitalization agenda. It is our prayer that you find this manual helpful while navigating the system. It is our humble appeal that you use this manual to train those that you can reach who may be interested in navigating the government data integration platform, but have not yet been able to get the opportunity to be trained. We

are confident that through such efforts, there will be increased government transparency, better investor confidence in the country, and generally an improvement in the business environment.

We are grateful to the European Union, that has generously financed the SG+ project, and Enabel who offer endearing technical backstopping and capacity support to PSFU on this SG+ interventions.

Stephen Asiimwe
Chief Executive Officer-PSFU

Dr. Hatwib Mugasa
Executive Director-NITA-U

Introduction

The UgHub Data Integration platform was implemented in order to achieve the following purposes;

The UgHub Integration platform is intended to:

- a) Enable data sharing among MDAs in a rational and efficient way to improve provisioning of e-services to the public. This will further help to promote data reuse hence preventing information redundancy in the public sector.
- b) Provide a mechanism for public services optimization through reusing information resources and services.
- c) Improve decision making through data sharing across Government. This will further help to expedite implementation of Government Programs.
- d) Reduce the time and development cost for rolling out e-services among MDAs. The seamless sharing of data through a common platform shall simplify or eliminate some processes currently involved in provisioning of e-services; hence reducing time and cost for rolling out e-services by MDAs.
- e) Enable the public sector to become more efficient, transparent, and receptive to the needs of the citizens and businesses.
- f) Promote the use of shared public service delivery platforms such as e-Payment Gateway, authentication, Mobile and SMS Gateway as well as Government cloud.
- g) Ensure automatic updates for data shared between MDAs. This is very critical for data that is highly dynamic such as physical addresses, sources of income, email addresses, phone numbers etc.

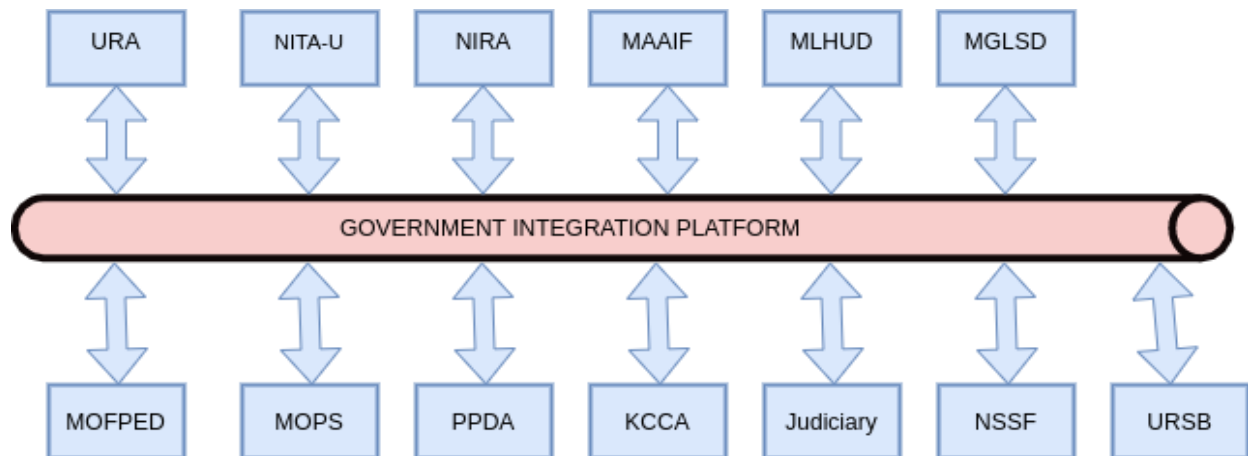


Figure 1 High Level view of entities on the UgHub Integration Platform

Objectives

This manual describes the modules on the UgHub Data Integration Platform. It explains the step by step usage of the modules. The functionalities explained in this document are related to;

- A. Identity and Access Management.
- B. API Management.
- C. Integration platform (Enterprise Service Bus).
- D. Analytics, dashboard and Reporting.
- E. Semantic and System Catalogue.

Identity and Access Management

Generally, Identity and access management (IAM) is referred to as the discipline that enables the right individuals to access the right resources at the right times for the right reasons. IAM addresses the critical need to ensure appropriate access to resources across increasingly heterogeneous technology environments and to meet increasingly rigorous compliance requirements.

It is no longer a mere security project for enterprises, as the integration and secure governance of APIs are more important than ever before. Security has become a big challenge for identity architects and administrators due to increasing user identity spaces, company-wide policies, complex structure hierarchies and roles, regulatory pressures, and customer facing applications. To mitigate the security challenges, **WSO2 Identity server** was used to implement the UgHub IAM module.

WSO2 Identity Server has a wide range of capabilities but the training will majorly cover the following capabilities;

- Managing Tenants.
- User Management (Add Users, Disable Users, View Users).
- Role Management
- Single Sign On (Developer Portal, Publisher, Admin Portal).
- Identity Management (password recovery, User profile update e.g. email)

UgHub IAM (WSO2 Identity Server) User Guide Prerequisites

To successfully execute the scenarios in this section, the following are the prerequisites;

- VPN connection to the UgHub training environment. This requires valid access credentials and Fort client installed.

IAM Scenarios

Note: These scenarios will be executed by participants in groups during the training but the same scenarios can be executed on an individual basis as well.

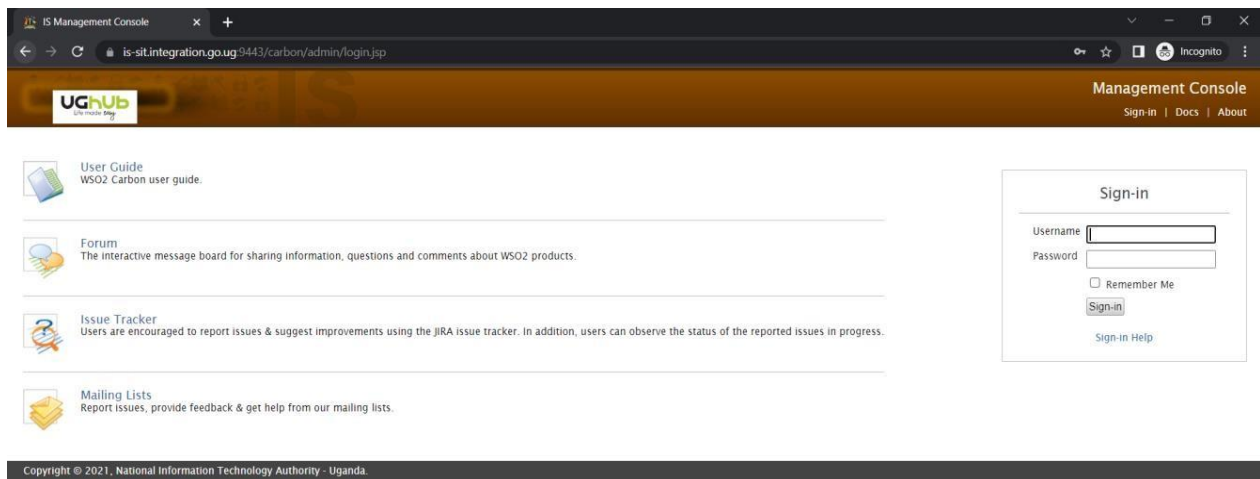
Manage Group Tenants

GroupA users have selected a group leader who we will refer to as group admin. The requirement is to create their own domain as a tenant and manage users, roles, user claims, APIs etc. from that created domain.

Add Tenant

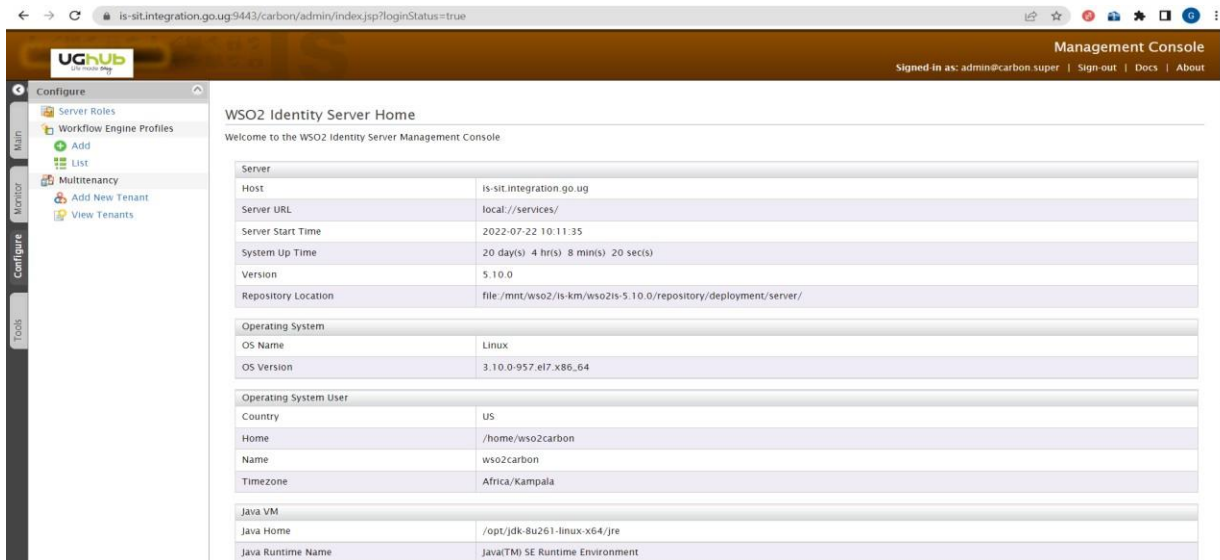
Super tenant user accesses the Identity Server Management console login page using the link below;

Link: <https://is-sit.integration.go.ug:9443/carbon>



Super Admin logs into the platform with valid credentials;

- Username: admin
- Password: <super-admin-password>



Create Tenant and Add Tenant Admin

Go to Configure on the menu -> Multitenancy -> Add New Tenant

Provide all the required details of the tenant including the admin email and save.

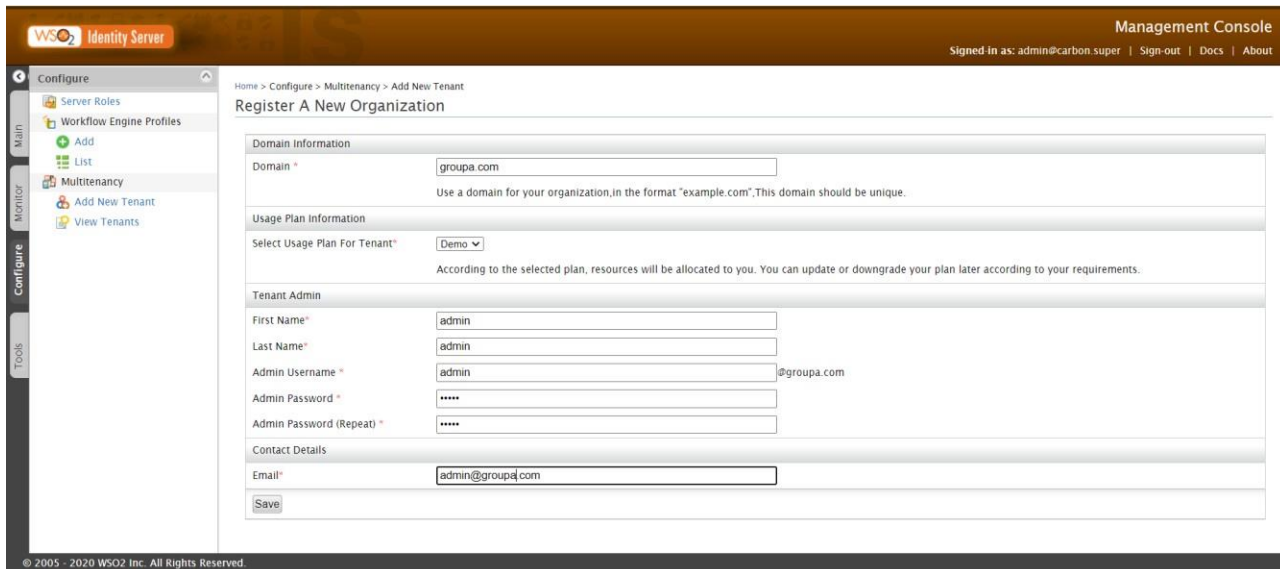


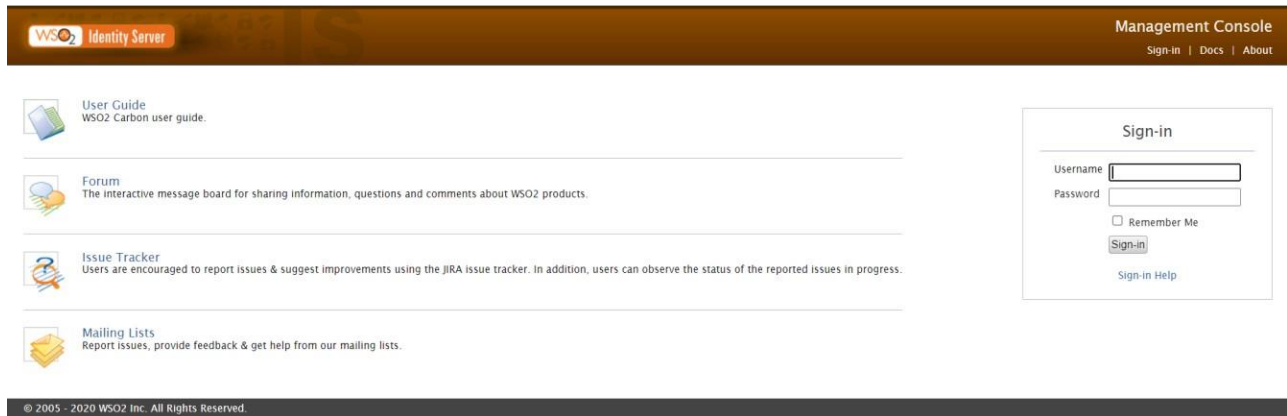
Figure 2 Showing Add tenant/domain interface

Create Users and set Permissions in the created domain (tenant)

Peter a group leader (admin) of group A wants to log into his group tenant/domain and manage his tenant users and roles.

- Peter Logs in to the WSO2 IS management Console using the tenant admin credentials specified in the previous use case.

Link: <https://is-sit.integration.go.ug:9443/carbon>

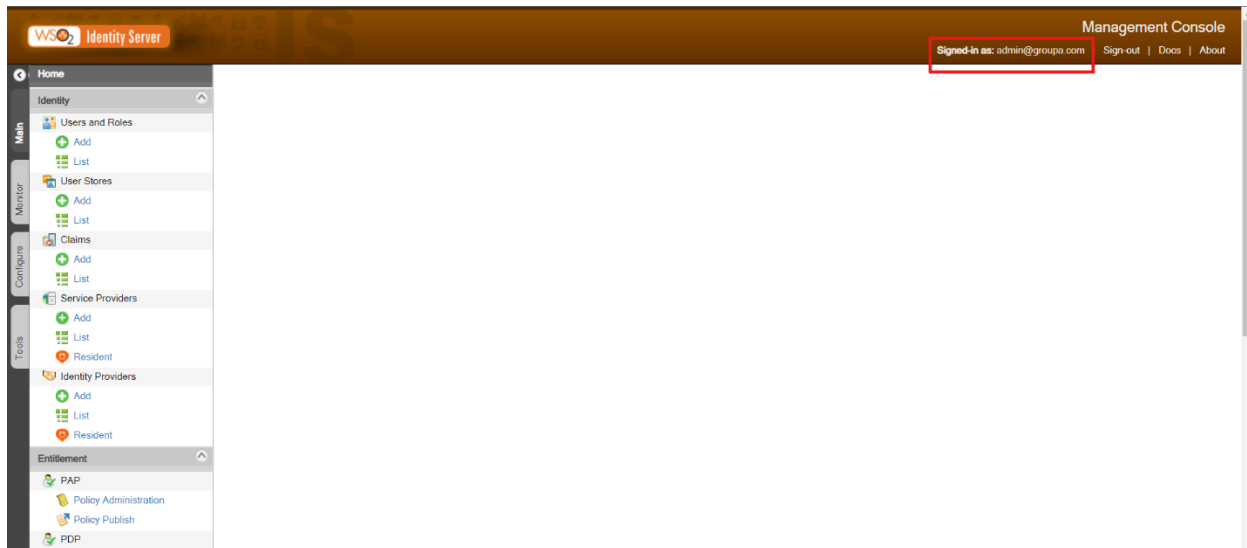


The screenshot shows the WSO2 Identity Server Management Console sign-in page. The page has a dark blue header with the WSO2 logo and 'Identity Server' on the left, and 'Management Console' with links for 'Sign-in', 'Docs', and 'About' on the right. Below the header, there are four links with icons: 'User Guide' (WSO2 Carbon user guide), 'Forum' (The interactive message board for sharing information, questions and comments about WSO2 products), 'Issue Tracker' (Users are encouraged to report issues & suggest improvements using the JIRA issue tracker. In addition, users can observe the status of the reported issues in progress.), and 'Mailing Lists' (Report issues, provide feedback & get help from our mailing lists). On the right side, there is a 'Sign-in' form with fields for 'Username' and 'Password', a 'Remember Me' checkbox, a 'Sign-in' button, and a 'Sign-in Help' link. At the bottom, there is a copyright notice: '© 2005 - 2020 WSO2 Inc. All Rights Reserved.'

Username : admin@groupa.com

Password: <groupA-admin password>

Note: Attention is drawn to the difference in the usernames for super tenant admin and that of groupa admin. For tenant users you must append the domain name at the end of the username e.g. admin@psfu.com



The screenshot shows the WSO2 Identity Server Management Console dashboard after successful login. The header is dark blue with the WSO2 logo and 'Identity Server' on the left, and 'Management Console' with links for 'Signed-in as: admin@groupa.com', 'Sign-out', 'Docs', and 'About' on the right. The main content area is divided into a left sidebar and a main panel. The sidebar has a 'Home' button and several categories: 'Main' (Users and Roles, Add, List), 'Monitor' (User Stores, Add, List), 'Configure' (Claims, Add, List; Service Providers, Add, List), 'Tools' (Resident, Identity Providers, Add, List), and 'Entitlement' (PAP, Policy Administration, Policy Publish, PDP). The main panel is currently empty.

Create New User

Go to the Main → Identity → Users and Roles → Add New User



Figure 3 Adding new User

Assign Permissions to the new User

In this step you will assign subscription and publisher roles to the newly created user, these roles will allow the user to subscribe and publish APIs respectively

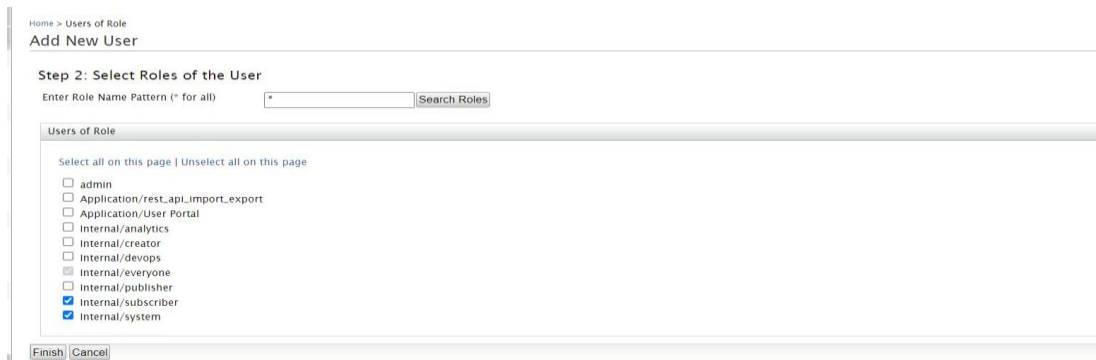


Figure 4 Assign Permissions

Assign Publisher role to the New User

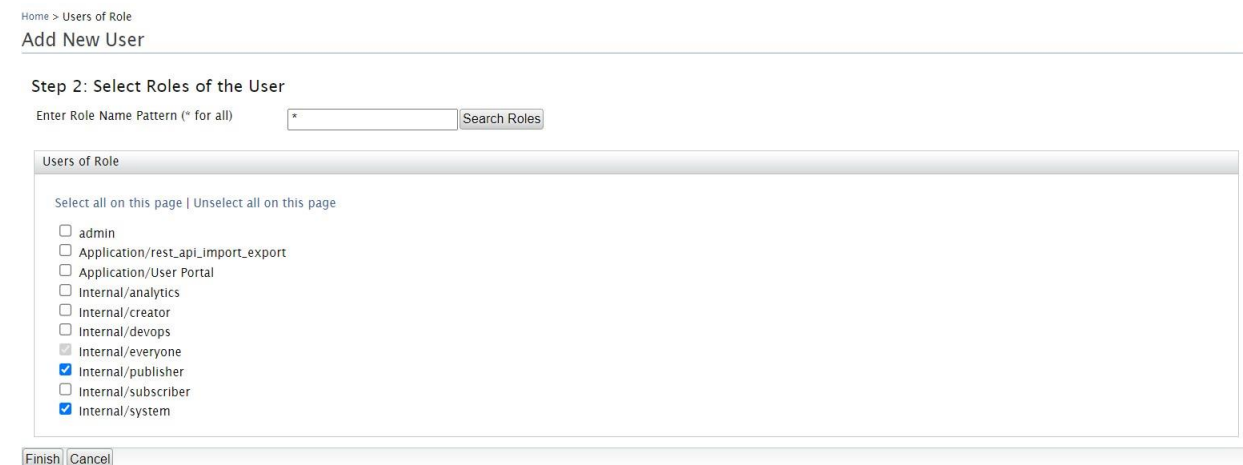


Figure 5 Assign publisher role to the new users

Manager User's Profile - User Portal

Kelly a subscriber/Creator/Publisher wants to manage her user profile. i.e. change her password, update her profile, change her username etc.

Log into User Portal

<https://is-sit.integration.go.ug:9443/t/groupa.com/user-portal>

WSO₂ IDENTITY SERVER

Sign In

Forgot **Username** or **Password** ?

 Remember me on this computer

We use browser cookies to track your session to give better experience. You can refer our **Cookie Policy** for more details.

By signing in, you agree to our **Privacy Policy**

[Create Account](#)

Username: kelly@groupa.com

Password: <password assigned by groupA admin>

Update User Profile

Kelly wants to update her Firstname, Lastname and Email Address.

- Kelly enters her valid credentials and is redirected to the User-profile home page

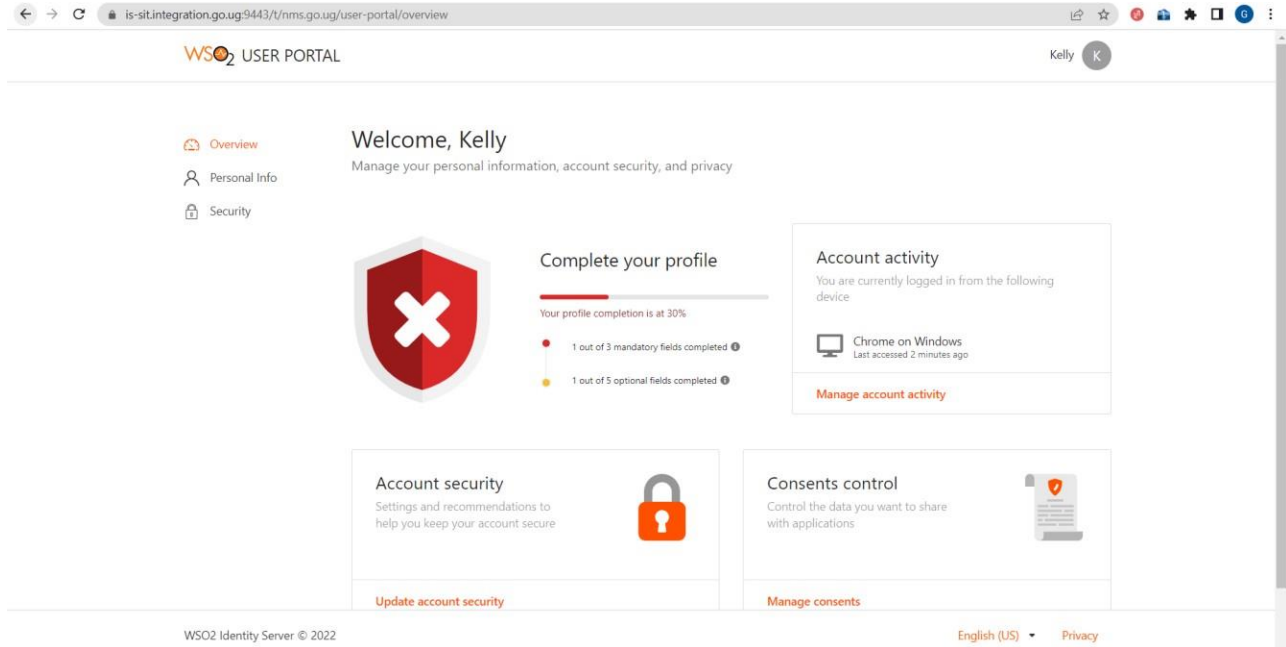
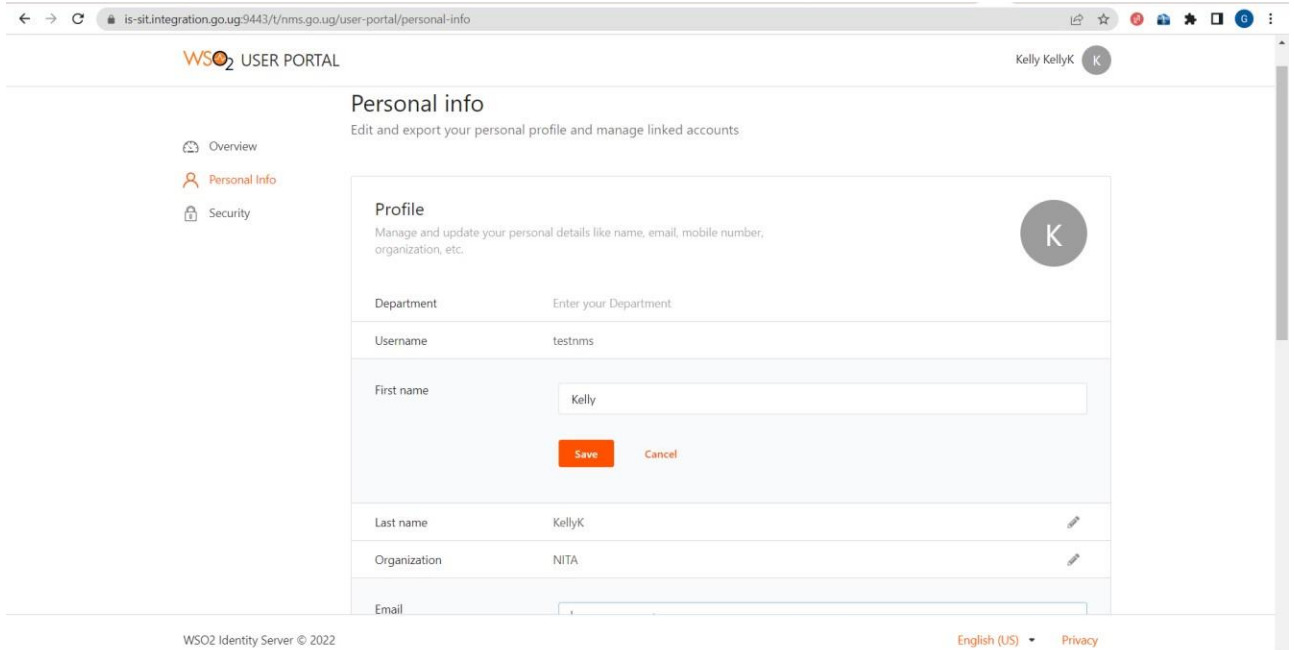


Figure 6 User Portal

- Go to Personal Info and update the user profile accordingly



Change Password Via Email

Kelly wants to change her password through the user portal.

- Logout of the User Portal

WSO IDENTITY SERVER My Account

Kelly KellyK

Overview
Personal Info
Security

Personal info

Edit and export your personal profile and manage linked accounts

Profile
Manage and update your personal details like name, email, mobile number, organization, etc.

Username	kelly	
First Name	Kelly	
Last Name	KellyK	
Organization	NITA	
Country	Enter your Country	
Email	kelly@groupa.com	
Mobile	Enter your Mobile	

Personal Info
Logout

- From the login Page, select forgot Password;

Sign In

Forgot Username or Password ?

Remember me on this computer

We use browser cookies to track your session to give better experience. You can refer our [Cookie Policy](#) for more details.

By signing in, you agree to our [Privacy Policy](#)

[Create Account](#) [Continue](#)

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- Enter kelly's username and also select Recover with email then submit.

Recover Password

Enter your username here

kelly@groupa.com

- Recover with Mail
- Recover with Security Questions

Cancel

Submit

Information

Password recovery information has been sent to the email registered with the account kelly@nms.go.ug

Close

- Kelly Checks her email messages of the email she updates in the user profile.

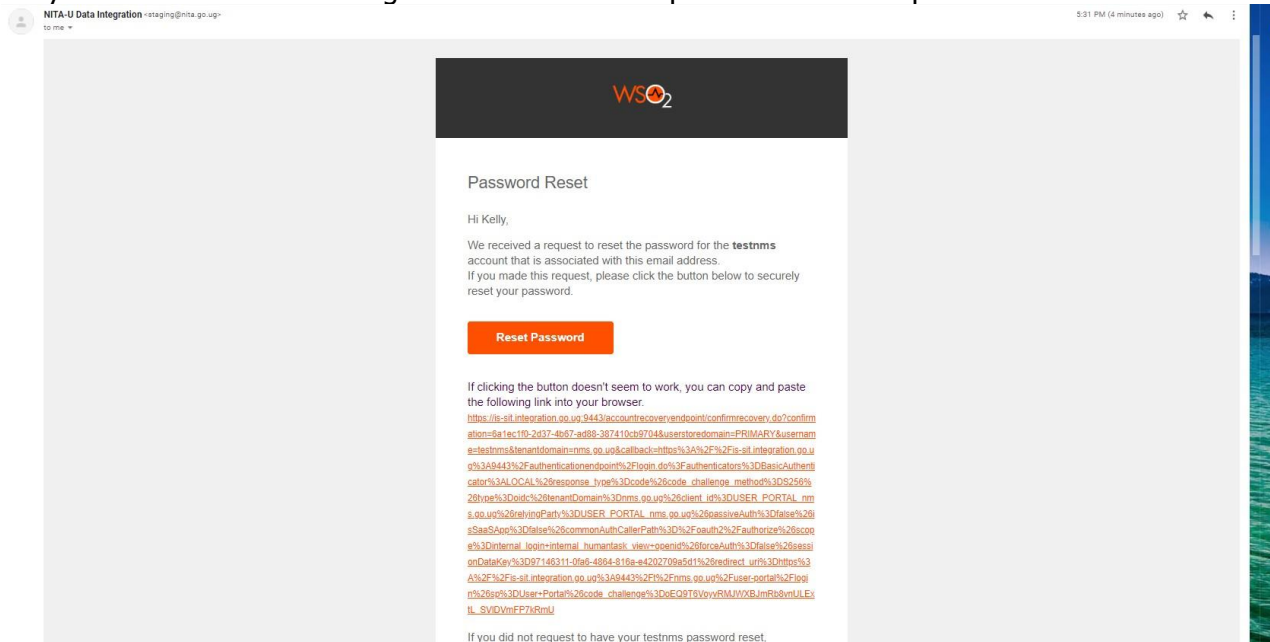


Figure 7 Account confirmation Email message

- She clicks on the Reset Password Link/Button in the received email where she is redirected to a page to set new password.

Reset Password

Enter New Password

Confirm password

Proceed

Information

Updated the password successfully

Close

- Upon Password reset, she is redirected to the login page where she can now login with her new password.

For more information on WSO2 Identity Server refer to : <https://is.docs.wso2.com/en/latest/>

API Management and Integration

API management refers to a process by which an organization creates, oversees and controls application programming interfaces (APIs) in a secure and scalable environment. The main goal of API management is to ensure that the needs of developers and applications that may use the API are being met, concerning organizations that publish or use APIs to monitor an interface's lifecycle. WSO2 API Manager is the product used for Ughub API Management module

The API management module is a very important module in an integration platform solution. APIs are the interfaces between the service providers and the service consumers.

WSO2 API Manager plays the API management module role in the solution. From creating and publishing an API to securing, rate-limiting & viewing analytics of APIs, the WSO2 API Manager addresses all aspects of API Management.

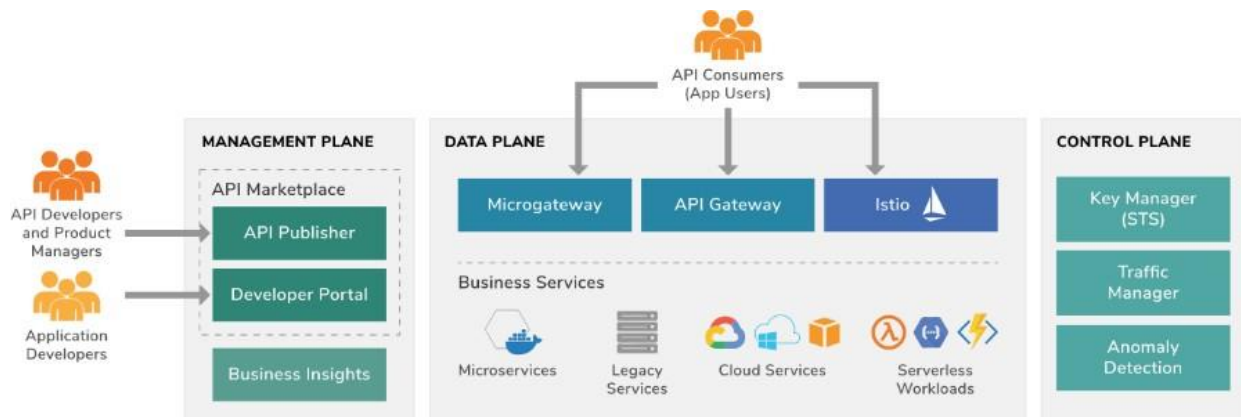


Figure 8 Showing components of WSO2 API Manager

The following are the key features WSO2 API Manager provides;

- Design and Prototype APIs
- Publish API Products and Govern the Use of APIs
- Control Access and Enforce Security
- Developer Portal
- Manage Developer Community
- Manage and Scale API Traffic
- Monitor and Monetize
- Pluggable, Extensible, and Theme-able
- Easily Deployable in Your Enterprise
- Platform Multi-Tenancy

API Management has a Gateway component that is responsible for intercepting client calls and apply the necessary security checks, traffic controls, and other Quality of service such as mediations. The component has an underlying Integration which does most the heavy lifting when it comes to complex mediations. Ughub Integration module is developed is WSO2 Enterprise Integrator, it is used to handle scenarios such as transformations as shown in the figure below;

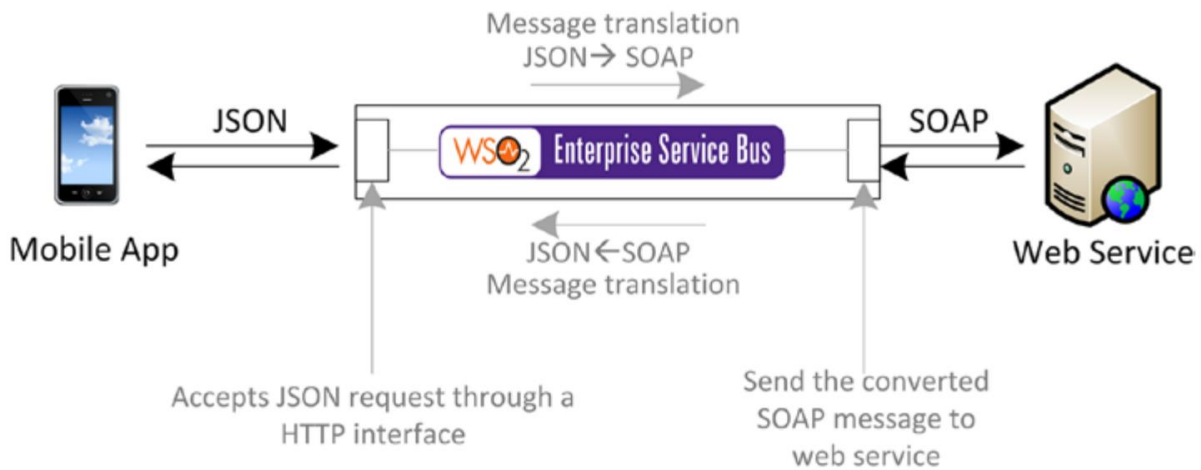


Figure 9 Showing Enterprise service bus mediation feature

UgHub API Management User guide

Prerequisites

To successfully execute the scenarios in this section, the following are the prerequisites;

- VPN connection to the UgHub training environment. This requires valid access credentials and Forticlient installed.

Publisher Portal

To access the API Manager Publisher, you need to use the following link;

Link: <https://api-sit.integration.go.ug:9443/publisher>


Once the link is accessed, you will be redirected to the login form as shown in figure below.


Enter valid credentials for the user you created in your tenant.

Note: The user must have been assigned an **internal/publisher role** illustrated in Identity Server scenarios.

Admin User	Username: <admin@groupa.com> Password: <admin@groupa.com-password>
Other Tenant Users	Username: <kelly@groupa.com> Password: <kelly-tenant password>

Sign In

 arnold.kalema@sybyl.com



Forgot [Username](#) or [Password](#) ?

Remember me on this computer

We use browser cookies to track your session to give better experience. You can refer our [Cookie Policy](#) for more details.

By signing in, you agree to our [Privacy Policy](#)

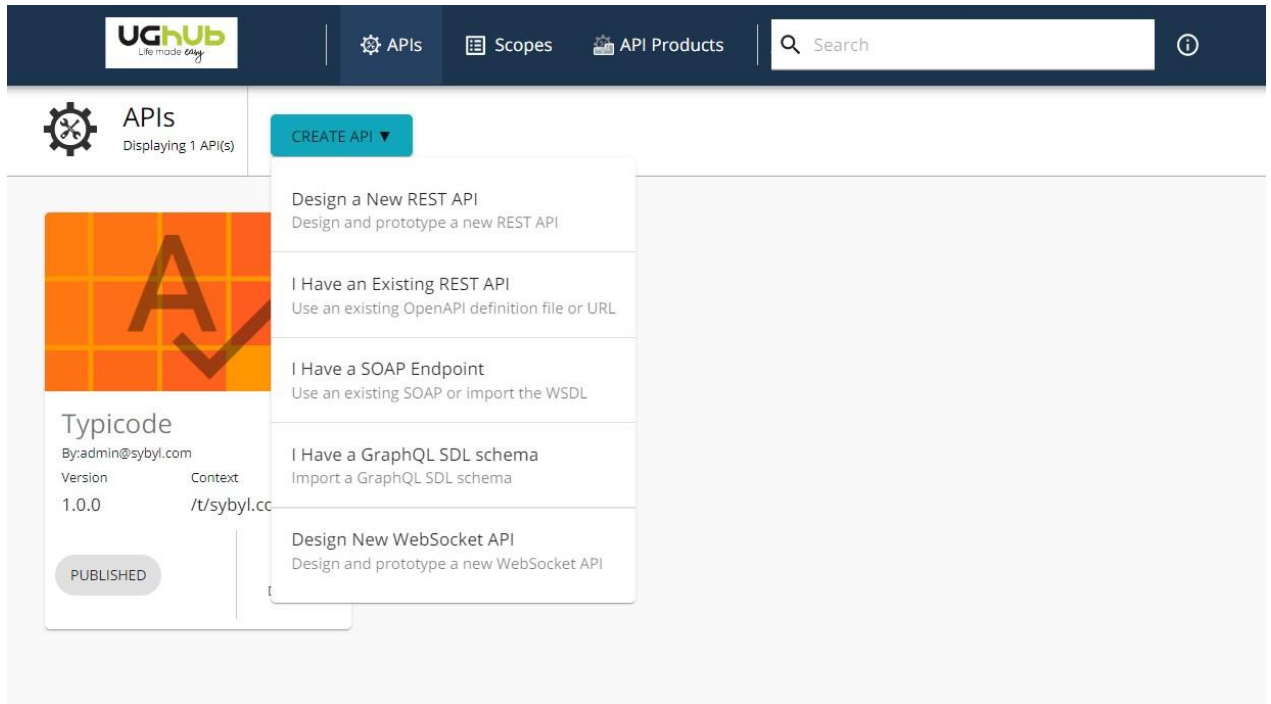
[Create Account](#)

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Figure 10 Showing Publisher login screen

Create an API

After successfully logging into the publisher module, click on **Create API** button, you will be presented a number of options as shown in the screenshot below;



Note: The steps explained in this section can only be used in Development/Testing environment. For APIs to be deployed through UAT, PROD and DR environments CICD process **MUST** be followed.

To bring out the concept of mediation in which we can switch message protocols such as JSON to SOAP and vice-versa, we shall use a SOAP based API which expects XML messages which we shall expose as a REST API that consumes JSON messages. Therefore, in a nutshell when consuming the API, you will send a JSON message, UgHub integration component will convert the JSON to XML which is expected at the backend, the converted XML message will then be sent to the Calculator SOAP API Backend, a response will be received at the Integration layer which is of XML again the message will be converted to JSON that the consumer expects to receive back.

As mentioned above, for demonstration purposes, we shall use a **SOAP API** from [Calculator Web Service \(dneonline.com\)](http://dneonline.com)

The endpoint will therefore be <http://dneonline.com/calculator.asmx?WSDL>

Before using the Endpoint in API Manager module you can optionally first test the API using any client such as curl, SOAPUI, or Postman (You may need to first install the preferred tool if not already installed)

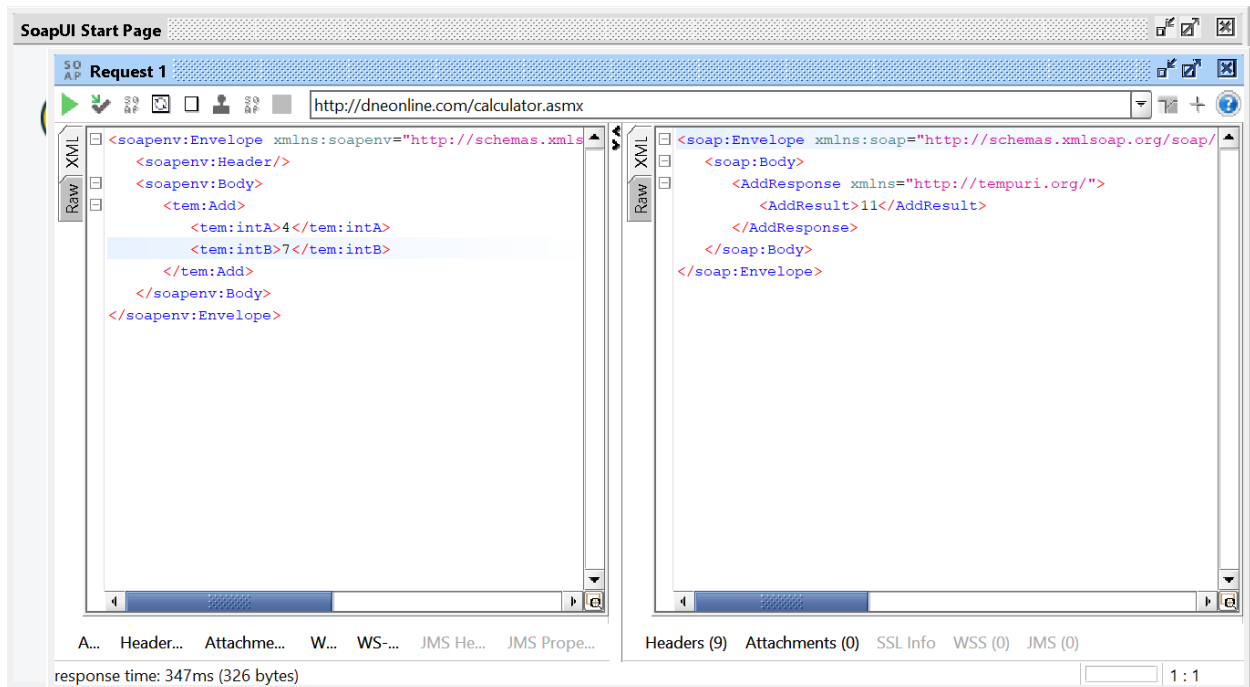


Figure 11 Showing SOAPUI test for sample Calculator API

Once you are done testing the API, proceed with providing all required API details in API Management module as shown below;

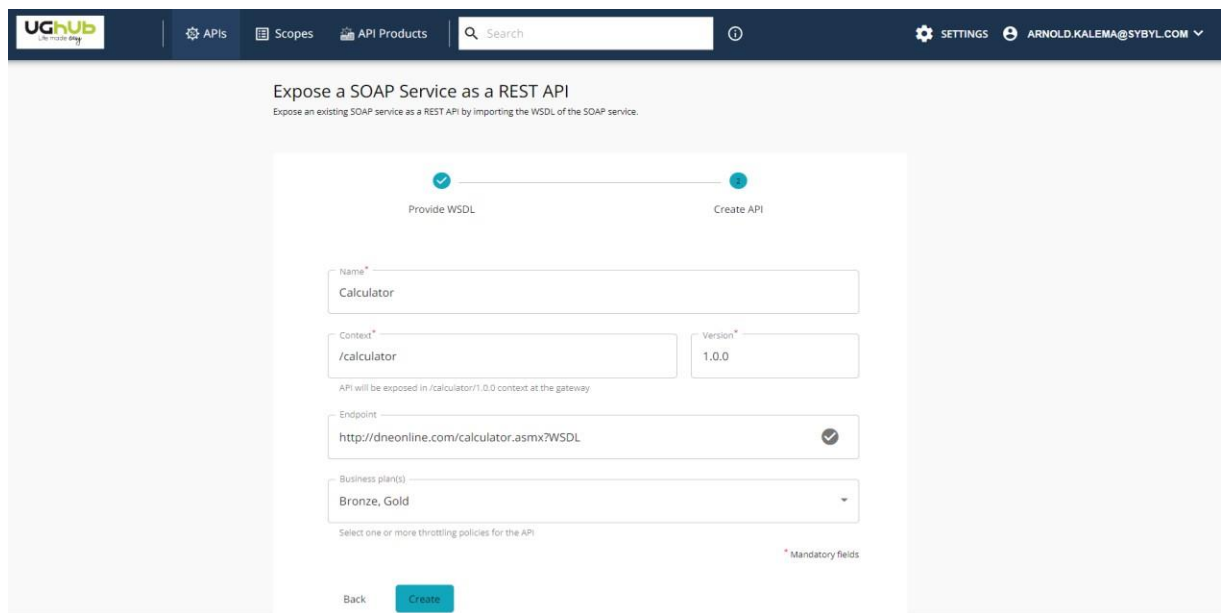


Figure 12 Exposing a SOAP service as a REST service

Publish the Calculator API

Click the **Publish** button shown in the image below to publish the **Calculator API**.

The screenshot shows the UGHub API Overview page for the Calculator API (version 1.0.0). The page is in the 'CREATED' state. The top navigation bar includes 'APIs', 'Scopes', 'API Products', a search bar, 'SETTINGS', and the user profile 'ARNOLD.KALEMA@SYBYL.COM'. The left sidebar lists various navigation options like 'Overview', 'Design Configurations', 'Runtime Configurations', 'Resources', 'Endpoints', 'Subscriptions', 'Lifecycle', 'API Definition', 'Environments', 'Local Scopes', 'Business Info', 'Properties', 'Documents', 'Test Console', and 'Monetization'. The main content area features a progress bar with three steps: 'Created' (completed), 'Endpoint' (completed), and 'Business plans' (completed). A 'Publish' button is visible in the third step. Below the progress bar, there are sections for 'Metadata', 'Configuration', and 'Endpoints'. The 'Metadata' section includes fields like Description, Provider, Context, Version, Type, Created Time, Last Updated Time, Business Owner, and Technical Owner. The 'Configuration' section includes Transports, API Security, Access Control, Workflow Status, Visibility on Developer Portal, Business Plans, and Tags. The 'Endpoints' section shows the Production Endpoint URL.

Figure 13 Showing the API Overview with provided details

Click **View in Dev Portal** link shown in the image below to consume the Calculator API in the Developer Portal.

The screenshot shows the UGHub API Overview page for the Calculator API (version 1.0.0) in the 'PUBLISHED' state. The top navigation bar is similar to Figure 13, but the user profile is 'ARNOLD.KALEMA@SYBYL.COM'. The left sidebar is also similar. The main content area features a progress bar with three steps: 'Created' (completed), 'Endpoint' (completed), and 'Business plans' (completed). A 'View in Dev Portal' link is visible in the third step. Below the progress bar, there are sections for 'Metadata', 'Configuration', and 'Endpoints'. The 'Metadata' section includes fields like Description, Provider, Context, Version, Type, Created Time, Last Updated Time, Business Owner, and Technical Owner. The 'Configuration' section includes Transports, API Security, Access Control, Workflow Status, Visibility on Developer Portal, Business Plans, and Tags. The 'Endpoints' section shows the Production Endpoint URL.

Figure 14 Showing API in the published state

The image shown below illustrates the **Developer Portal** Dashboard.

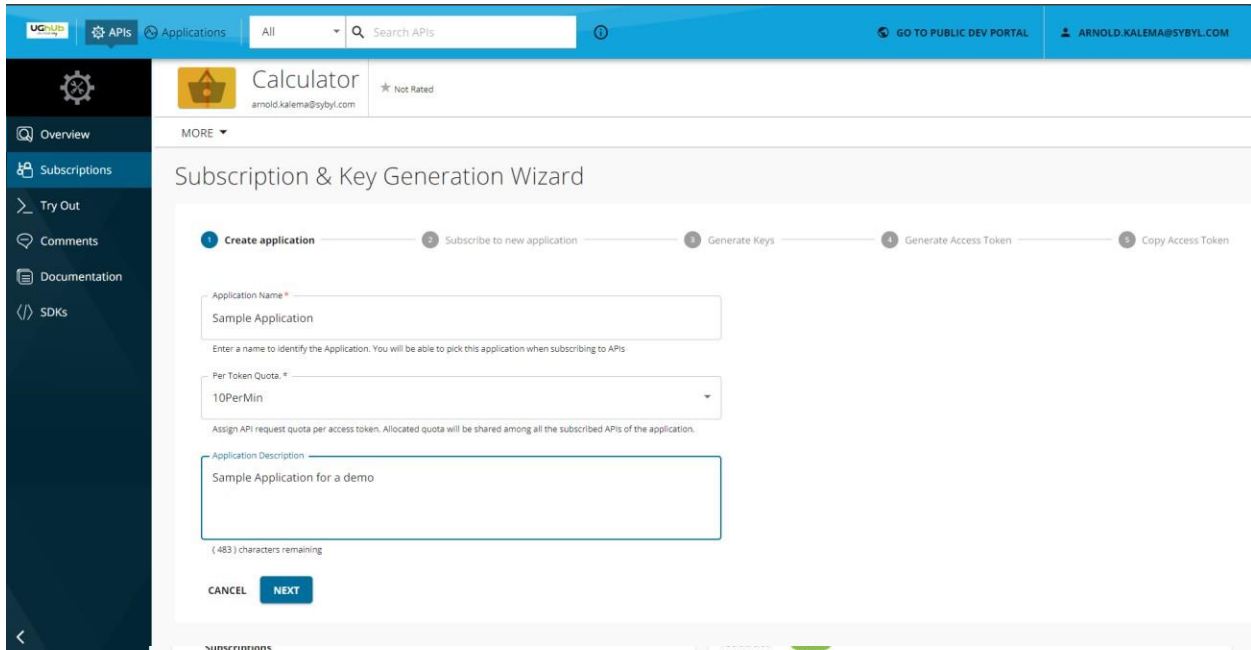


Figure 15 Showing API in the UGHub Developer portal

Subscribe to the Calculator API

To **subscribe** to the Calculator API, you **MUST create an application first**.

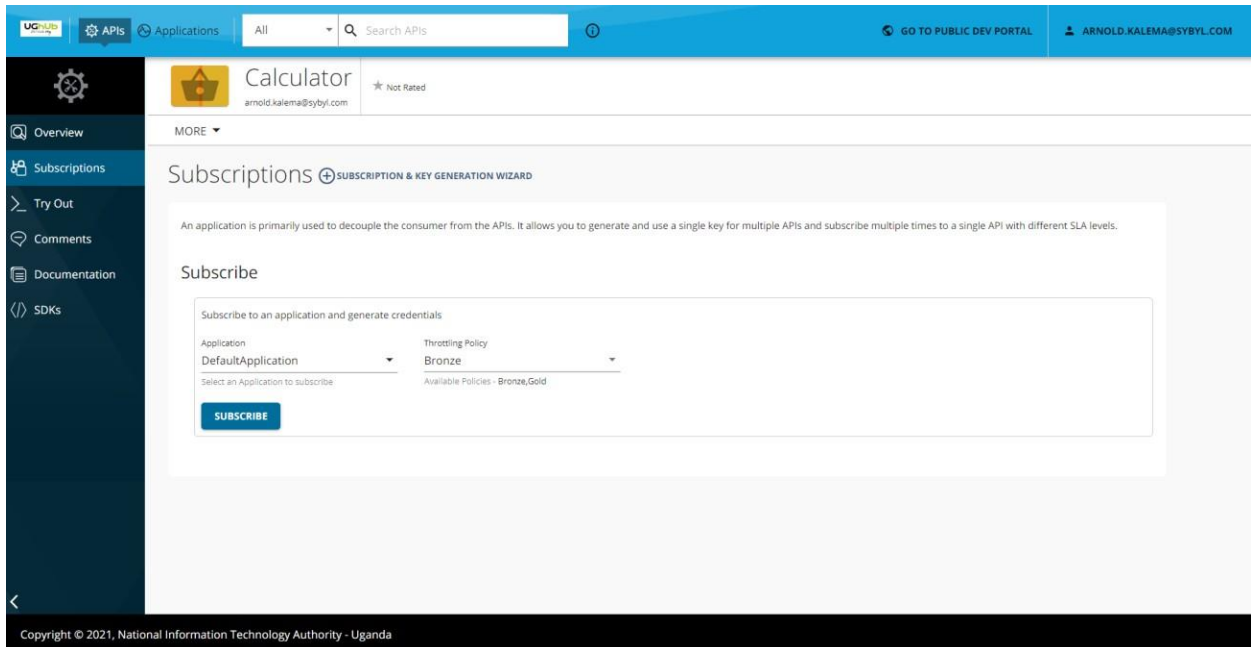


Figure 16 Subscribing to an API in the UGHub developer Portal

Enter the application details as shown in the image below.

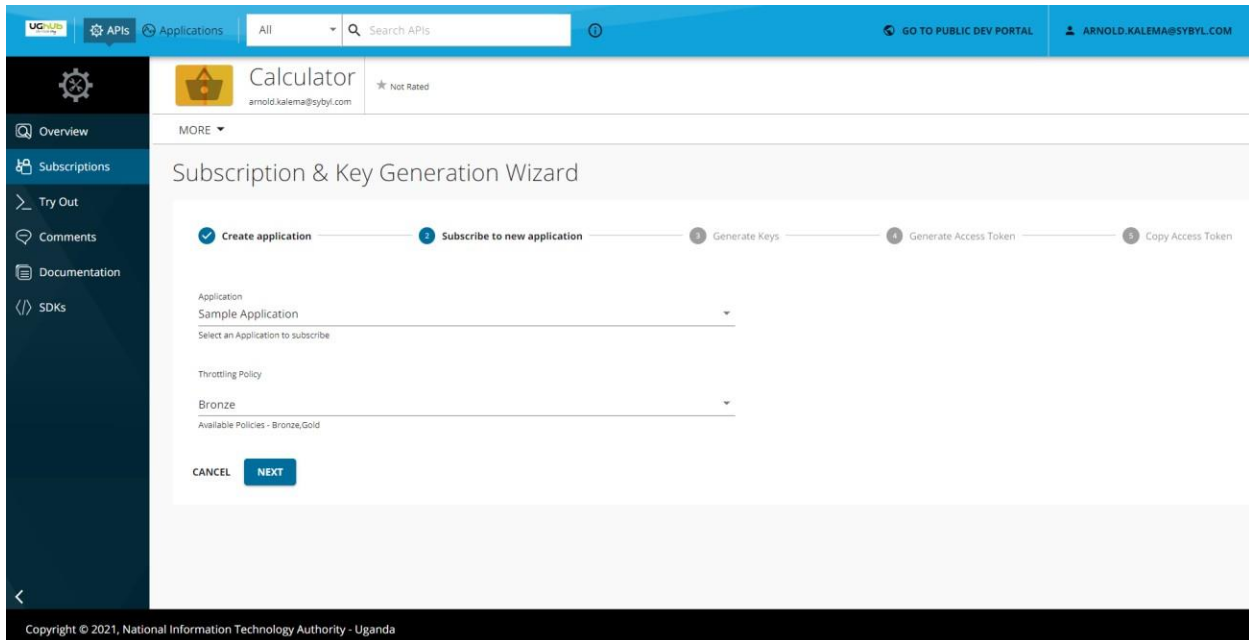
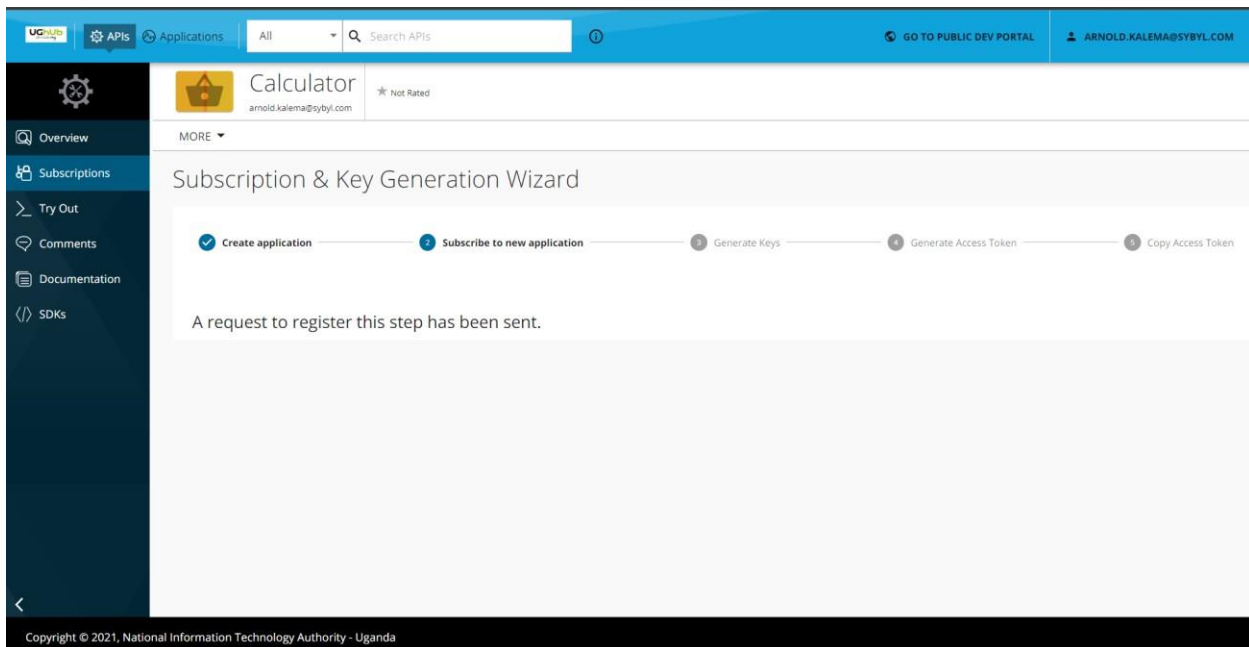
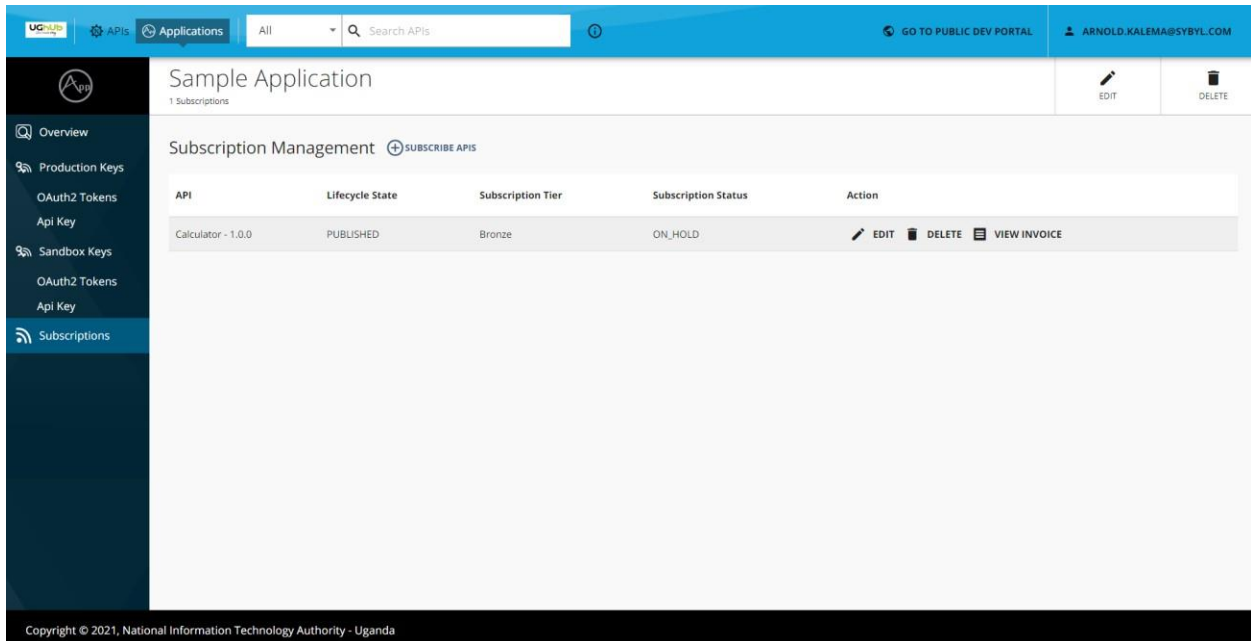


Figure 17 API Subscription and Key Generation Wizard

After clicking the **NEXT** button in the images shown above, The Calculator API subscription will be **put on hold** until it's **verified** and **approved** by the **tenant administrator** as shown below.



After the Calculator API has been **approved** by the **Tenant Administrator**, the subscription status will be updated to **UNBLOCKED**.



Obtain Access token for the Calculator API

As earlier mentioned, access the Developer portal using the link below;

Link <https://api-sit.integration.go.ug:9443/devportal/apis>

Select Tenant where your API was published.

nita.go.ug
nms.go.ug
pcuganda.com
ppda.go.ug
pridemicrofinance.co.ug
publicservice.go.ug
stanbicbank.co.ug
sybyl.com
upf.go.ug
ura.go.ug
ursb.go.ug
wso2.com

Figure 18 Showing a list of available tenants

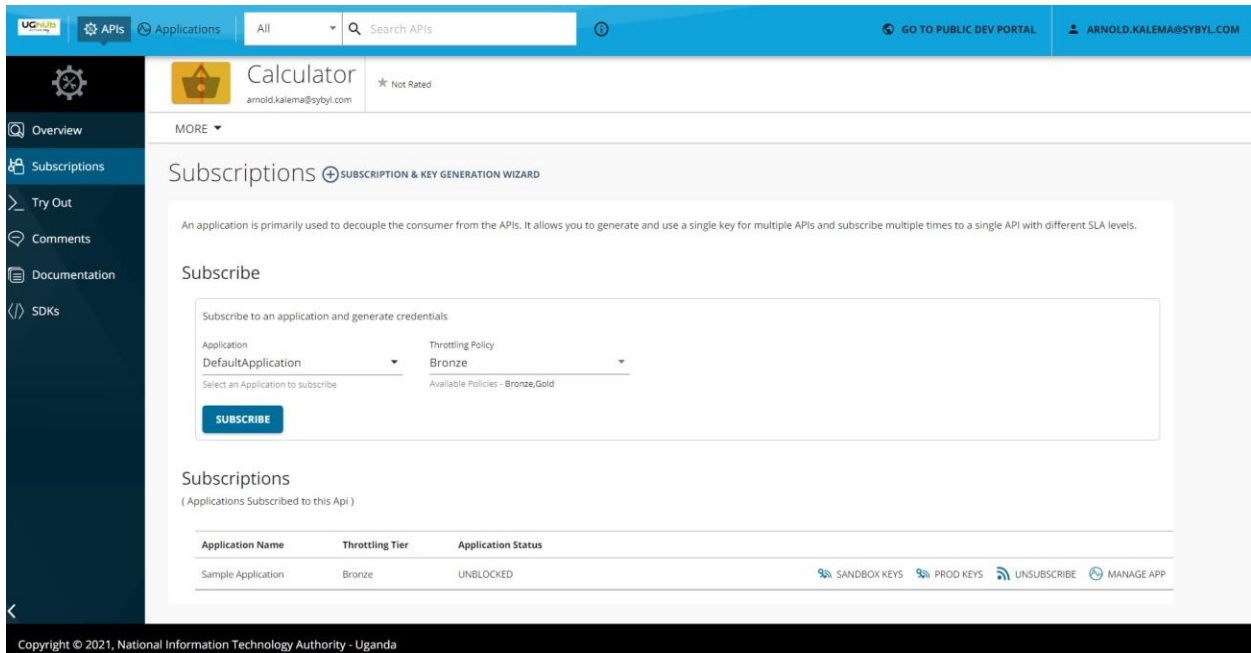
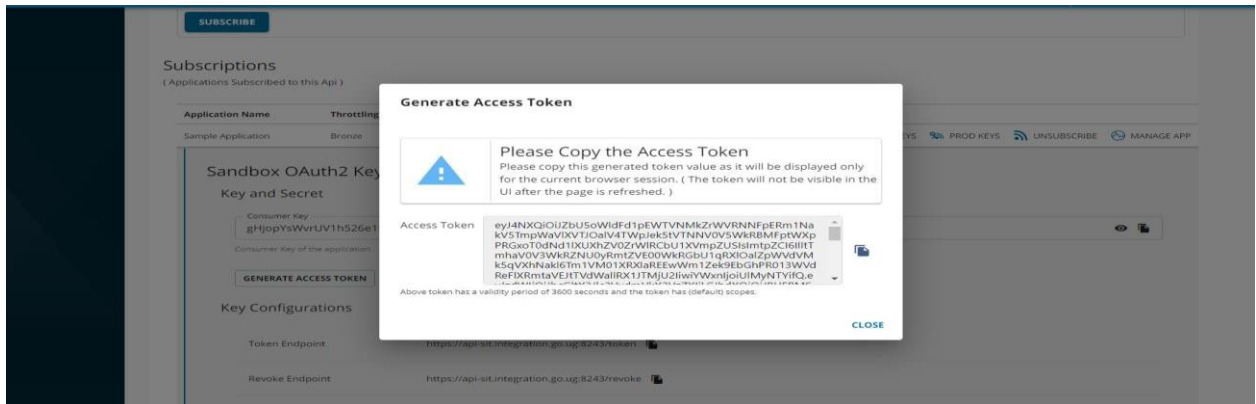
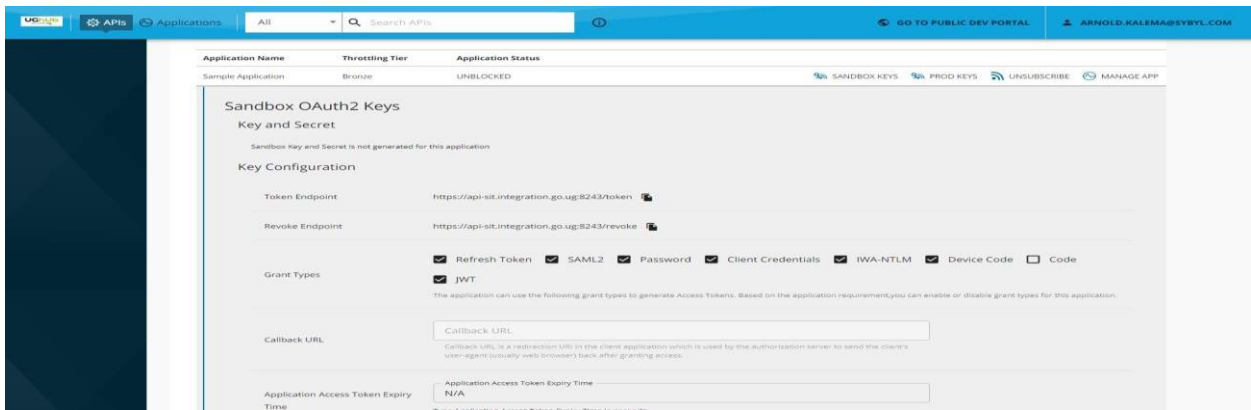


Figure 19 List of subscriptions

Click SANBOX KEYS to generate the access token.

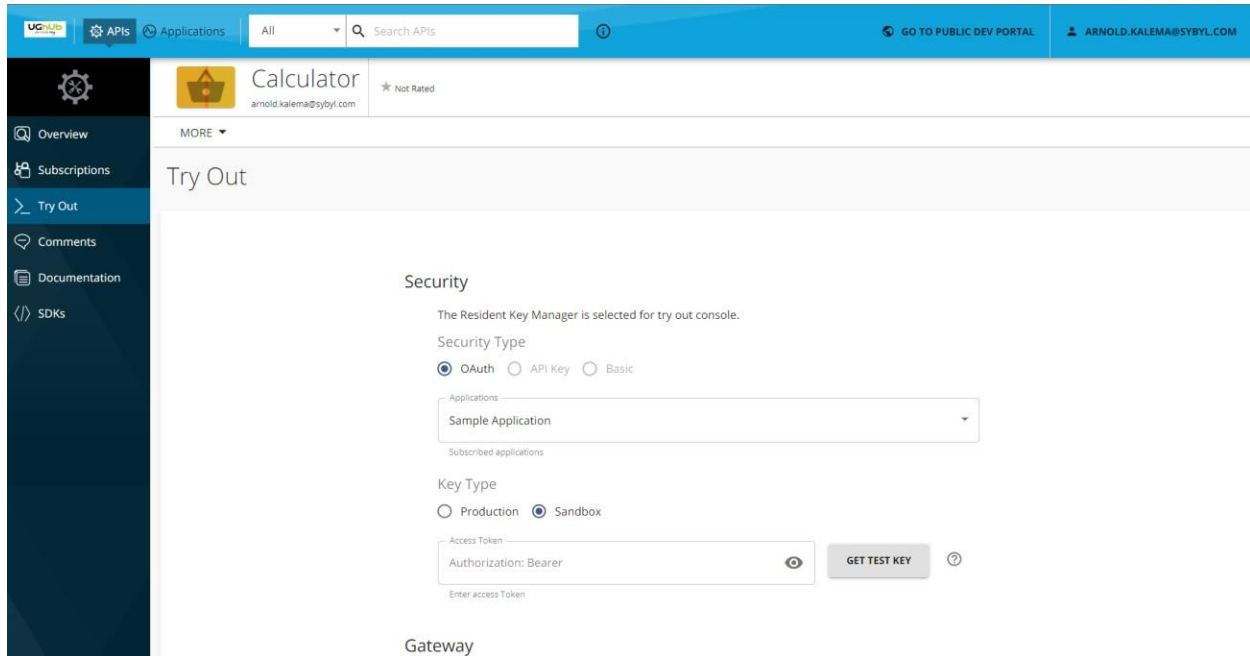


Consume the Calculator API

Consume the Calculator API via the Developer Portal

Click **Try Out** on the developer portal to **consume** the Calculator API.

Paste the **copied access token** into the **Access Token input field** as shown in the image below.



Alternatively, Click the **GET TEST KEY** button to input the access token automatically into the access token input field.

Key Type

Production Sandbox

Access Token

Authorization: Bearer ?

Enter access Token

Gateway

Environment

Production and Sandbox

Please select an environment

Click the **POST /subtract** tab to consume the **subtract resource** of the Calculator API as shown in the image below.

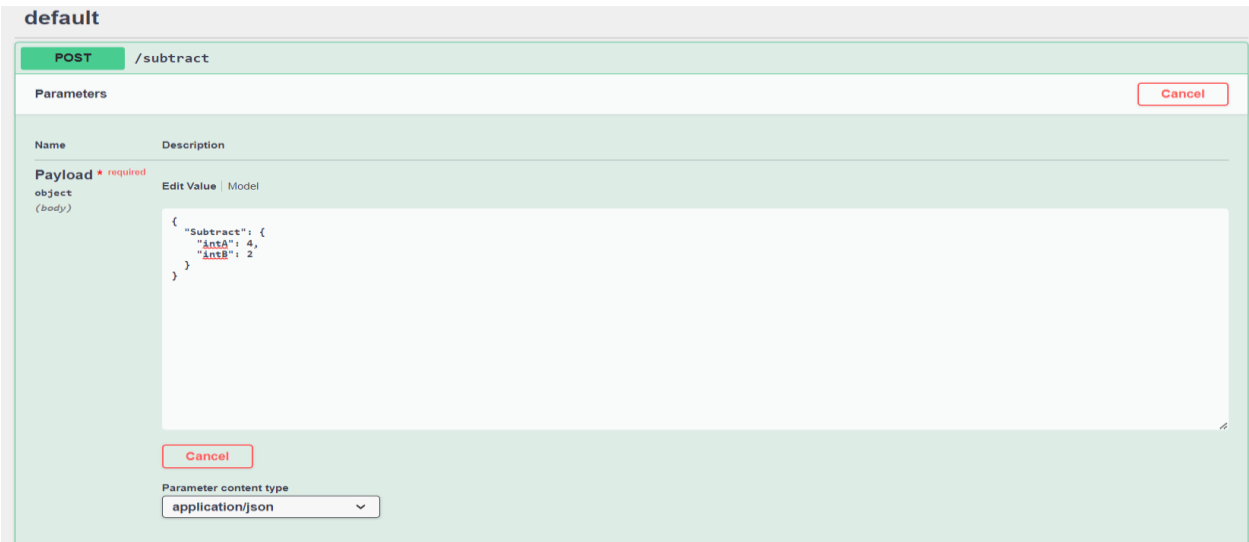
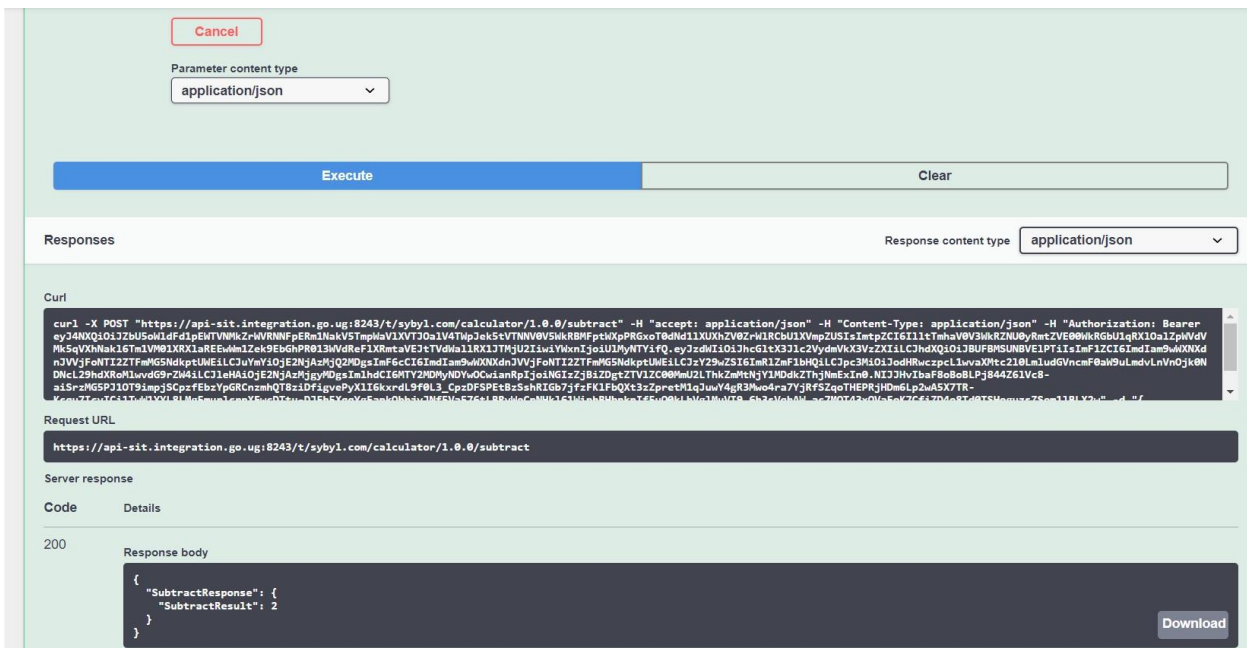


Figure 20 Testing API via Developer Portal

Input the **int A** and **int B** in the payload shown in the image above and click the **Execute** button.



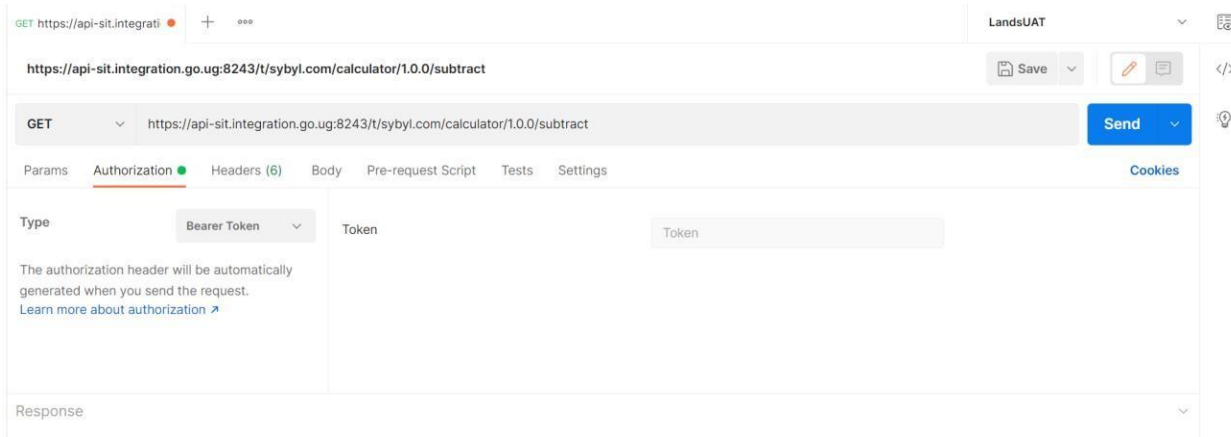
The response will be displayed as shown in the image above.

Consume the Calculator API via POSTMAN

Copy the URL shown in the image below to access the Calculator API via POSTMAN.



Input the **URL in POSTMAN** and also add the **access token** to access the **subtract resource** of the Calculator API.



Input the token as shown in the image below.



Click Send, to get the results.

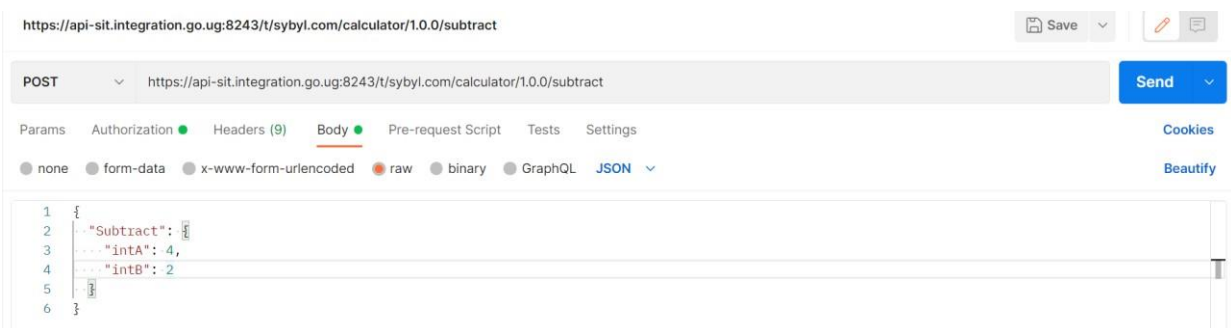


Figure 21 Consuming API using Postman

The screenshot displays a REST client interface for a POST request to the endpoint `https://api-sit.integration.go.ug:8243/t/sybyl.com/calculator/1.0.0/subtract`. The request body is a JSON object:

```

1 {
2   "Subtract": {
3     "intA": 4,
4     "intB": 2
5   }
6 }

```

The response status is 200 OK, with a time of 714 ms and a size of 590 B. The response body is a JSON object:

```

1 {
2   "SubtractResponse": {
3     "SubtractResult": 2
4   }
5 }

```

Note: The end point ([Calculator Web Service](#)) being accessed was a **SOAP** endpoint. You do realize we are sending a **REST request** and we get a **REST response**.

This is because the WSO2 APIM uses the WSO2 ESB (discussed in the first chapter) to **convert** our **REST request to a SOAP message** which is sent to the [Calculator Web Service](#), the response from the [Calculator Web Service](#) is then **converted to the REST response** we need.

Approve API Subscription

Access the Admin Portal

Login to the admin portal using valid tenant administrator credentials.

Use this link below to access the admin portal;

Link: <https://api-sit.integration.go.ug:9443/admin/>

Sign In

Forgot [Username](#) or [Password](#) ?

 Remember me on this computer

We use browser cookies to track your session to give better experience. You can refer our [Cookie Policy](#) for more details.

By signing in, you agree to our [Privacy Policy](#)

[Create Account](#) [Continue](#)

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Approve the Subscription

The screenshot shows the UGHub dashboard interface. On the left is a dark sidebar with navigation options: Dashboard, Rate Limiting Policies (Advanced, Application, Subscription, Deny), Gateways, API Categories, Key Managers, Manage Alerts, Bot Detection (Bot Detection Data, Configure Emails), and Tasks (User Creation, Application Creation, Subscription Creation, Subscription Update, Application Registration, API State Change). The main content area is titled 'Dashboard' and features several widgets. The 'Rate Limiting' widget lists: Advanced Policies (Control access per API or API resource using advanced rules), Application Policies (Applicable per access token generated for an application), Subscription Policies (Control access per Subscription), and Custom Policies (Allows system administrators to define dynamic rules for specific use cases, which are applied globally across all tenants). The 'API Category based grouping' widget includes a description of API categories and an 'Add new Category?' button. The 'Pending tasks' widget shows one task: 'Calculator-1.0.0 Sample Application', subscribed by 'arnold.kalema@sybyl.com' 3 minutes ago, with 'Accept' and 'Reject' buttons.

Figure 22 Approve subscriptions

Click the **Accept button** shown in the image above to approve the Calculator API subscription.

Discovering APIs – Developer Portal

Access the Developer Portal using link below;

Link: <https://api-sit.integration.go.ug:9443/devportal/>

You will be redirected to the login page as shown in the image below. Enter valid credentials of the user with an **internal/subscription role**.

Sign In

Forgot [Username](#) or [Password](#) ?

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Search for Calculator API

The image shown below illustrates the developer portal.

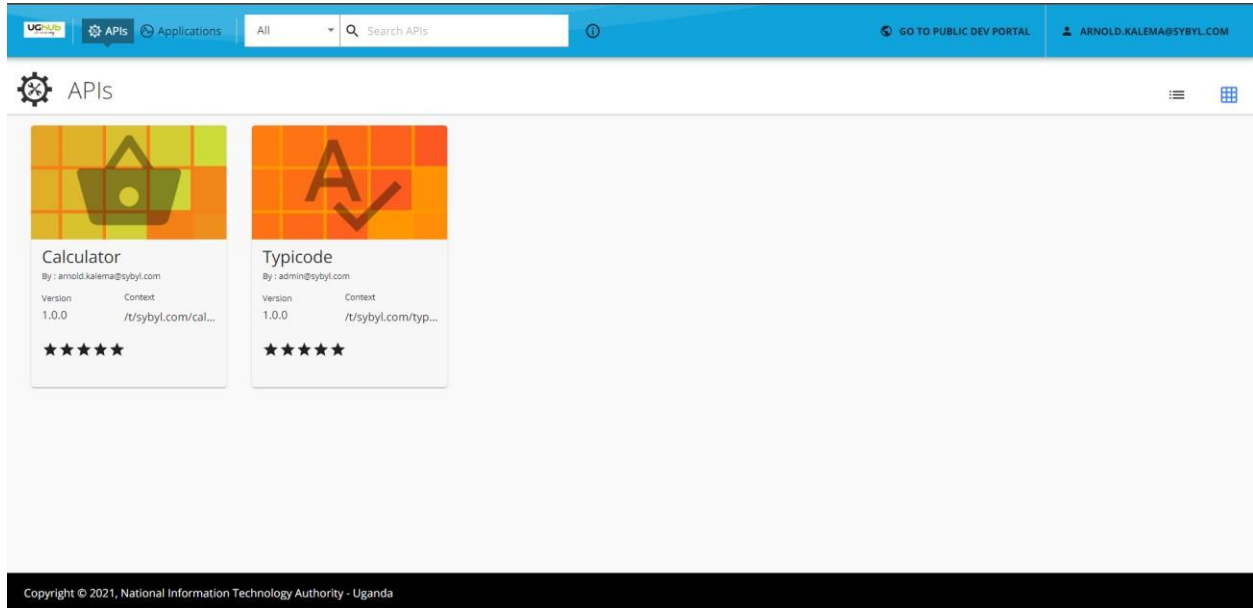
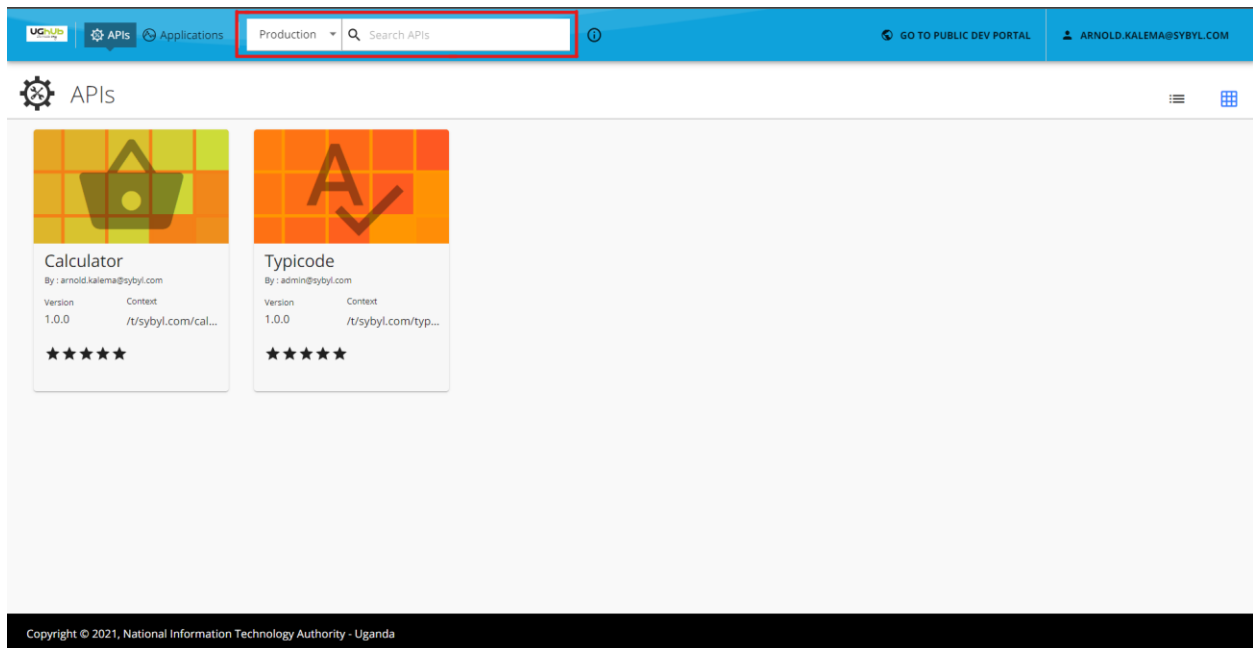


Figure 23 Search APIs via Developer Portal

Input the **name** of the API using looking for in the search input shown in the image below.

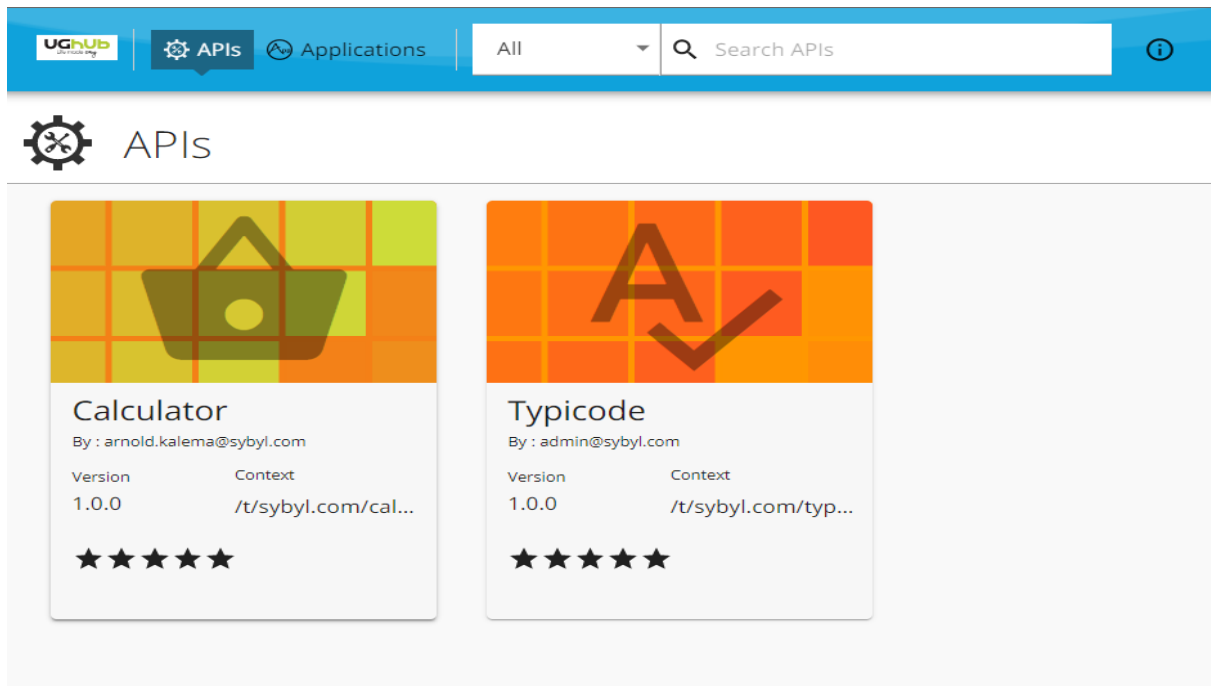
For more information go to this link

<https://apim.docs.wso2.com/en/3.2.0/learn/consume-api/discover-apis/search/>



Adding Comments to the APIs

Access the Preferred API in the Developer Portal



Select the preferred API to which you would like to provide a **comment**. For this case the **Calculator API** will be selected.

Access the Comments Section

Click the Comments tab as shown in the image below to access the comments section. Input your comment and click the **ADD COMMENT** button to save the comment.

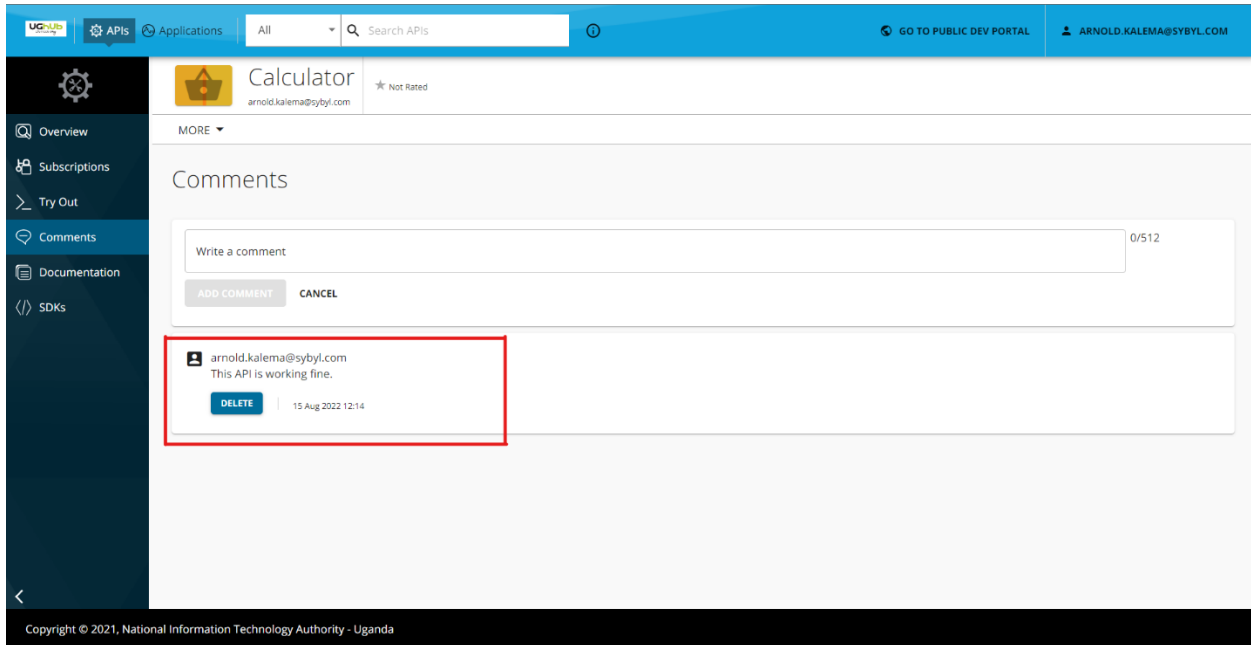
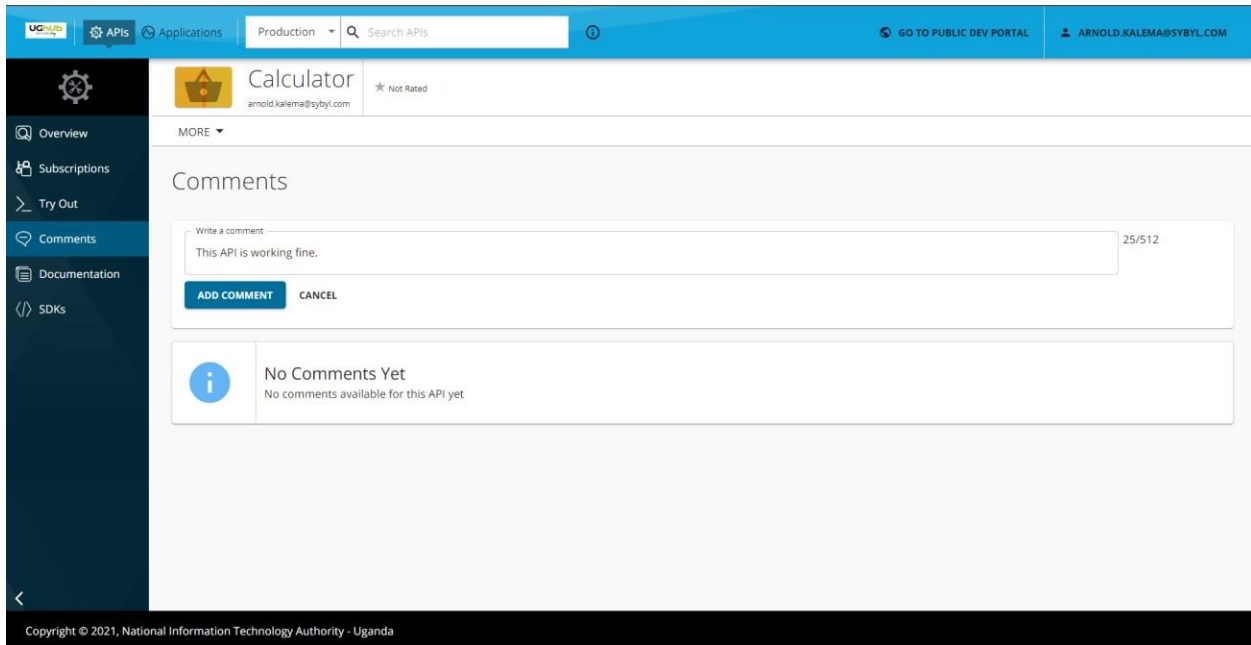


Figure 24 Adding comments to an API

The comment will appear as shown in the image above.

Semantic and System Catalogue - User Guide

This section describes the process of giving access to the end user to view the assets.

Link: <https://catalogue-sit.integration.go.ug:9443/carbon>

Create User and set Permissions

Use Case: I'm Mukisa and I'm from Kampala Capital City Authority (KCCA). I want to see the KCCA related Assets.

Create User in Identity Server


KCCA admin (tenant-admin) user has to log into the Identity Server

management console. Username: kcca-admin@kcca.go.ug

Password: <kcca-admin password>

Link: <https://is-sit.integration.go.ug:9443/carbon>

Go to the Main → Identity → Users and Roles → Add New User



The screenshot shows a web browser window with the URL `ismgt-uat.integration.go.ug/kcca.go.ug/carbon/user/add-step1.jsp`. The page is titled "Management Console" and shows a user logged in as "kcca-admin@kcca.go.ug". The main content area is titled "Add New User" and "Step 1: Enter Username and Password". The form includes a "Domain" dropdown menu set to "PRIMARY", a "Username" field containing "mukisa", a "Password" field with masked characters, and a "Confirm Password" field also with masked characters. There are "Next >", "Finish", and "Cancel" buttons at the bottom of the form. A sidebar on the left contains navigation links for "Home", "Identity", "Users and Roles", "User Stores", "Claims", "Service Providers", and "Identity Providers".

Create User in Semantic and System Catalogue

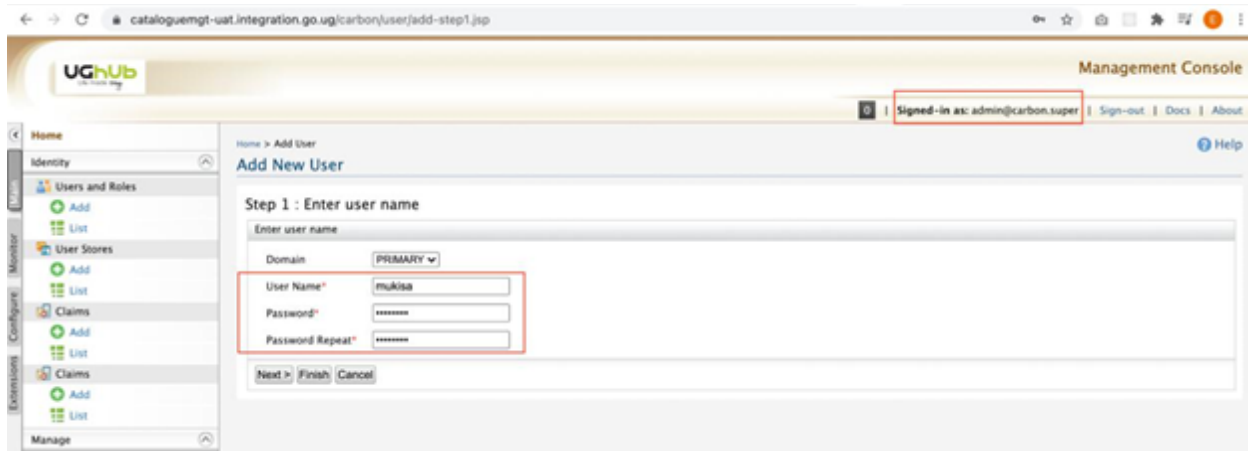
Admin user has to log into the Semantic and System Catalogue management console.

Username: admin

Password: <admin password>

Go to the Main → Identity → Users and Roles → Add

New User. Give username as "mukisa" and password.



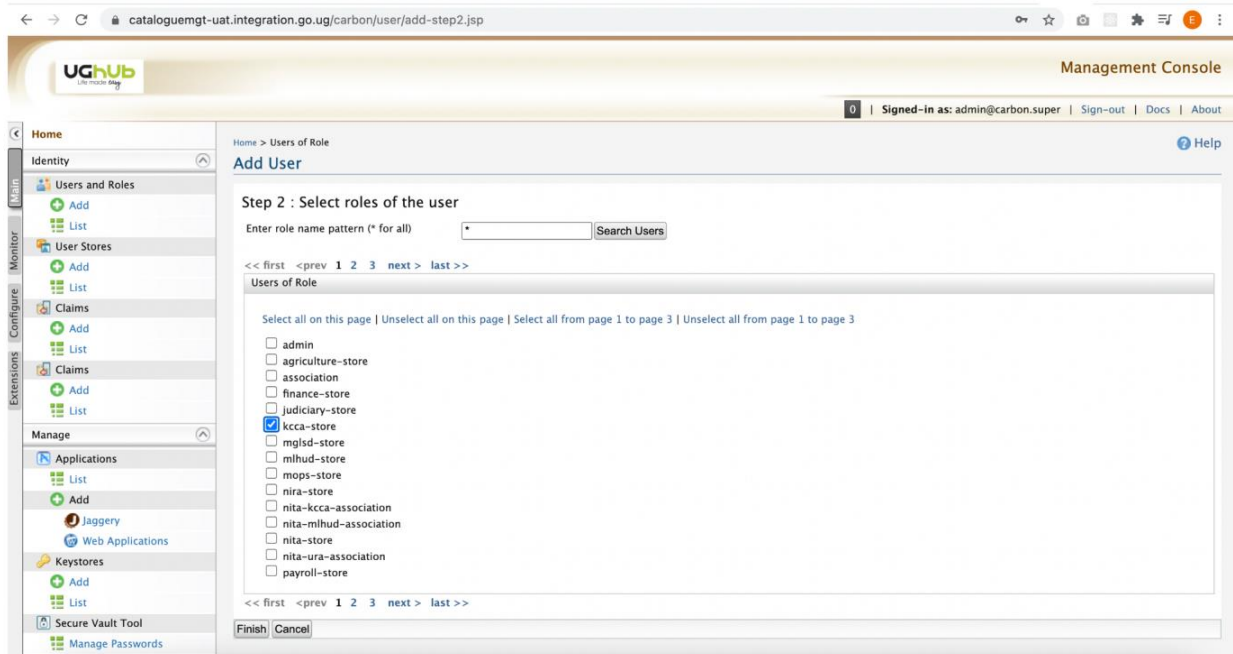
The screenshot shows a web browser window with the URL `cataloguemgt-uat.integration.go.ug/carbon/user/add-step1.jsp`. The page is titled "Management Console" and features the UGHub logo. A navigation menu on the left includes "Home", "Identity", "Users and Roles", "User Stores", "Claims", and "Manage". The main content area is titled "Add New User" and "Step 1 : Enter user name". It contains the following form fields:

- Enter user name (text input)
- Domain: PRIMARY (dropdown menu)
- User Name*: mukisa (text input)
- Password*: (password input)
- Password Repeat*: (password input)

Buttons for "Next >", "Finish", and "Cancel" are located at the bottom of the form. The top right corner shows the user is signed in as "admin@carbon.super".

Assign permissions to the new user

Assign kcca-store and Internal/store permissions.



KCCA admin(tenant-admin) should send username and password to Mukisa.

Username: mukisa@kcca.go.ug

Password: <password>

New user views assets on Store Portal

Now Mukisa can log into the store portal using her username and password. Now she is able to view KCCA related assets.

Link: <https://catalogue-sit.integration.go.ug:9443/store>

ismgt-uat.integration.go.ug/authenticationendpoint/login.do?RelayState=https%253A%2F%2Fcataloguemgt-uat.integration.go.ug%2Fstore%2Fpages%2Ftop..

Sign In

Forgot [Username](#) or [Password](#) ?

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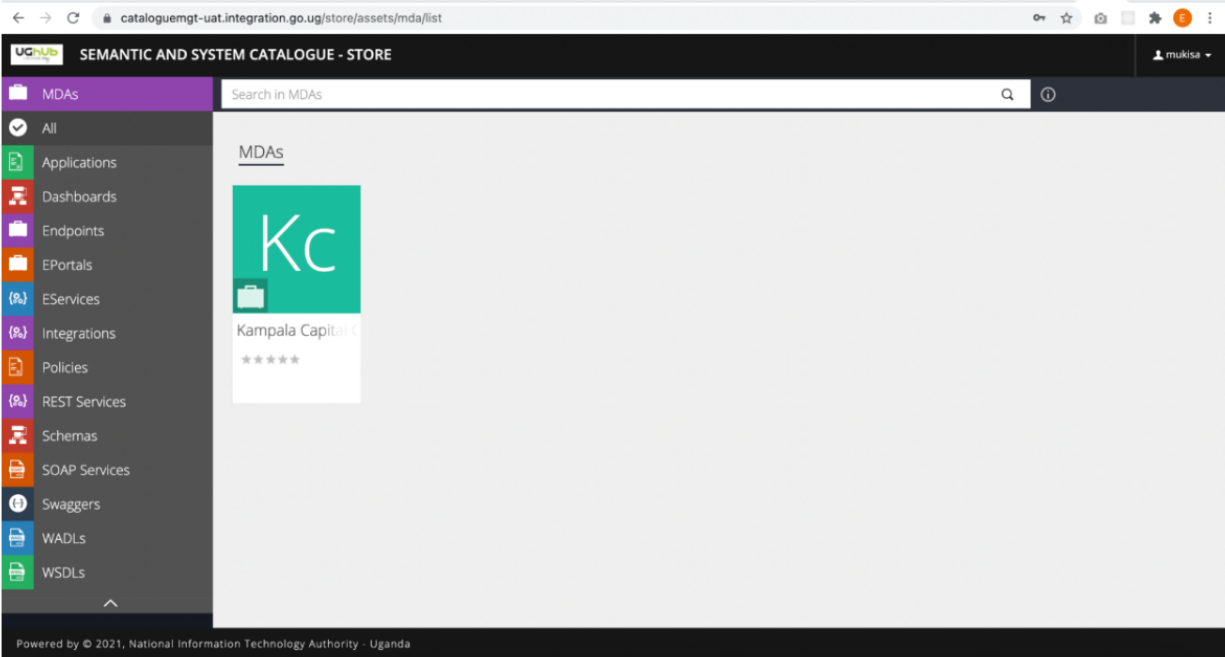
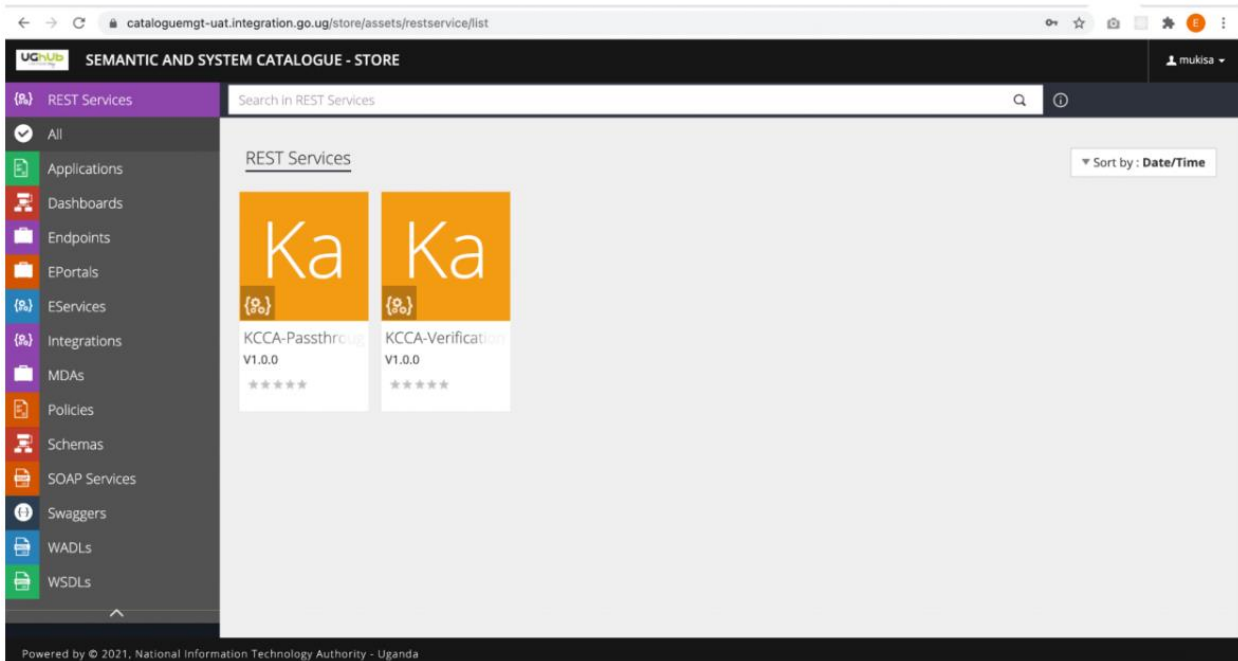


Figure 25 Semantics and System catalogue Store



View on Publisher Portal

Log into the publisher portal and select the relevant asset. Under the Lifecycle tab, you can see the Lifecycle details and you can promote or demote the stages here.

Link: <https://catalogue-sit.integration.go.ug:9443/publisher>

The screenshot displays the 'SEMANTIC AND SYSTEM CATALOGUE - PUBLISHER' interface. The top navigation bar includes 'HOME / MDAS / KAMPALA CAPITAL CITY AUTHORITY' and a user profile 'kcca-admin'. The main menu features 'MDAs', 'EDIT', 'DELETE', 'LIFECYCLE', 'ASSOCIATIONS', 'VERSION', and 'PERMISSIONS'. The 'LIFECYCLE' tab is active, showing the 'Kampala Capital City Authority' logo and 'KCCALifeCycle : Development'.

Lifecycle Information
Active: KCCALifeCycle
State: Tested
Current State Duration: 00s

The lifecycle diagram shows three stages: DEVELOPMENT, TESTED, and PRODUCTION. The 'TESTED' stage is highlighted in blue. Arrows labeled 'PROMOTE' and 'DEMOTE' indicate transitions between stages.

Check lists
The check items will be automatically saved
 Effective Inspection Completed
 Test Cases Passed
 Smoke Test Passed

Comment
This comment will be recorded with the state transition

History
2021-08-19 kcca-admin moved asset from Development to Tested in KCCALifeCycle

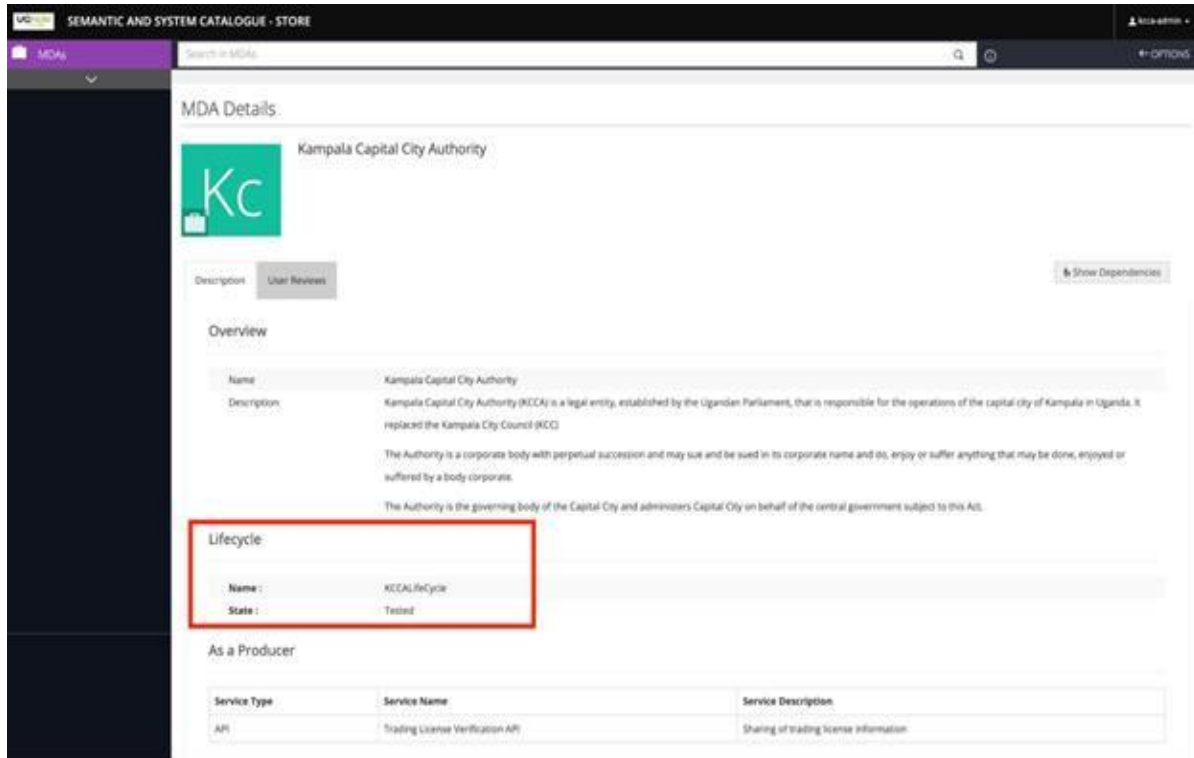
Figure 26 Semantics and System Catalogue Publisher

For example, Lifecycle is promoted to the next stage as "Tested" as follows.

View on Store Portal

Log into the store portal and click on the relevant asset. Now you can see the Lifecycle details here.

Link: <https://catalogue-sit.integration.go.ug:9443/store>



SEMANTIC AND SYSTEM CATALOGUE - STORE

MDA Details

Kampala Capital City Authority

Kc

Description User Reviews Show Dependencies

Overview

Name: Kampala Capital City Authority

Description: Kampala Capital City Authority (KCCA) is a legal entity, established by the Ugandan Parliament, that is responsible for the operations of the capital city of Kampala in Uganda. It replaced the Kampala City Council (KCC).

The Authority is a corporate body with perpetual succession and may sue and be sued in its corporate name and its, enjoy or suffer anything that may be done, enjoyed or suffered by a body corporate.

The Authority is the governing body of the Capital City and administers Capital City on behalf of the central government subject to this Act.

Lifecycle

Name: KCCALifeCycle

State: Tested

As a Producer

Service Type	Service Name	Service Description
API	Trading License Verification API	Sharing of trading license information

Analytics, dashboards and Reporting

APIM Analytics provides statistics, reports and graphs on the APIs deployed in API Manager. In order to monitor the data easily, APIM-Analytics offers different dashboards that show different views of the APIs to different perspectives of the underlying API system.

URL: https://<APIM_Analytics_Host>:<APIM_Analytics_Port>/analytics-dashboard
<https://apim-analytics-uat.integration.go.ug:9643/analytics-dashboard/>

API based Analytics has the following features.

- Can be filtered based on the API or date.
- Can be used for multi-tenant environments.
- Can be downloaded as PDF or CSV.

Log into the API-Analytics portal:

<https://apim-analytics-uat.integration.go.ug:9643/analytics-dashboard/>

Username: <tenant-username> e.g. admin@groupa.com

Password: <groupa-admin-password>

Sign In

admin@groupa.com

.....

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Business Analytics

Business Analytics dashboard consists of 12 pages i.e. Overview, Usage Summary, API Usage, Performance Summary, API Performance, Throttle Summary, Error Summary, API Errors, API Statistics, Developer Statistics, Geo Map and Devices.

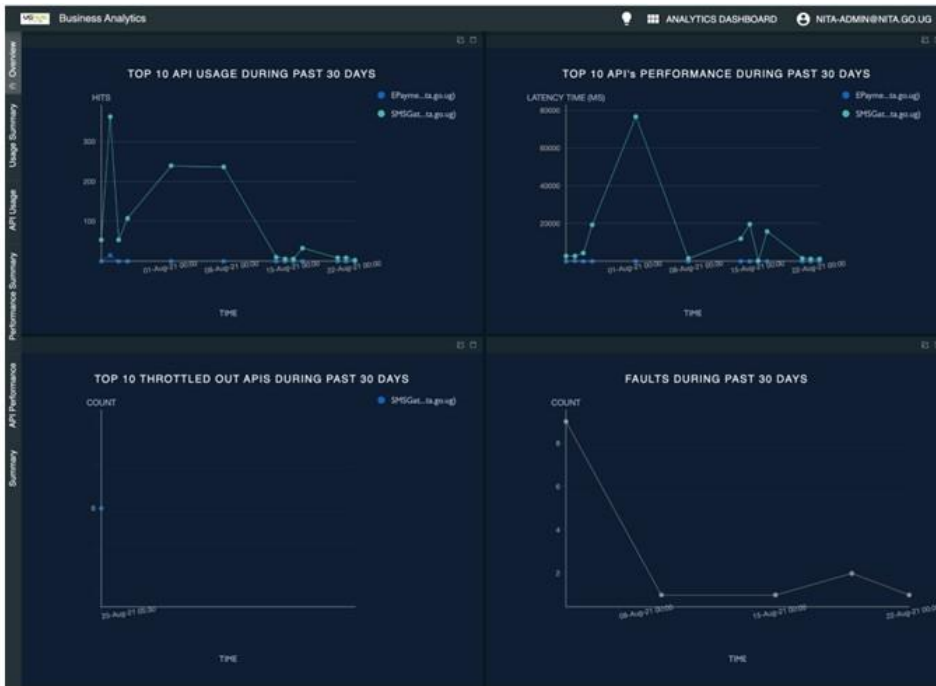


Figure 27 Showing Business analytics and dashboards

Application Analytics

Application Analytics dashboard contains only one page such as **Analytics**.

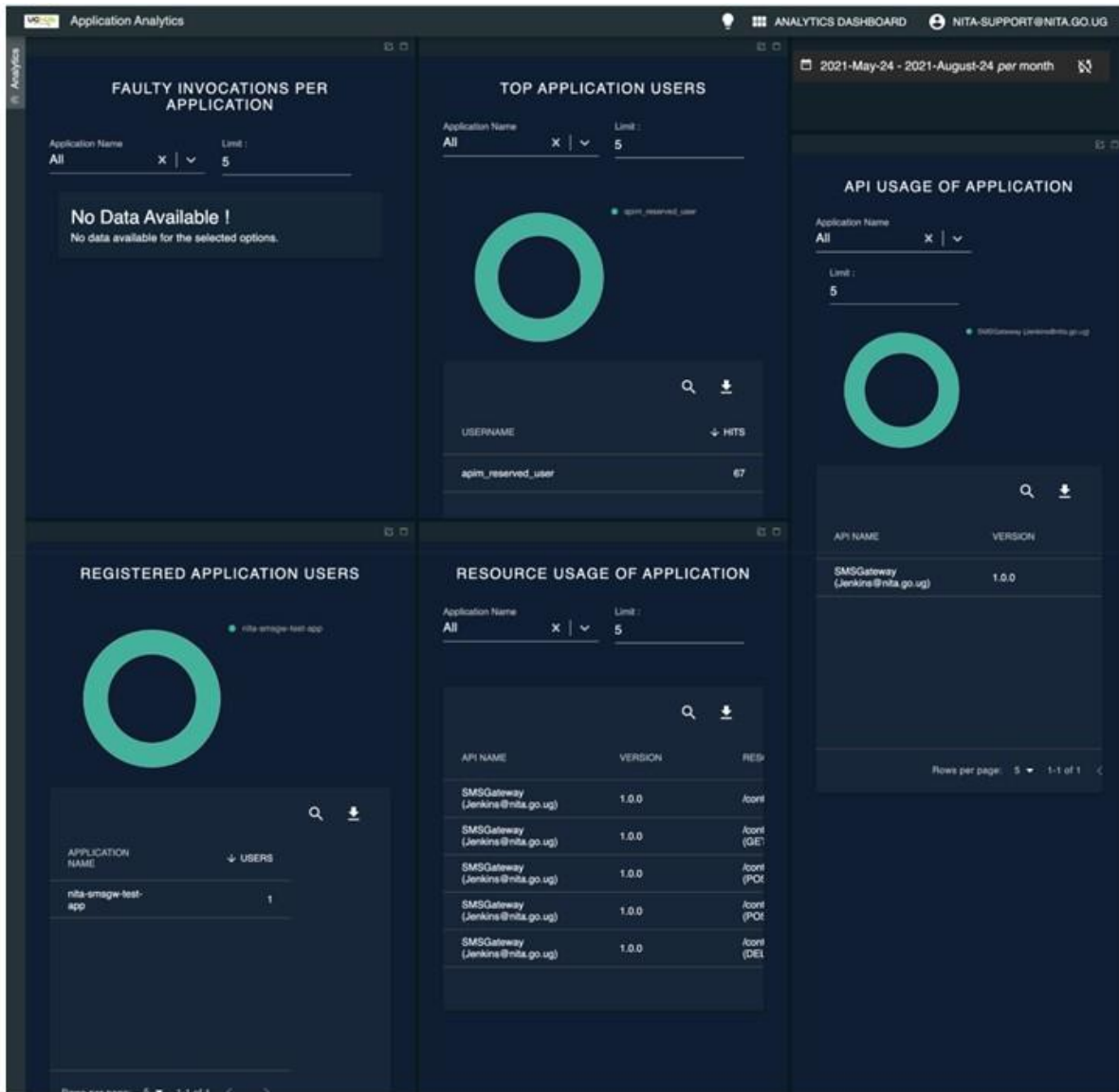
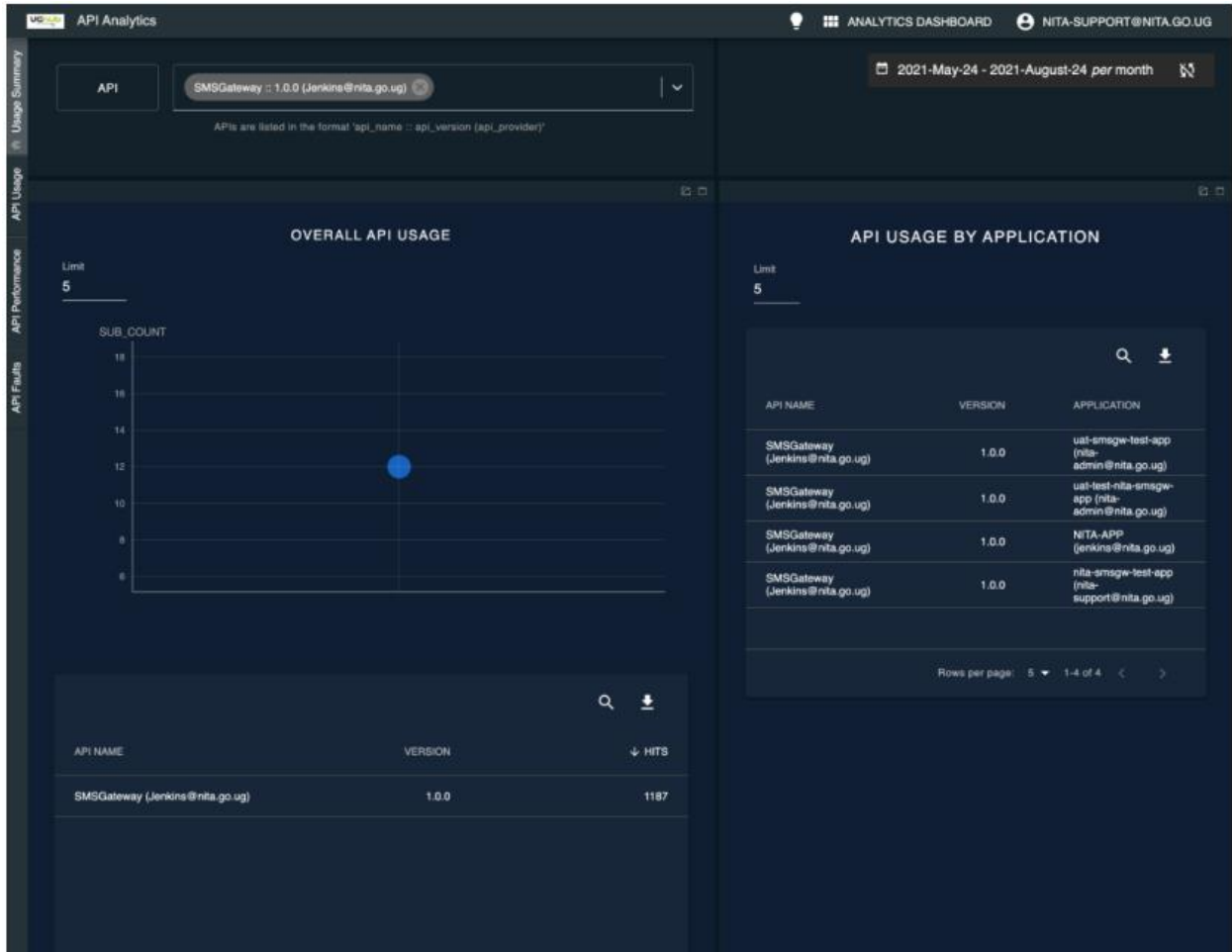


Figure 28 Showing Application Analytics and dashboards

API Analytics

API Analytics dashboard consists of 4 pages such as Usage Summary, API Usage, API Performance and API Faults.



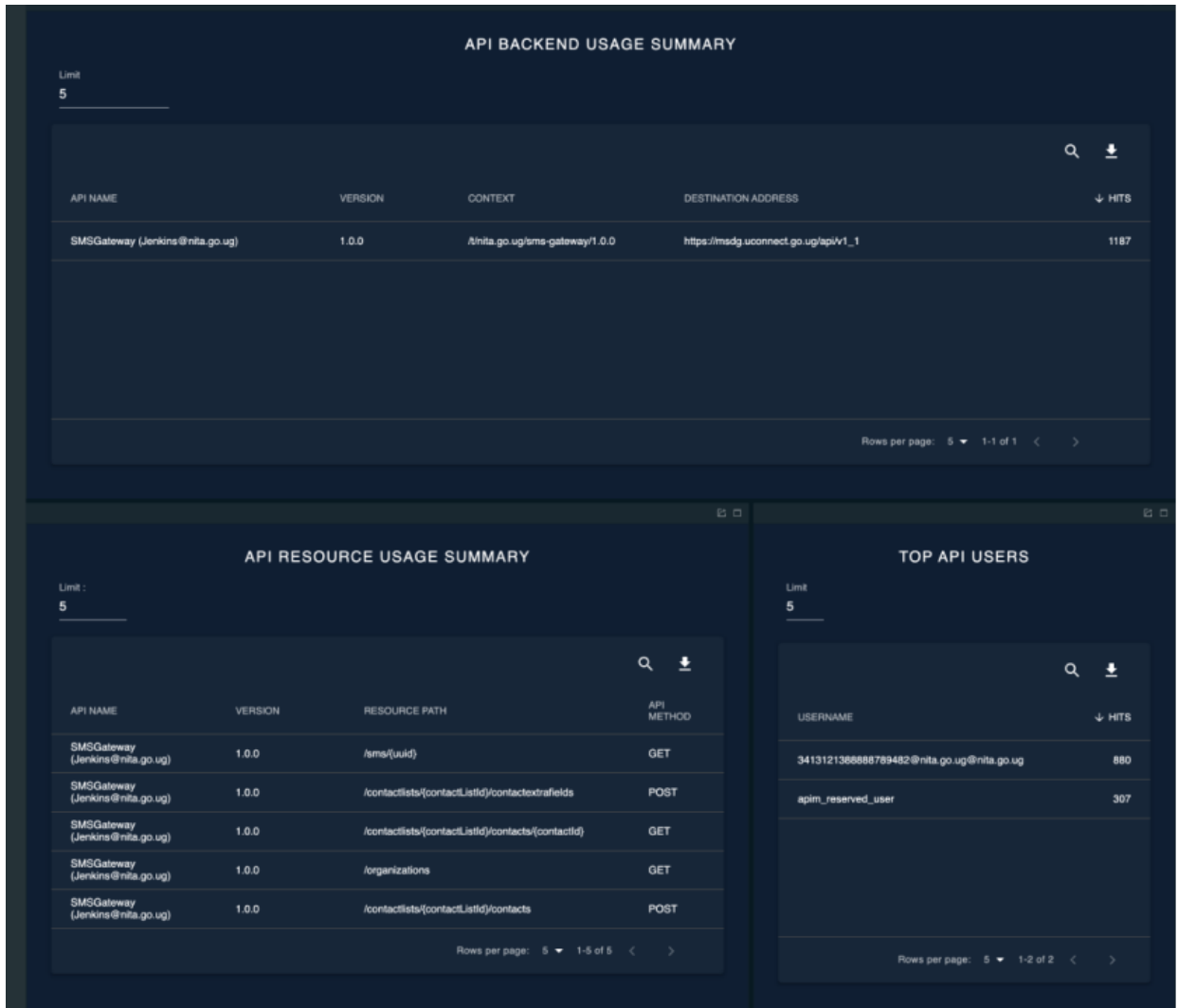


Figure 29 Showing API Usage Summary

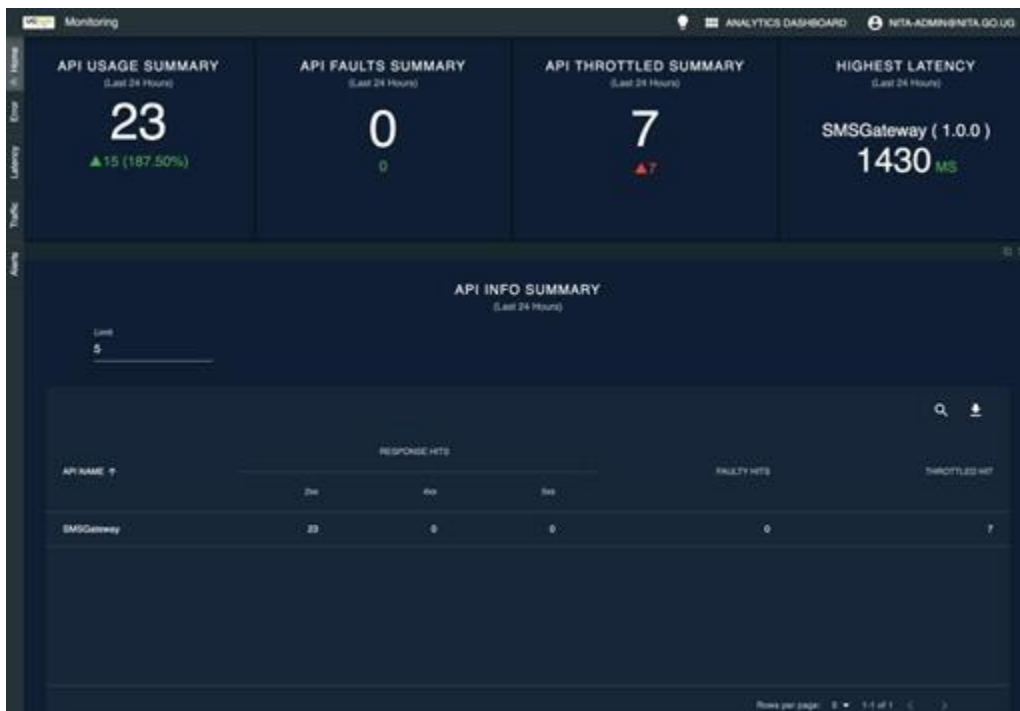
Reports

APIM Monthly API Usage Report. Here Report can be downloaded for the selected month and year.



Monitoring

Monitoring dashboard consists of 4 pages such as Home, Error, Latency, Traffic and Alerts.





- Driving the IT Revolution -

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Palm Courts

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