

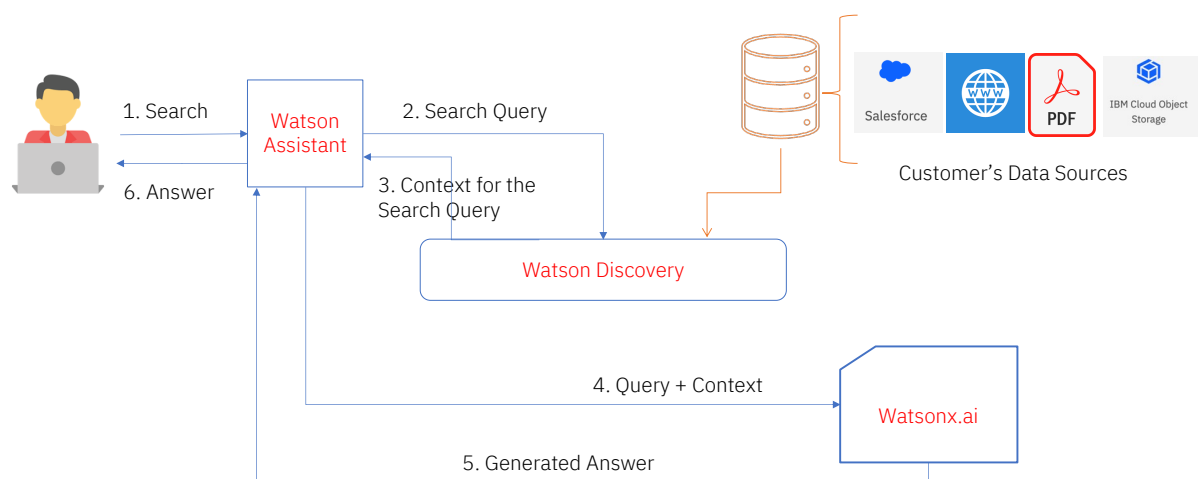
Building Question-Answering with watsonx.ai, watsonx Assistant, watsonx Discovery

Detailed Instructions

Introduction

This document describes the steps you can follow to set an enterprise level question and answer system using Watson Assistant, Watson Discovery and Watsonx.ai.

We will follow a Retrieval-Augmented-Generation pattern as shown in the highlevel architecture below.



Step 0: Load your Content to Watson Discovery

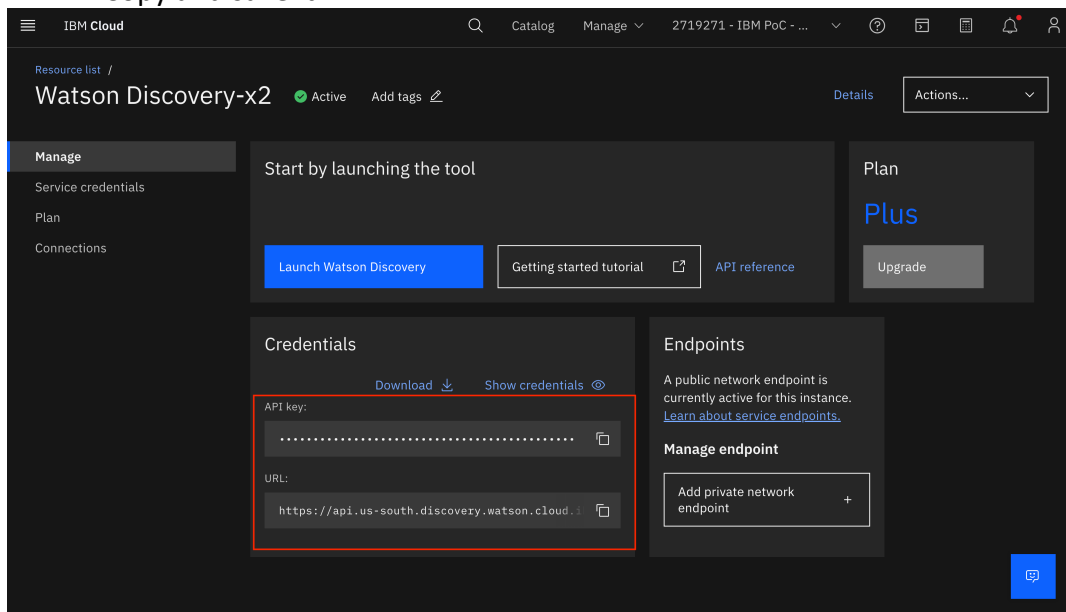
In the RAG pattern we need the data stored and indexed for retrieval. In this lab we will use Watson Discovery to index and retrieve documents necessary for a query. This step is completed for you by the lab coordinator.

Step 1: Save the Watson Discovery URL and Watson Discovery API key and Watson Discovery Collection ID

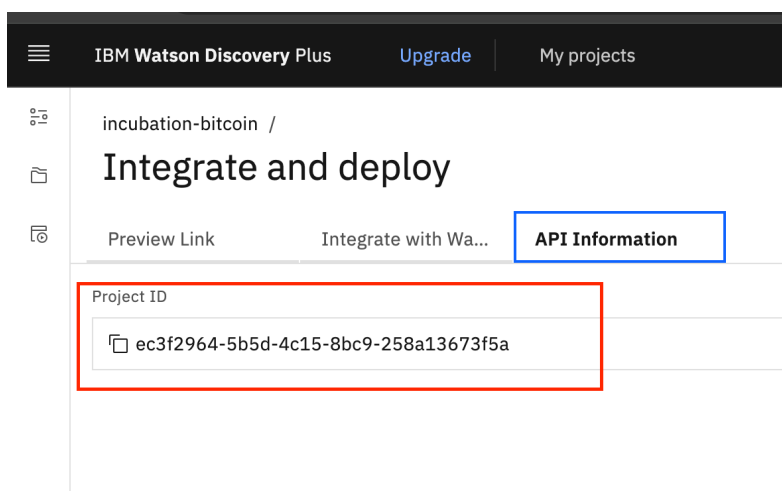
We need to have the API key and the URL of the Watson Discovery instance we setup in Step 0. To find these details

1. Login to your IBM Cloud Account. Then go to the Navigation Menu → Resource List → Expand AI/Machine Learning.
2. Select the Watson Discovery instance.

3. Under credentials section you will see the API key and the URL.
4. Copy and save it.



5. Select Launch Watson Discovery
 - a. From the Navigation Menu → Select Integrate and Deploy → API Information → Copy Project ID



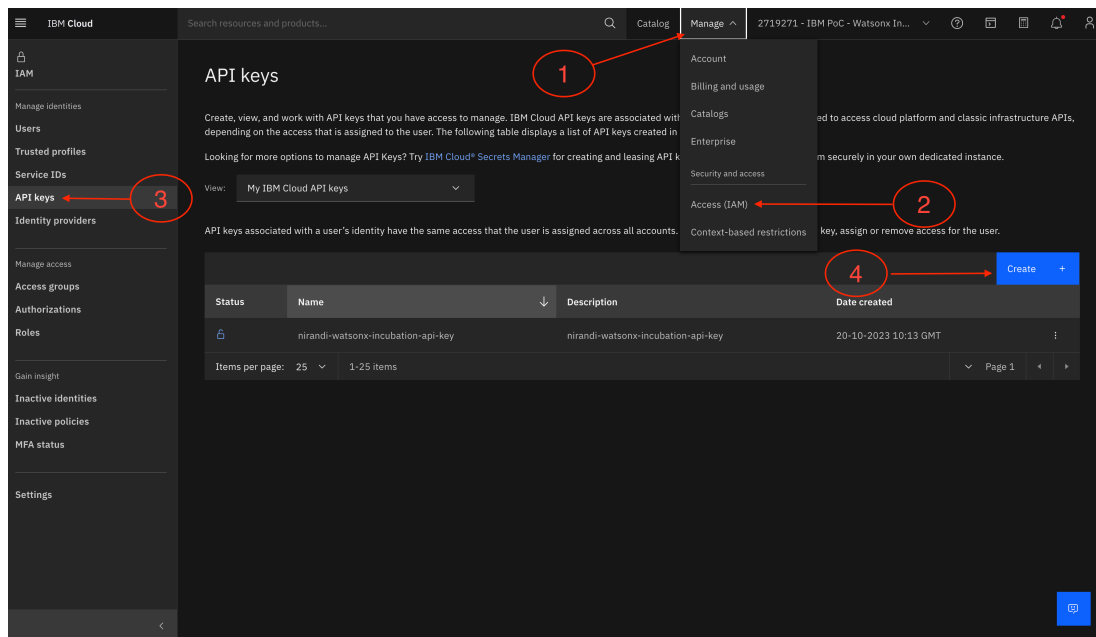
Step 2: Save the API key for IBM Cloud

To connect the watsonx.ai instance to Watson Assistant we will need the IBM Cloud API Key. If you already have a watsonx.ai API key have it ready.

If you don't have an API key follow these instructions.

1. Go the IBM Cloud
2. Manage → Access (IAM) → API keys
3. Enter a name and description for your API key.

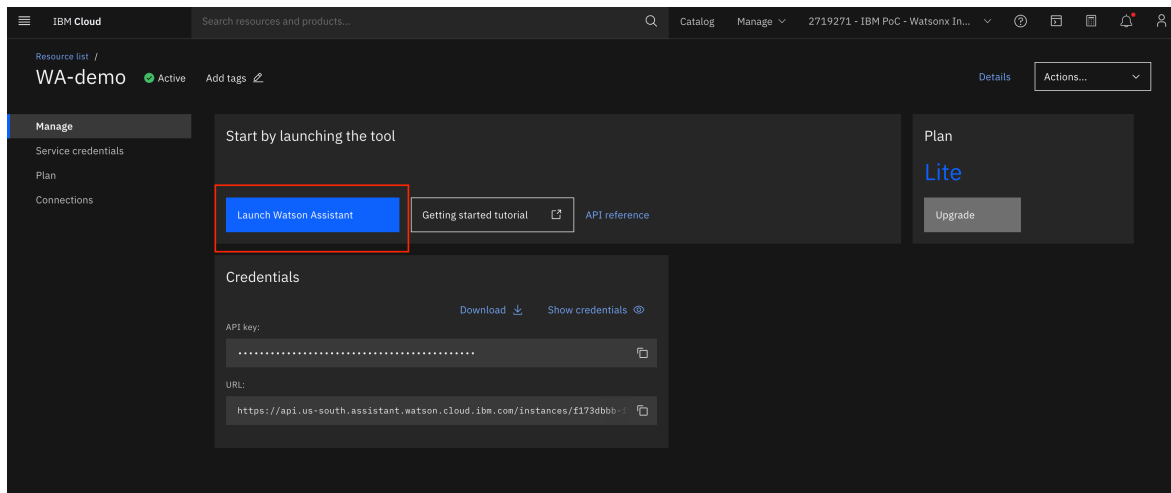
4. Click Create.
5. Then, click Show to display the API key. Or, click Copy to copy and save it for later, or click Download.



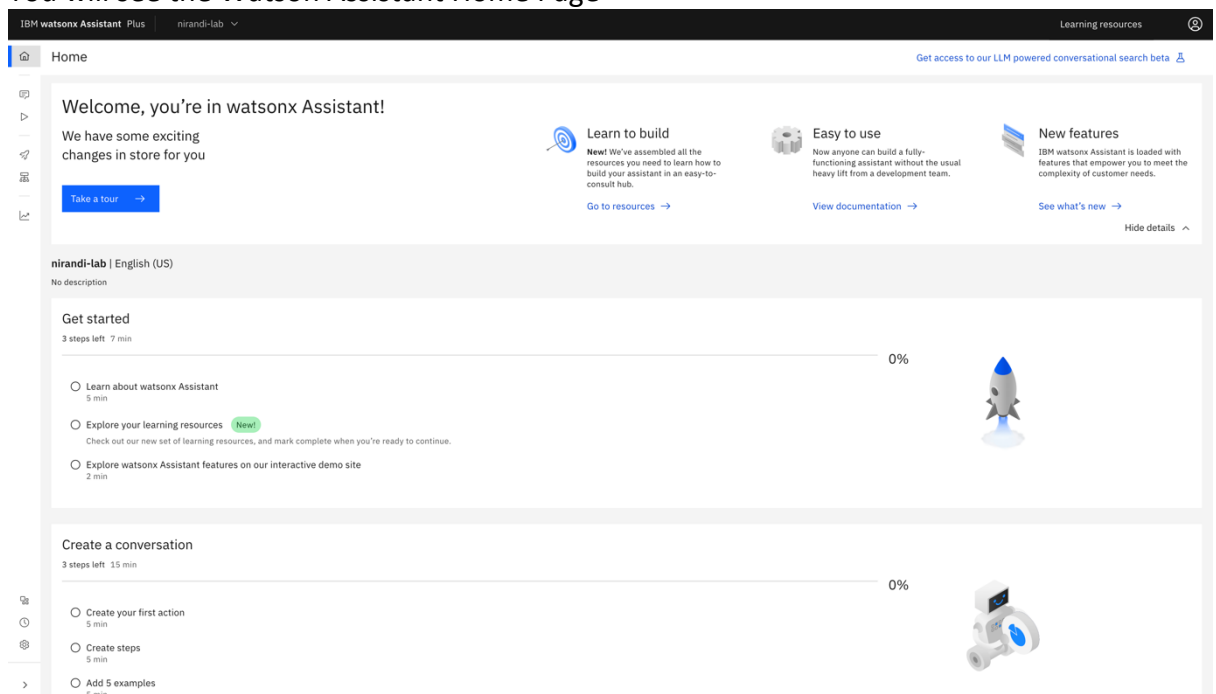
Step 3: Launch Your Watson Assistant instance

Let's check how to use the Watson Assistant capabilities to build the RAG pattern for Question and Answering. To launch your Watson Assistant instance follow the below instructions.

1. Login to IBM Cloud
2. Go to the Navigation Menu
3. Select Resource List
4. Expand AI/Machine Learning
5. Select your Watson Assistant Service
6. Select Launch Watson Assistant



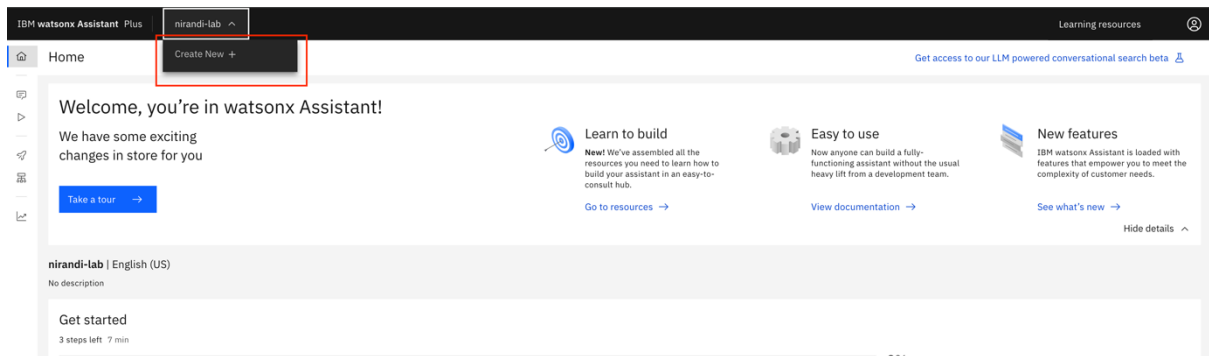
7. You will see the Watson Assistant Home Page



Step 4: Create a New Chat instance in Watson Assistant

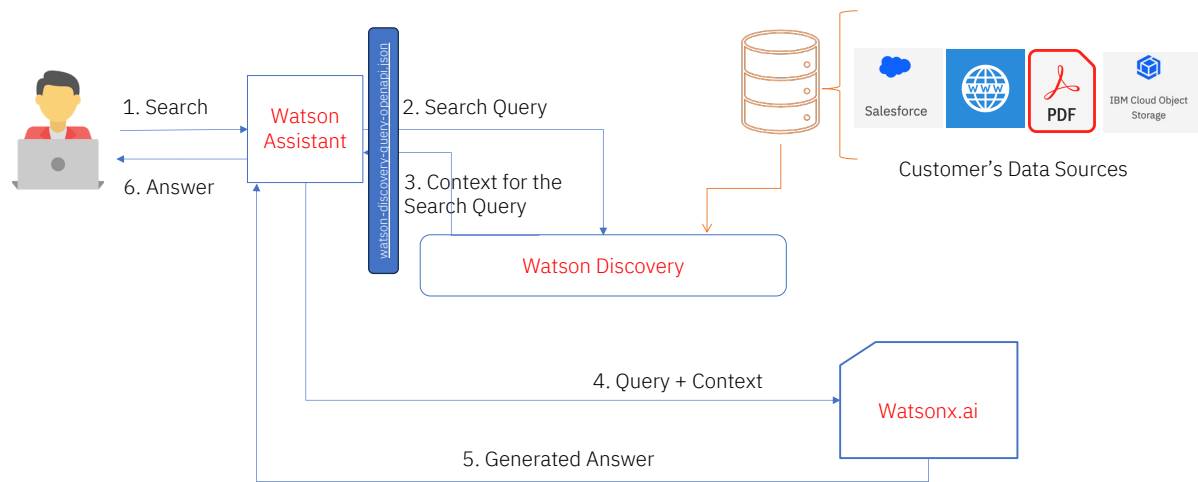
Watson Assistant allows you to create multiple chat instance. To create your own now follow the below instructions.

1. Stay in the Watson Assistant Home Page.
2. Select "Create New" on the top drop down menu.
 1. Give a name for your chat instance "<your-name>-qa-chat-demo"
 2. Fill in the information.



Step 5: Add a Custom Extension for Watson Discovery in Watson Assistant

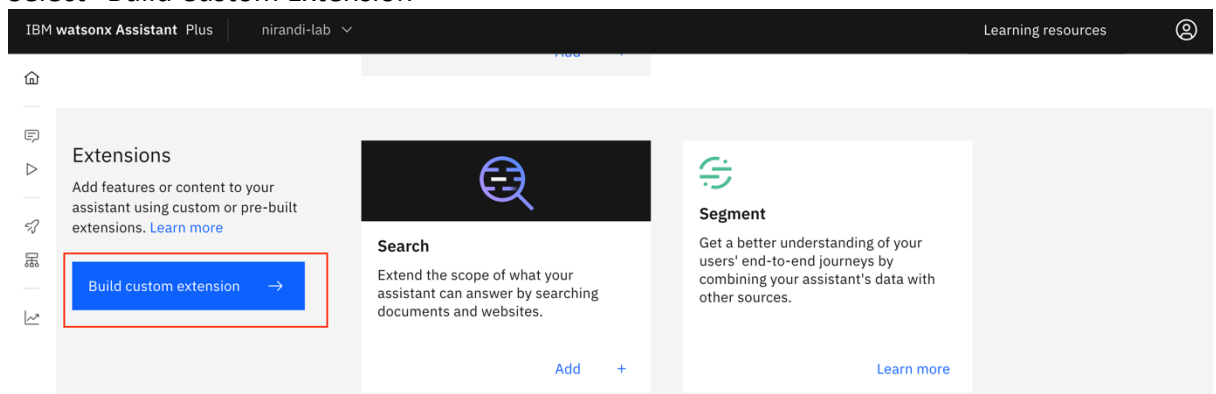
Watson Assistant can extend to many applications with out-of-the-box extension plugins. We can also extend Watson Assistant to any plugin with an OpenAPI specification.



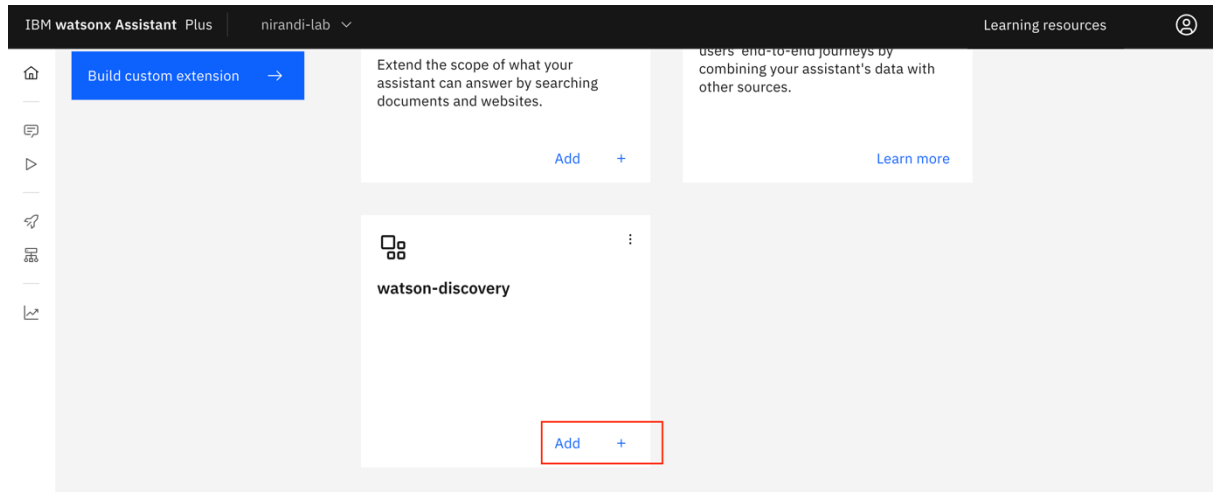
Github link – https://github.com/kniesz/GenAI_Incubation_watsonx/tree/main/lab%207%20-%20Building%20Question-Answering%20with%20watsonx.ai%2C%20watsonx%20Assistant%2C%20watsonx%20Discovery

In this step we will create a custom extension to Watson Discovery.

1. Make sure you have selected your chat instance on the top.
2. From the navigation menu select “Integration”.
3. Select “Build Custom Extension”



4. Enter the custom extension name (i.e., Watson-discovery)
5. Import OpenAPI json file.
 - a. Go to lab 07 folder (lab 7 - Building Question-Answering with watsonx.ai, watsonx Assistant, watsonx Discovery) → extension folder
 - b. Select [watson-discovery-query-openapi.json](#) and upload.
 - c. Select Next → Review → Finish.
6. You can see a new tile under custom extension. Click Add in this new tile.

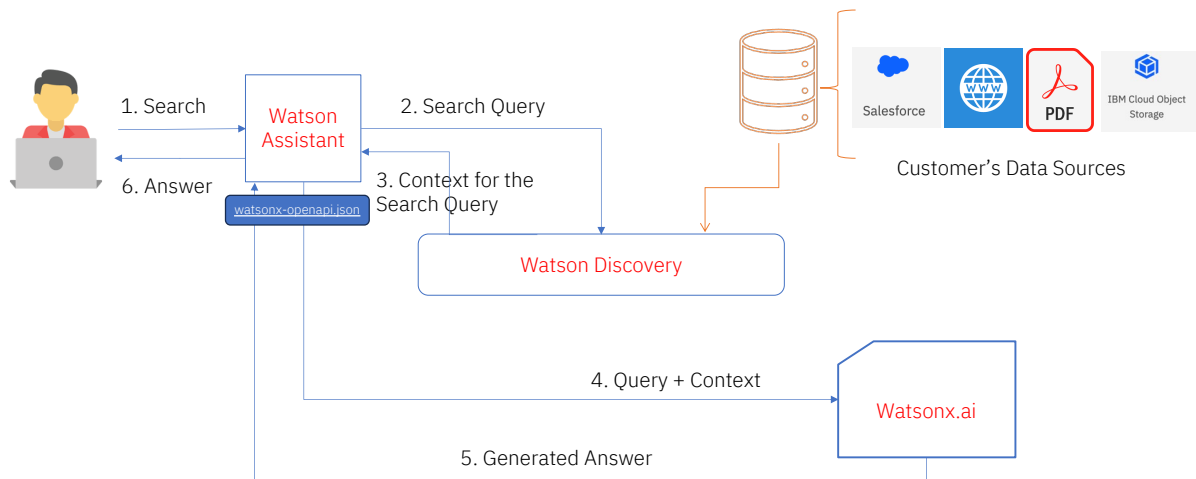


7. Add the details to setup your Watson Discovery instance
 - a. Change “Authentication type” to “Basic auth”
 - b. Enter Username as “apikey”
 - c. Enter the Password which is your Watson Discovery API key in Step 1.
 - d. Enter Server variable which is the Watson Dsicoverly URL (without https://)
 - e. Select Next → Review → Finish

Note: If your data is stored and indexed in some other application we can have a custom extension to those applications as well.

Step 6: Add a Custom Extension for watsonx.ai in Watson Assistant

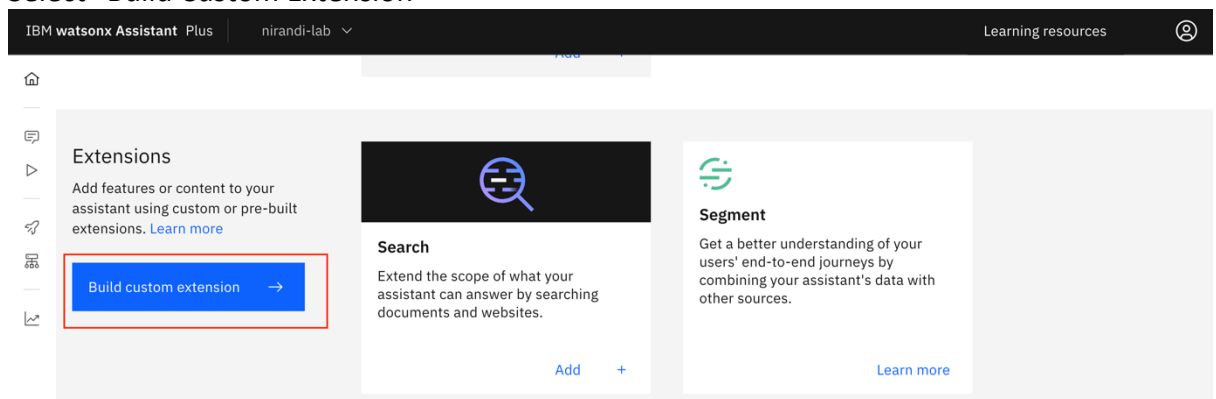
Next, we will add a custom extension to our Watsonx.ai instance.



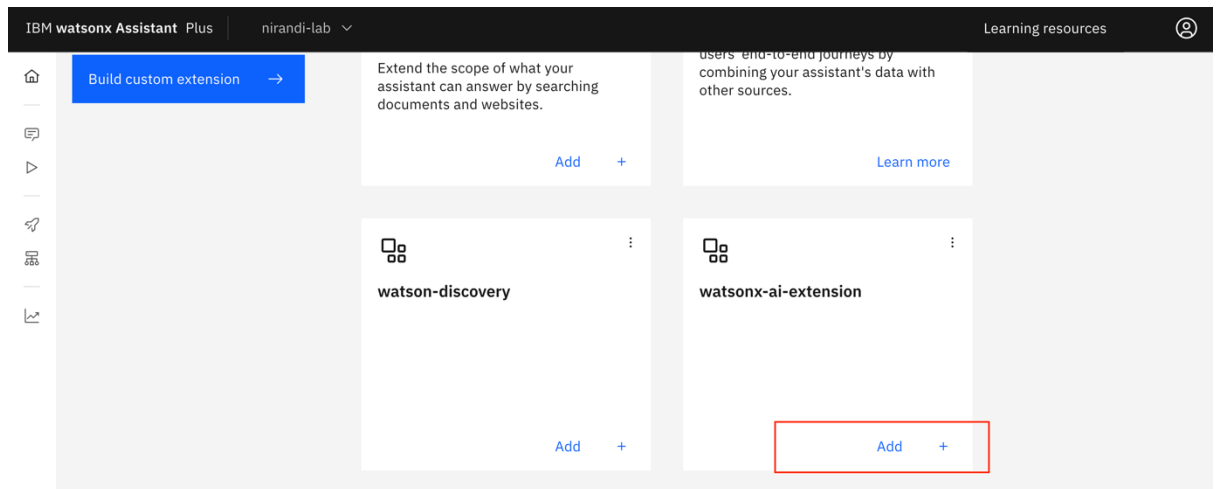
Github link – https://github.com/knijesh/GenAI_Incubation_watsonx/tree/main/lab%20-%20Building%20Question-Answering%20with%20watsonx.ai%2C%20watsonx%20Assistant%2C%20watsonx%20Discovery

Follow the below instructions to create and add the watsonx.ai extension in Watson Assistant.

1. Make sure you have selected your chat instance on the top.
2. From the navigation menu select “Integration”.
3. Select “Build Custom Extension”



4. Enter the custom extension name (i.e., Watsonx-ai-extension)
5. Import OpenAPI json file.
 - a. Go to lab 07 folder (lab 7 - Building Question-Answering with watsonx.ai, watsonx Assistant, watsonx Discovery) → extension folder
 - b. Select [watsonx-openapi.json](#) and upload.
 - c. Select Next → Review → Finish.
6. You can see a new tile under custom extension. Click Add in this new tile.



7. Add the details to setup your Watsonx.ai instance
 - a. Change “Authentication type” to “OAuth 2.0”
 - b. Select Grant type as “Custom apikey”
 - c. Enter the Apikey which is your IBM Cloud API key in Step 2.
 - d. Leave the other parameters as is.
 - e. Select Next → Review → Finish

Step 7– Upload Actions Flows

In Watson Assistant we use Action Flows to define our conversation flow. We will use a custom template for in this lab to define the flow.

Follow the below instructions to upload the action flow for a RAG pattern.

0. Make sure you have selected your chat instance on the top.
1. From the Navigation Menu → Select Actions
2. Go to the “Global Settings” for your chat instance.

IBM watsonx Assistant Plus | nirandi-qa-demo | Learning resources

Home

Build

Actions

Preview

Deploy

Publish

Environments

Improve

Analyze

Integrations

Activity log

Assistant settings

Created by you /

Filter by name

Name	Last edited	Examples count	Steps count	Status
<input type="checkbox"/> Generate Answer	8 hours ago	0	10	✓
<input type="checkbox"/> Invoke watsonx generation API	8 hours ago	0	3	✓
<input type="checkbox"/> Search	8 hours ago	0	6	✓

Items per page: 50 | Showing 1–3 of 3 items | 1 | 1 of 1 pages

Preview

3. Import the action flow json file.
 - a. In Global Settings go to “Upload/Download”
 - b. Go to lab 07 folder (lab 7 - Building Question-Answering with watsonx.ai, watsonx Assistant, watsonx Discovery) → actions folder
 - c. Select [discovery-watsonx-actions.json](#) and Select “Upload”.
 - d. Close.
4. Check that you have three actions and the status is green.

IBM watsonx Assistant Plus | nirandi-qa-demo | Learning resources

Actions

Global settings

All items

Created by you

Set by assistant

Variables

Created by you

Set by assistant

Set by integration

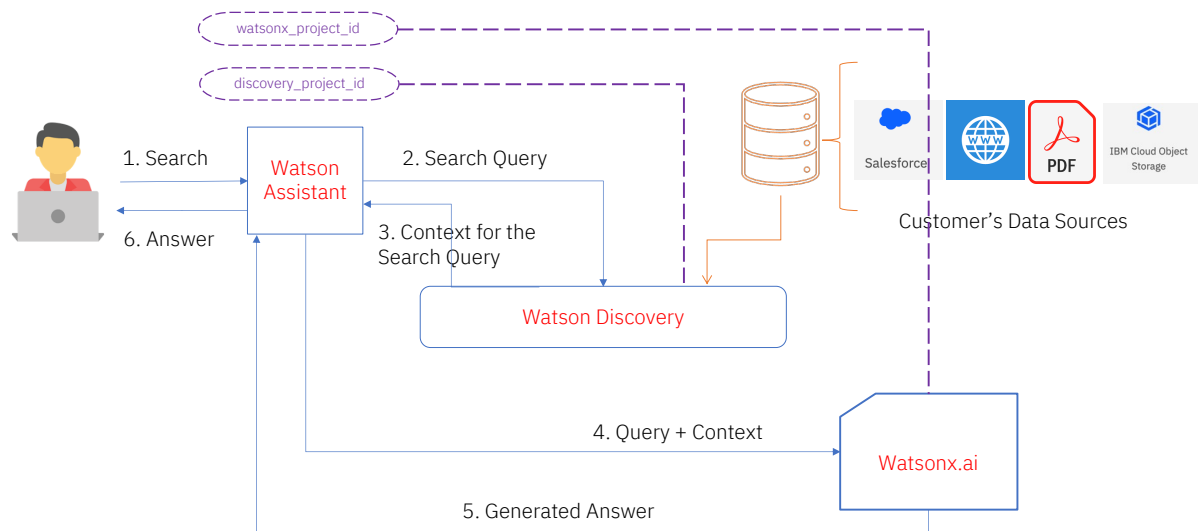
Saved responses

Created by you /

Filter by name

Name	Last edited	Examples count	Steps count	Status
<input type="checkbox"/> Generate Answer	8 hours ago	0	10	✓
<input type="checkbox"/> Invoke watsonx generation API	8 hours ago	0	3	✓
<input type="checkbox"/> Search	8 hours ago	0	6	✓

Step 8—Update the Variables (MUST)



Github link – https://github.com/knijesh/GenAI_Incubation_watsonx/tree/main/lab%20-%20Building%20Question-Answering%20with%20watsonx.ai%2C%20watsonx%20Assistant%2C%20watsonx%20Discovery

For the RAG pattern to work we need change the Watsonx.ai project ID and the Watson Discovery ID.

Follow the instructions below to change these variables.

1. From the Navigation Menu → Actions → Go to section “Variables”
2. Under Variables → Select “Created by you”
3. Select “discovery_project_id” and as the initial value set up your Watson discovery project id from Step 1. Close the window.
4. Select “watsonx_project_id” and as the initial value add your Watsonx.ai project id.

That’s it you are done. Click Preview and start using your RAG implementation.

IBM watsonx Assistant Plus

nirandi-qa-demo

Learning resources

Actions

All items

Created by you

Set by assistant

Variables

Created by you

Set by assistant

Set by integration

Saved responses

Name	Actions count	Initial value	Description	Variable ID
model_parameters_rep...	1	1.1		model_parameters_rep...
model_parameters_sto...	1	["\n\n"]		model_parameters_sto...
model_parameters_te...	1	0	he value used to control the ...	model_parameters_tem...
model_response	2		The text generated by the m...	model_response
passages	1			passages
query_text	1		You MAY change this to pas...	query_text
search_results	1		Response object from Disco...	search_results
snippet	1			snippet
verbose	1	false	Prints debug output when tr...	verbose
watsonx_api_version	1	2023-05-29	The version of the watsonx ...	watsonx_api_version
watsonx_project_id	1	eb36bb78-e96e-4972-bfb6...	You MUST set this to your w...	watsonx_project_id

Items per page: 50 Showing 1-17 of 17 variables

New variable +

Preview

IBM watsonx Assistant Plus

nirandi-qa-demo

Learning resources

Actions

All items

Created by you

Set by assistant

Variables

Created by you

Set by assistant

Set by integration

Saved responses

Name	Actions count	Initial value	Description	Variable ID
model_parameters_rep...	1	1.1		model_parameters_rep...
model_parameters_sto...	1	["\n\n"]		model_parameters_sto...
model_parameters_te...	1	0	he value used to control the ...	model_parameters_tem...
model_response	2		The text generated by the m...	model_response
passages	1			passages
query_text	1		You MAY change this to pas...	query_text
search_results	1		Response object from Disco...	search_results
snippet	1			snippet
verbose	1	false	Prints debug output when tr...	verbose
watsonx_api_version	1	2023-05-29	The version of the watsonx ...	watsonx_api_version
watsonx_project_id	1	eb36bb78-e96e-4972-bfb6...	You MUST set this to your w...	watsonx_project_id

Items per page: 50 Showing 1-17 of 17 variables

Preview

Greet customer [default]

Welcome, how can I assist you?

which online services use bitcoins

go to Search

Extension called

returned to Search

go to Generate Answer

go to Invoke watsonx generation API

Extension info

Inspect

Extension called

returned to Generate Answer

Namecheap and Overstock.com

returned to Search

returned to No action matches

Extension info

Inspect

type something...

