

# Hands-On Lab

Fraudulent Storm Claim Detection

*Weather ChatBot Demo*



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# 1 Demo Business Scenario

## 1.1 Storms can cause chaos – for insurance customers and insurance companies!

Sadly, the chaos after a serious storm can be devastating. Many people who are badly affected are likely to contact their insurance company, to find basic information about how to make an insurance claim and to claim compensation for damage caused by the storm. With this sudden load, the supporting systems are often overwhelmed, and communication lines get congested with claim requests and questions.

*What do I do if my home's been flooded or damaged in a storm? How to make an insurance claim? What do I need to submit for an insurance claim? Who will assess the damage? When should I make an insurance claim?...*

In times of crisis, fraudulent requests also surge and which in turn forces insurance companies to apply tedious processes for claim evaluation. Multiple layers and checks to discriminate between fraud and genuine claims are time-consuming for both parties which usually creates frustration among genuine victims and loyal customers.

## 1.2 Avoid the chaos with integrated cognitive technology

A chatbot can play a critical role in helping insurance companies to accelerate the process of claim evaluation checks and quickly gather information about storm damage and offering smoother user experience.

IBM Watson Assistant helps you build, train, and deploy conversational interactions that takes place as a first step in claiming a storm damage, assisting the victim about the process as well as validating the data to filter fraudulent claims to a certain degree without frustrating the victim. With IBM Cloud Pak for Integration you can elevate your chatbot experience from intelligent conversational interactions to real, cognitive system interactions by integrating with multiple applications. IBM Cloud Pak for Integration allows you to orchestrate your integration flows;

- to verify that there was a storm on the date and location provided by the victim with IBM's Weather service
- to create an online insurance claim
- to identify the items claimed for by analyzing the photographs uploaded by the victim using IBM Watson Visual Recognition and using this information to provide an estimate of value of the damage

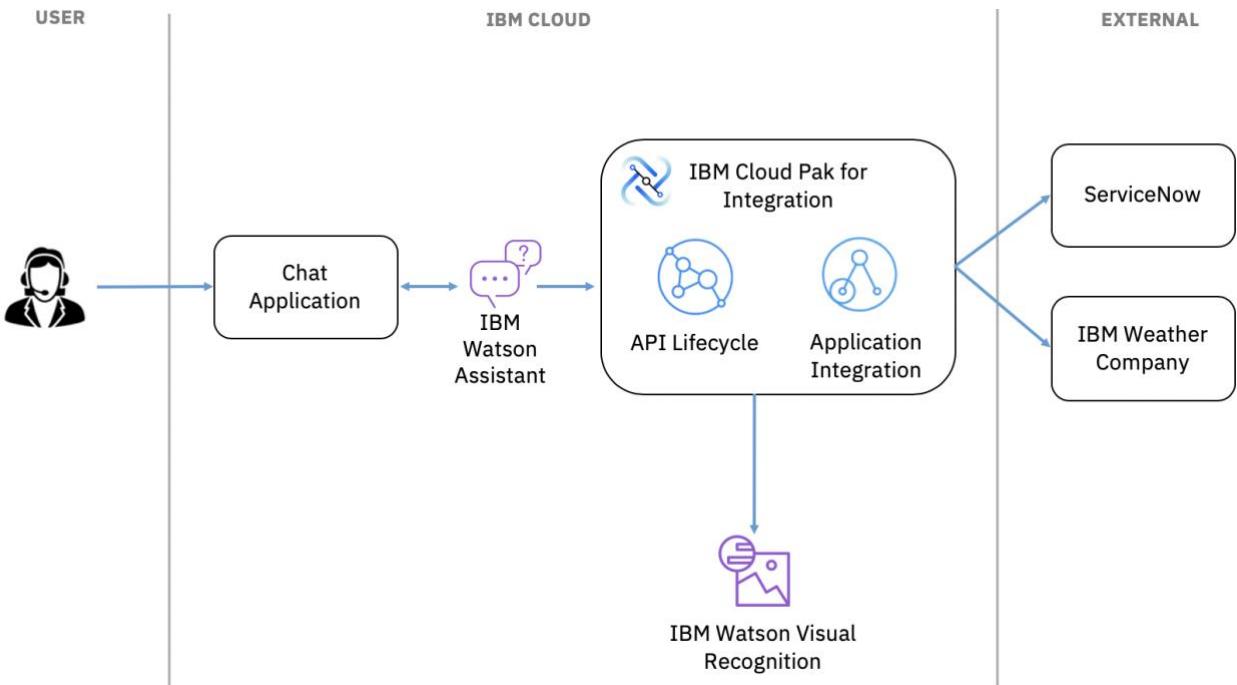
## 1.3 The integrated solution architecture

An insurance company that specializes in 'Storm insurance' wants to streamline its claims process. They have a chatbot that verifies that there was a storm on the date and location provided by the victim and provides an initial estimate for property damage, by analyzing images uploaded by the customer and raises a provisional claim ticket for follow-up by a specialist. This will dramatically increase the efficiency of the specialist, by eliminating obviously fraudulent claims, gathering key information, and providing an initial claim estimate.

This solution shows how IBM Watson Assistant on IBM cloud can be used together with IBM Cloud Pak for Integration to create an engaging chatbot experience implemented in Node.js which allows users to make online insurance claims and also upload photographs of the items for which they wish to claim.



Three separate APIs which are independently deployable and scalable are brought together to support chatbot application. These APIs also leverages IBM Watson Visual Recognition and IBM's Weather service using built-in connectors.



1. The user visits the insurance company's site with the storm insurance chatbot application to raise a storm claim.
2. The chat application calls IBM Watson Assistant hosted in IBM Cloud.
3. IBM Watson Assistant uses natural language understanding and machine learning to extract entities and intents of the user question.
4. IBM Watson Assistant collects address and date information from the user to validate the eligibility to raise a storm claim.
5. Watson Assistant invokes the API hosted on IBM App Connect for claim validation.
6. IBM App Connect uses IBM Weather data connector to determine if the path of storm from historical data actually crosses home location and severity would warrant such damage. Based on outcome, the claim is rejected or accepted.
7. If the claim is accepted IBM App Connect uses ServiceNow connector to create a provisional claim and returns back the claim details along with validation message.
8. IBM Watson Assistant replies to the user the validation message and asks the user to upload the photograph of the damage for claim assessment. The chat application displays the chat answer to the user.
9. The user uploads the photograph of the damaged object.
10. IBM Watson Assistant application invokes the API hosted on IBM App Connect for damage assessment.
11. IBM App Connect feeds the photograph into IBM Watson Visual Recognition running in IBM Cloud.
12. IBM Watson Visual Recognition analyzes the photograph and determines the object category and maximum amount user can claim for the item.
13. IBM App Connect returns the analyses result.

IBM Watson Assistant replies to the user the analyses result along with the provisional claim details. The chat application displays the answer to the user.

**IBM**

## 2 Plan of Work

This solution has a number of moving parts, so we'll tackle them in a logical sequence. If you're familiar with how to do any of the steps, feel free to do them in the way you prefer or are familiar with.

If you're familiar with any of the tools we're using, feel free to embellish or change the lab –as long as you make sure it all ‘hangs together’. You can build the ‘extension’ version if you're familiar with the tooling.

We recommend you make one journey through the lab as we describe it and then go back and explore if you have time. You can make changes and redeploy new versions afterwards.

We'll be doing the following:

- **Set up our integration systems and services endpoints**

We are going to integrate with SaaS systems and IBM Watson AI services. We will need to have these endpoints created and create credentials for so that we can integrate to them securely in the lab.

In the ‘real world’ systems like IBM's Weather service or ServiceNow will be running at customers already – this is a lab task.

- **Create an integration flows for our ‘Storm Claim APIs’**

This will create our three separate APIs which are independently deployable and scalable and the integrations to all of our endpoints. We will create an ‘integration flow’ which takes the API request, calls the endpoints in the correct order, maps the data between them and sends an appropriate API response back to the caller. These APIs will leverage IBM Watson Visual Recognition and IBM's Weather service using built-in connectors.

- **Deploy the API to the Cloud Pak for Integration (CP4I) runtime**

Once we have developed our flows and tested it, we will deploy it to CP4I running on OpenShift. This will create a Kubernetes container/pod deployment with highly available replicas which we can then scale up and down as we wish.

- **Manage the API, applying security and rate-plans and publish it to our Self-Service Portal**

We will create an API which will route across the three ‘Storm Claim APIs’ and secure it using API keys and rate-limited API plans. This way our consumers can discover it, get the information they need to use it and preferably sign up for access in a self-service and secure manner.

- **Set up our Watson Assistant and Node.js application**



We are going to implement a chatbot using Watson Assistant and use a Node.js client application to embed the chatbot.

- **Create an ‘application’ to consume our API. We’ll use the portal to discover the API and self-service register it.**

We will register to our Watson Assistant chatbot embedded Node.js application to API server. Registering Applications allows us to assign API keys and also to monitor the calls made to the API by that application.

## **3 List of things we will need:**

As this is an integration lab, we will need systems and services to integrate to:

### **3.1 List of Systems and Services Endpoints**

#### **Service Now:**

Service is an IT services management (ITSM) system provided as a SaaS i.e. it is hosted in the cloud.

In this scenario, we as a Storm Inc insurance company will use Service Now to log an insurance claim incident.

Service allows you to create developer instances/accounts free of charge. You will need a developer account to run this lab so instructions as to how to create them are included and you can set an account up as part of the lab (<https://developer.servicenow.com/>). If you already have a developer Service Now account, you can use that.

#### **IBM Weather Data:**

IBM Weather Data provides historical, current and future information about Weather parameters of a particular geo location. You could connect to Weather Data using the API Key.

A free 30-day API key can be available here.

<https://epwt-www.mybluemix.net/software/support/trial/cst/programwebsite.wss?siteId=443&tabId=774&w=1>

#### **IBM Watson Visual Recognition:**

IBM Watson is available on the IBM Cloud and also in the IBM Cloud Pak for Data. IBM Cloud lets you create non-expiring free instances of the IBM Watson services that you can use for this lab (or anything else)

The IBM Watson Image Recognition service lets you send a picture (.jpg, .png) to Watson and returns a list of things that Watson can ‘see’.

In this use case we are using Visual Recognition to recognize the images of weather damaged objects, assess the maximum claim possible for the type of the object. You can train your Visual Recognition model with your set of images and classifiers.

#### **IBM Watson Assistant:**



The IBM Watson Assistant service lets you build, train, and deploy conversational interactions into any application, device, or channel. Watson Assistant can be deployed in any cloud or on-premises environment – meaning smarter AI is finally available wherever you need it.

In this use case we are using Watson Assistant to build a chatbot dialog that takes place as a first step in claiming a storm damage, assisting the victim about the process as well as validating the data to filter fraudulent claims to a certain degree without frustrating the victim.

Source code is hosted on our Github repository.

### **Node.js Client Application:**

This project deploys a react application that connects to a Watson API. It currently runs from localhost. The application deals with text and image responses only from the Watson assistant.

Source code is hosted on our Github repository.

### **Some extra things we need for this lab:**

#### **GitHub**

We've hosted our API flow definitions, our test scripts and some other things you might need on a public github repository, so they're easy to download to your lab environment.

The repo is here: <https://github.com/IBM/cp4i-demos>

In this way, if you want to redo this lab in your own environment you can use the assets that you need.

Also, if you are using one-click install API Connect and App Connect assets will be available to you via Asset Repository.



## Asset repository

Upload 

## Browse Assets

## Remotes

Access Control

## Search Assets

 Search for assets, tags, types or owners...

## Designer API Implementation



Tags: No tags added.

---

Owner: IBM-CP4I-demos-git  
Modified: 15 days ago

## Designer API Implementation



Tags: No tags added.

---

Owner: IBM-CP4I-demos-git  
Modified: 15 days ago

## Open API specification (v2) chatbot

Mannion

Version: 0.0.1

Tags: No tags added.

---

Owner: IBM-CP4I-demos-git  
Modified: 15 days ago

## Designer API Impl



Tags: No tags add

---

Owner: IBM-CP4I  
Modified: 15 days

## 4 Getting Started – Setting up the endpoints

Before we can build our API integration, we need to set up the endpoints that we need will integrate to.

This lab doesn't use emulators, shims or stubs – we're going to connect to real endpoints in the real-world cloud! You can use these endpoints after this lab to explore more with CP4I and to do other demos – they're your endpoints to 'take home and keep'!

All of these endpoints have been deliberately chosen for this lab as they have free versions that we can use – don't worry, you won't need a credit card to create them.

We will set up endpoints to connect to:

- IBM Watson Image Recognition
- ServiceNow
- IBM Weather Company

(If you already have Watson Services and a ServiceNow Developer Account e.g., you can skip this section)

Later, we will connect to the following endpoints.

### 4.1 Setting up the Service Now

To get started you will require admin level access to your ServiceNow account. If you want to create a free ServiceNow account to test out App Connect, you'll have to [register](https://developer.servicenow.com/) (<https://developer.servicenow.com/>) for a ServiceNow Account. Once your account is activated, you can request a ServiceNow personal developer instance.

Once your account is activated, you can request a ServiceNow free developer instance.



servicenow | Developer Learn ▾ Reference ▾ Guides ▾ Connect ▾ Request Instance UC ▾

Welcome, Ulas!

Consider this your home base for your Developer Program experience.

Your Instance

Get a free developer instance

Rapidly test, build, and deploy applications on the Now Platform® with a personal developer instance.

Request an Instance

or, restore an instance.

BUILD Step 1 of 2

## First things first... Request an instance.

You need an instance to start building on the Now Platform®. You can request an instance of ServiceNow free of charge.

Request an Instance

EVENT CreatorCon 2020 Watch Now →

PODCAST Break Point Podcast Listen Now →

WEBINAR Discover Paris Platform features Watch Now →

Click on ‘Request an Instance’ and select the location of your instance.

Request an Instance

Request an Instance

Restore an Instance

Choose your release

Latest Release

Paris

Release Notes ↗

Orlando

Release Notes ↗

New York

Release Notes ↗

Cancel Request

Click on ‘Request’. This will only take a few seconds.

Learn ▾ Reference ▾ Guides ▾ Connect ▾

Watch Now → Listen Now →

We are processing your request. This will only take a few seconds.

Please note your instance URL and credentials. You will need these later when we configure the ServiceNow connector.

Your instance is ready!

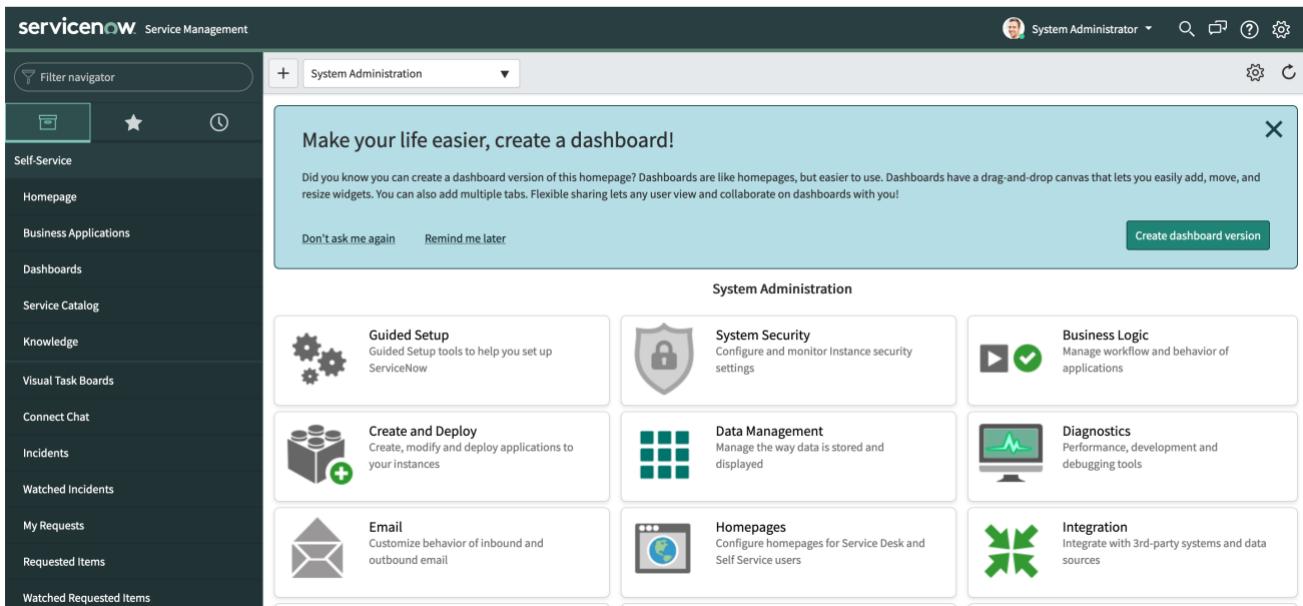
Your instance URL: <https://devXXXXXXXXXX-now.com>

Username: admin  
Current password: vXXXXXXXXXX

Keep your new instance active by developing on the instance or logging into the Developer Site. If your instance is inactive for 10 days, it will be reclaimed and released for other developers to use.

[Return to the Developer Site](#) [Open Instance](#)

Click on 'Open Instance'



The screenshot shows the ServiceNow System Administration homepage. The left sidebar includes links for Self-Service, Homepage, Business Applications, Dashboards, Service Catalog, Knowledge, Visual Task Boards, Connect Chat, Incidents, Watched Incidents, My Requests, Requested Items, and Watched Requested Items. The main content area has a header "System Administration". A prominent callout box says "Make your life easier, create a dashboard!" with a "Create dashboard version" button. Below this are several cards: "Guided Setup" (gear icon), "System Security" (shield icon), "Business Logic" (play and checkmark icon), "Diagnostics" (monitor icon), "Email" (envelope icon), "Data Management" (grid icon), "Homepages" (globe icon), and "Integration" (cross icon).

Search for Registry in 'Filter Navigator' search bar and then select 'Application Registry'.

The screenshot shows the ServiceNow Application Registry list view. The sidebar on the left has a 'registry' search bar at the top. Below it, under 'System OAuth', the 'Application Registry' item is selected and highlighted with a red box. The main area displays a table of application registries with columns for Name, Active, Type, Client ID, and Comments. The table includes entries for ADFS, Auth0, Azure AD, Google, Mobile API, Okta, and ServiceNow Agent.

	Name	Active	Type	Client ID	Comments
<input type="checkbox"/>	ADFS	true	External OIDC Provider	{adfds-application-client-identifier-here}	
<input type="checkbox"/>	Auth0	true	External OIDC Provider	{auth0-application-client-id-here}	
<input type="checkbox"/>	Azure AD	true	External OIDC Provider	{azure-ad-application-id-here}	
<input type="checkbox"/>	Google	true	External OIDC Provider	{google-application-client-identifier-here}	
<input type="checkbox"/>	Mobile API	true	OAuth Client	ac0dd3408c1031006907010c2cc6ef6d	Used by the mobile app to allow access t...
<input type="checkbox"/>	Okta	true	External OIDC Provider	{okta-application-client-id-here}	
<input type="checkbox"/>	ServiceNow Agent	true	OAuth Client	ff97fb4da3313004591cc3a291b47fd	

We will create an OAuth API endpoint for external clients. Click on ‘New’.

The screenshot shows the ServiceNow Application Registry list view. The sidebar on the left has a 'registry' search bar at the top. Under 'System OAuth', the 'Application Registry' item is selected. The main area shows a table of existing applications. The 'New' button in the top right corner is highlighted with a red box.

Select ‘Create an OAuth API endpoint for external clients’.

The screenshot shows the 'OAuth application' configuration panel. At the top, there's a back arrow and the title 'OAuth application'. Below that, the question 'What kind of OAuth application?' is displayed. Four options are listed: 'Create an OAuth API endpoint for external clients' (highlighted with a red box), 'Connect to a third party OAuth Provider', 'Configure an OIDC provider to verify ID tokens.', and 'Connect to an OAuth Provider (simplified)'.

In the config panel give it a unique name and hit submit.

Application Registries  
New record    [Submit](#)

OAuth client application details.

- Name: A unique name.
- Client ID: Client ID automatically generated by ServiceNow OAuth server.
- Client Secret: Client secret for the OAuth application. Leave it empty for auto-generation.
- Refresh Token Lifespan Time in seconds the Refresh Token will be valid.
- Access Token Lifespan: Time in seconds the Access Token will be valid.
- Redirect URL: The redirect URLs authorization server redirect to. They must be absolute URLs and they are comma separated.

[More Info](#)

* Name	<input type="text"/>	Application	Global	
* Client ID	14a90088a7702010dc11e9c14747e43d	Accessible from	All application scopes	
Client Secret	<input type="password"/>	Active	<input checked="" type="checkbox"/>	
Leave Client Secret blank to automatically generate a string		* Refresh Token Lifespan	8,640,000	
Redirect URL	<input type="text"/>	* Access Token Lifespan	1,800	
Logo URL				
Comments	<input type="text"/>			
<a href="#">Submit</a>				

This will create a new OAuth endpoint with Client ID and Client Secret generated. You can view these details by clicking and viewing the new endpoint. You will be providing Client ID and Client Secret

* Name	<input type="text" value="appconnect"/>
* Client ID	<input type="text" value=".....43"/> <a href="#">Toggle Password Visibility</a>
Client Secret	<input type="password" value="....."/>

Great! We've now a running ServiceNow instance with an Oauth app/endpoint registered for it which represents our App Connect!

Please keep in mind that this is a free developer instance, it will be reclaimed in 10 Days and also to support the developer program, instances hibernate when they are idle. But you can easily restore instance from the reclaimed instance's backup. Similarly, you can easily wake up a hibernating instance. (Learn more;

<https://developer.servicenow.com/dev.do#!/guides/orlando/now-platform/pdi-guide/understanding-pdis>

You'll be later asked for the following details about your ServiceNow instance and Oauth endpoint to integrate with the service. Please keep them safe.

- The URL of your ServiceNow instance, in the following form: <https://<servicenow-id>.service-now.com/>
- The username and password that you use to log in to the instance.
- ClientID and Secret of your ServiceNow application (Oauth endpoint).

## 4.2 Setting up the IBM Watson Services

You will need an IBM Cloud account to do this. You can use your existing one if you wish or you can set up a new one.

IBM cloud access is free and can be provisioned instantly.

Once you have an account, all of the Watson services have ‘lite’ plans which allow you to use them for free – the only restriction is the number of calls you can make per month. Don’t worry, we won’t be getting anywhere near that number – and you won’t get charged if you hit the limit, it will just stop working until the next month.

### Logging in to IBM Cloud

The IBM Cloud can be accessed at <https://cloud.ibm.com>.

If you’ve not been to the IBM cloud recently, the UI has just had a makeover, so yes, you are in the right place if you don’t recognize it.

If you don’t have an IBM ID then click ‘Create an account’ – all you need is an email, you don’t need a credit card.

When you have an IBM ID, sign in at <https://cloud.ibm.com> (Depending on your company, e.g. if you’re an IBMer, you may go through a Single Sign-on process).

Once you’re in, you’ll be presented with the cloud dashboard showing which services you have provisioned:



The screenshot shows the IBM Cloud Dashboard. On the left, there's a sidebar with various icons for services like Cloud Functions, Cloud Events, Cloud Pak for Data, VMs, and Kubernetes. The main area has a "Dashboard" header with a dropdown arrow. To the right are buttons for "Upgrade account", "Create resource", and a three-dot menu. Below the header is a "Quick start" section with four cards:

- Build**: Explore IBM Cloud with this selection of easy starter tutorials and services. (2 min)
- Explore IBM Cloud Shell**: Try a command-driven approach for creating, developing, and deploying a web project. (2 min)
- Create a Kubernetes cluster**: Automate deployments and manage your containerized apps in a native Kubernetes experience. (20 min)
- Create an OpenShift cluster**: Deploy apps on highly available clusters with Red Hat OpenShift on IBM Cloud. (20 min)

On the far right, there's a "FEEDBACK" button. At the bottom, there's a "Resource summary" section showing 13 resources (Resources), 1 cluster, and 1 notification.

## 4.2.1 Creating your free Lite-Plan IBM Watson Visual Recognition

On the IBM Cloud Dashboard, click 'Catalog'.

The screenshot shows the IBM Cloud Catalog. The left sidebar has a "Catalog" icon and lists categories: IBM Cloud catalog, Featured (which is selected), Services, Software, and Consulting. The main area has a dark background with a large blue abstract graphic on the right. The title "IBM Cloud products" is at the top. A sub-header says "Over 350 products available for you to customize and build the solutions that you need for your business". There's a search bar with the placeholder "Search the catalog...". Below, there's a section titled "Recommended for you" with a description: "These recommended products are complementary to the resources that you're already working with." It lists three products:

- Watson Assistant**: IBM • Services • AI / Machine Learning. Description: "Watson Assistant lets you build conversational interfaces into any application, device, or channel." Status: Lite • Free • IAM-enabled.
- Watson Studio**: IBM • Services • AI / Machine Learning. Description: "Embed AI and machine learning into your business. Create custom models using your own data." Status: Lite • Free • IAM-enabled.
- Kubernetes Service**: IBM • Services • Containers. Description: "Deploy secure, highly available apps in a native Kubernetes experience. IBM Cloud Kubernetes Service creates a cluster of..." Status: Free • IAM-enabled • Service Endpoint Supported.

You'll see a list of services (if not, click on 'services').



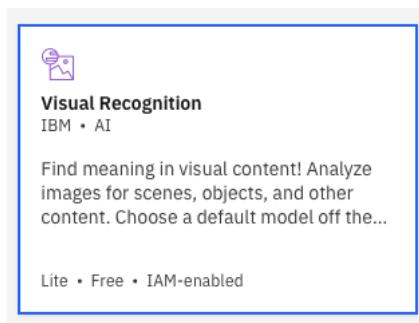
Check the ‘AI’ filter checkbox on the left to filter for Watson services. (You can also search for them by name)

The screenshot shows the IBM Cloud Catalog interface. On the left, there's a sidebar with categories like 'Catalog', 'Featured', 'Services', and 'Software'. Below 'Services' is a 'Category' section with checkboxes for various services, including 'AI' which is checked. A search bar at the top says 'Search the catalog...'. The main area is titled 'Services' and has a sub-section 'Explore our broad portfolio of managed services for infrastructure, developer tools, and more to build your apps on the public cloud.' Below this, it says 'Filters: AI' with a 'Clear all' button. It then lists 'AI 18 items' in three rows of six cards each. The cards include:

- Watson Assistant** (IBM + AI): Watson Assistant lets you build conversational interfaces into any application, device, or channel. Lite • Free • IAM-enabled.
- Watson Studio** (IBM + AI): Embed AI and machine learning into your business. Create custom models using your own data. Lite • Free • IAM-enabled.
- Annotator for Clinical Data** (IBM + AI): Analyze text to extract medical codes and concepts such as diseases, lab values, medications, procedures and more. Lite • Free • IAM-enabled.
- Compare and Comply** (IBM + AI): Process governing documents to convert, identify, classify, and compare important elements. Lite • Free • IAM-enabled.
- Discovery** (IBM + AI): Add a cognitive search and content analytics engine to applications. Lite • Free • IAM-enabled.
- Insights for Medical Literature** (IBM + AI): Search a medical literature corpus and discover insights. Lite • Free • IAM-enabled.

A 'FEEDBACK' button is located on the right side of the card grid.

Scroll down and click on the ‘Visual Recognition’ tile.



Inside, you'll be able create a lite plan (free) instance as shown in the screenshot below.



The screenshot shows the IBM Cloud interface for creating a Visual Recognition service. The top navigation bar includes 'IBM Cloud', a search icon, 'Catalog', 'Docs', 'Support', 'Manage', and user icons. The left sidebar has 'Catalog' and 'Services' selected. The main content area shows the 'Visual Recognition' service details: Region: Frankfurt, Plan: Lite, Service name: Visual Recognition-qx, Resource group: default. A 'Create' button is highlighted in blue. A dropdown menu for selecting a region shows 'Frankfurt' as the current choice. Below this, a table lists the 'Lite' plan features and pricing. The table has columns for 'Plan', 'Features', and 'Pricing'. The 'Lite' plan includes 1,000 Events per month towards Pre-trained model classification (General, Food, Explicit) (images), Custom Model classification (images), Custom Model training (images), 2 Custom Models, 1 Lite Plan instance per IBM Cloud Organization, and Free Exports to Core ML. The pricing is Free. A note states: 'The Lite Plan gets you started with 1,000 events (images) per month and the ability to train two Custom Models. Users wishing to use more premium features or increase usage must upgrade to a Standard Plan or a Subscription Plan.' A message at the bottom says: 'Lite plan services are deleted after 30 days of inactivity.' On the right side, there's a 'Summary' section with the service name, region, plan, and resource group. A 'Feedback' button is visible on the far right.

Plan	Features	Pricing
Lite	<b>1,000 Events per month towards:</b> Pre-trained model classification (General, Food, Explicit) (images) Custom Model classification (images) Custom Model training (images) 2 Custom Models 1 Lite Plan instance per IBM Cloud Organization Free Exports to Core ML	Free

The Lite Plan gets you started with 1,000 events (images) per month and the ability to train two Custom Models. Users wishing to use more premium features or increase usage must upgrade to a Standard Plan or a Subscription Plan.

Lite plan services are deleted after 30 days of inactivity.

Select the free 'lite' plan and provision the service.

You can change the service name to something more memorable if you wish.

Once you create the service, you will be redirected to 'Getting Started' page of your service where you can learn the basics and go through tutorials.



The screenshot shows the IBM Cloud interface for a service named "Visual Recognition-qx". The top navigation bar includes links for Catalog, Docs, Support, Manage, and various icons. Below the navigation is a search bar and a breadcrumb trail: "Resource list / Visual Recognition-qx". The main content area has tabs for "Details" and "Actions...". On the left, a sidebar menu lists "Manage", "Getting started" (which is selected), "Service credentials", "Plan", and "Connections". The main content area displays a "Getting started with Visual Recognition" tutorial. It includes sections for "Show credentials", "Curl", ".NET", "Go", and "More". The "Curl" tab is active. The tutorial text states: "This tutorial guides you through simple image recognition with IBM Watson™ Visual Recognition. You use the built-in models to analyze the images." A tip box says: "Tip: To work in a graphical interface where you can create your own custom models, use [Watson Studio](#), part of Cloud Pak for Data as a Service, and follow the [video](#)." Below the tutorial is a "Before you begin" section with instructions to make sure curl is installed and tested. A command-line interface box shows the command: \$ curl -v. A "Feedback" button is located on the right side of the page.

Or, you'll be able to access the service later from your cloud dashboard (to get to the cloud Dashboard,

click the 'hamburger' menu at the top left of the screen and select 'Dashboard')

The screenshot shows the IBM Cloud dashboard sidebar. It features a "Dashboard" icon and a "Resource List" icon. Below these are sections for "Classic Infrastructure", "Cloud Foundry", "Functions", "Kubernetes", and "OpenShift", each with a corresponding icon and a right-pointing arrow indicating they can be expanded or selected.

Look under 'Services' and you'll find your newly created service.



The screenshot shows the 'Resource list' interface in the IBM Cloud dashboard. On the left, there's a sidebar with various icons for different service categories like Cloud Foundry apps, Cloud Foundry services, and Watson services. The main area has a header with 'Name' and 'Group' columns, and search/filter bars. Below is a list of services:

Name	Group
Cloudant-mz	default
Event Streams-04	default
Key Protect-f0	default
Natural Language Classifier-32	default
Visual Recognition-qx	default
Watson Assistant-zc	default
WatsonStudio	default

The service 'Visual Recognition-qx' is highlighted with a dark gray background and a black border around its row.

Click on your new service and you'll see the 'Manage' tab:

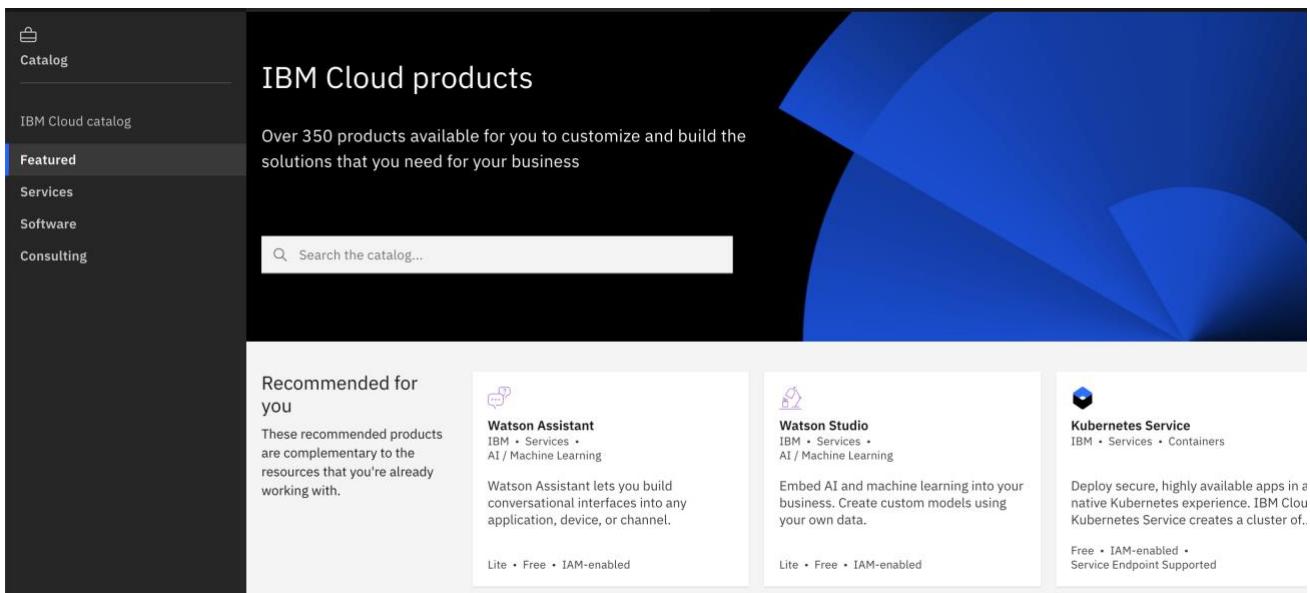
The screenshot shows the IBM Cloud dashboard interface. At the top, there's a navigation bar with links for Catalog, Docs, Support, Manage, and various notifications. Below the navigation, the service name "Visual Recognition-qx" is displayed, indicating it's active and has tags. A "Details" button and an "Actions..." dropdown menu are also present. On the left, a sidebar titled "Manage" lists "Getting started", "Service credentials", "Plan" (which is selected), and "Connections". The main content area starts with a "Start by viewing the tutorial" section, which includes a "Getting started tutorial" link and an "API reference" link. Below this is a "Plan" section for the "Lite" plan, featuring an "Upgrade" button. The final section is "Credentials", which displays the API key and URL. The URL is <https://api.eu-de.visual-recognition.watson.cloud.ibm.com/instances/8afe9e02-1d79-4421-86a1->. There are "Download" and "Show credentials" buttons next to the URL.

The API key and URL are what we are going to need to integrate with the service. You can click 'Show credentials' and copy/paste them somewhere for later use in this lab or you can click 'Download' and they will be downloaded as a text file for you.

#### 4.2.1 Creating your free Lite-Plan IBM Watson Assistant

On the IBM Cloud Dashboard, click 'Catalog'.

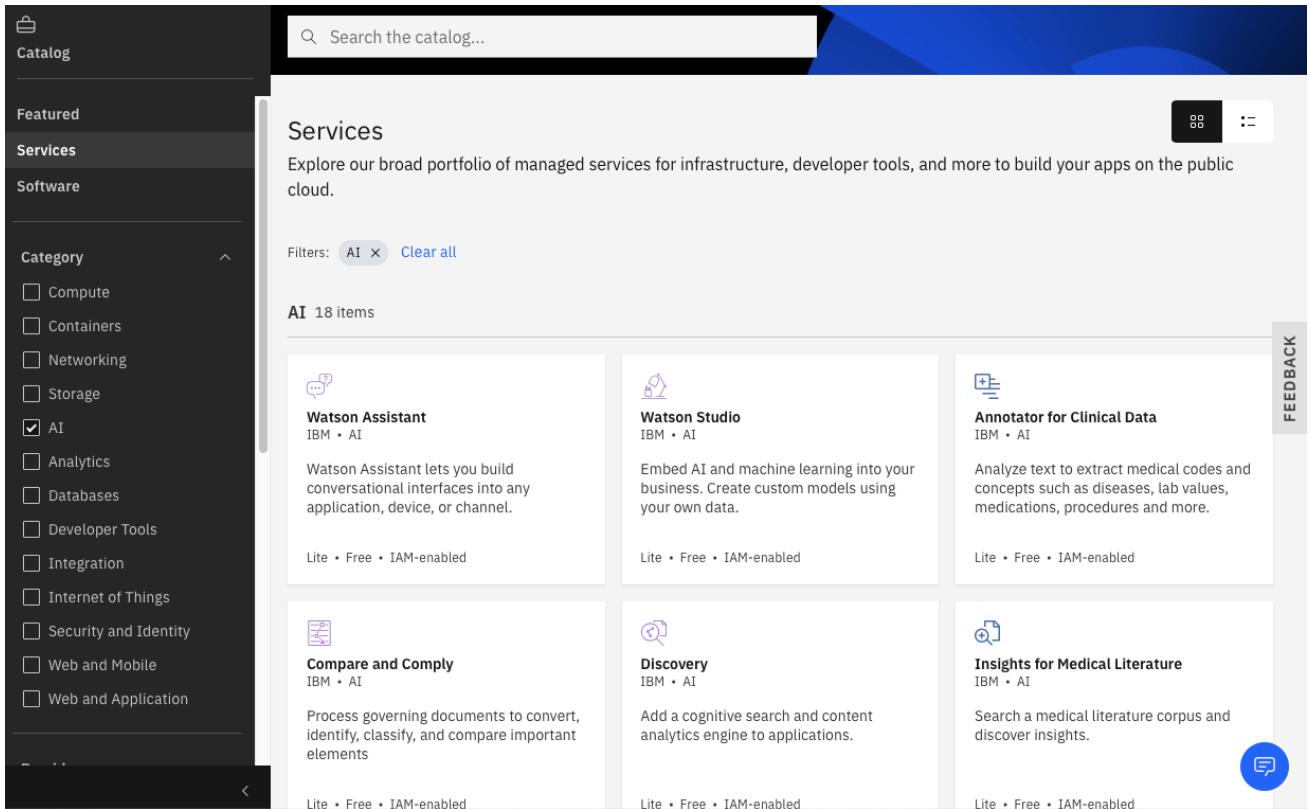




The screenshot shows the IBM Cloud products catalog. On the left, a sidebar lists categories: Catalog, IBM Cloud catalog, Featured, Services, Software, and Consulting. The 'Featured' category is selected. The main content area has a dark blue header with the text 'IBM Cloud products' and a sub-header 'Over 350 products available for you to customize and build the solutions that you need for your business'. Below this is a search bar with the placeholder 'Search the catalog...'. A large blue abstract graphic is on the right. In the center, there's a section titled 'Recommended for you' with a sub-section 'These recommended products are complementary to the resources that you're already working with.' To the right are three service cards: 'Watson Assistant' (AI / Machine Learning), 'Watson Studio' (AI / Machine Learning), and 'Kubernetes Service' (IBM • Services • Containers). Each card includes a brief description and a 'Lite • Free • IAM-enabled' status indicator.

You'll see a list of services (if not, click on 'services').

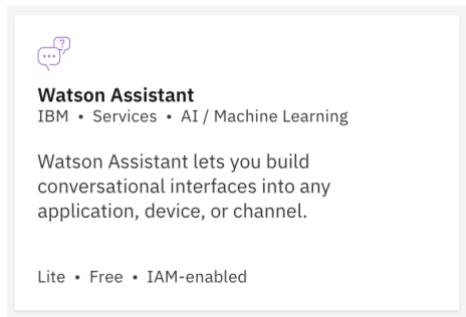
Check the 'AI' filter checkbox on the left to filter for Watson services. (You can also search for them by name)



The screenshot shows the services catalog page. The sidebar is identical to the previous one, with 'Featured' selected. The main content area has a dark blue header with the text 'Services' and a sub-header 'Explore our broad portfolio of managed services for infrastructure, developer tools, and more to build your apps on the public cloud.' Below this is a search bar with the placeholder 'Search the catalog...'. On the right, there are two small icons: a gear and a help symbol. A 'Filters' section shows a checked 'AI' checkbox and a 'Clear all' button. Below this, a heading 'AI 18 items' is followed by a grid of six service cards. The first row contains 'Watson Assistant' (AI), 'Watson Studio' (AI), and 'Annotator for Clinical Data' (AI). The second row contains 'Compare and Comply' (AI), 'Discovery' (AI), and 'Insights for Medical Literature' (AI). Each card includes a brief description and a 'Lite • Free • IAM-enabled' status indicator. A 'FEEDBACK' button is located on the right side of the grid.

Scroll down and click on the 'Visual Assistant' tile.





Inside, you'll be able to create a 'lite' plan (free) instance as shown in the screenshot below.

Select the free 'lite' plan and provision the service.

You can change the service name to something more memorable if you wish. Once you create the service, you will be redirected to home page of your service.

Congratulations, you've provisioned a free Watson Assistant service. We will be later using this service to create a chatbot.



## 4.3 Setting up the Weather Data Connector

You can use App Connect to retrieve details on the following objects:

- Historical Data
- Forecast
- Near Locations
- Locations
- Location by Point
- Current Conditions

To use App Connect to integrate IBM Weather Company Data with your other applications, you need to connect App Connect to your IBM Weather Company Data account. To do that, you'll need to provide the following information:

### **IBM Weather Company Data API key.**

Claim your 30-day free API key from here - <https://epwt-www.mybluemix.net/software/support/trial/cst/programwebsite.wss?siteld=443&tabId=774&w=1>



## 5 Getting into the Cloud Pak and Building Your Integration

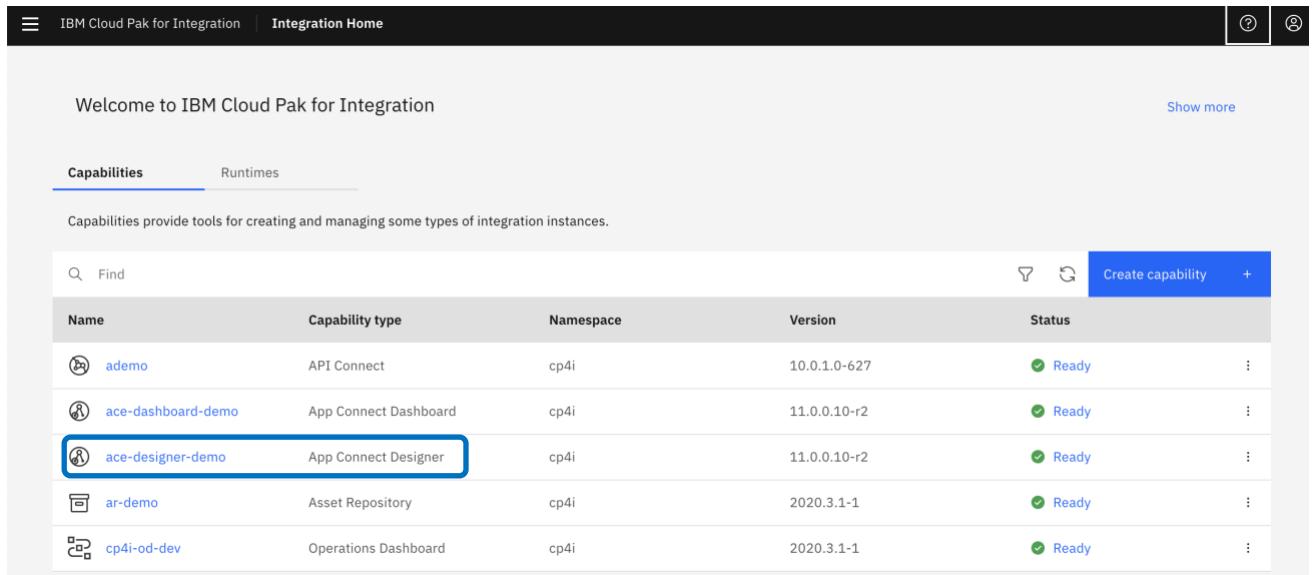
Getting started with Cloud Pak for Integration (CP4I) on Red Hat OpenShift Kubernetes Service (ROKS) on IBM Cloud has never been easier with one-click install. The following guide walks you through how to deploy Cloud Pak Integration on ROKS cluster.

<https://ibm-garage-tsa.github.io/cp4i-demohub/cp4i-on-roks/>

We're going to be using API Connect, App Connect and the Asset Repository for this lab.

### 5.1 Accessing the Designer Integration Tooling

For either method, menu or instance view, click on ‘ace-designer-demo’ which is our instance of the designer tooling for this lab.

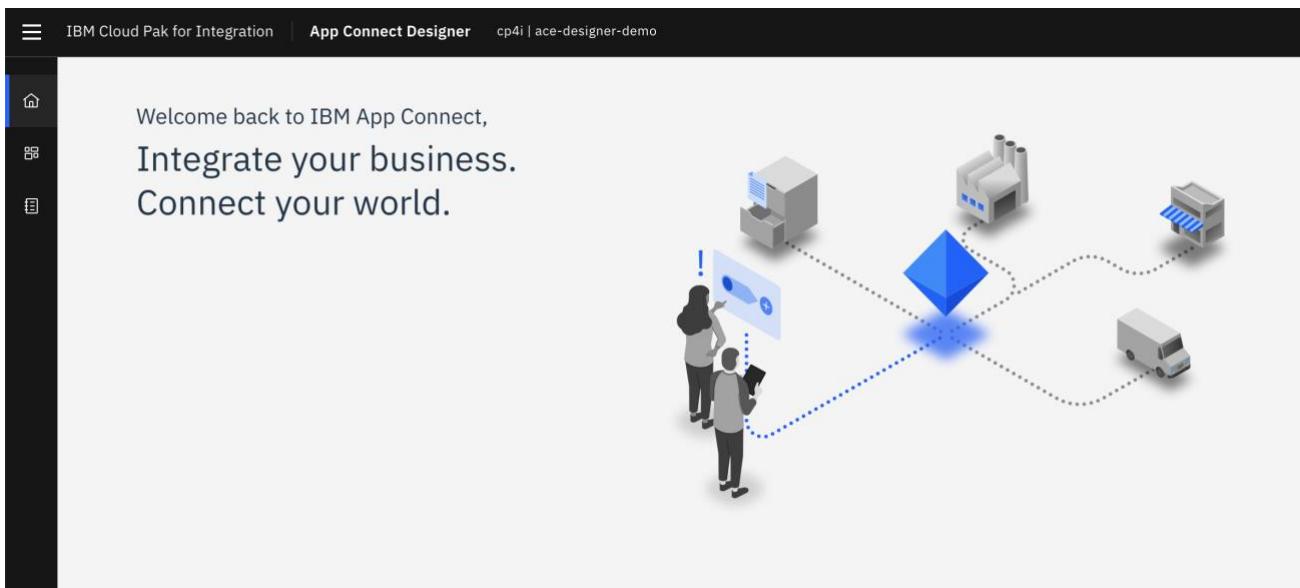


The screenshot shows the 'IBM Cloud Pak for Integration' interface with the 'Integration Home' tab selected. The main area displays a table of capabilities. The 'ace-designer-demo' row is highlighted with a blue border, indicating it is selected. The table columns include Name, Capability type, Namespace, Version, and Status. All listed instances are marked as 'Ready'. The 'Create capability' button is visible at the top right of the table area.

Name	Capability type	Namespace	Version	Status
ademo	API Connect	cp4i	10.0.1.0-627	Ready
ace-dashboard-demo	App Connect Dashboard	cp4i	11.0.0.10-r2	Ready
ace-designer-demo	App Connect Designer	cp4i	11.0.0.10-r2	Ready
ar-demo	Asset Repository	cp4i	2020.3.1-1	Ready
cp4i-od-dev	Operations Dashboard	cp4i	2020.3.1-1	Ready

You'll arrive at the App Connect Designer here:





This is where we can create all of our API integration flows and also manage our connectivity to our services and endpoints. You can create many integration flows and manage them all here.

## 5.2 Connecting the tooling to our endpoints

Let's go to the connector catalog:

The connector catalog appears with a list of the cloud pak connectors which are installed locally to this lab. There are many more connectors available although not all of them run 'locally'. Some of the connectors are currently available in the pak locally, all of them are available on the IBM cloud – you can use the ones that run on the IBM cloud directly from ICP4i designer as well – you just need to link to your IBM cloud account, which we won't be doing in this lab.

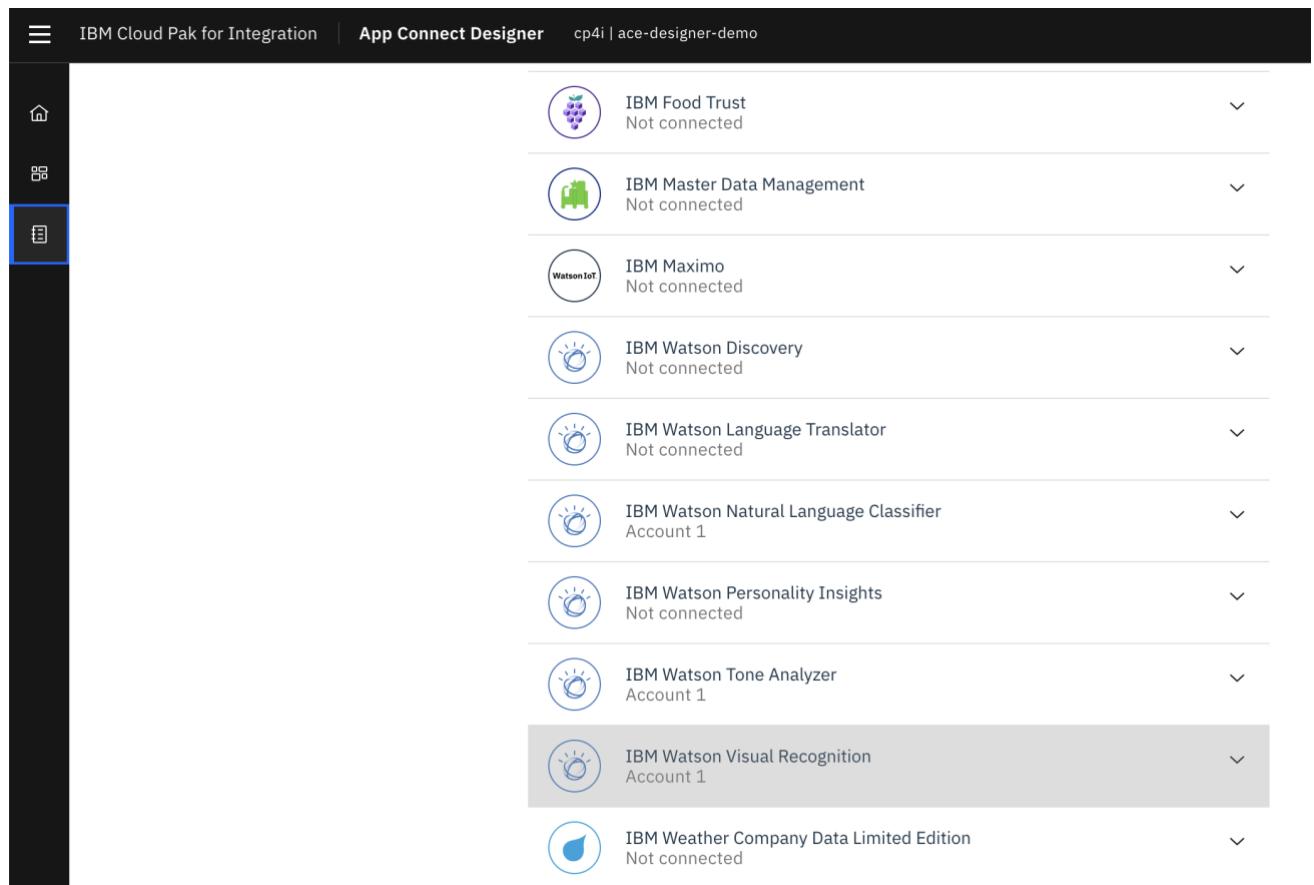
More connectors are being developed constantly – for a list, look here:  
<https://www.ibm.com/cloud/app-connect/connectors/>

You can choose whether you want to run the connectors locally or on the IBM cloud. For this lab, we will run them locally:

A screenshot of the IBM App Connect Catalog interface. The top navigation bar says "IBM App Connect" and has a question mark icon. The left sidebar has a "Catalog" button highlighted in black. The main area is titled "Catalog" and contains a search bar with "Search applications". Below the search bar is a list of connectors. The first item is "Acoustic Campaign" with the status "Not connected". Below it is another item starting with "Act-On". The interface uses a clean, modern design with a white background and light gray accents.

### 5.2.1 Connect to IBM Watson Visual Recognition

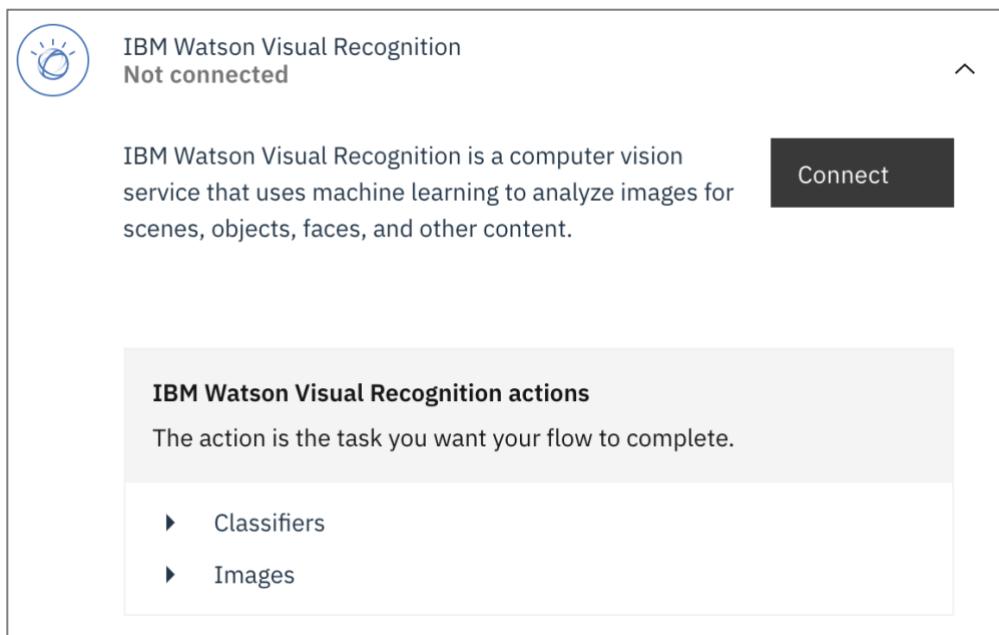
Let's set up our Watson AI endpoint – scroll down until you see the IBM Watson connectors:



The screenshot shows the App Connect Designer interface within the IBM Cloud Pak for Integration platform. The left sidebar has a 'Watson' icon highlighted in blue. The main area displays a list of connectors:

- IBM Food Trust (Not connected)
- IBM Master Data Management (Not connected)
- IBM Maximo (Not connected)
- IBM Watson Discovery (Not connected)
- IBM Watson Language Translator (Not connected)
- IBM Watson Natural Language Classifier (Account 1)
- IBM Watson Personality Insights (Not connected)
- IBM Watson Tone Analyzer (Account 1)
- IBM Watson Visual Recognition (Account 1)** (This connector is highlighted with a gray background)
- IBM Weather Company Data Limited Edition (Not connected)

Click on 'IBM Watson Visual Recognition'. You'll see that the connector expands and shows you the actions available for the connector. CP4I connectors are smart connectors and are metadata driven – you don't need to know what functions and data are in the endpoint – the connectors will usually show them to you.



IBM Watson Visual Recognition  
Not connected

IBM Watson Visual Recognition is a computer vision service that uses machine learning to analyze images for scenes, objects, faces, and other content.

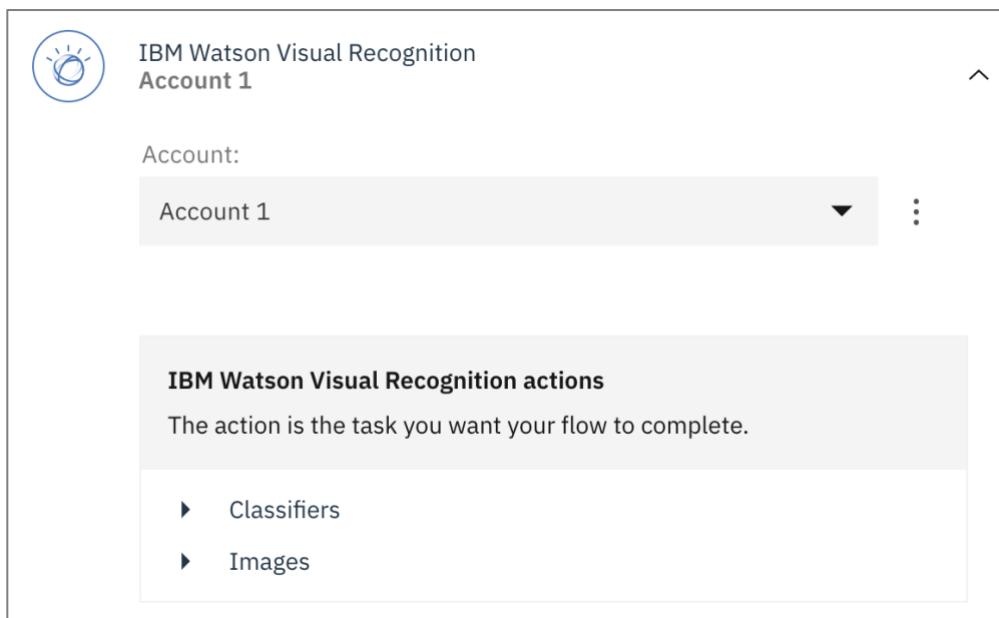
Connect

**IBM Watson Visual Recognition actions**

The action is the task you want your flow to complete.

- ▶ Classifiers
- ▶ Images

Click on ‘Connect’



IBM Watson Visual Recognition  
Account 1

Account:

Account 1

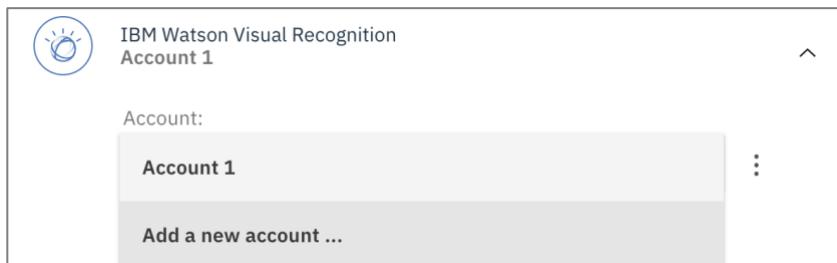
**IBM Watson Visual Recognition actions**

The action is the task you want your flow to complete.

- ▶ Classifiers
- ▶ Images

Note that if you have already an account associated with the connector, you can click on ‘Add a new account’. You can have multiple accounts connected to each application or API. You can also rename your App Connect accounts for ease of identification, update the credentials for your accounts when necessary, and remove accounts that you no longer need.

The ability to connect to multiple accounts enables you to create flows that use different accounts to connect to different instances of an application; for example, test and production instances, or instances in two different sites or geographies.



To connect to your Watson Visual Recognition account, you'll need credentials – otherwise anyone could connect to it. The service is protected by an API key. You'll now be asked for the API key that you kept safe from before: Enter it here and click 'connect'.

Connect to IBM Watson Visual Recognition

\*Region URL:

The service endpoint is based on the location of the service instance (as shown in the Service credentials for the instance). For example, when Visual Recognition is hosted in Frankfurt, the base URL is https://api.eu-de.visual-recognition.watson.cloud.ibm.com

\*API key:

Specify the API key of the Watson Visual Recognition service instance.

Disable logging: (optional)

Set to true or false. Set to true if you do not want IBM to use the data in your request to improve the Watson Visual Recognition service for future users. The default is true.

Cancel Connect

**IBM Watson Visual Recognition actions**

The action is the task you want your flow to complete.

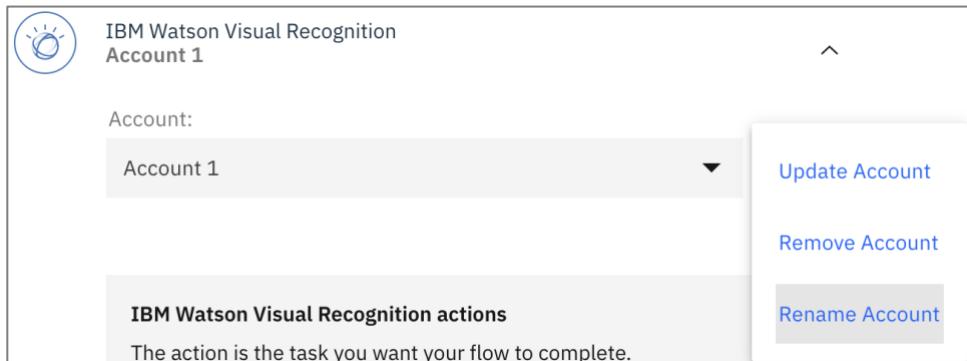
- ▶ Classifiers
- ▶ Images

(Hint: you can use the 'eye' button to show the API key to check it's correct)

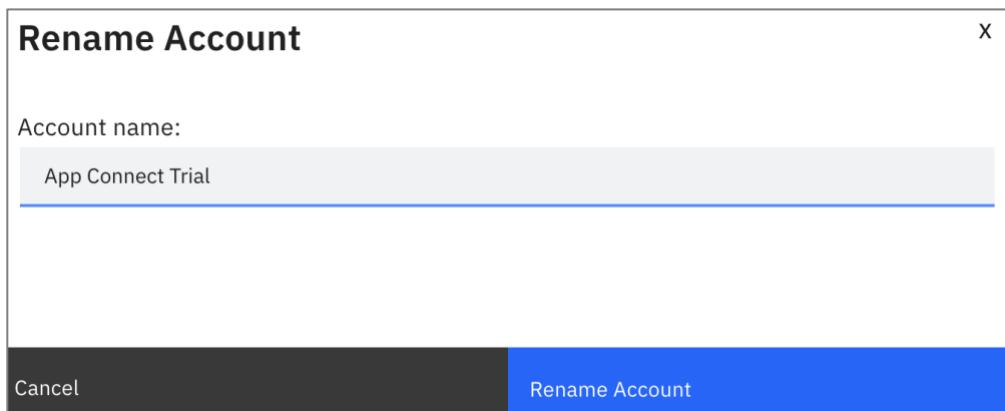
**IMPORTANT: DON'T MOVE ON YET!** You'll see 'Account 1' as the name of the account. WE NEED TO RENAME THE ACCOUNT FOR THE LAB TO WORK SEAMLESSLY.



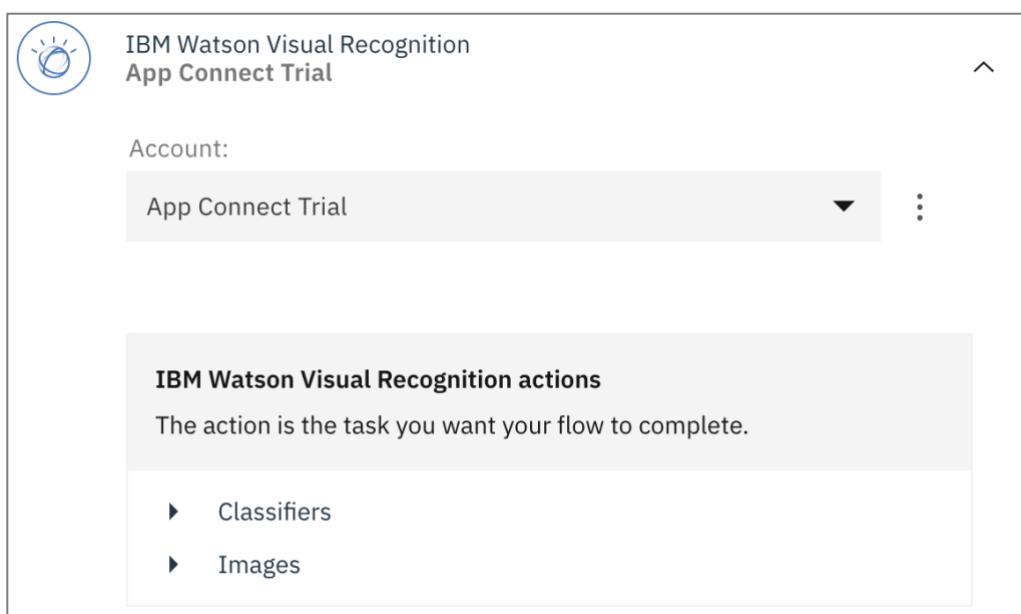
To rename your account, Click the three dots menu and click ‘Rename Account’.



In the dialog box, name the account ‘App Connect Trial’ (exactly as shown – capitals on the first letter of the words, spaces between the words) and click ‘Rename Account’ as shown below.



Your connector should now look like this.



### 5.2.2 Connect to ServiceNow

Let's set up our ServiceNow endpoint – scroll down until you see the ServiceNow connector or you can locate it by filtering via the search box.

Click on 'Connect'.

The screenshot shows the 'Catalog' section of the App Connect Designer interface. The top navigation bar includes 'IBM Cloud Pak for Integration', 'App Connect Designer', and 'cp4i | ace-designer-demo'. On the left, there's a sidebar with icons for Home, Catalog, and Applications. The main area is titled 'Catalog' and has tabs for 'Applications' (which is selected) and 'APIs'. A search bar contains the text 'servicenow'. Below the search bar, a 'ServiceNow' connector card is displayed, showing its icon (a yellow circle with 'now'), its name 'ServiceNow', and the status 'Not connected'. A descriptive text block states: 'ServiceNow is a cloud-based platform that supports IT service management for all departments of your business.' It includes a 'More info' link and a prominent 'Connect' button. At the bottom, a panel titled 'ServiceNow actions' lists 'Asset' with sub-options 'Create asset' and 'Retrieve assets'.

You'll now be asked for the following details that you kept safe from before: Enter it here and click 'Connect'.

The **URL of your ServiceNow instance**, in the following form: `https://<servicenow-id>.service-now.com/`

The **username and password** that you use to log in to the instance.

**ClientID** and **Secret** of your ServiceNow application (Oauth endpoint).

 **ServiceNow**  
Not connected ^

Connect to ServiceNow

\*URL:  
  
ServiceNow instance URL e.g. https://<servicenow-id>.service-now.com/

\*User Name:  
  
ServiceNow user name

\*User Password:  
 (eye)  
ServiceNow user password

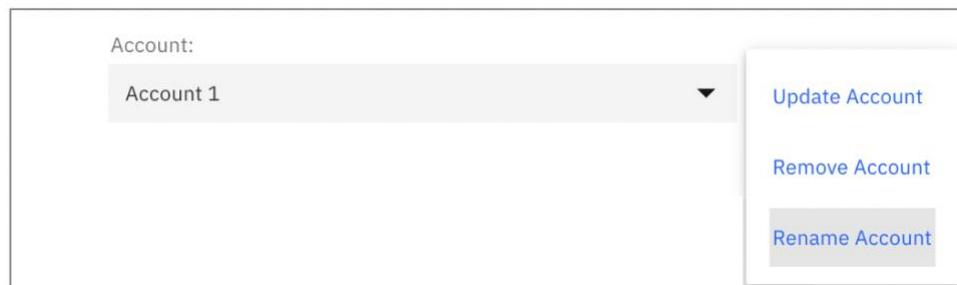
\*Client Id:  
 (eye)  
ServiceNow client identifier

\*Client Secret:  
 (eye)  
ServiceNow client secret

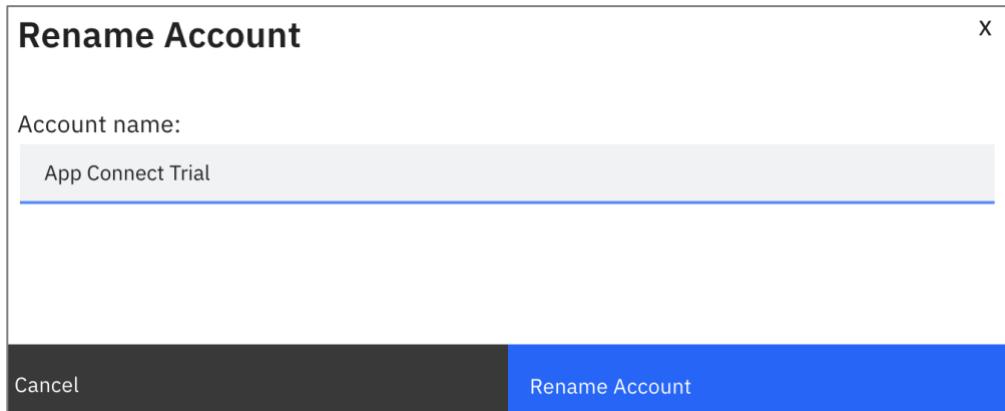
Cancel Connect

Similarly, we want to rename the account for the Lab to work seamlessly.

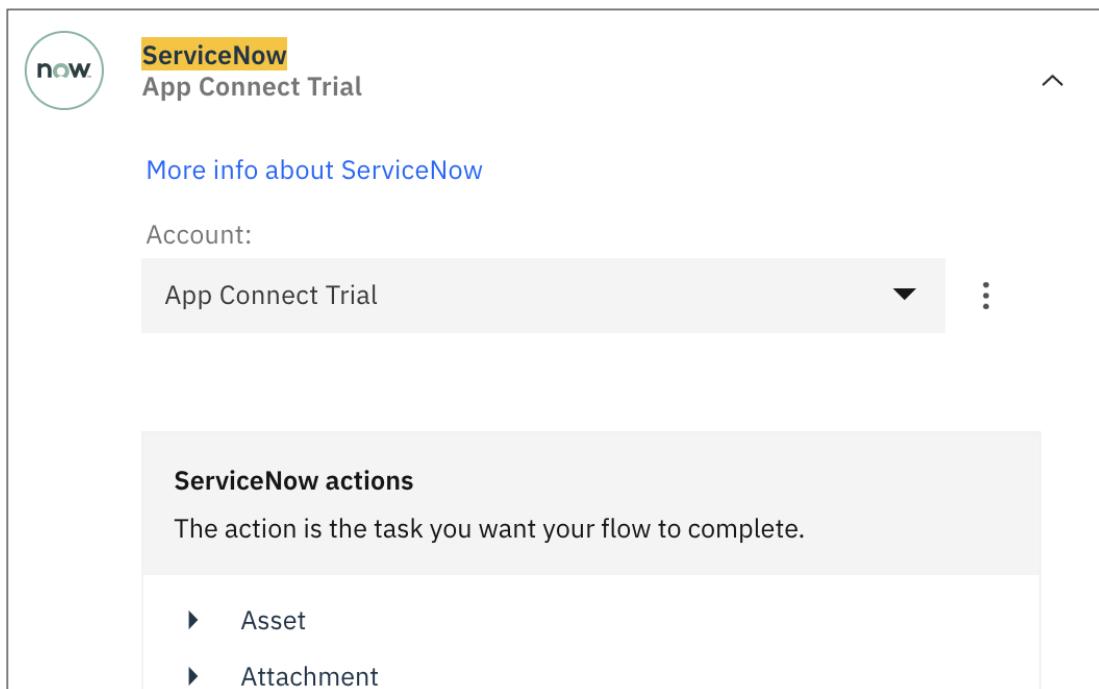
To rename your account, Click the three dots menu and click ‘Rename Account’.



In the dialog box, name the account ‘App Connect Trial’ (exactly as shown –capitals on the first letter of the words, spaces between the words) and click ‘Rename Account’ as shown below.



Your connector should now look like this.



### 5.2.3 Connect to IBM Weather

Let’s set up our IBM Weather endpoint – scroll down until you see the IBM Weather connector or filter via the search box.

Click on ‘Connect’.

IBM Weather Company Data Limited Edition  
Not connected

IBM Weather Company Data Limited Edition enables users to gain accurate insights and make informed decisions based on upcoming weather forecasts.

Connect

**IBM Weather Company Data Limited Edition actions**

The action is the task you want your flow to complete.

- ▶ Current conditions
- ▶ Forecasts
- ▶ Historical observations
- ▶ Locations
- ▶ Locations by point
- ▶ Near locations

The service is protected by an API key. You'll now be asked for the API key that you kept safe from before: Enter it here and click 'Connect'.

IBM Weather Company Data Limited Edition  
Not connected

Connect to IBM Weather Company Data Limited Edition

\*API key:

Your IBM Weather Company Data Limited Edition API key

Cancel Connect

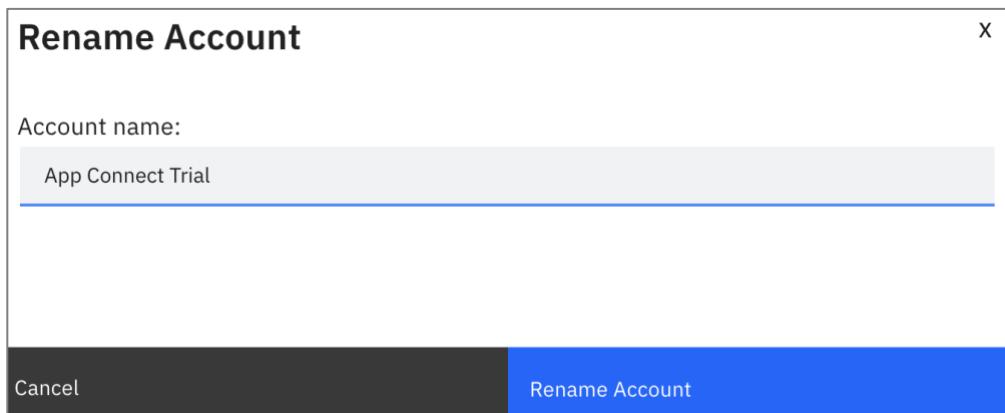
Similarly, we want to rename the account for the Lab to work seamlessly.

To rename your account, Click the three dots menu and click 'Rename Account'.

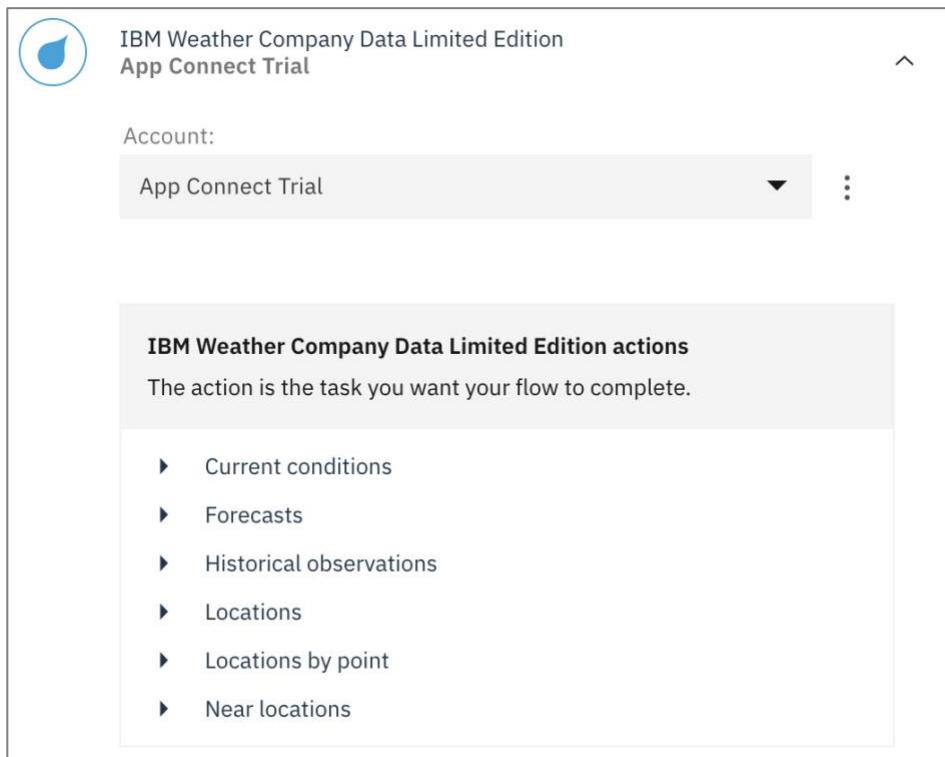




In the dialog box, name the account 'App Connect Trial' (exactly as shown – capitals on the first letter of the words, spaces between the words) and click 'Rename Account' as shown below.



Your connector should now look like this.

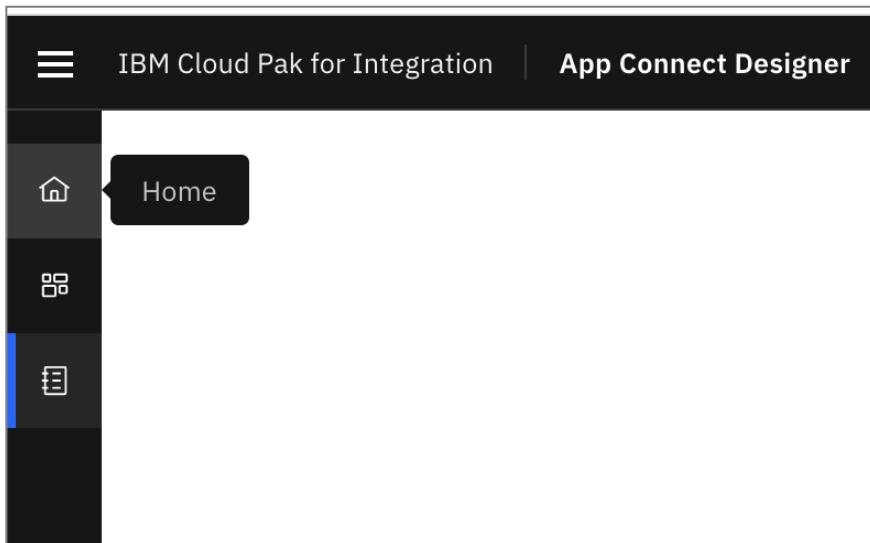


- ▶ Current conditions
- ▶ Forecasts
- ▶ Historical observations
- ▶ Locations
- ▶ Locations by point
- ▶ Near locations

Great! We're now all connected up! Let's go and see our flow!

## 5.3 Importing the Integration flow into designer

Go back to the 'Home' page in Designer by clicking the 'home' icon.



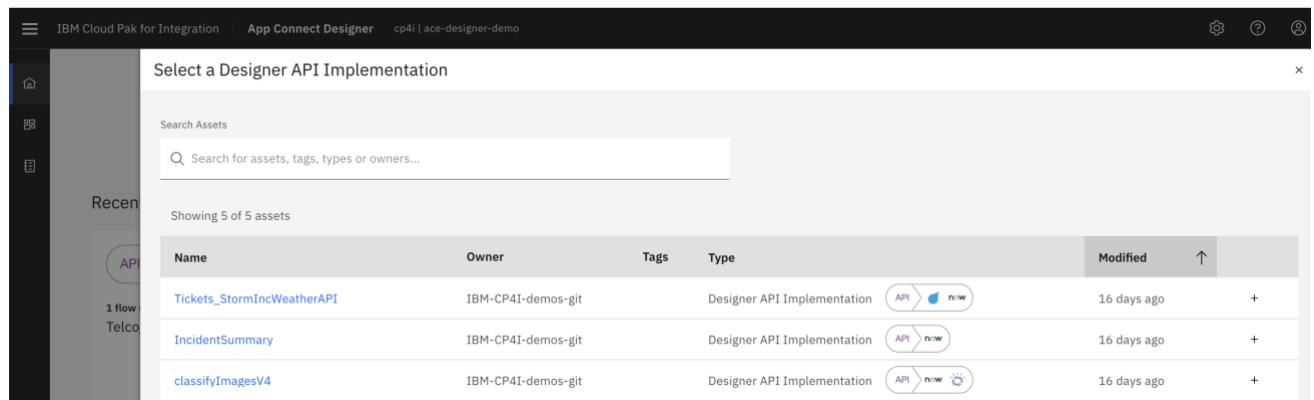
We're going to import our flow from the Asset Repository: The 1-click install has put it there for you...

Click on 'Create from an asset'.

A screenshot of the IBM App Connect Designer home page. The top navigation bar shows 'IBM Cloud Pak for Integration' and 'App Connect Designer'. The main content area features a welcome message: 'Welcome back to IBM App Connect, Integrate your business. Connect your world.' Below this is a diagram of two people interacting with a central blue diamond node, which is connected to various icons representing different integration components like databases and clouds. At the bottom, there are four buttons: 'Create flows for an API' (with a note: 'Define models, operations, and flows.'), 'Create from an asset' (with a note: 'Use an existing asset to accelerate your work.' and highlighted with a blue border), 'Import a flow' (with a note: 'Import a YAML file to import a flow.'), and 'Learn more' (with a note: 'Discover how to do more with App Connect in our documentation.').

We have a flow to use already stored in the Asset Repository: We're going to import it to save you typing and clicking!

There is a lot of detailed designer flow documentation for when you want to delve deeper – a good place to start is <https://ibm.biz/learnappconnect>



The screenshot shows the 'Select a Designer API Implementation' dialog box. On the left, there's a sidebar with icons for Home, Recent, and API. The main area has a search bar labeled 'Search Assets' with placeholder text 'Search for assets, tags, types or owners...'. Below the search bar, it says 'Showing 5 of 5 assets'. A table lists three assets:

Name	Owner	Type	Modified	+
Tickets_StormIncWeatherAPI	IBM-CP4I-demos-git	Designer API Implementation	16 days ago	+
IncidentSummary	IBM-CP4I-demos-git	Designer API Implementation	16 days ago	+
classifyImagesV4	IBM-CP4I-demos-git	Designer API Implementation	16 days ago	+

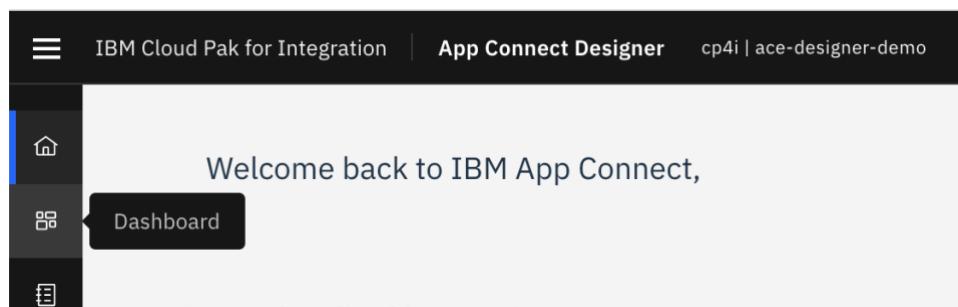
Click on the ‘+’ sign to the right on the ‘Tickets\_StormIncWeatherAPI’ asset and create from the asset.

Repeat the same for ‘IncidentSummary’ and ‘classifyImagesV4’ assets.

## 5.4 Reviewing our API Integration Flows:

This section is for you understand how the flow is built, as the flows are pre-built and we won't change it in the lab, you can skip straight to ‘Starting the flow’ section and come back here later.

Go back to the ‘Dashboard’ page in Designer by clicking the ‘Dashboard’ icon where you can access all your flows.



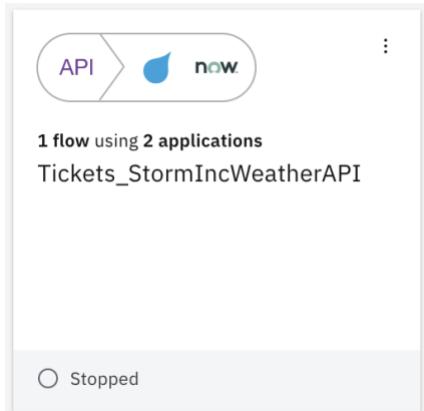
The screenshot shows the 'Welcome back to IBM App Connect,' message. On the left, there's a sidebar with icons for Home, Recent, and API. A large 'Dashboard' button is highlighted with a black background and white text. At the bottom, there are navigation links for 'Flows', 'Design', 'Integrations', and 'Data Services'.

### 5.4.1 The ‘Tickets\_StormIncWeatherAPI’ API flow



This API checks the weather on a date and location and opens a ServiceNow ticket if it determines that a storm has happened.

Click on the ‘Tickets\_StormIncWeatherAPI’ API flow tile.



What you can see first is our API model.

App Connect Designer builds your API for you – you don't need to worry about OpenAPI specs or Swagger editors – it's all built in. To create your API, you just type in the names of the fields you want to use in plain English.

A screenshot of the 'Define' tab in the App Connect Designer interface, specifically for the 'StormData' model. The properties section shows the following table:

Now that we've told the API what data to use, we need to define what actions to perform on that data. Click ‘Operations’.

IBM Cloud Pak for Integration | App Connect Designer cp4i | ace-designer-demo

Dashboard / Tickets\_StormIncWe... Define Test

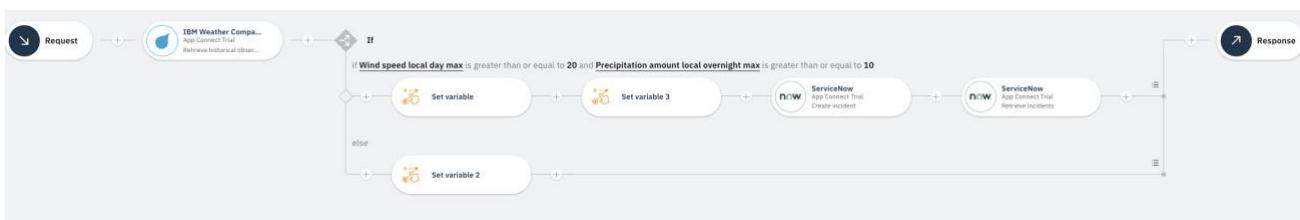
Create model

**StormData** Properties Operations

stormData POST /StormData/stormpath Edit flow

Select an operation to add

Click 'Edit flow' to see the details of the flow.



The first step in the flow uses date and location in the request input and retrieves the weather observations on that specified date and location.

You can also test this step independently by defining sample data and clicking 'Try this action'.

You will be amazed by how much data you can retrieve related to Weather observation. For the purpose of this demo, we will use wind and precipitation to evaluate the storm condition.

The screenshot shows the IBM Weather Company Data Limited Edition App Connect Trial interface. On the left, a search query is defined with the following filters:

- \*Where
  - End date equals 2019-04-12T23:20:50.52Z
  - Language equals en-US
  - Start date equals 2019-04-12T23:20:50.52Z
  - Units equals s
  - Postal key equals 20510-US

On the right, the results are displayed under the "Output" tab, showing a single item retrieved:

```
{
  "date": "20190412",
  "geoType": "postalKey",
  "geoTypeId": "70510-US",
  "latitude": "29.644829",
  "longitude": "-92.18706",
  "dewpointLocalAfternoonAvg": "293.85",
  "dewpointLocalAfternoonMax": "294.1",
  "dewpointLocalAfternoonMin": "293.6",
  "dewpointLocalDayAvg": "293.225",
  "dewpointLocalDayMax": "294.4",
  "dewpointLocalDayMin": "291.0",
  "dewpointLocalDaytimeAvg": "293.125",
  "dewpointLocalDaytimeMax": "294.2",
  "dewpointLocalDaytimeMin": "291.0",
  "dewpointLocalEveningAvg": "293.0166",
  "dewpointLocalEveningMax": "293.5",
  "dewpointLocalEveningMin": "292.6",
  "dewpointLocalMorningAvg": "292.4",
  "dewpointLocalMorningMax": "294.2",
  "dewpointLocalMorningMin": "291.0",
  "dewpointLocalOvernightAvg": "294.85",
  "dewpointLocalOvernightMax": "295.3",
  "dewpointLocalOvernightMin": "292.6",
  "FeelsLikeLocalAfternoonAvg": "293.93335",
  "FeelsLikeLocalAfternoonMax": "295.3",
  "FeelsLikeLocalAfternoonMin": "292.6",
  "FeelsLikeLocalDayAvg": "296.3",
  "FeelsLikeLocalDayMax": "301.5",
  "FeelsLikeLocalDayMin": "292.7",
  "FeelsLikeLocalDaytimeAvg": "297.1416",
  "FeelsLikeLocalDaytimeMax": "301.5",
  "FeelsLikeLocalDaytimeMin": "292.7",
  "FeelsLikeLocalEveningAvg": "296.4",
  "FeelsLikeLocalEveningMax": "296.5",
  "FeelsLikeLocalEveningMin": "296.3",
  "FeelsLikeLocalMorningAvg": "295.7",
  "FeelsLikeLocalMorningMax": "301.5",
  "FeelsLikeLocalMorningMin": "291.0"
}
```

The ‘If’ construct checks if the ‘wind speed is greater than or equal to 20’ and ‘precipitation is greater than or equal to 10’.

The screenshot shows the configuration of an 'If' construct. The condition is set to evaluate if all of the following are true:

- Wind speed local day max is greater than or equal to 20
- Precipitation amount local overnight max is greater than or equal to 10

If the above condition evaluates to true, we assume there is a storm occurrence and create a provisional storm claim in ServiceNow and return the claim id and the evaluation result.

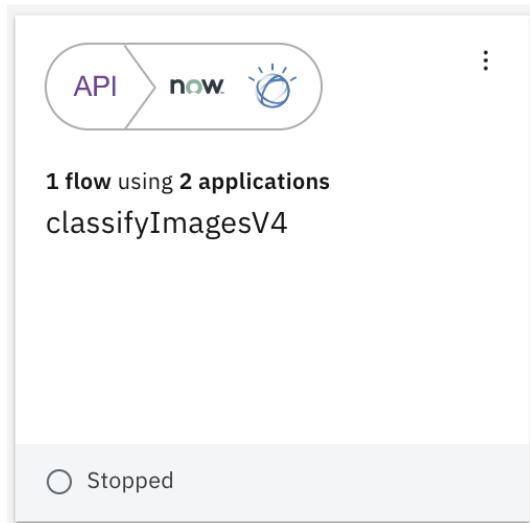
If the above condition evaluates to false, we directly return the evaluation result.



## 5.4.2 The ‘classifyImages’ API flow

This API takes an image and a ServiceNow ticket number as input, analyses the image with Watson Image Recognition and finally updates the ticket with analysis results.

Click on the ‘classifyImagesV4’ API flow tile.



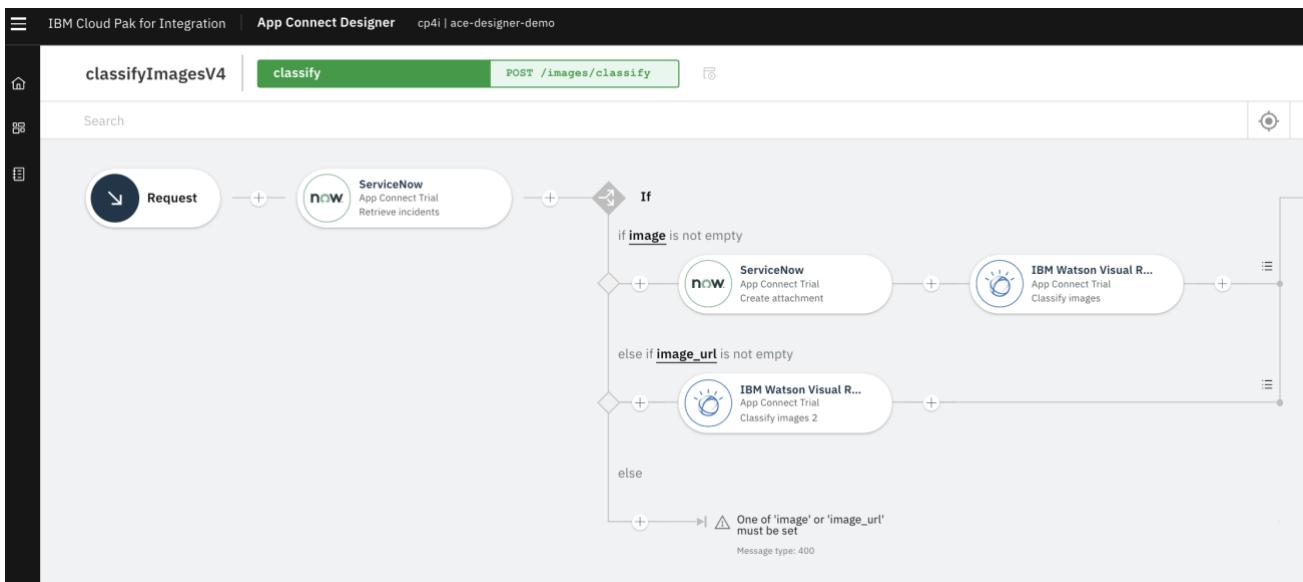
What you can see first is our API model.

The image shows the 'App Connect Designer' interface within the 'IBM Cloud Pak for Integration' environment. The top navigation bar includes 'Dashboard / classifyImagesV4', 'Define' (which is selected), and 'Test'. The main area displays two models:

- classification**: A model for a classification model. It has properties: 'attachment\_id' (String) and 'most\_valuable\_class' (Object). There are buttons to 'Add property' and 'Select properties from applications...'.
- images**: A model for an images model. It has properties: 'image' (String), 'incident\_id' (String), 'image\_name' (String), and 'image\_url' (String). There is a button to 'Add property'.

Now that we've told the API what data to use, we need to define what actions to perform on that data. Click 'Operations' of 'images' data model.

Click 'Edit flow' to see the details of the flow.



Retrieves the ServiceNow ticket.

Checks that either an image (file base64 encoded) or a URL to an image has been supplied.

- If an image has been supplied, it adds it as an attachment to ServiceNow
- If a URL has been supplied, it does not add an attachment and adds the attachment ID as the IF output context
- If neither supplied, exits the flow with error

Invokes Watson Visual Recognition to get the recognised 'classes' for the image from the 'default classifier'

Uses the JSON parse node to set an arbitrary set of 'claimable values' for a few classes

The set variable node augments the discovered classes with their claimable value.



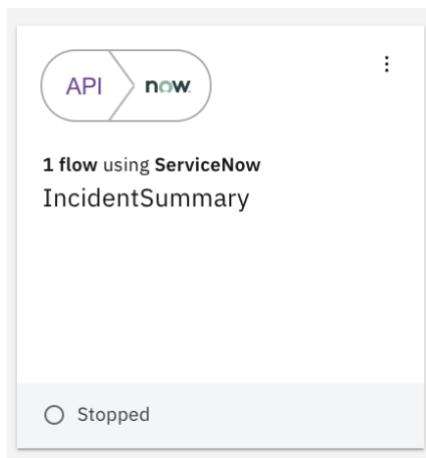
It responds with what the image was recognized as, and its maximum claimable value. It also augments the ticket.

- Adds the image as an attachment to the ticket
- Augments the description field with a JSON structure that holds the information discovered (for later retrieval)

### 5.4.3 The ‘IncidentSummary’ API flow

This API simply takes a ServiceNow ticket number as input, returns the details.

Click on the ‘IncidentSummary’ API flow tile.



What you can see first is our API model.

IBM Cloud Pak for Integration | App Connect Designer cp4i | ace-designer-demo

Dashboard / IncidentSummary Define Test

summary Properties Operations

Add properties to your summary model	ID ⓘ
incidentNumber	String
summary	Object
claimDate	String
claimLocation	String
customerName	String
stormPath	String
topClass	Object
class	String
score	Number
value	Number
Add property +	
userInput	String
windSpeed	String
Add property +	

Now that we've told the API what data to use, we need to define what actions to perform on that data. Click 'Operations'.

IBM Cloud Pak for Integration | App Connect Designer cp4i | ace-designer-demo

Dashboard / IncidentSummary Define Test

Create model

summary Properties Operations

Retrieve summary by ID GET /summary/{id} Edit flow

Select an operation to add

Click 'Edit flow' to see the details of the flow.



## 5.5 Testing our API Integration Flows



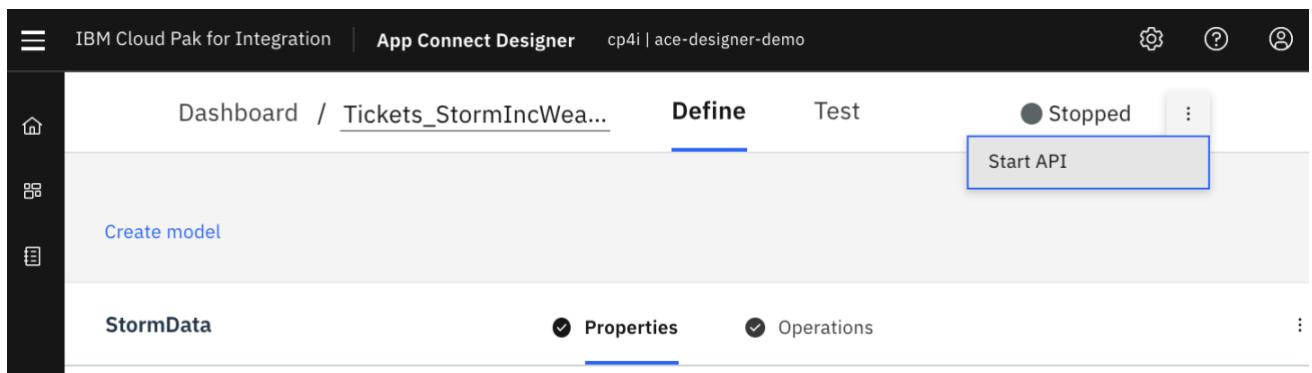
Now we've built our API, we need to test it. When you create an API flow in your App Connect Designer instance, the definition provides an API that you can expose. After you start the flow, you can verify its behaviour by using the built-in test facility to call the endpoints for each of the implemented API operations.

In the course of this lab, we want to test our APIs using built-in test facilities. This will give us the assurance to promote our flows from Designer runtime (which is a development environment) to integration runtime.

If the flow is not already open, click 'Dashboard' in the navigation pane and then click the flow tile.

Let's start with 'Tickets\_StormIncWeatherAPI' flow.

Click 'Start API'



The screenshot shows the App Connect Designer interface with the 'Define' tab selected. The flow name 'Tickets\_StormIncWea...' is visible. A 'Start API' button is highlighted with a blue box, indicating it has been clicked or is the current action. The status is shown as 'Stopped'.

Click the 'Test' tab.

The Overview page displays the API type and the base URL for the API endpoint. To the right of the "Overview" title, a tag is provided for each model that is defined in the API flow.



The screenshot shows the 'Test' tab selected. The 'Overview' section is displayed, showing the API Type as REST and the Endpoint as [https://ace-designer-diners.appdomain.cloud/Tickets\\_StormIncWeatherAPI](https://ace-designer-diners.appdomain.cloud/Tickets_StormIncWeatherAPI). A 'Download Open API Document' link is highlighted with a blue box.

A Download Open API Document link is also provided for the OpenAPI document that describes the API.



If you download this document, it is saved as a YAML file to the default download location that is configured for your browser. The format of the file name is ‘*flowName-version.yaml*’; for example, Tickets\_StormIncWeatherAPI-1.0.0.yaml. The version number is derived from the version of the API in the OpenAPI document and is always set to 1.0.0.

You can use the OpenAPI document to test your flow in any other test tool or you can proceed with the embedded test option.

From the left pane, click ‘POST /StormData/stormpath’ operation to view its details and test the behaviour. Notice that the tag shown will reflect the model that an operation belongs to.

The Details tab displays the following information:

- The HTTP method and request for the operation.
- The authentication method (security scheme) that the API uses.
- The header parameters in a collapsible section.
- The body, path, or query parameters with examples, and the schema if relevant, in collapsible sections. The parameters that you see will depend on the operation's settings.
- Tooling languages that can be used when making the request, and a code sample for calling the operation in the selected language.
- Response status codes for the operation, and the response body schema with an example.

The screenshot shows the IBM Cloud Pak for Integration App Connect Designer interface. The top navigation bar includes 'IBM Cloud Pak for Integration', 'App Connect Designer', 'cp4i | ace-designer-demo', and status indicators. The main area has a left sidebar with 'Overview', 'Definitions', and a search/filter field. The central content area is titled 'StormData.stormpath' and shows the 'Test' tab selected. It displays the following details:

- Method:** POST
- URL:** [https://ace-designer-demos.appdomain.cloud/Tickets\\_StormIncWeatherAPI/StormData/stormpath](https://ace-designer-demos.appdomain.cloud/Tickets_StormIncWeatherAPI/StormData/stormpath)
- Security:** basicAuth
- Type:** basic
- Parameters:** A section with 'Header' and 'Body' subsections, both currently collapsed.
- Tooling:** A dropdown menu showing 'curl' (selected), ruby, python, php, java, node, go, and swift.
- Example:** A JSON example under the curl section: { "postCode": "R5M 7K9", "date": "2006-12-13T04:20:41.700Z", "stormPath": true, "name": "Anthony Reed", "claimNumber": "458764008292352", "customerResponseMsg": "pogfeguziob" }
- Schema:** A placeholder for the response schema.

Again, you can use the embedded test scripts to test your flow from your preferred tooling language or proceed with the embedded test option.

To proceed with the embedded test option, click ‘Try it’.

Use the below test data which passes the storm validation and creates a ServiceNow incident.

```
{  
  "postCode": "70510:US",  
  "date": "2019-07-13",  
  "name": "John ACE"  
}
```

Note that authentication credentials are auto generated and displayed together with the request parameters.

Click ‘Send’.

The screenshot shows the IBM Cloud Pak for Integration App Connect Designer interface. The top navigation bar includes 'IBM Cloud Pak for Integration', 'App Connect Designer', 'cp4i | ace-designer-demo', and status indicators for 'Running' and 'StormData'. The main area displays a 'Test' tab for a service named 'StormData.stormpath'. On the left, a sidebar shows 'Definitions' and 'Parameters'. The 'Try it' section for a 'POST /StormData/stormpath' endpoint is selected. It shows the URL as 'https://ace-designer-cp4i.ers.appdomain.cloud/tickets\_stormincweatherAPI/StormData/stormpath'. Under 'Security', there is an 'Authorization' section. Under 'Parameters', there is a 'Header' section. The 'Body' section contains the JSON test data shown in the code block above. At the bottom right are 'Reset' and 'Send' buttons.

Then review the request and response that are displayed.

The screenshot shows the App Connect Designer interface. In the top navigation bar, it says "IBM Cloud Pak for Integration | App Connect Designer cp4i | ace-designer-demo". The main area has tabs "Define" and "Test". Under "Test", there is a JSON input field containing:

```
{"name": "Alan Welch"}
```

Below the input field, there are "Reset" and "Send" buttons. To the left, there's a sidebar with "Overview" and "Definitions" sections, and a "Request" section showing a POST request to `https://ace-designer-.../Tickets_StormIncWeatherAPI/StormData/stormpath`. The request headers are:

```
POST https://ace-designer-...
/Tickets_StormIncWeatherAPI/StormData/stormpath
Headers:
Content-Type: application/json
Accept: application/json
```

The "Response" section shows a success code 200 OK with the following details:

```
Code: 200 OK
Headers:
content-encoding: gzip
content-type: application/json; charset=utf-8
date: Mon, 30 Nov 2020
etag: W/"df-vjg1RAbMg5um40WR1SMD4te/81U"
server: IBM App Connect Enterprise
transfer-encoding: chunked
vary: Origin, Accept-Encoding
x-original-http-status-code: 200
x-powered-by: Express
{
  "claimNumber": "INC0010001",
  "customerResponseMsg": "We are sorry to hear that the wind exceeded
20.4 MPH, this is assessed as a storm, please proceed with your claim",
  "date": "2019-07-13",
  "name": "Alan Welch",
  "stormPath": true
}
```

For our POST example, the Response section displays the success code that is returned (200 OK), the headers, and the claimNumber value that represents the ID assigned by ServiceNow.

We will use this claimNumber as an input parameter to test the other APIs.

Next, we will start ‘classifyImagesV4’ API.

If the flow is not already open, click ‘Dashboard’ in the navigation pane and then click the ‘classifyimagesV4’ flow tile.

Click ‘Start API’.

The screenshot shows the App Connect Designer interface again. The top navigation bar is the same. The main area has tabs "Define" and "Test". Under "Test", there is a "Start API" button which is highlighted with a blue border. Below the button, there's a "classification" model properties section with tabs "Properties" and "Operations". The "Properties" tab is selected. At the bottom, there's a note: "Add properties to your classification model".



Click ‘POST /images/classify’ and ‘Try it’.

Use the below test data which passes the ServiceNow incident id created in the previous step along with the image url.

```
{  
  "incident_id": "INC0010001",  
  "image_name": "my damaged car",  
  "image_url": "https://raw.githubusercontent.com/IBM/cp4i-demos/main/ace-weather-  
chatbot/images/car.jpg"  
}
```

Click ‘Send’.

The screenshot shows the IBM Cloud Pak for Integration interface, specifically the App Connect Designer section. The 'Test' tab is selected. On the left, there's a sidebar with 'Overview', 'POST /images/classify' (which is highlighted), and 'Definitions'. The main area shows a 'Try it' section for a 'POST' request to 'https://ace-designer-demo-:cloud/classifyImagesV4/images/classify'. Under 'Parameters', there are sections for 'Header' (Accept: application/json) and 'Content-Type' (application/json). In the 'Body' section, there's a 'data' field with a 'Generate' button, containing the following JSON:

```
{  
  "incident_id": "INC0010001",  
  "image_name": "my damaged car",  
  "image_url": "https://raw.githubusercontent.com/IBM/cp4i-demos/main/ace-weather-chatbot/images/car.jpg"  
}
```

At the bottom right, there are 'Reset' and 'Send' buttons.

Then review the request and response that are displayed.



```
POST https://ace-designer-.cloud/classifyImagesV4/images/classify
Headers:
Content-Type: application/json
Accept: application/json

Code: 200 OK
Headers:
content-encoding: gzip
content-type: application/json; charset=utf-8
date: Mon, 30 Nov 2020 15:22:38 GMT
etag: W/"83-shYivSzQS50Irewis7YY500QCOY"
server: IBM App Connect Enterprise
transfer-encoding: chunked
vary: Origin, Accept-Encoding
x-original-http-status-code: 200
x-powered-by: Express
{
  "attachment_id": "\"Attachment not created for public URL\"",
  "most_valuable_class": {
    "class": "coupe car",
    "score": 0.5,
    "value": 20000
  }
}
```

For our POST example, the Response section displays the success code that is returned (200 OK), the headers, and the classification values provided by Watson Image Recognition for the input image.

Lastly, we will start ‘incidentSummary’ API.

If the flow is not already open, click ‘Dashboard’ in the navigation pane and then click the ‘incidentSummary’ flow tile.

Click ‘Start API’.

Stopped

Start API

Click ‘GET /summary/{id}’ and ‘Try it’.

Use the ServiceNow incident id created in the previous steps.

Click ‘Send’.



The screenshot shows the IBM Cloud Pak for Integration | App Connect Designer interface. The URL is cp4i | ace-designer-demo. The left sidebar has sections for Overview, GET /summary/{id}, and Definitions. The main area is titled "Test" with the sub-section "Find a model instance by {{id}} from the data source." Below this, there are tabs for "Details" and "Try it". Under "Try it", the method is "GET" and the URL is https://ace-designer-demo-designer-https-cp4i.agdemo20-2020-3-1-252622168ef3ca91d0666944581f016f-0000.us-south.containers.appdomain.cloud/IncidentSummary/summary/{{id}}. The "Parameters" section shows a "Path" parameter "id" with the value "INC0010001" highlighted with a red box. At the bottom are "Reset" and "Send" buttons.

Then review the request and response that are displayed.

The screenshot shows the same IBM App Connect Designer interface. The "Request" section displays a GET request to https://ace-designer-demo-designer-https-cp4i.agdemo20-2020-3-1-252622168ef3ca91d0666944581f016f-0000.us-south.containers.appdomain.cloud/IncidentSummary/summary/INC0010001. The "Headers" are: Content-Type: application/json, Accept: application/json. The "Response" section shows the JSON output: Code: 200 OK, Headers: content-encoding: gzip, content-type: application/json; charset=utf-8, date: Mon, 30 Nov 2020 16:01:28 GMT, etag: W/"eb-wi6RGowDmzq0mhFDJzvFcIIIE", server: IBM App Connect Enterprise, transfer-encoding: chunked, vary: Origin, Accept-Encoding, x-original-http-status-code: 200, x-powered-by: Express. The JSON payload is: { "incidentNumber": "INC0010001", "summary": { "claimDate": "2019-07-13", "claimLocation": "70510:US", "customerName": "Alan Welch", "stormPath": "true", "topClass": { "class": "coupe car", "score": 0.5, "value": 20000 }, "userInput": "", "windSpeed": "20.4" } }



For our GET example, the Response section displays the success code that is returned (200 OK), the headers, and the updated claim details.

We've now got our flow running in the designer and we've tested it – now we are ready deploy it 'for real' on the cloud pak runtime.

## 6 Deploying the Integration flow to CP4I Runtime via the App Connect Dashboard

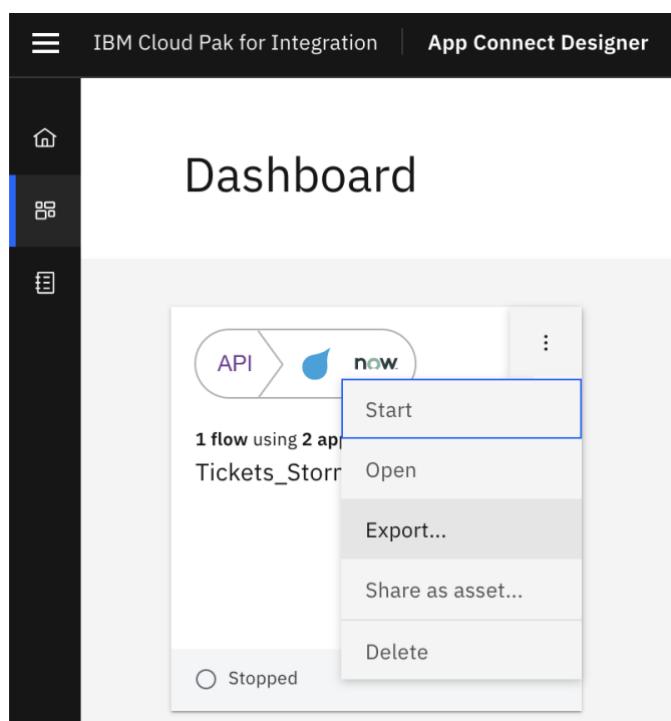
We've now got our flow running in the designer and we've tested it – now we need to deploy it 'for real' on the cloud pak runtime. To do this, we'll export a .bar file of our flow from the designer.

This .bar file contains everything in our flow –with the exception of the connector credentials, which we'll configure later in a Kubernetes secret.

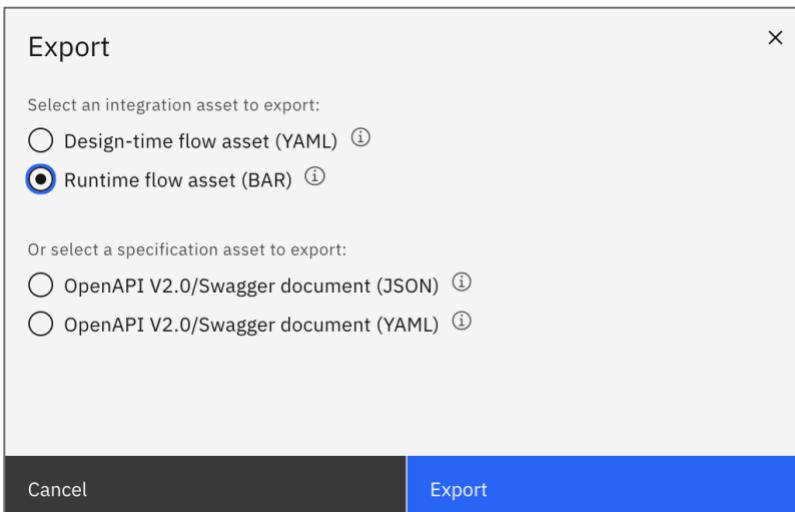
When we deploy, it will create a 3 HA replica container pods running on OpenShift – automatically.

### 6.1 Exporting the executable bar file:

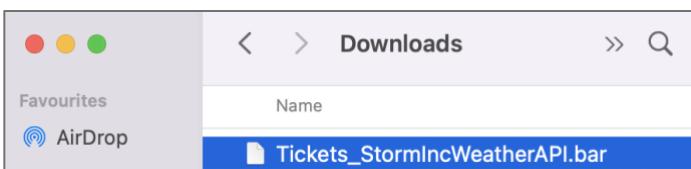
To export the .bar file, go into the designer dashboard and click the '...' menu on the integration tile and click 'Export...'



You'll get a dialog box. Select 'Runtime flow asset (BAR)' and click 'Export'.



The browser may prompt you for a download location – otherwise it will place the ‘Tickets\_StormIncWeatherAPI.bar’ file in the Downloads directory.



That’s it – we now have our executable flow – let’s see what we need to do to deploy it.

## 6.2 Navigating to the App Connect dashboard and importing the .bar file

From the menu, click ‘App Connect’ and then click ‘ace-dashboard-demo’: This is the runtime, we need not the tooling.

Integration Home	App Connect Dashboard
API Connect	1 instance
App Connect Dashboard	1 instance
App Connect Designer	1 instance

Find cp4i  
ace-dashboard-demo

You’ll then be taken to the App Connect Dashboard.  
Click ‘Create A Server’

Welcome back to IBM App Connect

Show more

Integrations (4)

Servers (4)

Create a server

Learn more

Select a BAR file to create an integration server.

Discover how to do more with App Connect in our documentation.

Now we need to select the kind of tooling we used to build the integration. We used App Connect Designer, so click that and click ‘Next’.

Back to Dashboard

## Create an App Connect Integration Server

For more help with instance creation check the [readme](#)

Type     Integrations     Configuration     Server

Select the type of integration you would like to run

**Toolkit integration**  
Deploy an integration that was created with App Connect Toolkit that uses multiple replicas to increase resilience and availability

**Designer integration**  
Deploy an integration that was authored in App Connect Designer, or created as a hybrid by using both Designer and the toolkit that uses multiple replicas to increase resilience and availability

Toolkit integration	Designer integration
VPCs 3	VPCs 9
Memory 3 GB	Memory 6 GB
CPU 3	CPU 9
Storage 0GB	Storage 0GB

You’re now prompted to upload the .bar file you exported before. In the dialog box, click ‘Drag and drop a BAR file or click to upload’.

Back to Dashboard

## Create an App Connect Integration Server

For more help with instance creation check the [readme](#)

Type     Integrations     Configuration     Server

Provide a BAR file to deploy to the server

Drag and drop a BAR file or click to upload

or use an existing BAR file:

Select BAR...

Browse to the location of the ‘Tickets\_StormIncWeatherAPI.bar’ file that you exported from designer and select it with ‘Open’ and then click ‘Next’.



In the next step, we need to choose configurations for the connector account credentials as we want to use locally deployed connectors. For the purpose of this demo, we will use ‘ace-designer-demo-designer-acc’ accounts configuration which holds all the connector credentials we configured previously in App Connect Designer.

Select that as below and click ‘Next’.

(note: For the purpose of this demo, you don’t need to click ‘create configuration’ here unless you want to use different credentials for your connector accounts.)

The screenshot shows the 'Create an App Connect Integration Server' page. At the top, there are navigation icons and a breadcrumb path: 'IBM Cloud Pak for Integration' > 'App Connect Dashboard' > 'cp4i | ace-dashboard-demo'. Below the title, there's a link to 'readme'. A navigation bar at the bottom has tabs: 'Type' (selected), 'Integrations', 'Configuration' (selected), and 'Server'. On the right, there are 'Back' and 'Next' buttons. The main area is titled 'Select configurations to apply to the integration server'. A table lists one configuration:

Name	Type	Description
ace-designer-demo-designer-acc	Accounts	

A 'Create configuration' button is located in the top right corner of the table area.

You’re now on the last screen!

Enter a name for our integration server – note that permitted characters are lowercase alphanumeric and “-” and must start and end with lowercase alphanumeric characters.

In these flows we will use local connectors only, so we select ‘local’ for ‘Designer flows mode’. This option will extend the functionality of each pod by deploying sidecar containers, which are needed to run APIs that are authored in App Connect Designer, and local connectors.

The screenshot shows the 'Create an App Connect Integration Server' page. The 'Name' field is filled with 'ticketsstormincweather'. Under 'Designer flows mode (optional)', 'local' is selected. Under 'Replicas (optional)', '3' is selected. Under 'Version', '11.0.0' is selected. The 'Common settings' tab is active.

Now click 'Create'

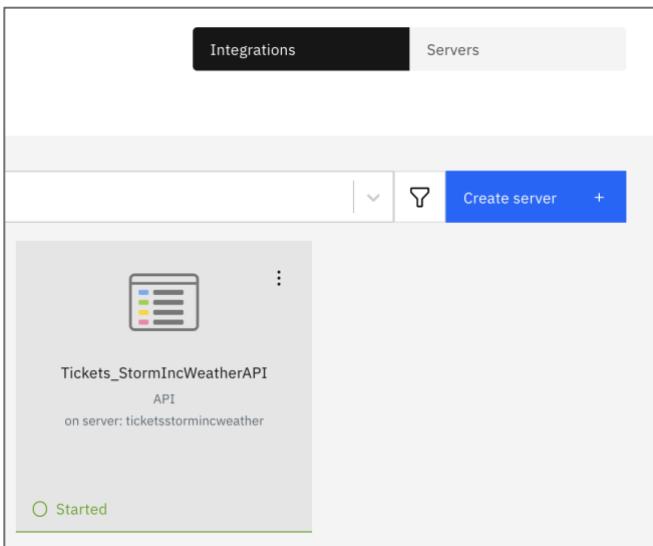
You'll see:



When you get refreshed screen, you will see the integration server displayed as a tile on the Servers page of the dashboard, with an initial status of Unavailable (⚠️), which then changes to Started when the deployment completes. (so, DON'T PANIC! – this is the cloud pak spinning up 3 pods of the integration server – it won't show a green tick until all the pods are running. Give it a couple of minutes or so and refresh your browser.)

The Servers page will also display any other integration servers that are installed in the same namespace.

Switch to 'Integration' view and click the 'Tickets\_StormIncWeatherAPI' tile to see further the details about your integration API.



IBM Cloud Pak for Integration | App Connect Dashboard cp4i | ace-dashboard-demo

## Tickets\_StormIncWeatherAPI

- [Documentation](#)
- Contents
- Properties
- Other resources

Filter

Overview

[POST /StormData/stormpath](#)

Definitions

**StormData.stormpath**

**POST** http://tick.../Tickets\_StormIncWeatherAPI/StormData/stormpath

**Parameters**

Header
Body

**Example request**

curl

```
curl --request POST \
--url http://ticketsstormincweather-http-cp4i.agdemo...
--header 'accept: application/json' \
--header 'content-type: application/json' \
--data '{"postCode":"K7B 4Z0","date":"2017-10-26T01:4...
```

**Responses**

You can see the REST operation; example test request and you can even download the OpenAPI (also called swagger) document. Hence, after you deploy an integration server to the cluster, you can view the underlying API definition. You can then test the API by using the built-in testing facilities. ([learn more](#))

Repeat the same steps for ‘IncidentSummary’ and ‘classifyImagesV4’ assets. Eventually you will have all the integration APIs deployed as shown below.

The screenshot shows the 'Servers' tab in the App Connect Dashboard. There are three servers listed:

- classifyimages**: Server, 3/3 replicas, Started
- incidentsummary**: Server, 3/3 replicas, Started
- ticketsstormincweather**: Server, 3/3 replicas, Started

Now would be a good time to test it again.

You can also use the below 'curl' request examples, where you need to replace with your hostnames. Also remember to use the incident number returned from the first call in the subsequent calls.

### 1) Call ticketsstormincweather API

```
curl --request POST \
--url
http://REPLACE_ticketsstormincweather_HOSTNAME/Tickets_StormIncWeatherAPI/StormData/stormpath \
--header 'accept: application/json' \
--header 'content-type: application/json' \
--data '{"postCode": "70510:US", "date": "2019-07-13", "name": "Alan ACE"}'
```

### 2) Call classifyimages API

```
curl --request POST \
--url http://REPLACE_classifyimages_HOSTNAME/classifyImagesV4/images/classify \
--header 'accept: application/json' \
--header 'content-type: application/json' \
--data '{"incident_id": "REPLACE INCIDENTNUMBER", "image_name": "my damaged car", "image_url": "https://raw.githubusercontent.com/IBM/cp4i-demos/main/ace-weather-chatbot/images/car.jpg"}'
```

### 3) Call incidentsummary API

```
curl --request GET \
--url
http://REPLACE_incidentsummary_HOSTNAME/IncidentSummary/summary/REPLACE INCIDENTNUMBER \
--header 'accept: application/json'
```



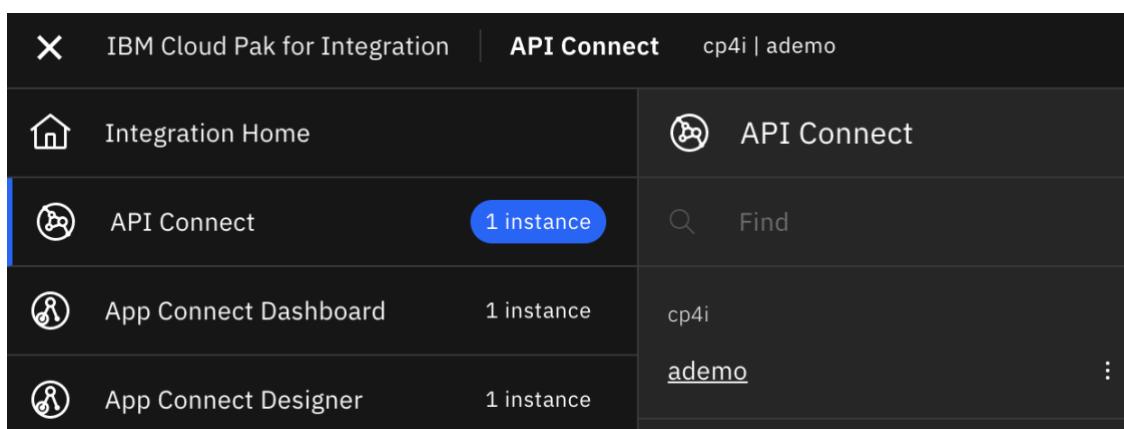
## 7 Managing our API using API Connect

Now it is the time to configure our facade API in API Connect, let's go there and do some API Management.

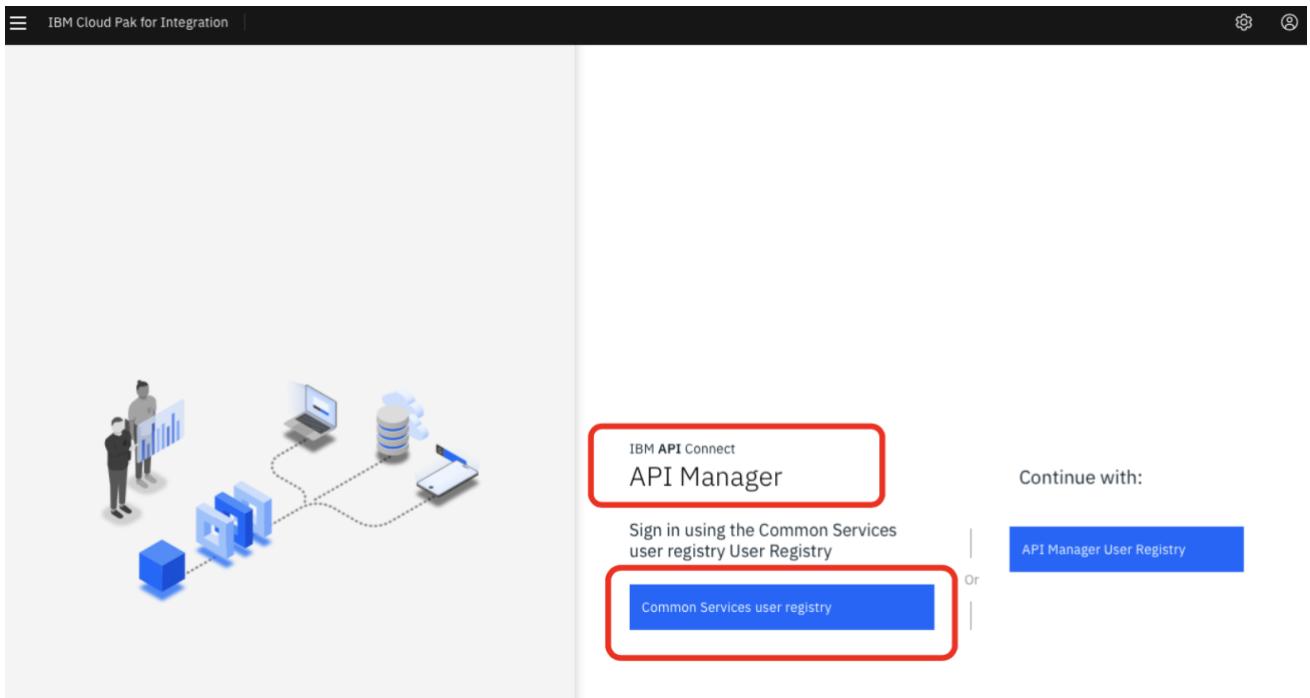
We want to be able to add security, define some rate-limiting plans and publish the API to a secure gateway.

In addition we want to be able to use a self-service portal so that consumers can browse our APIs and sign up to use them.

Using the hamburger menu, click on 'ademo'. This time, click on the name – we want to go to the API manager, not the APIC cloud manager...



You'll be asked to log into the API Manager. Click on 'IBM Common Services user registry'. You should be logged in automatically using SSO. If not, use 'admin' and the same password you used to log into the cloud pak home page.



Make sure it says 'Welcome to API Manager'.

Also check out the organisation at the top-right: Make sure it says 'Org for Demo use' – If it doesn't, click on it and change it so it does.

## 7.1 Importing our Facade API flow into API Manager

We're going to import our API flow from the Asset Repository: The 1-click install has put it there for you...

Click 'Develop APIs and Products' tile.

Hello!

## Welcome to API Manager



 Develop APIs and Products  Edit, assemble, secure and test APIs. Package APIs using products for publishing to consumers.	 Manage Catalogs  Manage active APIs and consumers	 Manage Resources  Configure user registries, OAuth providers and TLS	 Manage Settings  Edit settings for roles, notifications and more.
 Learn More  Documentation and tutorials with step-by-step instructions	 Connect  Find expert answers in the API Connect community forum	 Download Toolkit  Download toolkit and credentials for various platforms	

Click ‘Add’.

IBM Cloud Pak for Integration | API Connect cp4i | ademo Organization: Org for Demo use (ddd-demo-test)  

## Develop

Add

Search for Title or Name or Version

Select ‘From asset repository’ and click ‘Next’



Develop /

## Select API Type

### Create

**From target service**

Create a REST proxy that routes all traffic to a target API or service endpoint

**From existing OpenAPI service**

Create a REST proxy based upon an OpenAPI described target service

**From existing WSDL service (SOAP proxy)**

Create a SOAP proxy based upon a WSDL described target service

**From existing WSDL service (REST proxy)**

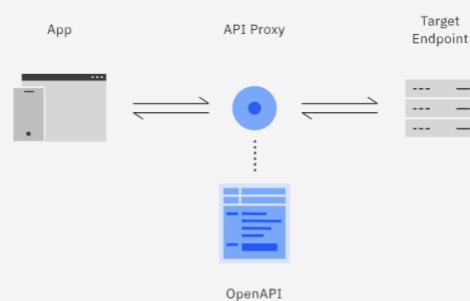
Create a REST proxy based upon a WSDL described target service

**From existing GraphQL service (GraphQL proxy)**

Create a GraphQL proxy based on a GraphQL service

**New OpenAPI**

Compose a new REST proxy by defining paths and operations



### Import

**Existing OpenAPI**

Use an existing definition of a REST proxy or GraphQL proxy or SOAP API

**From asset repository**

Import OpenAPI definition from asset repository

[Cancel](#)

[Next](#)

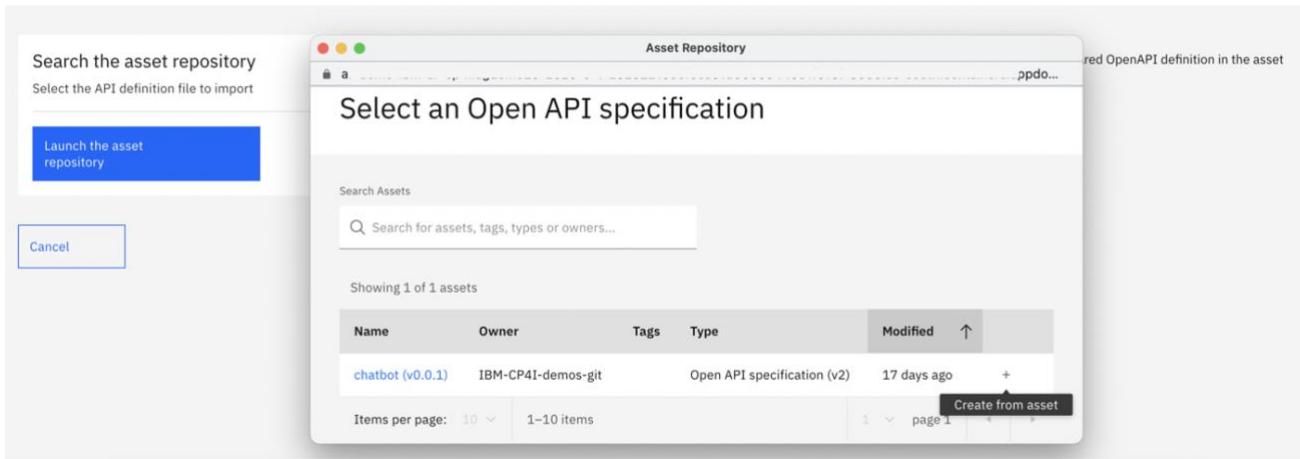
In the next window you will be provided an option to launch the asset repository. When you click on it a pop-up window opens. You should be logged in automatically using SSO. If not, use ‘admin’ and the same password you used to log into the cloud pak home page. which might ask you to login again.

Select the ‘chatbot’ Open API specification.

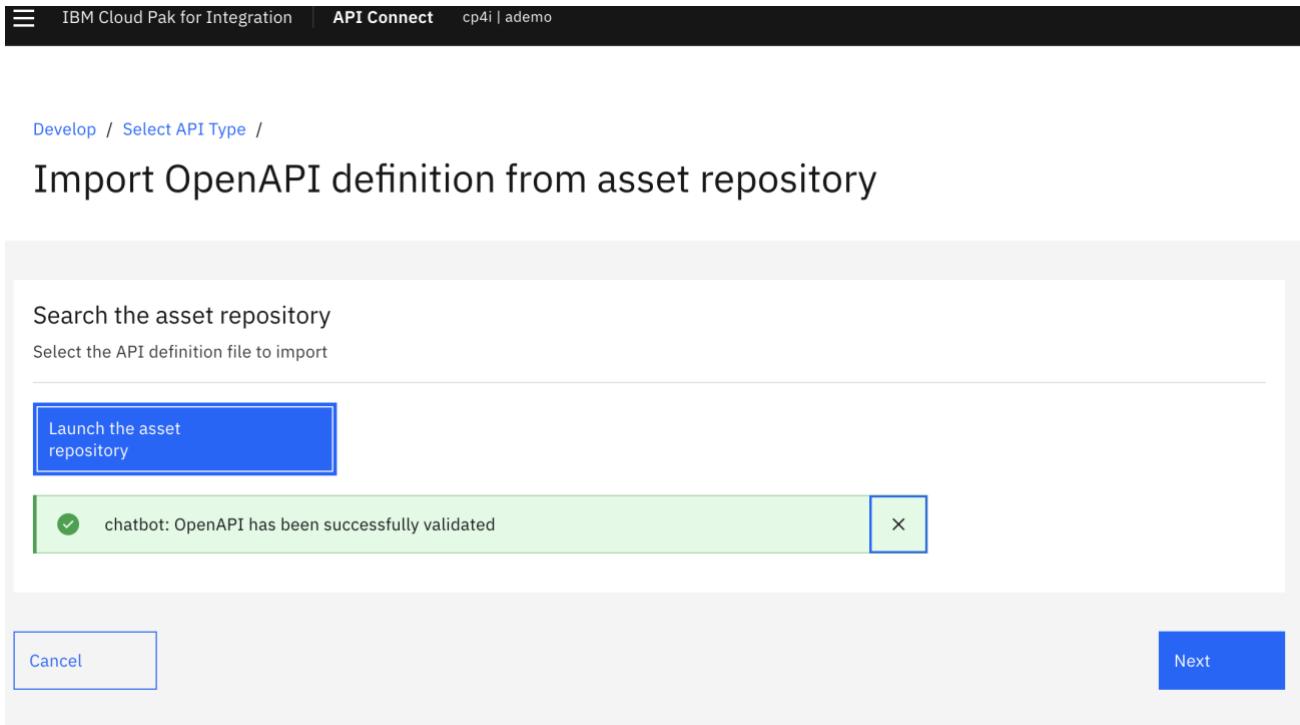


Develop / Select API Type /

## Import OpenAPI definition from asset repository



Once our asset is validated, we can click ‘Next’ to proceed with the import.



In the next window, you can configure to Activate API option which creates a draft Product, adds the API to the Product, and publishes the Product to the Sandbox Catalog so that the API is available to be called. We want to only publish to our demo catalog, so will not select this option.



Click ‘Next’.

IBM Cloud Pak for Integration | API Connect cp4i | ademo

Develop / Select API Type / Import OpenAPI definition from asset repository

Activate API  
This API will be available to be invoked when the following option is enabled.

Activate API

Cancel Back Next

## 7.2 Reviewing and editing our Facade API Flow

The Import API Summary panel indicates that the YAML file is loaded and valid.

Click ‘Edit API’.

IBM Cloud Pak for Integration | API Connect cp4i | ademo

Develop / Select API Type / Import OpenAPI definition from asset repository

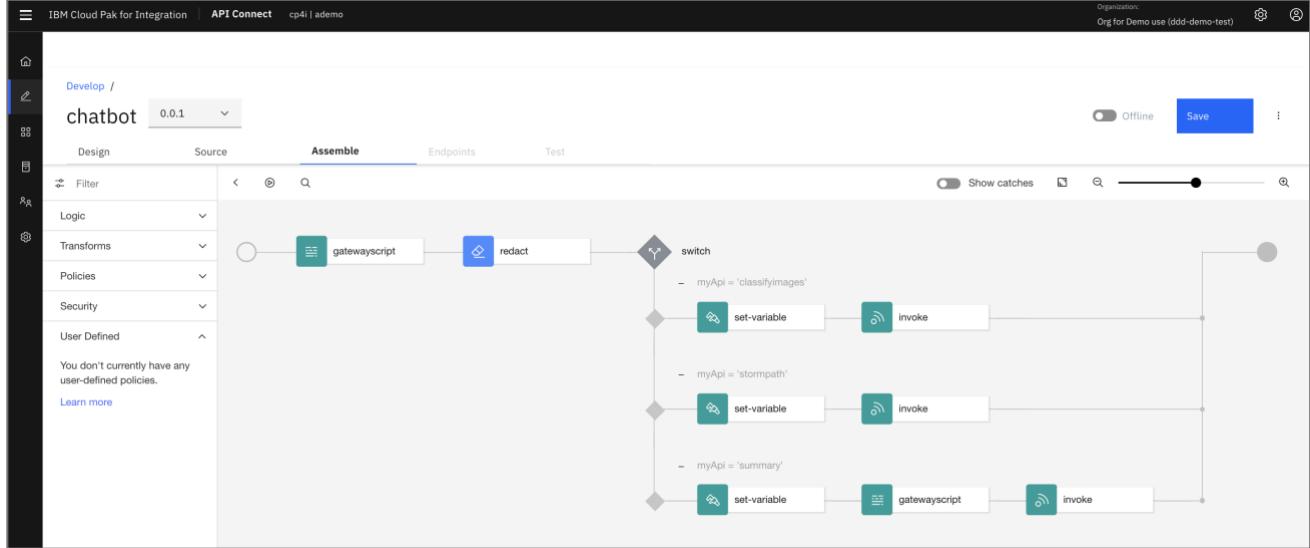
Summary

✓ Generated OpenAPI 2.0 definition

Edit API

You can switch to the ‘Assemble’ tab to view the implementation details.

This is a simple facade API secured by an API key which routes the incoming requests to our integration APIs based on request content. But you can always enrich the flow additional error handling or security constructs depending on your requirements. For the purpose of this demo, we will stick to our simple façade API 😊



Each invoke policy uses property values to specify the URL for our target integration APIs. (such as classifyImages-endpoint)



Next, we need to update these endpoint properties to point to our deployed integration APIs.

Switch to ‘Design’ tab and select ‘Properties’.



The screenshot shows the 'Properties' tab for a catalog item named 'chatbot'. The 'summary-endpoint' property is selected and highlighted with a blue border. The table below lists other properties:

Property Name	Encoded	Description
username	false	
passw	false	
summary-endpoint	false	
summary-key	false	
stormpath-endpoint	false	
stormpath-key	false	
classifyImages-key	false	
classifyImages-endpoint	false	

First, click ‘summary-endpoint’ property and click ‘Add’ to define a catalog specific value.

The screenshot shows the 'Edit Property' dialog for the 'summary-endpoint' property. The 'Default value (optional)' field contains 'https://XXXX.us-south.containers.appdomain.cloud/IncidentSummary/summary'. The 'Catalog' section is empty, showing a message: 'You currently don't have any catalog specific values for this property.'

Select our demo catalog and type the endpoint value of the ‘IncidentSummary API’.



The screenshot shows a configuration interface for defining catalog-specific values. At the top, there is a checkbox labeled 'Encoded' and a note: 'Define catalog specific values for this property'. A blue 'Add' button is located in the top right corner. Below this is a table with three columns: 'CATALOG', 'VALUE', and 'Delete'. A dropdown menu under 'CATALOG' contains the option 'ddd-demo-test-catalog'. The 'VALUE' column contains an empty input field, and the 'Delete' column contains a trash can icon.

Make sure you use the correct endpoint value here.

It should be in the following format:

<http://<incidentsummary-hostname>/IncidentSummary/summary>

You can check the value of the hostname from App Connect Dashboard.

The screenshot shows the 'IncidentSummary' API definition in the App Connect Dashboard. The top navigation bar includes 'IBM Cloud Pak for Integration', 'App Connect Dashboard', and 'cp4i | ace-dashboard-demo'. The page title is 'Dashboard / Server: incidentsummary / API: IncidentSummary'. The 'IncidentSummary' section is highlighted. Below it, there are tabs for 'Documentation', 'Contents', 'Properties', and 'Other resources'. A 'Filter' input field is present. The main content area displays the API endpoint: 'Find a model instance by {{id}} from the data source.' with a 'summary' button. Under 'Definitions', the 'GET /summary/{incidentNumber}' method is selected, showing its details: 'GET' and the URL 'http://incidentsummary-[http://incidentsummary-<http://cp4i.a...-0000.us-south.containers.appdomain.cloud:80/IncidentSummary/summary/{incidentNumber}>](http://cp4i.a...-0000.us-south.containers.appdomain.cloud:80/IncidentSummary/summary/{incidentNumber})

Next, click 'stormpath-endpoint' property and click 'Add' to define a catalog specific value. Select our demo catalog and type the endpoint value of the 'Tickets\_StormIncWeatherAPI'.

Make sure you use the correct endpoint value here.

It should be in the following format:

[http://<stormpath-hostname>/Tickets\\_StormIncWeatherAPI/StormData/stormpath](http://<stormpath-hostname>/Tickets_StormIncWeatherAPI/StormData/stormpath)

You can check the value of the hostname from App Connect Dashboard.



The screenshot shows the App Connect Dashboard for the 'cp4i | ace-dashboard-demo' server. The URL is 'Dashboard / Server: ticketsstormincweather / API: Tickets\_StormIncWeatherAPI'. The main title is 'Tickets\_StormIncWeatherAPI' with a status of 'Started'. Below the title, there are tabs for 'Documentation', 'Contents', 'Properties', and 'Other resources'. A 'Filter' section is present. The main content area shows the API endpoint 'StormData.stormpath' with a 'POST' method. The URL is listed as 'http://ticketsstormincweather-[http-cp4i.us-south.containers.appdomain.cloud:80/Tickets\\_StormIncWeatherAPI/StormData/stormpath](#)'.

Lastly, click ‘classifyImages-endpoint’ property and click ‘Add’ to define a catalog specific value. Select our demo catalog and type the endpoint value of the ‘classifyImagesV4 API’.

Make sure you use the correct endpoint value here.

It should be in the following format:

<http://<classifyImages-hostname>/classifyImagesV4/images/classify>

You can check the value of the hostname from App Connect Dashboard.

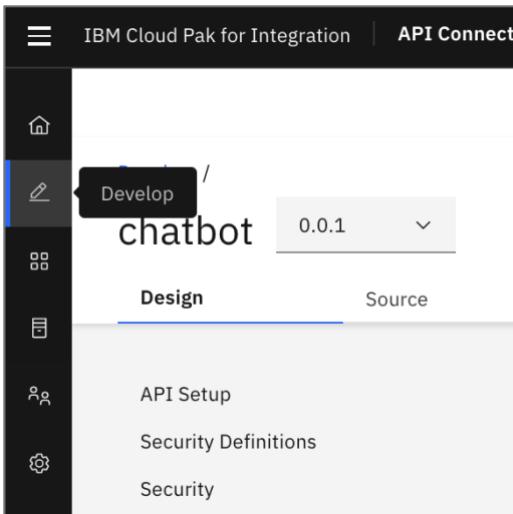
The screenshot shows the App Connect Dashboard for the 'cp4i | ace-dashboard-demo' server. The URL is 'Dashboard / Server: classifyimages / API: classifyImagesV4'. The main title is 'classifyImagesV4' with a status of 'Started'. Below the title, there are tabs for 'Documentation', 'Contents', 'Properties', and 'Other resources'. A 'Filter' section is present. The main content area shows the API endpoint 'images.classify' with a 'POST' method. The URL is listed as 'http://classifyimages-[http-cp4i.us-south.containers.appdomain.cloud:80/classifyImagesV4/images/classify](#)'.

We finished editing our API, lets create a product! A product is a way of grouping together APIs. Consumers subscribe to products rather than individual APIs.

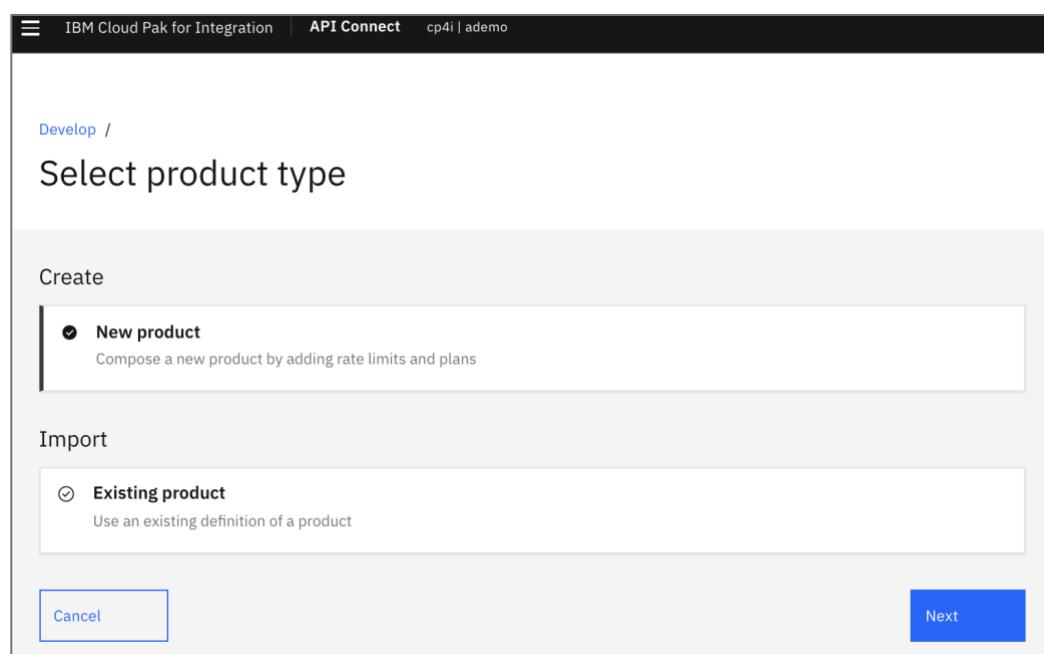
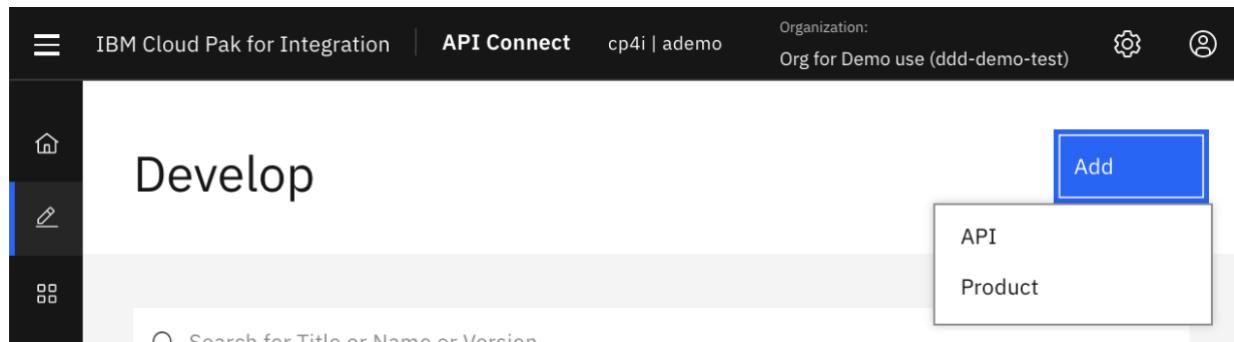
## 7.3 Publishing our Facade API Flow

Click the ‘Develop’ menu on the left.





Click 'Add' and select 'Product'.



Enter a product name such as 'Storm Insurance APIs' and a version '1.0.0' will do.



IBM Cloud Pak for Integration | API Connect cp4i | ademo

Develop / Select product type /

## Create New Product

**Info**

Enter details of the product

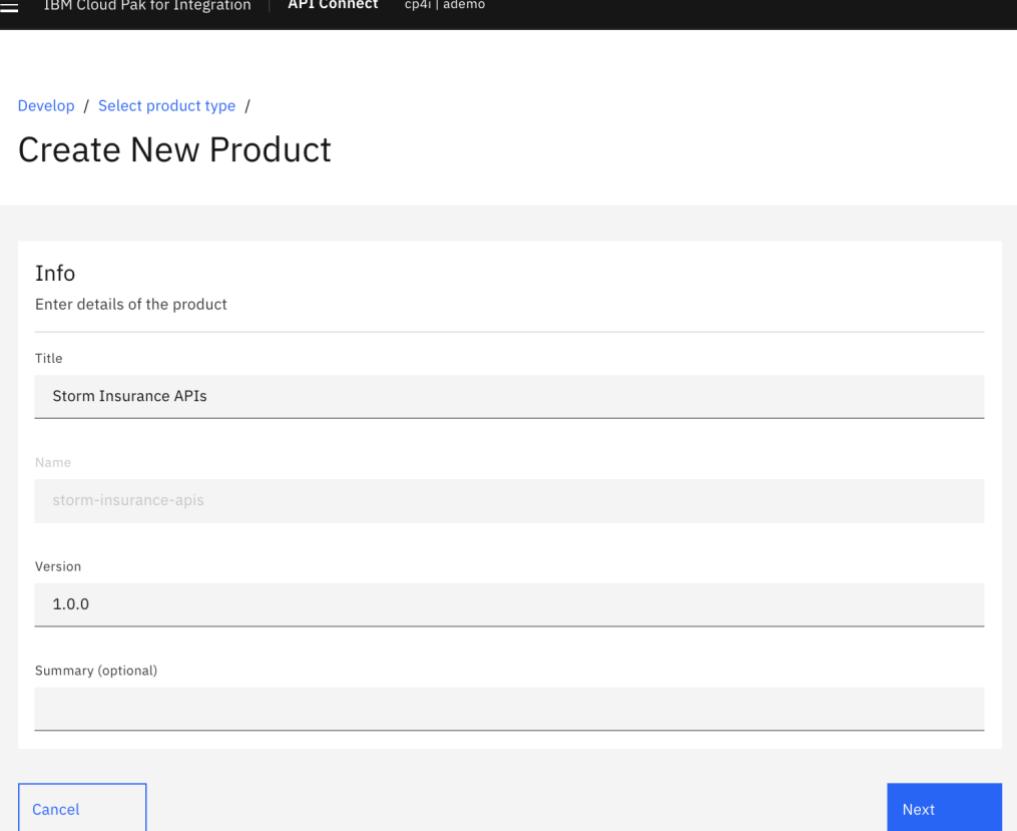
Title  
Storm Insurance APIs

Name  
storm-insurance-apis

Version  
1.0.0

Summary (optional)

[Cancel](#) [Next](#)



Select 'chatbot' API to add to the product and click 'Next'

IBM Cloud Pak for Integration | API Connect cp4i | ademo

Develop / Select product type /

## Create New Product

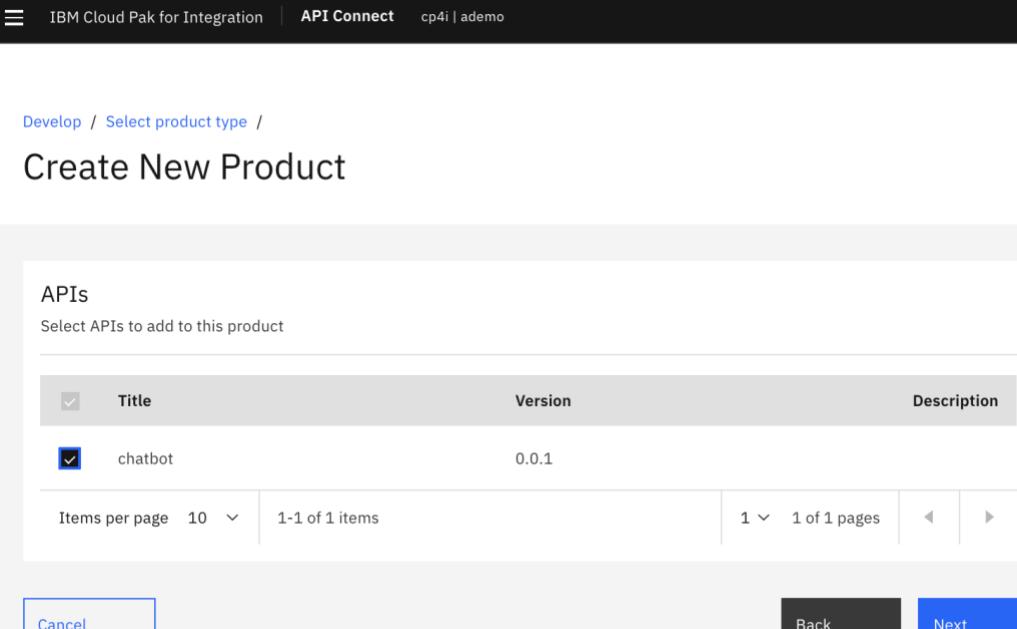
**APIs**

Select APIs to add to this product

<input checked="" type="checkbox"/>	Title	Version	Description
<input checked="" type="checkbox"/>	chatbot	0.0.1	

Items per page 10 1-1 of 1 items 1 1 of 1 pages < >

[Cancel](#) [Back](#) [Next](#)



You can add multiple rate limits and plans. But for now, Default plan will do.

[Develop](#) / [Select product type](#) /

## Create New Product

### Plans

Compose a new product by adding rate limits and plans

[Add](#)

#### Default Plan

Default Plan

Title

Default Plan

Description (optional)

Default Plan

Rate Limit

100

/

1

hour

▼

[Cancel](#)[Back](#)[Next](#)

Finally configure the ‘visibility and subscribability’ settings. You can leave the default settings. We will leave the ‘Publish product’ checkbox empty as we want to publish to our demo catalog later.

Develop / Select product type /

## Create New Product

### Publish

Enable publishing of this product

Publish product

### Visibility

Select the organizations or groups you would like to make this product visible to

Public

Authenticated

Custom

### Subscribability

Select the organizations or groups you would like to subscribe to this product

Authenticated

Custom

[Cancel](#)

[Back](#)

[Next](#)

Click ‘Done’. You will be redirected to the ‘Develop’ page. Now, we are ready to publish to the Portal!

Develop / Select product type /

## Create New Product

### Summary

 Created new product

 Added APIs

 Added rate limits

[Edit Product](#)

[Done](#)

Now click on the three-dot overflow menu by the ‘Storm Insurance APIs’ product and click ‘publish’.



The screenshot shows the 'Develop' catalog in the API Connect interface. A context menu is open over a product entry, with the 'Publish' option highlighted. The menu also includes Stage, Save as a new version, Download, and Delete options.

Title	Version	Type	Last modified
chatbot	0.0.1	API (REST)	24 minutes ago
Storm Insurance APIs	1.0.0	Product	3 minutes ago
Weather Insurance APIs	1.0.0	Product	a month ago

You'll be prompted for a catalog to publish to – select ‘Catalog for Demo use’. We only have one gateway installed so we can leave the checkbox blank – click ‘Publish’

The screenshot shows the 'Publish Product' dialog box. The 'Publish To' section displays 'Catalog for Demo use (ddd-demo-test-catalog)'. A checkbox for 'Publish to specific gateway services' is present, with a note explaining it's currently published to all services. The 'Publish' button is highlighted.

You will see a notification once the publish finishes. (in seconds)

If you now go back to your catalog and look for products, you can see the status is ‘published’ (go to the ‘Manage’ menu and then click on the Catalog for Demo use)



The screenshot shows the 'Manage' section of the API Connect interface. A sidebar on the left contains icons for Home, Create, Grid, List, and Help. The main area displays a catalog card for 'Catalog for Demo use (ddd-demo-test-catalog)'. The card includes a 'Sandbox' section with a 'Sandbox Catalog' link. Below the catalog card, there is a message: 'A catalog hosts a collection of API products that are visible in the associated developer portal when published'.

You can see our Default plan added into the product. You can also see that we've published our API to a secure DataPower Gateway.

The gateway has been configured as an APIC gateway service and bound to the catalog as part of the 1-click demo installation for this lab.

The screenshot shows the details page for the 'Catalog for Demo use (ddd-demo-test-catalog)'. The top navigation bar includes 'IBM Cloud Pak for Integration', 'API Connect', 'cp4i | ademo', 'Organization: Org for Demo use (ddd-demo-test)', and user icons. The main content area shows the catalog name and a table of products. The table has columns: Title, Name, State, and Last State Changed. One row is shown: 'Storm Insurance APIs', 'storm-insurance-apis 1.0.0', 'published', and 'Today at 16:07'. Below the table, sections for 'PLANS' (Default Plan) and 'GATEWAY SERVICES' (api-gateway-service, DataPower API Gateway) are displayed.

Title	Name	State	Last State Changed
Storm Insurance APIs	storm-insurance-apis 1.0.0	published	Today at 16:07



## 7.4 Discovering and consuming our API

Now that we've published our API, we need to make sure that our API consumers can discover it and use it.

Our Portal will allow customers to view the APIs, sign up and subscribe to plans in a self-service manner, test the APIs, download the OpenAPI / Swagger documents and more.

Click 'Catalog settings' and 'Portal'.

The screenshot shows the 'Catalog for Demo use (ddd-demo-test-catalog)' page. On the left, there's a sidebar with various management options like Overview, Gateway Services, Lifecycle Approvals, Roles, Onboarding, API User Registries, OAuth Providers, API Endpoints, TLS Client Profiles, and a 'Portal' option which is highlighted with a red box. The main content area has tabs for Products, Consumers, Applications, Tasks, Analytics, Members, and 'Catalog settings' (which is also highlighted with a red box). Under the 'Portal' section, it shows the 'Portal Service' (portal-service) and its 'Portal URL' (https://a...-0000.us-south.containers.appdomain.cloud/ddd-demo-test/ddd-demo-test-catalog). It also lists 'User Registries' (Catalog for Demo use (ddd-demo-test-catalog) Catalog User Registry).

You can see that a portal service has been created for you as part of the 1-click demo installation.

You can directly access to the Portal URL from your browser. Notice that 'Storm Insurance APIs' are already visible as we set the visibility as 'public'.

We're going to need to register a consumer and get an API key – luckily, we can do that self-service! Click 'Sign in'.

IBM API Connect | Developer Portal API Products Blogs Forums Support

Create account · Sign in

# Brace yourselves. APIs are coming.

Explore, subscribe to and be creative with our APIs.  
We can't wait to see what you come up with!

[Explore API Documentation](#)

## Explore products

[View all](#)



**Weather Insurance APIs 1.0.0**

Weather Insurance APIs



**Storm Insurance APIs 1.0.0**

Click 'Sign up' to create a new account. (if you don't have already one)

IBM API Connect | Developer Portal API Products Blogs Forums Support

Create account · Sign in



### API Developer Portal

#### Sign in

Sign in with Catalog for Demo use (ddd-demo-test-catalog) Catalog User Registry

Username

Continue with [admin](#)

Password

or

[Sign in](#)

[Forgot password?](#)

Don't have an account? [Sign up](#)

Fill in your details and then click 'sign up'.



## Sign up

Sign up with Catalog for Demo use (ddd-demo-test-catalog)  
Catalog User Registry

Username \*

Email address \*

First Name \*

Last Name \*

Consumer organization \*

Password \*

Password strength:

Confirm password \*

Minimum password character types: 3  
Password character length of at least 8 characters  
Password must not contain the user's username.  
Password Strength minimum score of 2  
Maximum consecutive identical characters: 3

**Sign up**

Tip: If you're using mailtrap.io as your mail server, you can use any email address. Use 'chatbot@example.com' to be safe – example.com is guaranteed to not be a real domain.



 Your account was created successfully. You will receive an email with activation instructions.

## Brace yourselves. APIs are coming.

Explore, subscribe to and be creative with our APIs.  
We can't wait to see what you come up with!

[Explore API Documentation](#)

We'll need to get the email: You'll find it in your email page in your mailtrap.io. account.

API Connect thinks you are now a new consumer user and has sent you an email to welcome you.

[Home](#) / [Demo inbox](#) / Catalog for Demo use developer portal account registration

### Catalog for Demo use developer portal account registration

From: APIC Administrator <admin@apiconnect.net>  
To: <> r@example.com>

[Show Info](#)

[HTML](#) [HTML Source](#) [Text](#) [Raw](#) [Analysis](#) [SMTP info](#)

Hello

Thank you for signing up for an account on the Catalog for Demo use developer portal.

To complete your registration, use this link:

<https://www.apiconnect.com/demoorg/democatalog/user/activation?activation=ZY1KaGTHV21PallnTVXnTM115nSYNTh1T1V0N.TNk1rcPhW00o5t.mV5SnFkR2+nT21.td05u2zv0h1v3T1MwM111C>

Copy and paste the link into the browser in the lab desktop machine. You should eventually get the portal with the notice:

 Your account has been activated. You can now [Sign In.](#)

Make sure you're using demo catalog user registry and sign in with your credentials you just created.

The screenshot shows the IBM API Connect Developer Portal sign-in page. At the top, there's a navigation bar with links for 'IBM API Connect' (highlighted in blue), 'Developer Portal', 'API Products', 'Blogs', 'Forums', a dropdown menu, a search icon, 'Create account', and 'Sign in'. Below the navigation is a large graphic of two people interacting with a computer monitor, which is connected to a central database icon and a smartphone. To the right of the graphic, the text 'API Developer Portal' and 'Sign in' is displayed. A callout box highlights the link 'Sign in with Catalog for Demo use (ddd-demo-test-catalog) Catalog User Registry'. The main sign-in form includes fields for 'Username' and 'Password', a 'Sign in' button, and options for 'Continue with' (selected 'admin') or 'or' another method. Below the form are links for 'Forgot password?' and 'Don't have an account? [Sign up](#)'.

You'll get the following home screen:

The screenshot shows the IBM API Connect Developer Portal home screen. The top navigation bar is identical to the sign-in page. The main content area features a welcome message 'Welcome, let's get started!' on the left. On the right, there are several large, light-gray rectangular boxes outlined in blue, arranged in a grid-like pattern. The first box contains a gear icon and the text 'Explore API Products'. The second box contains a document icon and the text 'Create a new App'. Below these boxes, there is descriptive text: 'Take a look at our API products and quickly find the APIs you need.' under 'Explore API Products', and 'Create an App so you can subscribe to our API Products and start building your application.' under 'Create a new App'. At the bottom left, there's a link 'Take me to the homepage →'. The bottom right corner features the classic IBM logo.

We're going to create a new application: This will give us an API key so we can call our APIs.

Click on 'Create a new App'.

Give our App a title e.g Storm Insurance Chatbot and click 'Submit':

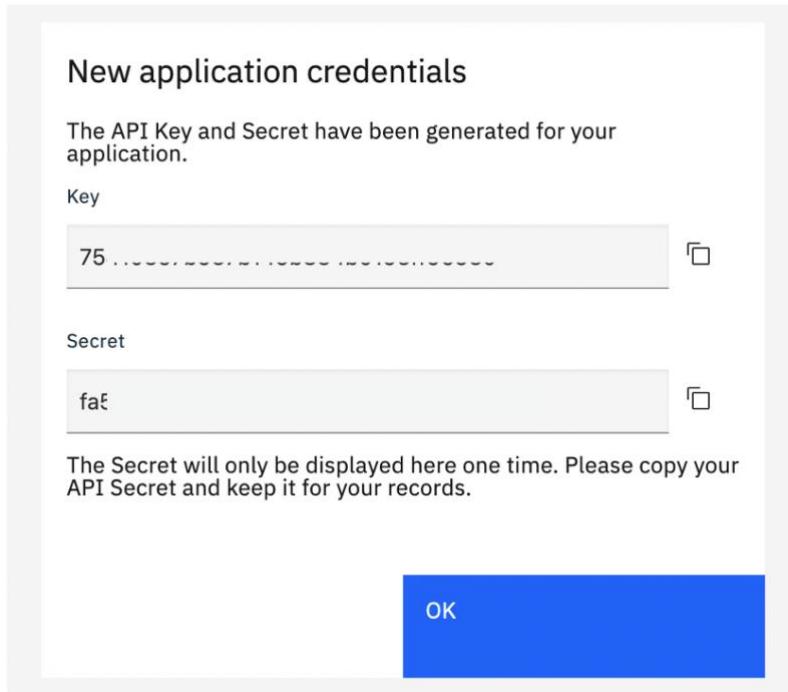
The screenshot shows the 'Create a new application' form on the IBM API Connect Developer Portal. The form has the following fields:

- Title \***: Storm Insurance ChatBot
- Description**: Chatbot Application powered by Watson Assistant.
- Application OAuth Redirect URL(s)**: An empty input field with a placeholder 'x' and a button 'Add another item'.

At the bottom, there are 'Cancel' and 'Save' buttons. The 'Save' button is highlighted in blue.

This gives us an API key and secret. You'll only ever be able to see the secret once here. For this lab, we haven't asked for secrets, so you won't need to remember it.

Click 'Copy' ( ) to get your API key. Copy it somewhere safe then click 'Ok'



You'll now see the details for your application. Dashboard tab shows you the stats of your application. At the moment, we don't have an API calls, so no stats...

We've not also subscribed to any APIs yet – click on 'Why not browse the available APIs?'

A screenshot of the IBM API Connect developer portal. The top navigation bar includes links for IBM API Connect, Developer Portal, API Products, Apps, Blogs, Forums, and Support. A search bar and user profile are on the right. The main area shows an "Applications" section with a card for "Storm Insurance ChatBot". The "Subscriptions" tab is selected. Under "Credentials", there is a "Credential for Stor..." entry with "Client ID" set to "75410357b937b149b834b0193ff96930" and a "Verify" button. Under "Subscriptions", a table header shows "Product" and "Plan". A message at the bottom states "No subscriptions found." followed by a red-bordered link "Why not browse the available APIs?"

Click on the 'Storm Insurance APIs' product.

The screenshot shows the IBM API Connect Developer Portal. At the top, there's a navigation bar with links for 'IBM API Connect', 'Developer Portal', 'API Products' (which is the active tab), 'Apps', 'Blogs', 'Forums', and 'Support'. To the right of the navigation are search, user profile, and settings icons. Below the navigation, the page title is 'API Products'. The main content area displays a table with two rows of API products. The first row is for 'Storm Insurance APIs 1.0.0' and the second for 'Weather Insurance ... 1.0.0'. Each row contains a thumbnail, the product name, version, rating, and a brief description.

## API Products

Name	Category	Sort by	Order	Items per page	Apply	Reset
Storm Insurance APIs 1.0.0 ★★★★★	- Please select -	Name	Asc	10	Apply	Reset
Weather Insurance ... 1.0.0 ★★★★★	Weather Insurance APIs					
chatbot 0.0.1	chatbot 0.0.1					

You can now see the plans:

We have only Default plan. Click on 'subscribe'.

The screenshot shows the 'Storm Insurance APIs 1.0.0' product details page. At the top, there's a navigation bar with links for 'IBM API Connect', 'Developer Portal', 'API Products' (active), 'Apps', 'Blogs', 'Forums', and 'Support'. To the right of the navigation are search, user profile, and settings icons. The main content area has a breadcrumb 'Products / Storm Insurance APIs 1.0.0 ★★★★★'. The page is divided into sections: 'APIs' and 'Plans'. The 'APIs' section shows a single entry for 'chatbot 0.0.1' with a REST API icon and 'Online' status. The 'Plans' section shows a table with one row for the 'Default Plan'. The plan details show '100 calls per hour' and a 'Default Plan' button with a 'Subscribe' link.

Select the 'Storm Insurance ChatBot' application we have just created.



## Subscribe to Storm Insurance APIs 1.0.0

Select Application  Subscribe  Summary

Select an existing application or create a new application



**Storm Insurance ChatBot**

Chatbot Application powered by Watson Assistant.



Create Application

We now need to confirm our subscription – click ‘Next’.

## Subscribe to Storm Insurance APIs 1.0.0

Select Application  **Subscribe**  Summary

### Confirm Subscription

Product	Application	Plan
Storm Insurance APIs	Storm Insurance ChatBot	Default Plan: Free subscription for 100 calls per hour

[Previous](#)

[Next](#)

Now our application subscribed to the ‘Default plan’ of the ‘Storm Insurance APIs’ product.

What does this mean?

This means, ChatBot application can make 100 calls per hour for free.

## Subscribe to

Select Application  Subscribe  Summary

**Subscription Complete**  
Your application is now subscribed to the selected plan.

Product	Application	Plan
Storm Insurance APIs	Storm Insurance ChatBot	Default Plan

**Done**

We're now back at the product screen – click on the API itself, not the plan. Click on POST – note the portal has everything you need to call your API – if you scroll down, it's even generated clients in various languages for you (that's how we created our test clients in curl in our scripts for this lab).

IBM API Connect | Developer Portal API Products Apps Blogs Forums Support

Products / Storm Insurance APIs

chatbot 0.0.1 ★★★★★ **Subscribe**

**Route to claim APIs**

**POST** Production, Development: https://ademo-gw-gateway-.cloud/ddd-demo-test/ddd-demo-test-catalog/chatbot/

**Security** Identification **Client ID**

**Parameters** Header Body Generate

**reqIn\*** generated

**Reset** **Send**

You can go ahead and test your API.

Notice that API key will be automatically filled by the 'Storm Insurance Chatbot' application's client id.

You can use the below request examples. Remember to use the incident number returned from the first call in the subsequent calls.

**1) Route to ticketsstormincweather API**

```
{  
  "apiName": "stormpath",  
  "postCode": "70510:US",  
  "date": "2018-07-13",  
  "name": "John ACE"  
}
```

**2) Route to classifyimages API**

```
{  
  "apiName": "classifyImages",  
  "image_url": "https://raw.githubusercontent.com/IBM/cp4i-demos/main/ace-weather-  
chatbot/images/car.jpg",  
  "incident_id": "REPLACE INCIDENTNUMBER",  
  "image_name": "My damaged car using a URL"  
}
```

**3) Route to incidentsummary API**

```
{  
  "incidentId": "REPLACE INCIDENTNUMBER",  
  "apiName": "summary"  
}
```

Now we are ready to consume our API from Watson Assistant chatbot!



## 8 Create your Watson Assistant chatbot

Now it is time to create our chatbot which will consume the APIs we've created before.

Login to your cloud account. (sign in at <https://cloud.ibm.com> Use your IBM ID, or if you're an IBMer, you may go through a Single Sign-on process).

Once you're in, you'll be presented with the cloud dashboard showing which services you have provisioned.

From the 'Resource summary' tile click on the 'Services', you'll find your Watson Assistant service that you've created before.

The screenshot shows the IBM Cloud Resource list interface. On the left is a sidebar with various icons for different service categories. The main area is titled 'Resource list' and contains a table with columns for 'Name' and 'Actions'. The table has a header row with a search bar labeled 'Filter by name or IP address...'. Below the header, there are several rows of service entries. The 'Services' category is expanded, showing seven items: Cloudant-mz, Event Streams-04, Key Protect-f0, Natural Language Classifier-32, Visual Recognition-qx, Watson Assistant-nd, and another entry for Watson Assistant-nd which is highlighted with a dark gray background. The 'Watson Assistant-nd' entry in the list has a small speech bubble icon next to it.

An assistant helps your customers complete tasks and get information faster. It may clarify requests, search for answers from a knowledge base, and can also direct your customer to a human if needed. In our demo,

- it will search for answers to queries like 'can customer claim a storm insurance?' via validating the storm occurrence with IBM Weather Service.

- it will analyse the image uploaded by customer to get an estimate value for the damage via connecting to Watson Visual Recognition service.
- And moreover, it will automate the claim creation process.

Click on your new service and you'll see the ‘Manage’ tab. Click ‘Launch Watson Assistant’.

Click ‘Create assistant’.

Name the Watson Assistance instance ‘Storm Insurance’ and click ‘Create assistant’.



# Create assistant

Create an assistant to deploy the skill that addresses your customers' goals.

Name

Storm Insurance

Name your assistant, for example **Banking** or **Customer Care**.

Description (optional)

Add a description for this assistant

Web chat ⓘ

Enable web chat

Preview link ⓘ

Enable preview link

**Create assistant**

Next, we are going to add the dialog skill that is hosted on our Git repo (<https://github.com/IBM/cp4i-demos/tree/main/ace-weather-chatbot/assets/watson-assistant-skills>).

A dialog skill is a container for the artifacts that define the flow of a conversation that your assistant can have with your customers.

Download or clone the dialog skill ([skill-Stormy-Insurance.json](#)).

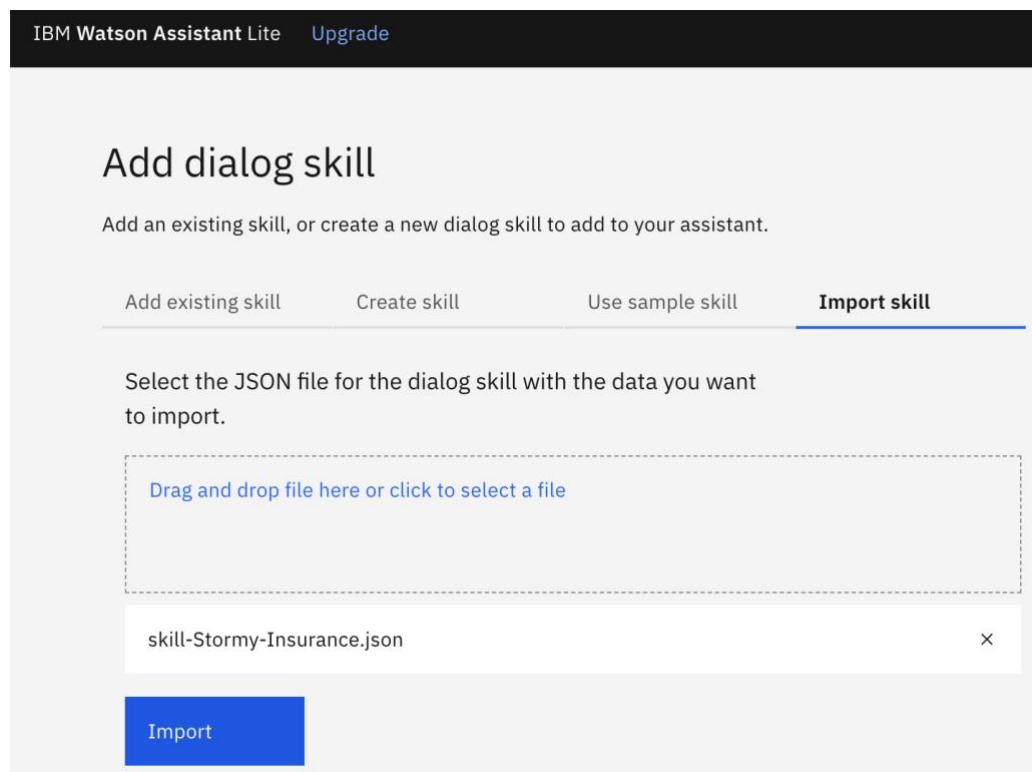
Click 'Add dialog skill'.

The screenshot shows the IBM Watson Assistant Lite interface. At the top, there's a navigation bar with 'IBM Watson Assistant Lite' and 'Upgrade'. Below it, a sidebar has icons for 'Assistants' and 'Skills'. The main area is titled 'Storm Insurance'. It features two main sections: 'Actions' (Beta) and 'Dialog'. The 'Actions' section has a heading 'Build conversations easier than ever' with a bulleted list: 'Have an assistant ready to chat in less time, with less effort', 'Compose step-by-step flows for any range of simple or complex conversations', 'Focus more on your customer's goals and experience', and 'Collaborate and work more intuitively, made so that anybody can build'. It includes a 'Learn more' link and a blue 'Add an actions skill' button. The 'Dialog' section has a heading 'Our full-feature conversation builder' with the text 'Dialog offers all the smarts, power, and flexibility you've come to trust. Select to keep building with the tools you know and love.' It includes a 'Learn more' link and a large red-bordered blue 'Add dialog skill' button.



Click ‘Import skill’ tab.

Select ‘skill-Stormy-Insurance.json’ file that you’ve downloaded from Git repo and click ‘Import’



You will see that dialog is added to your assistant.

The screenshot shows the IBM Watson Assistant Lite interface. At the top, there's a black header bar with the text "IBM Watson Assistant Lite" and "Upgrade". Below this, on the left, is a sidebar with icons for "Assistants" (a speech bubble), "Actions" (a gear), and "Dialog" (a document). The main area displays the "Storm Insurance" dialog. At the top of the dialog, there's a section titled "Actions Beta" with a sub-section "Build conversations easier than ever" containing a bulleted list of benefits. To the right of this list is a blue button labeled "Add an actions skill". Below this section is a link "Learn more". The main content area of the dialog is titled "Stormy Insurance" and contains details about the assistant: "LANGUAGE: English (US)", "TRAINED DATA: 24 Intents | 9 Entities | 64 Dialog nodes", "VERSION: ---", "DESCRIPTION: ---", and "VERSION CREATED: ---". At the bottom of the dialog, it says "LINKED ASSISTANTS (1): Storm Insurance". A red box highlights the "Stormy Insurance" title and its associated details.

Now that you've created your Watson Assistant-enabled chatbot, you need to connect it to a data source. The following section shows you how to do that by adding webhooks to Watson Assistant that query for dynamic data.

Our insurance chatbot uses our facade API to communicate with the integration flows.

Click on your 'Storm Insurance' dialog tile to open the dialog

Click on Options on the left.

The screenshot shows the "Options" menu for the "Stormy Insurance" dialog. On the left, there's a sidebar with icons for "Intents", "Entities", "Dialog", "Options" (which is underlined and highlighted in blue), "Analytics", "Versions", and "Content Catalog". To the right of the sidebar, there are three items listed with checkboxes: "Intents (24) ↑", "#General\_Jokes", and "#General\_Negative\_".

Under Options, click 'Webhooks'.



A webhook is a mechanism that allows you to call out to an external program based on something happening in your program. When used in a dialog skill, a webhook is triggered when the assistant processes a node that has a webhook enabled. The webhook collects data that you specify or that you collect from the user during the conversation and saves in context variables.

In the URL text box, type the endpoint value of your chatbot API (that you've exposed via API Connect)

In the 'X-IBM-Client-Id' Header value text box, type the Client ID (API key) value of your chatbot API (that you've exposed via API Connect).

The screenshot shows the IBM Watson Assistant Lite interface. At the top, there's a dark header bar with the text "IBM Watson Assistant Lite" and "Upgrade". Below this is a navigation sidebar with icons for Home, Products, and Data. The main content area is titled "Stormy Insurance". On the left, a vertical menu lists "Intents", "Entities", "Dialog", "Options", "Webhooks" (which is selected and highlighted in blue), "Disambiguation", "Autocorrection", "Irrelevance Detection", "Intent Detection" (with a "New" badge), "Analytics", "Versions", and "Content Catalog". The "Webhooks" section contains a "Webhook setup" heading and a "URL" input field containing the value "https://XXX.appdomain.cloud/demoorg/democatalog/chatbot". Below this is a "Headers" section with a table:

Header name	Header value
X-IBM-Client-Id	dbf8xxxxxxxxxxxxxx Delete icon

Note: If you didn't take a note of these values you can follow the steps below to access

From the API Connect Portal dashboard, click on the tile for the Storm Insurance APIs product.



IBM API Connect | Developer Portal API Products Apps Blogs Forums Support

## API Products

Name Category Sort by Order Items per page

- Please select - Name Asc 10 Apply Reset

 Storm Insurance APIs 1.0.0 ★★★★★

Storm Insurance APIs

chatbot 0.0.1

Click on the tile for the chatbot API.

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Products /

### Storm Insurance APIs 1.0.0 ★★★★★

APIs

 chatbot 0.0.1

REST • Online •

From the 'Overview' copy the Endpoint URL

This is used as your webhook URL



The screenshot shows the IBM API Connect Developer Portal. At the top, there's a navigation bar with links for 'Developer Portal', 'API Products', 'Apps', 'Blogs', 'Forums', and 'Support'. On the right side of the header, there's a search icon, a user profile icon, and a dropdown menu. Below the header, the page title is 'Products / Storm Insurance APIs'. A specific API product, 'chatbot 0.0.1', is displayed with a 5-star rating. A 'Subscribe' button is visible. The main content area is titled 'Overview'. It shows the method 'POST /' and the type 'REST'. An 'Endpoint' section is highlighted with a red border, containing details for 'Production' and 'Development' environments, both pointing to the URL `https://ade1o-test-catalog/chatbot`. Below this, a 'Security' section lists 'clientIdHeader' and 'X-IBM-Client-Id' as apiKey located in header. A 'Filter' search bar is also present on the left.

Next, we need to get the value to use as 'X-IBM-Client-Id' HTTP Header value.

From the API Connect Portal dashboard, click 'Apps'.

Click on the tile for the 'Storm Insurance APIs' product and navigate 'Subscriptions' tab.

The 'Client ID' is the value to use as 'X-IBM-Client-Id' HTTP Header value.

The screenshot shows the 'Subscriptions' tab for the 'Storm Insurance ChatBot' application. The top navigation bar includes links for 'Dashboard' and 'Subscriptions'. The 'Subscriptions' tab is active, indicated by a blue underline. Below the tabs, there's a section for 'Credentials' with a 'Credential for Stor...' entry. Under this entry, the 'Client ID' field contains the value '7541'. There's also a 'Client Secret' section with a 'Verify' button. At the bottom of the screen, there's a 'Subscriptions' table with one row for 'Storm Insurance APIs (1.0.0)' under the 'Product' column and 'Default Plan' under the 'Plan' column. The IBM logo is at the bottom right.



**IBM**

## 9 Node Chat Application

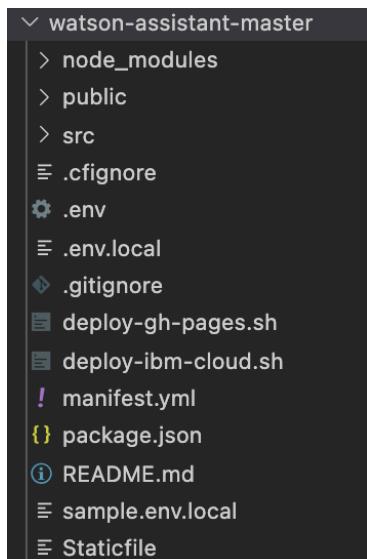
The application deals with text and image responses only from the Watson assistant. This project was bootstrapped with Create React App. This project deploys a react application that connects to a Watson API.

### 9.1 Installation

0. Clone this repo (<https://github.com/IBM/cp4i-demos/tree/main/ace-weather-chatbot/assets/watson-assistant>)
1. [install 'yarn'](#): follow the instructions for your OS
  - a. Mac-specific: if you do not have it already, you will need to install xcode. [This article](#) gives detailed instructions.
2. Install the dependencies: yarn install

### 9.2 Configuration

Once you cloned the repository and installed the yarn packages, you will see a similar folder structure.



You can now configure the project with your preferences and demo environment details.

### 9.2.1 Set access credentials in `.env.local`

The chatbot has the following immediate dependencies;

- The API Credentials specific to your Watson Assistant
- The credentials to access an image processing API, which is provided by an App Connect API Flow

The credentials for these are stored in the `.env.local` file, which you will need to create, in the same directory that you cloned this repo to. We have supplied a sample `sample.env.local` that you should edit and rename to `.env.local`.

```
REACT_APP_ASSISTANT_URL="https://..."  
REACT_APP_ASSISTANT_API_KEY="xxxYYYzzz"  
REACT_APP_IMAGE_PROCESS_URL="https://..."  
REACT_APP_IMAGE_PROCESS_API_KEY="xxxYYYzzz"
```

#### For your Watson assistant

- The API URL for your Watson Assistant: `REACT_APP_ASSISTANT_URL`
- The API key for accessing your Watson Assistant instance: `REACT_APP_ASSISTANT_API_KEY`

To get these;

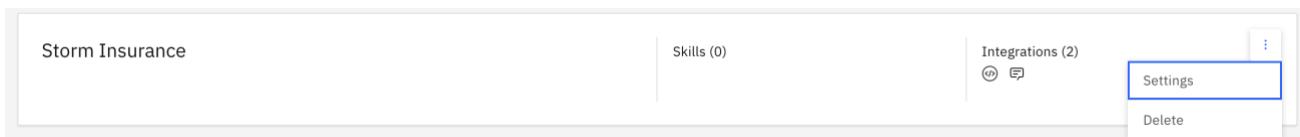
Browse to your list of assistants on [assistant.watson.cloud.ibm.com](https://assistant.watson.cloud.ibm.com)

The screenshot shows the IBM Watson Assistant Lite interface. At the top, there are links for "IBM Watson Assistant Lite" and "Upgrade". On the left, there's a sidebar with icons for "Assistants", "Skills", and "Integrations". The main area displays three assistants:

- Campaign**: Built for you to complete tasks and get information faster. It may clarify requests, search for answers from a knowledge base, and can also direct your customer to a human if needed. It has 1 skill (Create Lead) and 2 integrations (IBM Watson Assistant and Watson Assistant).
- My first assistant**: Built for you to explore and learn. It has 1 skill (My first skill) and 0 integrations.
- Storm Insurance**: It has 0 skills and 2 integrations (IBM Watson Assistant and Watson Assistant).

Choose the assistant for this demo; from its overflow menu (:) select ‘Settings’.





Select the 'API details' tab, where you will find "Assistant URL" and "API Key".

IBM Watson Assistant Lite Upgrade

### Assistant settings

Storm Insurance

Rename assistant

**API details**

Inactivity timeout

### API details

#### Assistant details

Assistant name:	Storm Insurance
Assistant ID:	b
Assistant URL:	https://ai...watson.cloud.ibm.com/

#### Service credentials

Credentials name:	Auto-generated service credentials
API key:	173...INY

## For your App Connect Image Processing flow

- The URL for your image processing API: REACT\_APP\_IMAGE\_PROCESS\_URL
- The API Key for accessing your image processing API: REACT\_APP\_IMAGE\_PROCESS\_API\_KEY

To get these;

From the API Connect Portal dashboard, click on the tile for the Storm Insurance APIs product.



IBM API Connect | Developer Portal API Products Apps Blogs Forums Support

## API Products

Name Category Sort by Order Items per page

- Please select - Name Asc 10 Apply Reset

 Storm Insurance APIs 1.0.0 ★★★★★

Storm Insurance APIs

chatbot 0.0.1

Click on the tile for the chatbot API.

IBM API Connect | Developer Portal API Products Apps Blogs Forums Support

Products /

### Storm Insurance APIs 1.0.0 ★★★★★

APIs

 chatbot 0.0.1

REST • Online •

From the 'Overview' copy the Endpoint URL

This is used as your `REACT_APP_IMAGE_PROCESS_URL`



The screenshot shows the IBM API Connect Developer Portal. At the top, there's a navigation bar with links for 'Developer Portal', 'API Products', 'Apps', 'Blogs', 'Forums', and 'Support'. On the right side of the header, there's a search icon, a user profile icon, and a dropdown menu. Below the header, the page title is 'Products / Storm Insurance APIs'. A specific API product, 'chatbot 0.0.1', is displayed with a 5-star rating. A 'Subscribe' button is visible on the right. The main content area is titled 'Overview'. It shows the method 'POST /' and the type 'REST'. An 'Endpoint' section is highlighted with a red border, containing details for 'Production' and 'Development' environments, including URLs like 'https://ade1o-test-catalog/chatbot'. Below this, a 'Security' section lists 'clientIdHeader' and 'X-IBM-Client-Id' with the note 'apiKey located in header'. A 'Filter' search bar is also present on the left.

Next, we need to get the value to use as `REACT_APP_IMAGE_PROCESS_API_KEY`.

From the API Connect Portal dashboard, click 'Apps'.

Click on the tile for the 'Storm Insurance APIs' product and navigate 'Subscriptions' tab.

The 'Client ID' is the value to use as `REACT_APP_IMAGE_PROCESS_API_KEY`

The screenshot shows the 'Subscriptions' tab for the 'Storm Insurance ChatBot' application. The top navigation bar includes links for 'Dashboard' and 'Subscriptions'. The 'Subscriptions' tab is active, indicated by a blue underline. Below the tabs, there's a 'Create and manage your apps' button. The main content area is divided into two sections: 'Credentials' and 'Subscriptions'. In the 'Credentials' section, there's a 'Credential for Stor...' entry with a 'Client ID' field containing '7541' and a 'Verify' button. In the 'Subscriptions' section, there's a table with columns for 'Product' and 'Plan'. One row shows 'Storm Insurance APIs (1.0.0)' and 'Default Plan'. The bottom right corner features the IBM logo.



### 9.2.2 Set the value of proxy in `package.json`

You must set the value of proxy in `package.json`. You need to do this to allow your client to communicate with Watson assistant - which does not allow 'Cross Origin' requests. This must be set to the same value as the base part of your `REACT_APP_ASSISTANT_URL`. For example, if your `.env.local` has;

```
REACT_APP_ASSISTANT_URL="https://api.us-south.assistant.watson.cloud.ibm.com/instances/ffcc1122..."
```

then your `package.json` should contain;

```
...
"proxy": "https://api.us-south.assistant.watson.cloud.ibm.com",
..."
```

### 9.2.3 File uploads

The `Assistant.js` component is currently configured to accept jpg, png and gif. Change the following line to update that.

```
const imageTypes = ["jpg", "jpeg", "png", "gif"];
```

### 9.2.4 File processing code

The file is processed via code in [src/utils/imageApiCall.js](#). The supplied implementation calls an API, and constructs a Watson Assistant message based on the response.

This code is called from within [src/components/Assistant.js](#) using this code;

```
imageApiCall(result.value.data).then(
  (response) => {
    //addUserMessage(response)
    sendUserMessage(response)
    .then((res) => {
      console.log(JSON.stringify(res.data, null, 2))
      setConversation((prevState) => [...prevState, res.data]);
    })
    .catch((err) => {
      console.dir(err);
    });
  }
)
```

The current implementation sends the result of ‘imageApiCall’ to Watson Assistant (`sendUserMessage`) but does not display it in the chat dialog. The message can be displayed in the dialog by uncommenting the call to ‘`addUserMessage`’.



### **9.2.5 The dialog**

The dialog adds both images the user adds and a text message depending on the number of files uploaded.

- "file: uploads failed"
- "file: upload failed"
- "file: uploads successful"
- "file: upload successful"

Comment out the 'addUserMessage' that follows these strings in Assistant.js to avoid displaying this string.

```
addUserMessage (msg) ;
```

### **9.2.6 Assistant response to files**

The same text messages are sent to the Waston Assistant using 'sendUserMessage(msg)'.

- "file: uploads failed"
- "file: upload failed"
- "file: uploads successful"
- "file: upload successful"

These need to be configured as intents in the Watson assistant with responses in the dialog.

## **9.3 Running your Node Chat Application**

We have installed and configured our application. Now we are ready to run it locally.

From your terminal navigate to your project folder and run the following command.

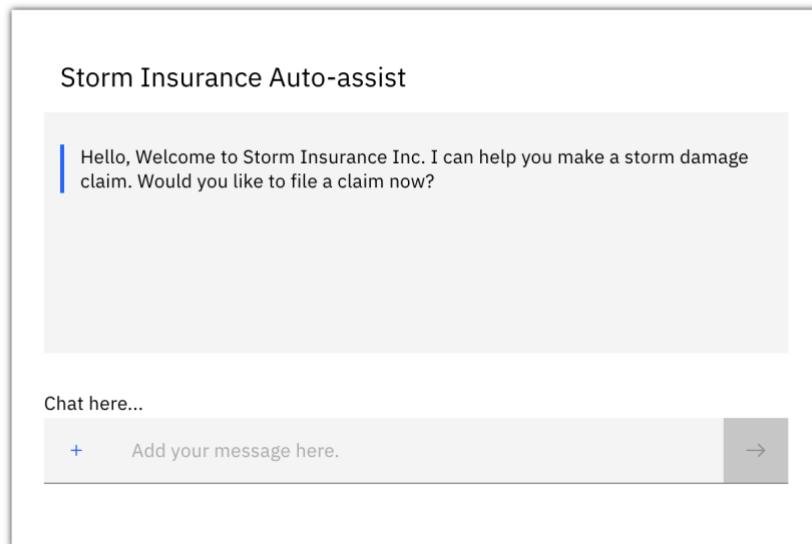
```
yarn start
```

Runs the app in the development mode.

Open <http://localhost:3000> to view it in the browser.

The page will reload if you make edits. You will also see any lint errors in the console.





There are some other scripts in the project directory that you can run to test, build and eject the application

```
yarn test
```

Launches the test runner in the interactive watch mode.

See the section about running tests for more information.

```
yarn build
```

Builds the app for production to the build folder.

It correctly bundles React in production mode and optimizes the build for the best performance.

The build is minified and the filenames include the hashes.

Your app is ready to be deployed!

See the section about [deployment](#) for more information.

```
yarn eject
```

*Note: this is a one-way operation. Once you eject, you can't go back!*

If you aren't satisfied with the build tool and configuration choices, you can 'eject' at any time. This command will remove the single build dependency from your project.

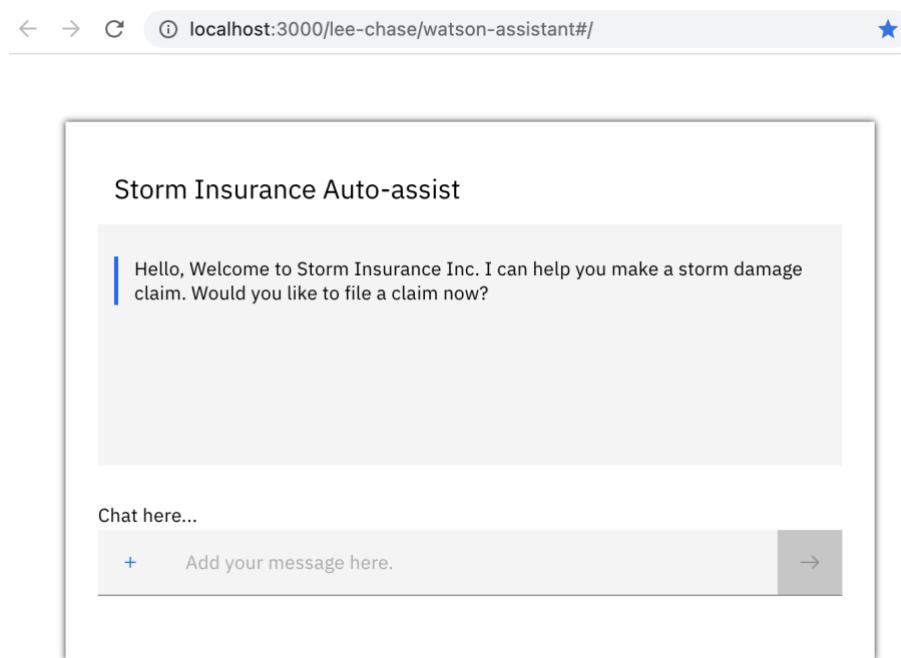
Instead, it will copy all the configuration files and the transitive dependencies (webpack, Babel, ESLint, etc) right into your project so you have full control over them. All of the commands except eject will still work, but they will point to the copied scripts so you can tweak them. At this point you're on your own.

You don't have to ever use 'eject'. The curated feature set is suitable for small and middle deployments, and you shouldn't feel obligated to use this feature. However we understand that this tool wouldn't be useful if you couldn't customize it when you are ready for it.

## 9.4 Test everything – your cognitive integrated insurance chatbot!

Let's test our application end to end.

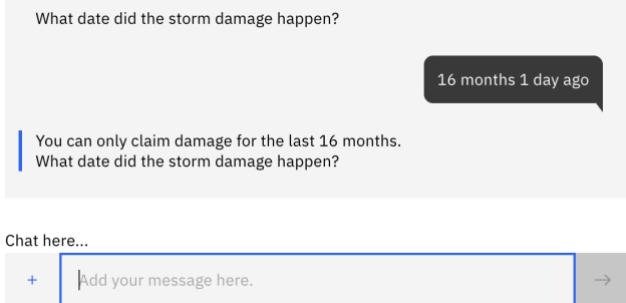
Open <http://localhost:3000> to view chatbot in the browser.



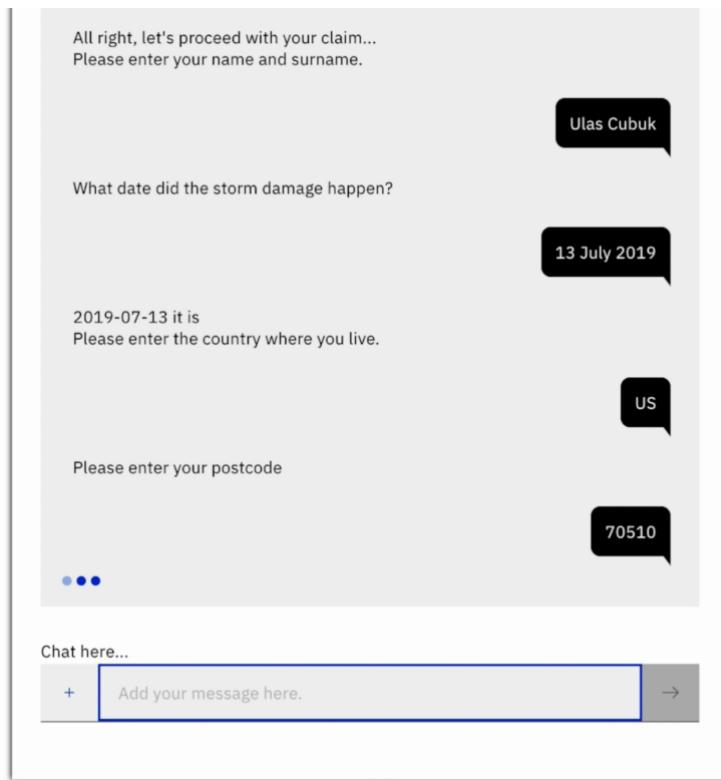
Type 'yes' to start your claim process.

Next the chatbot ask questions to collect details about you, your location and the date of the storm.

Please note that for the purpose of this demo we trained the chatbot to accept only US and UK postcodes. Also, we've embedded a logic to accept the claims requests that are not older than 16 months. In that case, it will ask you again to enter a valid date or you can refresh your page to start over again.



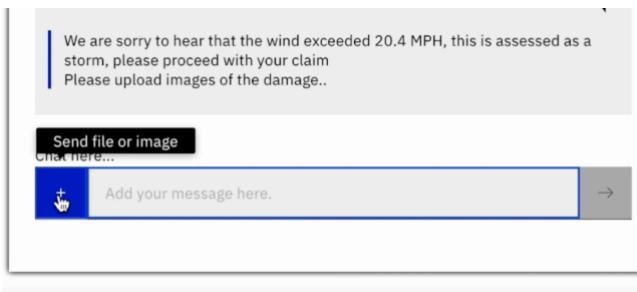
The location and the date given below in the screenshot is an occurrence that matches the criteria of storm in our integration flow. You can use the same or you can try other options.



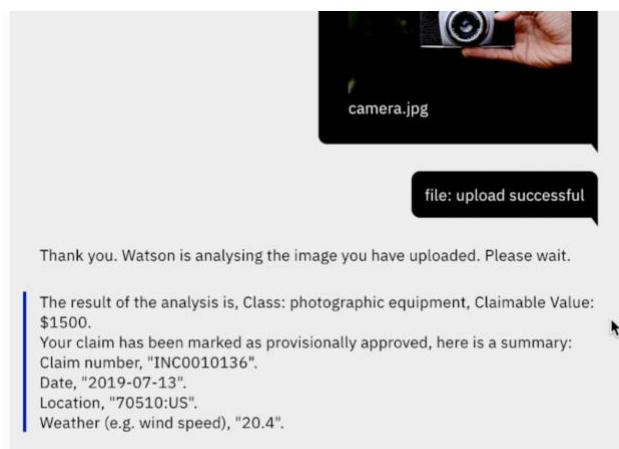
At this point the chatbot uses the power of integration to return back a dynamically retrieved assessment result. In addition to that it will trigger claim process and create a provisional claim.

You can see that your case is confirmed as a storm occurrence.

Now all you need to do is to upload the image of the damage.



Again, your chatbot, powered with integration and Watson Visual Recognition, will analyse the damaged object.



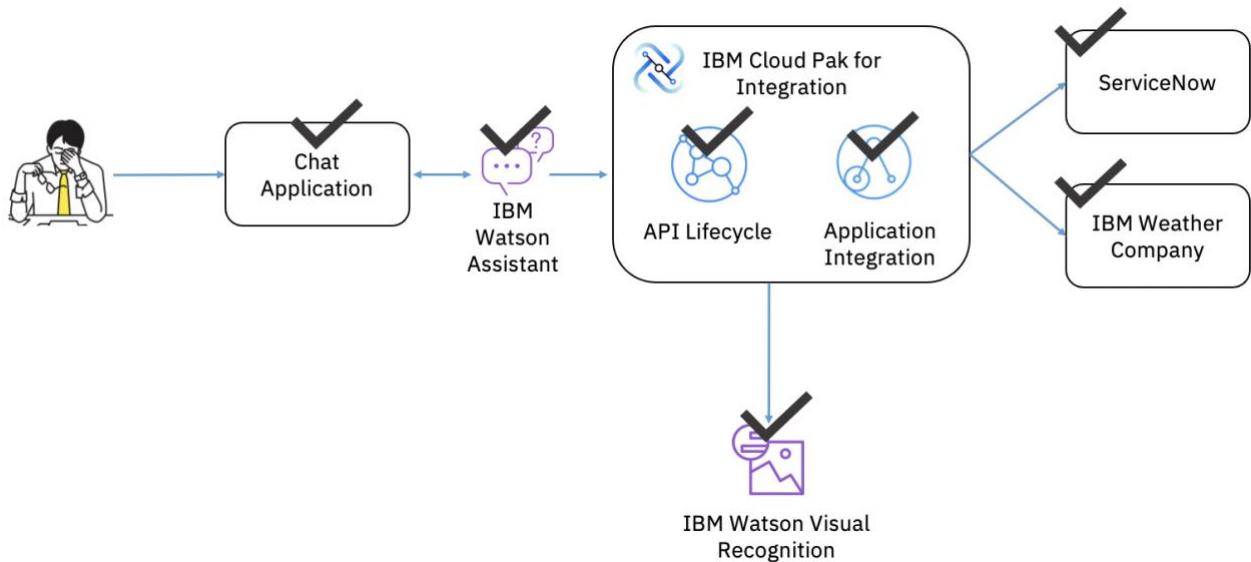
IBM Watson Assistant replies to the user the analyses result along with the provisional claim details. The chat application displays the answer to the user.

There you go! No need to worry about the issues like; how to make an insurance claim? what do I need to submit for an insurance claim? who will assess the damage? when should I make an insurance claim?... With couple of clicks your claim process has been initiated.

## 10 Summary

Well done, you've completed the lab!

Let's review what we have done...



Created a series of SaaS endpoints to do the lab with.

Created secure managed connections to each of these endpoints using the CP4I connectors.

Created a facade API and API integration flows to process storm damage claims.

Tested the connections from within the tooling, building your integration interactively.

Deployed your integration flows as a highly available, scalable resilient Kubernetes deployment of containers and pods onto CP4I runtime on OpenShift

CP4i secured credentials using a Kubernetes secret to abstract credentials from the integration flow

Configured API Connect with a Developer Organization and a Catalog, a secure Gateway and a Portal.

Created an API definition in API connect to securely route the requests to App Connect. Added an API Key security policy to keep your API secure and added a rate-limit policy to manage your API at 100 calls/minute. Published your API to a self-service portal.

Signed up as a new consumer of your API. Registered as a new consumer, used the portal self-service features including the interactive tester.

Created Watson Assistant chatbot and a Node application.

