Kong

Powering the API world

Kong Konnect Workshop

October 2024

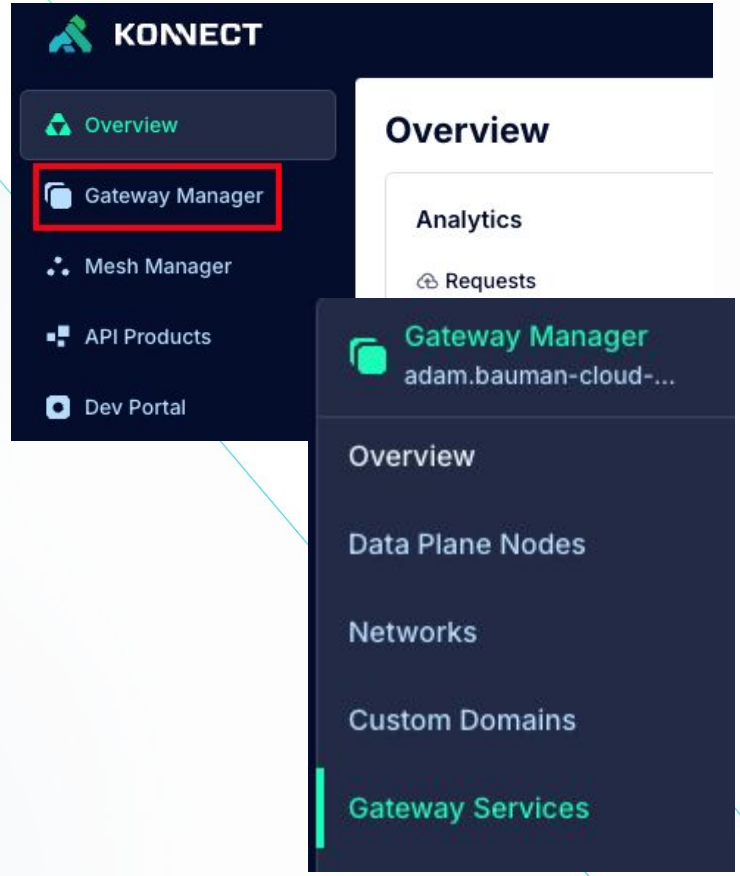
AGENDA

1. Hands on with Kong Konnect
    - Deploy your API
    - Secure the API
    - Expose API to external developers
    - Observe API Usage
2. Developing APIs with Insomnia
    - Sharing Collections
    - Designing API Specs

Deploy and Test an API with Kong Konnect

The following steps will guide you through, creating a Gateway Service

1. Log into the Kong Konnect UI with your username and password - https://cloud.konghq.com/login/
2. On the left menu, select the “Gateway Manager” menu item
3. Select/open your assigned Control Plane
4. On the left menu, select the “Gateway Services” sub menu
5. Click the “New Gateway Service” button in the upper right corner.
6. Give your service a name, e.g. “httpbin” and set the Upstream URL value to http://httpbin.konghq.com/anything
7. Click the “Save” button at the lower right corner of the window.



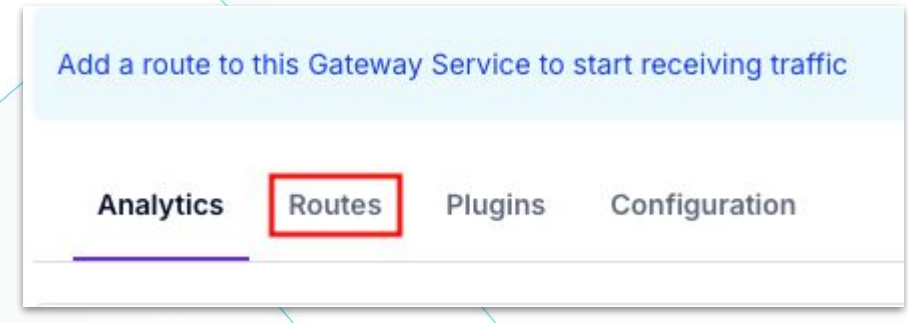
You have just configured your Kong Gateway to connect to an API application. Proceed to the next page to add a route to your new service

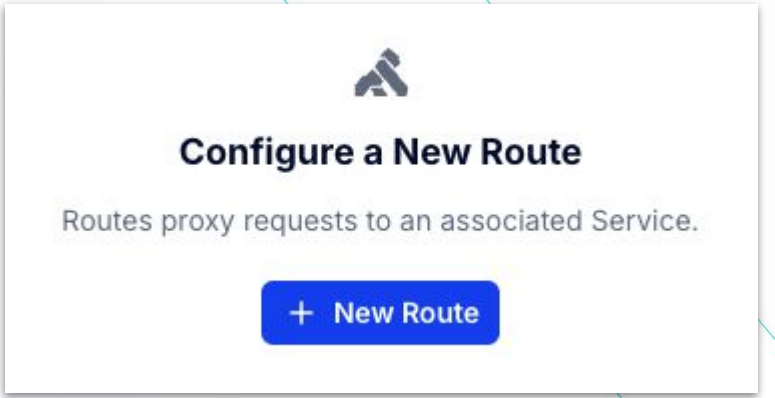
Deploy and Test an API with Kong Konnect

Now create a *route* for your service.

1. In the center of the window, select the “Routes” tab.
2. Click the “New Route” button located at the bottom center of the window.
3. Give your new route a name, e.g. “echo” and set the Path value to “/echo”
4. Click “Save” in the lower right corner of the window

You have now configured the Kong Gateway to proxy traffic to an “Upstream” application. We will proceed to test connectivity to the application from Kong’s Insomnia



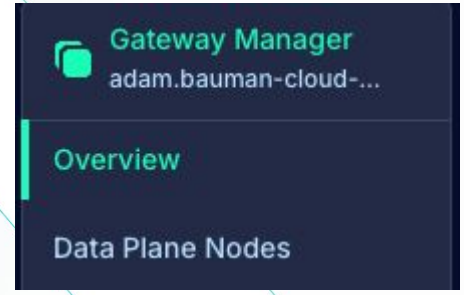


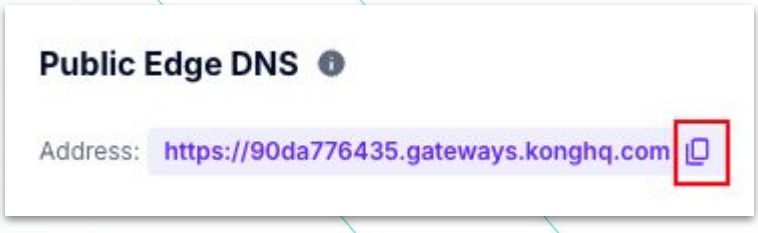
Deploy and Test an API with Kong Konnect

Get the public URL for your Gateway

1. In the left menu, click the “Gateway Manager -> Overview” menu item
2. In the upper right corner, click the “Connect” button
3. Under the “Public Edge DNS” section click the copy icon next to the URL of your Kong Gateway
4. Open or switch to the Insomnia application

Proceed to the next page to set up Insomnia



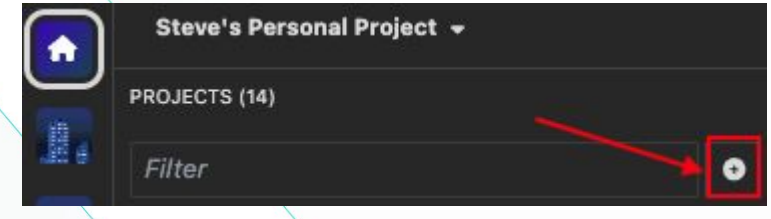


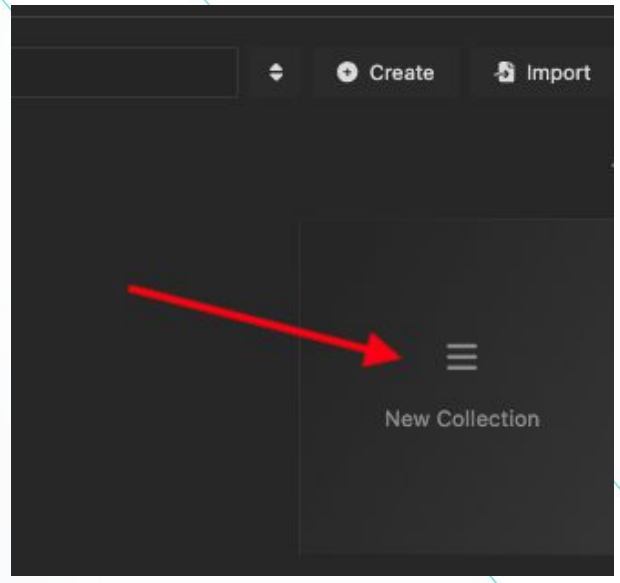
Deploy and Test an API with Kong Konnect

Create a new Insomnia Project and Collection

1. In your Personal Organization, create a new project by clicking on the “+” icon
2. Give it the name “Kong Workshop” and optionally, set storage to Local Vault and click “Create”
3. In the center of the window, click the “New Collection” tile
4. Call your collection “Gateway Testing” and click “Create”

Proceed to the next page to create a request



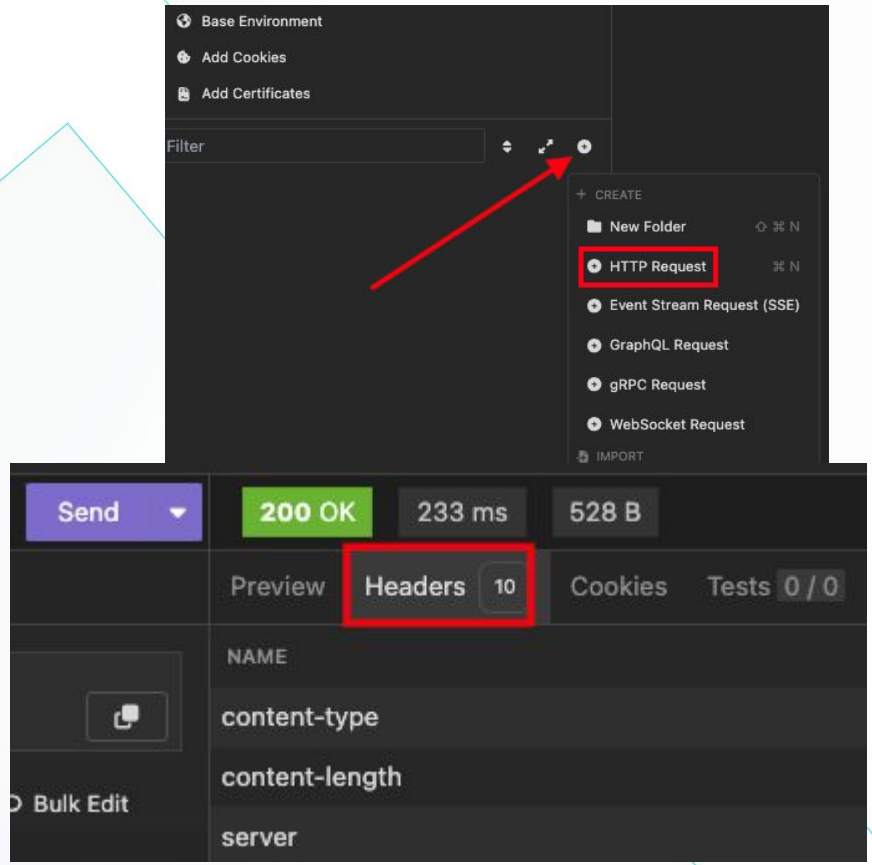


Deploy and Test an API with Kong Konnect

Create a new Insomnia request

1. Create a new HTTP Request by using the create drop down menu
2. In the URL field, paste your clipboard containing your Gateway FQDN
3. Append the path “/echo” to the URL
4. Click the “Send” button - you should receive a “200” response and a JSON body in the “Preview” window pane.
5. Click the “Headers” pane to view the response headers, some of which your Gateway has added to provide additional insights into the Gateway performance.

Pause here and wait for the instructor to proceed



Protect and Secure your API

Add a Plugin to your Gateway Service

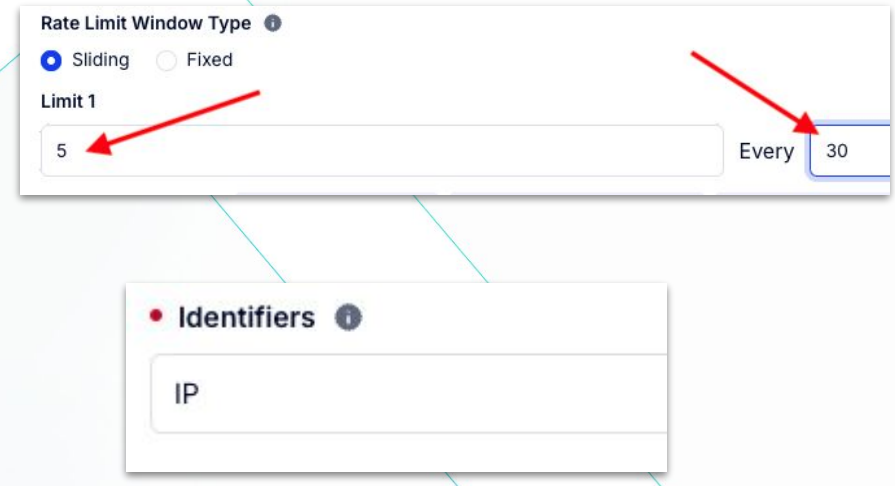
1. Return to the Konnect UI
2. On the left menu, select the “Gateway Services” sub menu for your Control Plane
3. Select the service you previously created (httpbin)
4. Near the center of the window, select the “Plugins” tab then click the “New Plugin” button in the lower center of the window
5. In the filter field type the text “rate”
6. Scroll down to find the “Rate Limiting Advanced” plugin and Click “Enable” at the bottom of the tile

Proceed to the next page to configure your plugin

Protect and Secure your API

Configure the plugin

1. In the “Limit 1” field enter the value 5. In the “Every” field enter 30. This sets the request limit to five requests every 30 seconds.
2. In the “Identifiers” drop down menu, select “IP”. This selection sets the rate limit for each individual IP address accessing your API.
3. Click the “Save” button on the lower right corner of the window



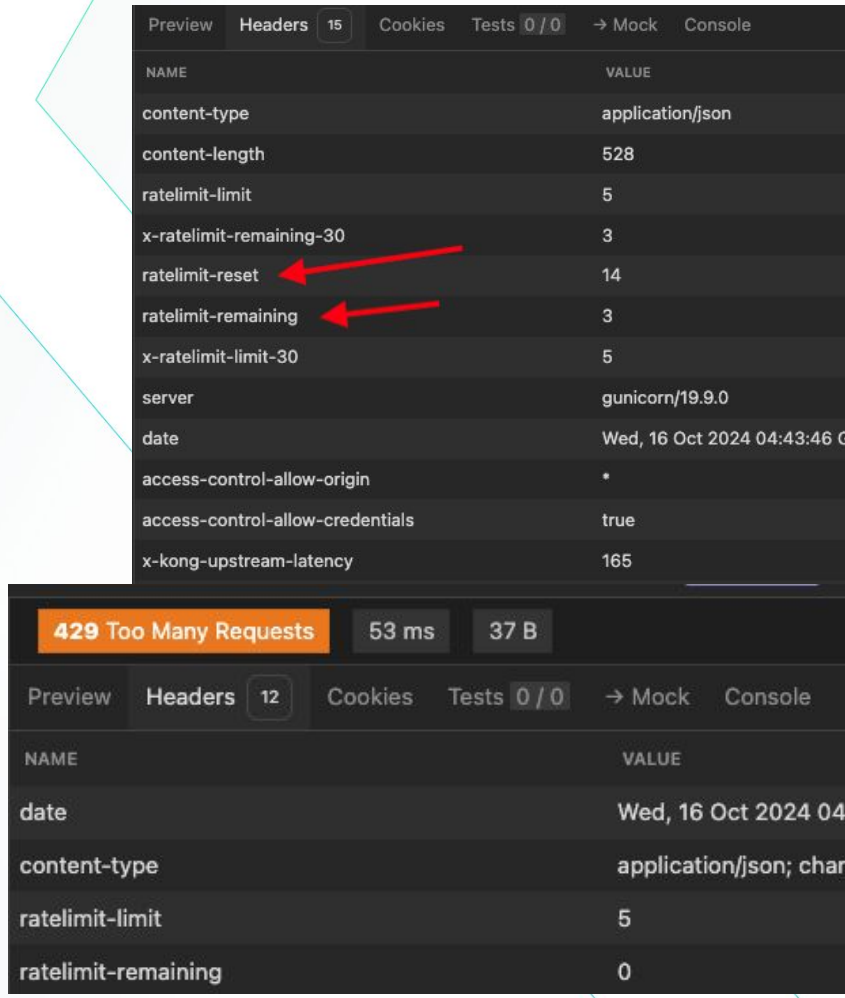
Proceed to the next page to test your plugin

Protect and Secure your API

Test the Rate Limiting Advanced Plugin

1. Return to the Insomnia application
2. In the request you previously created, click the “Send” button again.
3. Inspect the response headers by clicking the “Headers” tab. You should see rate limiting headers that show how many requests are remaining and the reset time along with some additional headers added by the plugin.
4. Click “Send” five or six more times and you should see a 429 response code. This is the indication that you have exceeded the rate limit. You have now verified that your API is protected from abuse by excessive requests.

Pause here and wait for the instructor to proceed

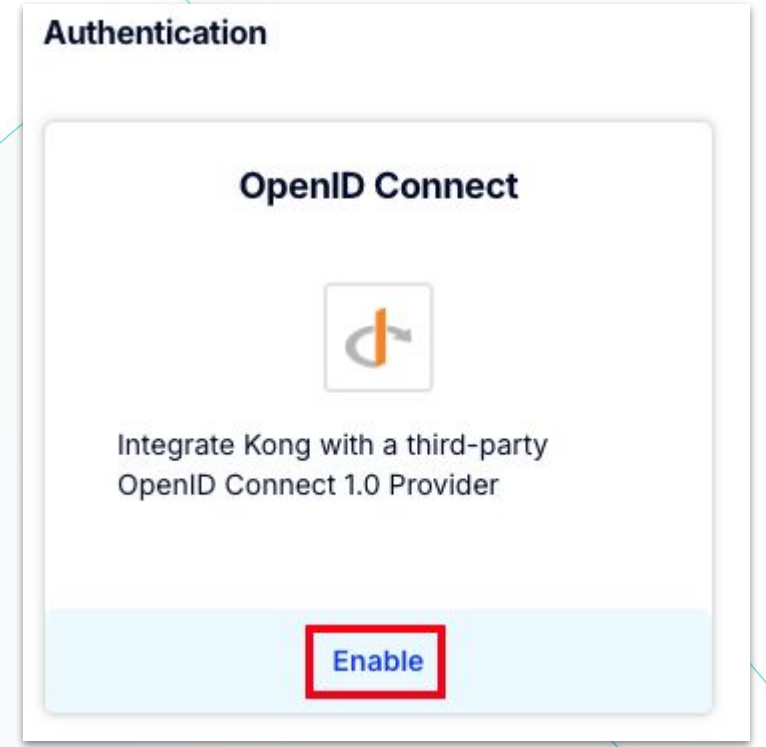


Protect and Secure your API

Enable Authentication with the OIDC Plugin

1. Return to the Konnect UI
2. On the left menu, select the “Gateway Services” sub menu for your Control Plane
3. Select the service you previously created (httpbin)
4. Near the center of the window, select the “Plugins” tab then click the “+ New Plugin” button on the right center of the window
5. In the filter field type the text “open”
6. Click “Enable” at the bottom of the “OpenID Connect” tile. This will open a form to configure the plugin

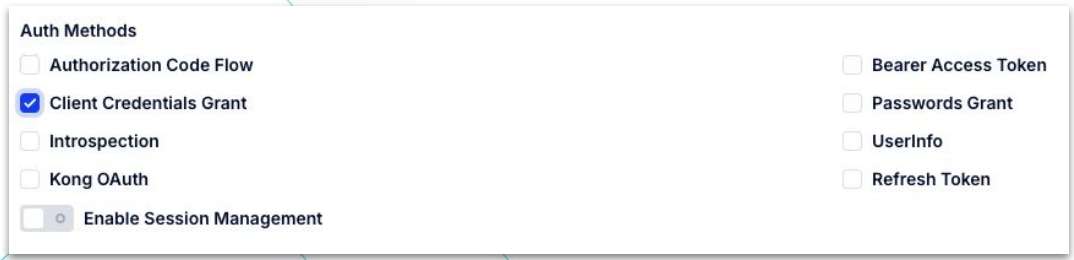
Proceed to the next page to configure the plugin

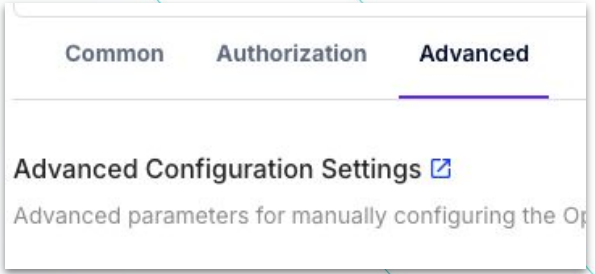


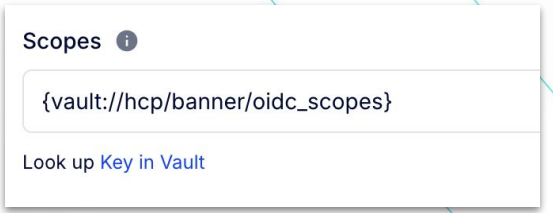
Protect and Secure your API

Configure the OIDC Plugin

1. In the Issuer field, enter: https://dev-45309067.okta.com/oauth2/default
2. Select the “Client Credentials Grant” option
3. Click the “Advanced” tab to access additional settings
4. Using your browser’s search, search the page for “scopes”
5. In the Scopes field, enter: {vault://hcp/banner/oidc_scopes}
6. Click the “Save” button on the lower right corner of the window





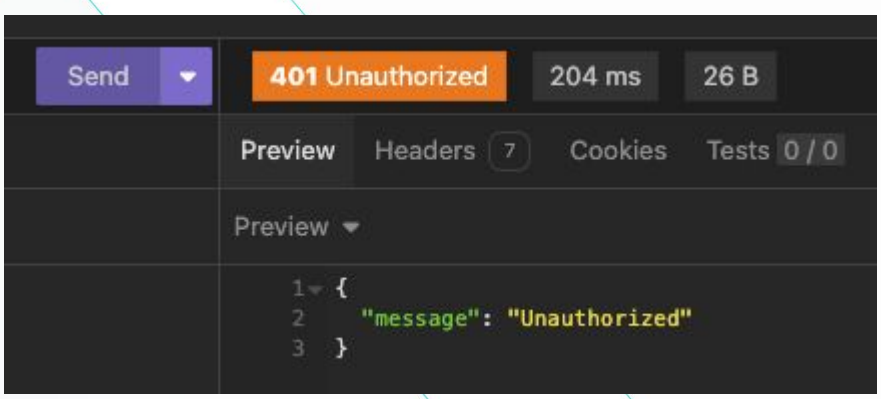


Proceed to the next page to test the plugin

Protect and Secure your API

Test the OIDC Plugin without credentials

1. Return to the Insomnia application
2. In the request you previously created, click the “Send” button again.
3. You should receive a 401 “Unauthorized” response since you haven’t provided any credentials and the Service is now protected with the OIDC plugin



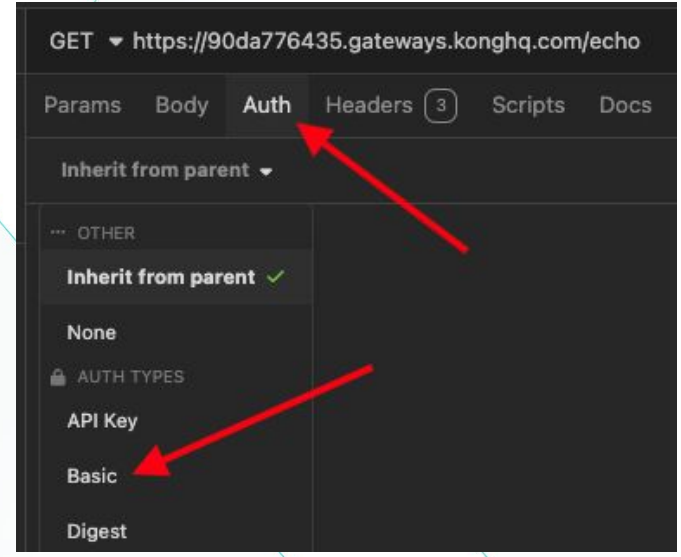
Proceed to the next page to add credentials to your request

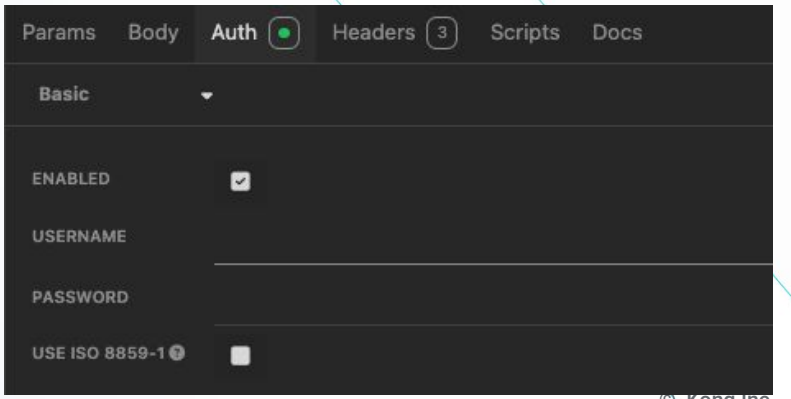
Protect and Secure your API

Test the OIDC Plugin with credentials

1. Under the request URL, click the “Auth” tab and select the “Basic” menu item.
2. In the “Username” field, enter 0oakegh0qatzQ1jBs5d7
3. In the “Password” field, enter: o5OQLX1qizBxJ-6SxEiyCWyo5rg7GtCrvOxwLXAoykM_5KvEPpOJ6COEnqeXPR1j
4. Click the “Send” button again and you should now receive a 200 response

Pause here and wait for the instructor to proceed

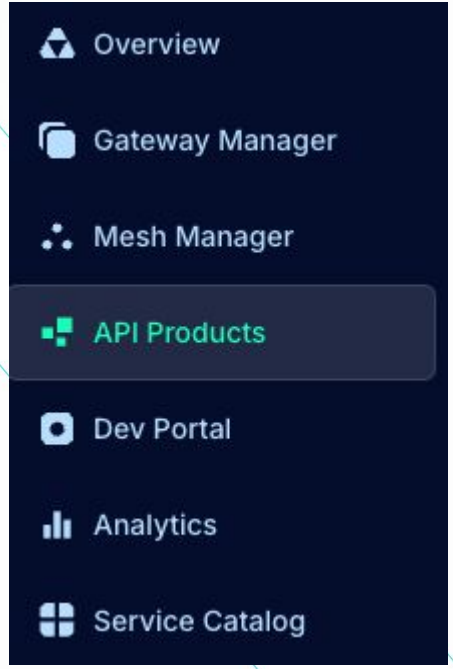


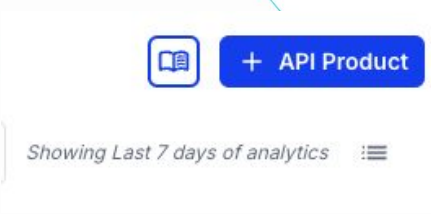


Productize and Publish an API for Discovery

Create an API Product

1. Begin by downloading an API Spec from this URL - https://raw.githubusercontent.com/srpoyer/kong-workshop/refs/heads/main/bankong-v1.0.6.yaml
2. In Konnect, navigate to “API Products” by clicking the Menu item on the left
3. Create a new API Product by clicking on the “+ API Product” button in the upper right corner of the window
4. Name your product “BanKong-<your name>” and click the “Save” button on the lower right corner of the window



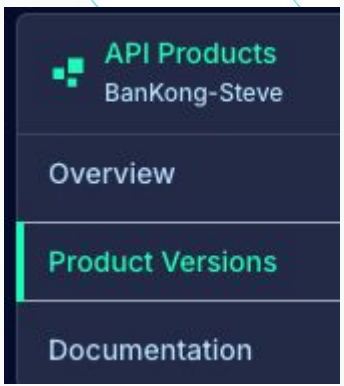


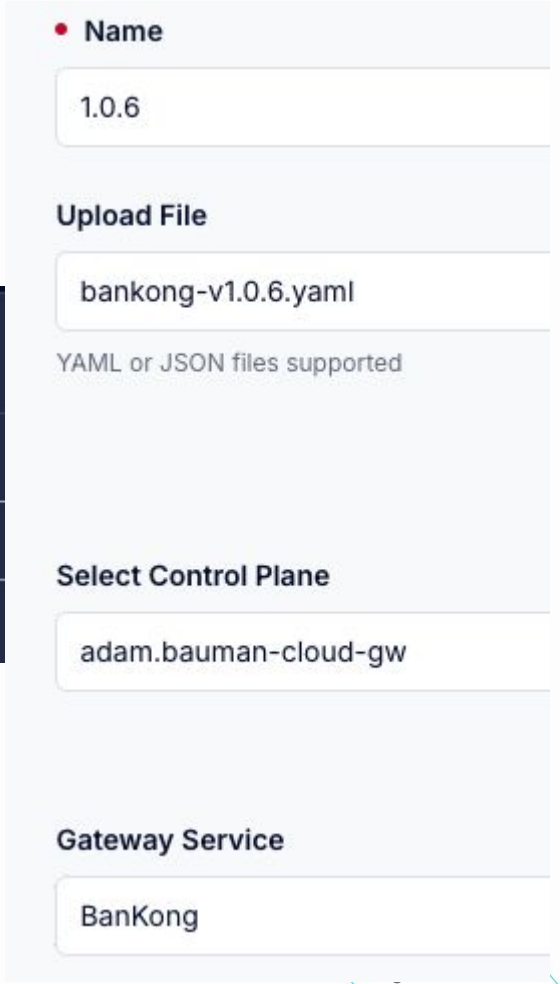
Proceed to the next page to create an API Product version

Productize and Publish an API for Discovery

Create an API Product Version

1. Click the “Product Versions” sub menu on the left and click the “New Version” button in the center of the window
2. Name your new version 1.0.6
3. In the “Upload File” field, click the “Select File” button and choose the API spec you previously downloaded
4. Using the drop down menu, select your Control Plane
5. Using the drop down menu, select the BanKong service
6. Click the “Save” button. You have now created your first version of the BanKong API Product. You will be shown a summary of your version.



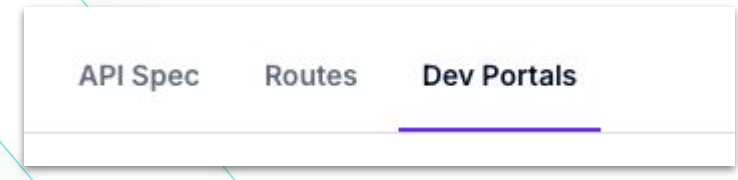


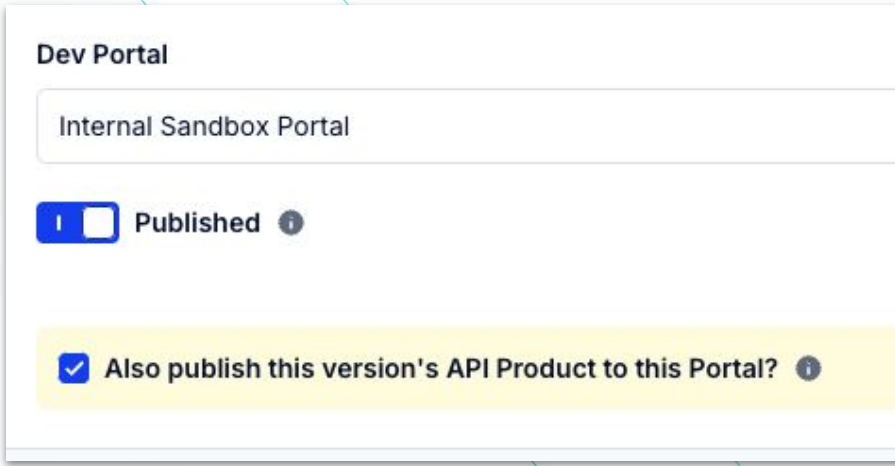
Proceed to the next page to publish your version to the Dev Portal

Productize and Publish an API for Discovery

Publish your API Version to a Dev Portal

1. On the product version page, select the “Developer Portal” tab then click the “Publish to Dev Portals” button at the center right of the window
2. In the “Dev Portal” drop down menu, select the “Internal Sandbox Portal”
3. Click the checkbox “Also publish this version's API Product to this Portal?”
4. Click the “Save” button at the lower right corner of the window



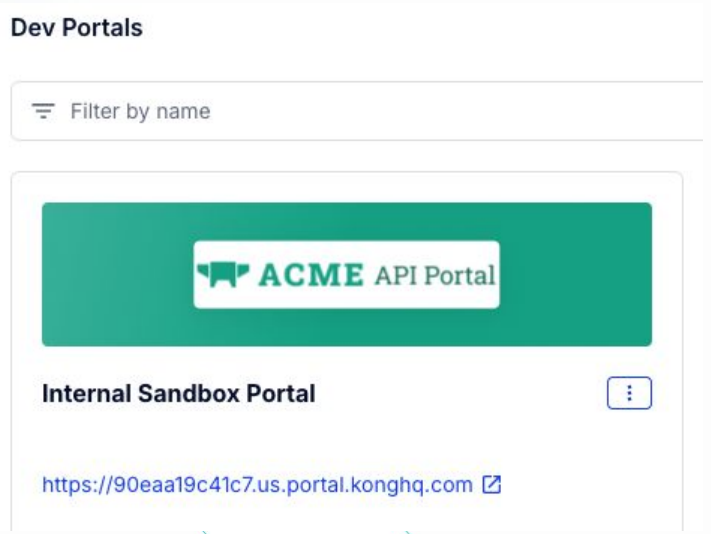


Proceed to the next page to interact with your API Product on the dev portal

Productize and Publish an API for Discovery

Interact with your API Product in the Dev Portal

1. On the Dev Portal tile, click the provided link to open the portal in a new tab
2. In the portal window, select the API Product you published
3. Click the “List all transactions” endpoint then click the “Try it out” button on the right.
4. Click the “Execute” button. You will be presented with code snippets in different languages to use in developing your application as well as a response to the request.
5. Close the Dev Portal and return to the Konnect Portal.

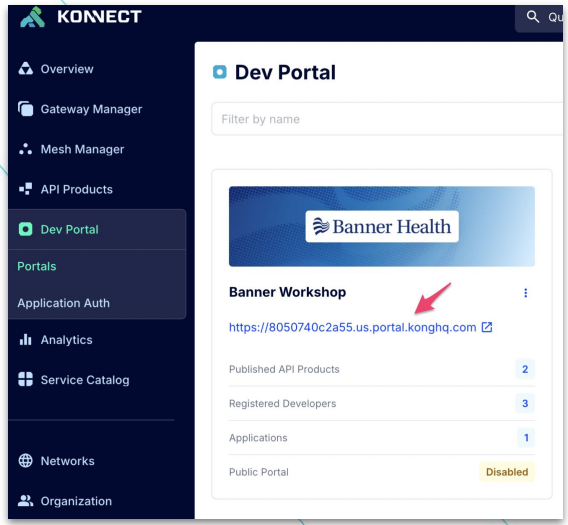


Pause here and wait for your instructor to proceed

Interact with the Dev Portal as a Developer

Register for an Account in a Dev Portal

1. Click the “Dev Portal” menu on the left side of the Konnect Portal
2. Click the link provided to open the “Banner Workshop” portal in a new tab. Unlike the previous portal you saw, this one requires authentication.
3. Click the “Sign Up” link at the bottom of of the page
4. Enter your name and an email address where you can receive a confirmation email
5. In the email you receive, click the link to confirm your account, create a password and log into the portal

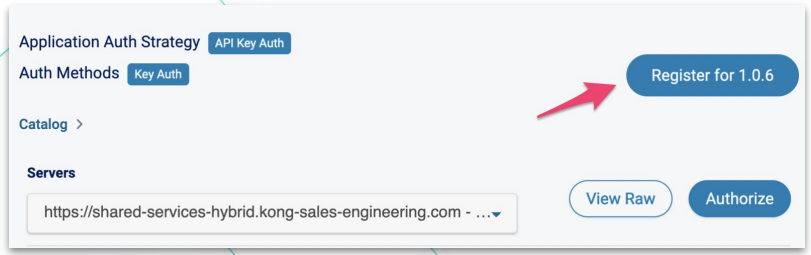


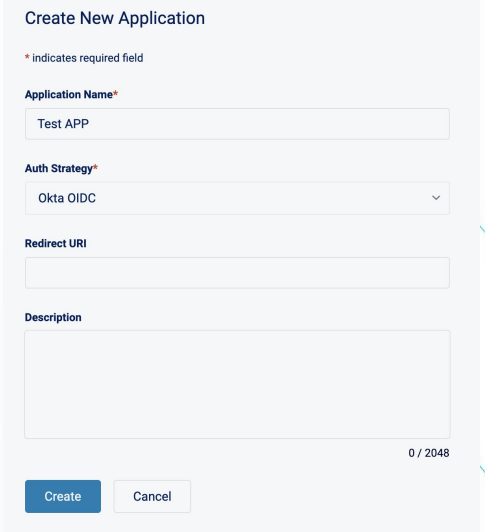
Pause here and wait for your instructor to proceed

Interact with the Dev Portal as a Developer

Create an App and get credentials

1. Open the **BanKong** product. This version of the portal has been configured for App Registration, letting developers self provision credentials to access the APIs.
2. In the upper right, click the "**Register for 1.0.6**" button then click the "**Create an Application**" button.
3. Give your application a name, e.g. "Test APP" and select "**Okta OIDC**" as the Auth Strategy. Then click the "Create" button at the bottom of the form. You will be presented with a "Client ID" and "Secret" that you can use to access the API's. Copy these credentials to use in the following step
4. You can now use these credentials to make authenticated calls to the secured API you created earlier.





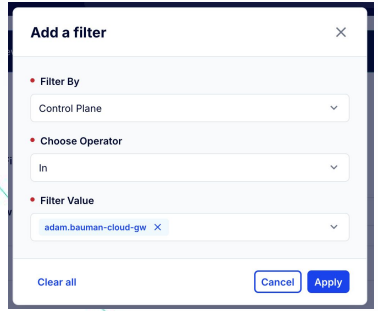
NOTE: *This organization is connected to a sandbox instance of Okta and cannot generate new Apps*

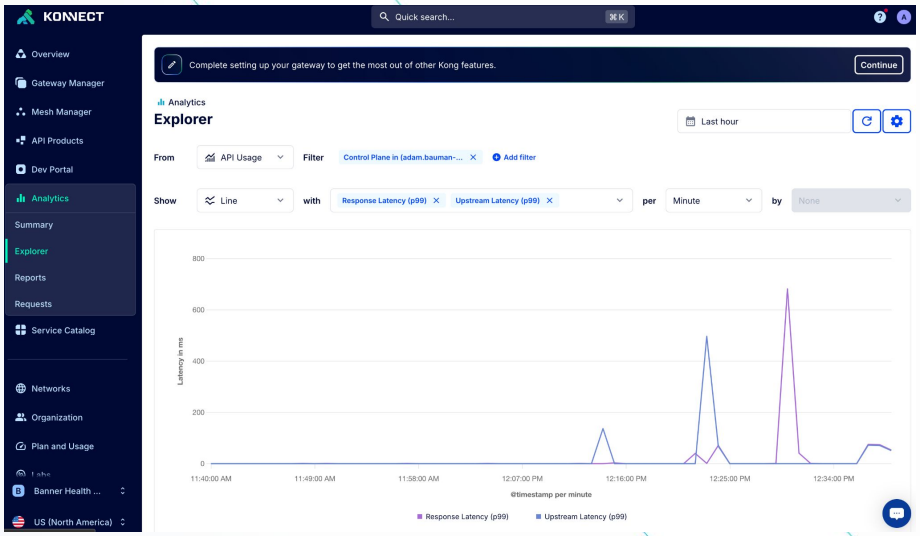
Pause here and wait for your instructor to proceed

Observe API usage

Interact with the Data Explorer

1. On the left side of the window, click the “Analytics” menu. You will see a summary of all the traffic passing through this Org’s gateways, including graphs for request counts and latencies.
2. Navigate to the Metrics Explorer by clicking the Explorer sub menu on the left. You will be presented with an interactive interface to drill down to specific data of interest. As an example, click the “Add filter” located towards the top left of the window. In the “Filter By” drop down, select “Control Plane” then in the “Filter Value”, choose your Control Plane. Click “Apply” to view Request Counts specific to your Control Plane. With the “Show”, “with” filter, try selecting one or more of the latency graphs.

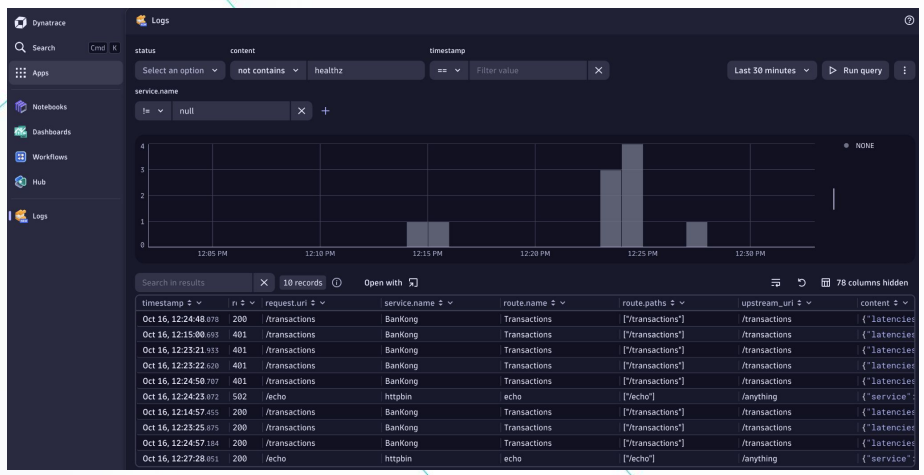


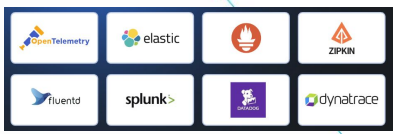


Observe API usage

Kong can export data to any Dashboard solution of choice can export data to different solutions if needed.

For example, the data for department A should go to 1 solution while the data for department B should go to another solution. Kong can integrate operational API metrics into existing tools for insight into usage, health and compliance





Powering the API world

Thank you!

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