IBM TechXchange

2025 Pre-conference watsonx Hackathon

{hack}

IBM

IBM TechXchange 2025 Pre-conference watsonx Hackathon

AI agents are intelligent systems that can perceive their environment, reason about it, and take actions to achieve specific goals. These agents are capable of operating autonomously or collaboratively, making them ideal for solving complex real-world problems.

In this hackathon, participants are invited to explore the power of agentic AI using IBM's enterprise ready platforms **IBM watsonx.ai** and **IBM watsonx Orchestrate**. These tools provide everything you need to build, deploy, and manage intelligent AI agents that can plan, adapt, and act in dynamic environments.

IBM watsonx.ai is a powerful AI studio that supports the development of agentic AI solutions using a wide range of foundation models. Through the Prompt Lab, participants can experiment with IBM's Granite models and other leading models to create agents that understand and respond to natural language. IBM watsonx.ai can also serve as an inference provider for your agents, allowing them to generate responses, make decisions, and interact with users or systems intelligently.

IBM watsonx Orchestrate is a no code and low code platform designed to orchestrate AI agents across business workflows. With watsonx Orchestrate, you can create intelligent workflows where agents think, act, and adapt to deliver real business value.

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The hackathon expectation

In this hackathon, participants are expected to design and build a **proof-of-concept agentic AI solution** using **IBM watsonx.ai, IBM watsonx Orchestrate, or both**. Your solution should align with one of the following themes:

1. **Build with agentic AI challenge**
   Identify a real-world everyday problem and develop a working proof-of-concept that uses agentic AI to solve it. Focus on high impact tasks or workflows where AI agents can demonstrate autonomy, collaboration, and adaptability.

2. **Sustainable cities and communities challenge presented by Call for Code**
   Create an innovative agentic AI proof-of-concept that addresses a challenge under United Nations Sustainable Development Goal (SDG) 11 which focuses on sustainable cities and communities. Think about how AI agents can improve urban living whether through smarter infrastructure, efficient resource management, or inclusive community services.

You are required to use **IBM watsonx.ai, IBM watsonx Orchestrate, or both**. These platforms provide the foundation for building and orchestrating intelligent AI agents.

Participants may also **optionally** use **IBM watsonx Code Assistant** to accelerate development. Generate code from natural language, integrate APIs, and streamline backend logic to support your agentic AI solution.

Example use cases

Refer to example use cases to help you get started with your solution idea.

Note on data sets before you begin

Participants are required to bring their own datasets to build the solution aligning to your use case. As you collect data for your project, you'll want to use the best practices. Here are some helpful tips:

- Teams are responsible for ensuring data is compliant.
- Data from public websites may be used, if the terms allow for commercial use, but please keep a list of the websites you use.
- Do not use data or assets containing company confidential data, or any other data without permission from the data owner. Teams are responsible for getting approval.
- Do not use any client data.
- Do not use any data containing personal information (PI).
- Do not use data obtained from social media.

Get started with IBM watsonx

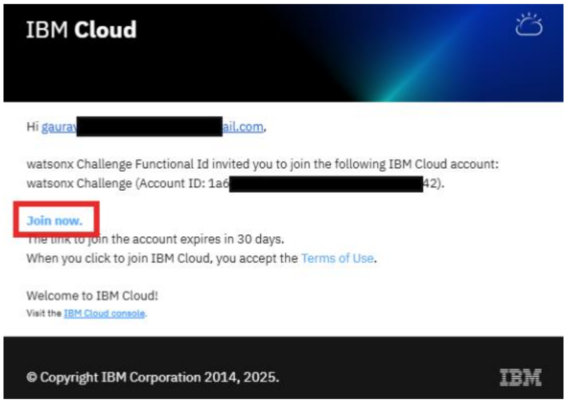
To access and use the watsonx products for this hackathon, participants must be registered for the hackathon and have access to the hackathon site. Once you have access to the hackathon site, follow the instructions on the "**Complete the hackathon**" page to request a pre-configured hackathon IBM Cloud account for your team.

Access your IBM Cloud account

Once your team has been provisioned a hackathon IBM Cloud account, all team members will receive an email invite to join the cloud account. Follow the steps below to access your team's cloud account:

1. Check the email inbox you used to register for the hackathon and open the email you received from the IBM Cloud team about joining your cloud account. Please check your junk/spam folders if you are not able to find the email in your inbox. You can also quickly search for "IBM Cloud" to locate the email.

2. Click the **Join Now** button seen in that email. A new browser tab will open with the cloud account sign up page.



IBM **Cloud**

Hi gaura[redacted]ail.com,

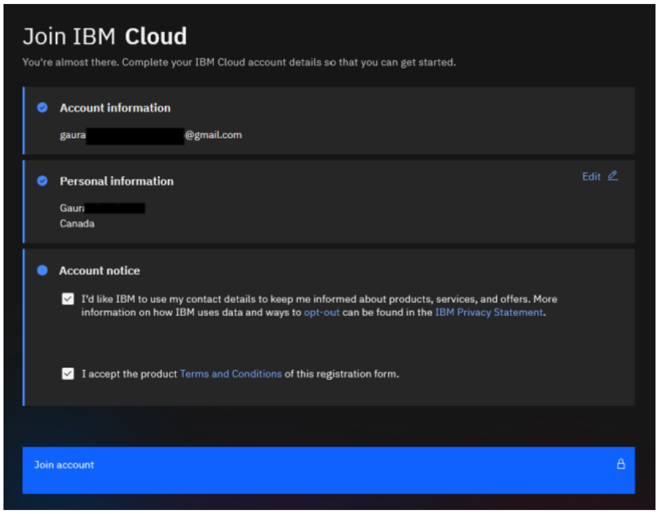
watsonx Challenge Functional Id invited you to join the following IBM Cloud account:
watsonx Challenge (Account ID: 1a6[redacted]42).

Join now.
The link to join the account expires in 30 days.
When you click to join IBM Cloud, you accept the Terms of Use.

Welcome to IBM Cloud!
Visit the IBM Cloud console.

© Copyright IBM Corporation 2014, 2025.

3. Review your account and personal information. Read and accept the Account notice and click the **Join Account** button.



Join IBM **Cloud**

You're almost there. Complete your IBM Cloud account details so that you can get started.

Account information
gaura[redacted]@gmail.com

Personal information
Edit
Gauri [redacted]
Canada

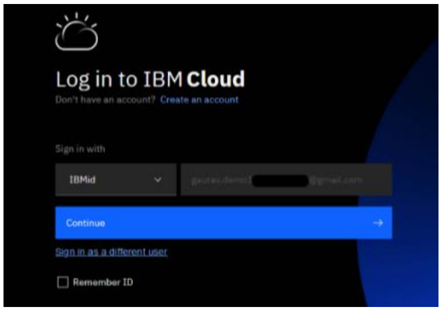
Account notice

☑ I'd like IBM to use my contact details to keep me informed about products, services, and offers. More information on how IBM uses data and ways to opt-out can be found in the IBM Privacy Statement.

☑ I accept the product Terms and Conditions of this registration form.

Join account

4. Complete the authentication process by clicking the Continue button.



Log in to IBM **Cloud**

Don't have an account? Create an account

Sign in with

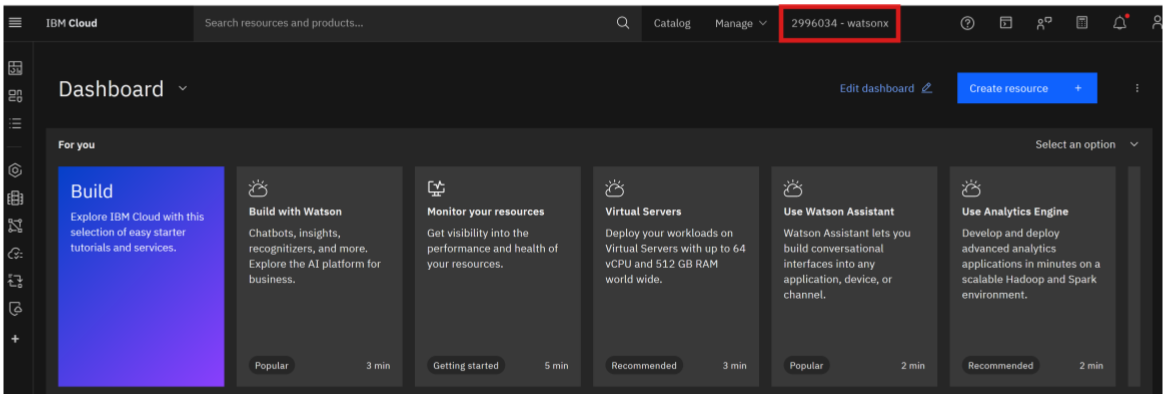
IBMid ⌄ gaurav.demo1[redacted]@gmail.com

Continue →

Sign in as a different user

□ Remember ID

5. After you authenticate successfully, you will be taken to the IBM Cloud dashboard.



IBM Cloud | Search resources and products... | Catalog | Manage ⌄ | 2996034 - watsonx

Dashboard ⌄ | Edit dashboard | Create resource +

For you | Select an option ⌄

Build Explore IBM Cloud with this selection of easy starter tutorials and services.

Build with Watson Chatbots, insights, recognitizers, and more. Explore the AI platform for business. Popular 3 min

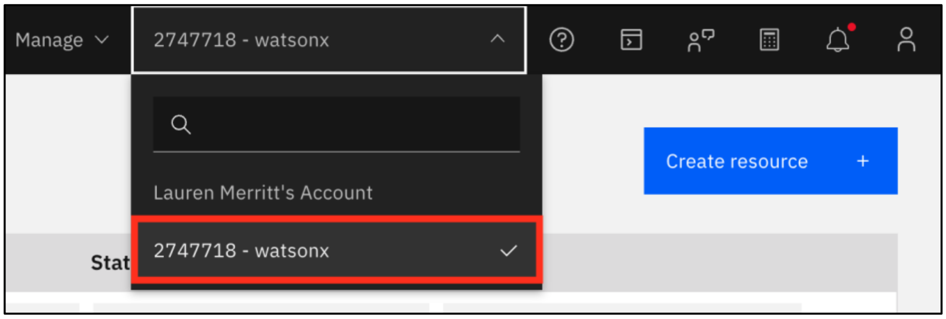
Monitor your resources Get visibility into the performance and health of your resources. Getting started 5 min

Virtual Servers Deploy your workloads on Virtual Servers with up to 64 vCPU and 512 GB RAM world wide. Recommended 3 min

Use Watson Assistant Watson Assistant lets you build conversational interfaces into any application, device, or channel. Popular 2 min

Use Analytics Engine Develop and deploy advanced analytics applications in minutes on a scalable Hadoop and Spark environment. Recommended 2 min

6. If you have an existing personal IBM Cloud account for the same email/IBMid, sometimes you will be directed to your personal account. In this case, please switch your account to the **xxxxxxx - watsonx** account. Select your account drop-down at top-right of the dashboard and select watsonx account. Refer to the below image on switching accounts in your cloud dashboard.



Manage ⌄ | 2747718 - watsonx ^

Lauren Merritt's Account

2747718 - watsonx ✓

Create resource +

Stat

Access IBM watsonx

To begin building your agentic AI solution, explore the capabilities and resources for each IBM watsonx product.

1. watsonx.ai
2. watsonx Orchestrate
3. watsonx Code Assistant (Optional)

1. IBM watsonx.ai

After successfully joining the IBM Cloud account, you can now access watsonx.ai to work on the platform and build your solution.

Note on IBM watsonx.ai service usage

For this hackathon, **$100 credits** will be automatically applied on the provisioned **IBM watsonx.ai platform**. This should be sufficient for designing and creating compelling submissions.

You will receive periodic email notifications about your **credit consumption** at the following usage levels: **25%, 50%,** and **80%**. Once you reach **100% usage**, your account will be **suspended**. You can appeal the suspension by completing the form shared in the account suspension notification email.

Please note that these email notifications are sent **once per hour**, so there is a possibility that you may **exhaust all your credits before receiving an alert**.

Please plan to use the watsonx.ai efficiently and back up your work accordingly. Refer **tips to work efficiently on watsonx.ai platform** **(Tokens and CUH explained)** and **saving your work**.

Important:

- **Foundation model inferencing** consumes tokens, which are measured as Resource Units (RUs). **1,000 tokens = 1 RU,** and each RU costs **$0.0001 USD.** Learn more about tokens and tokenization.

- If you are using **Jupyter Notebook editor on watsonx.ai,** consider selecting **a lower runtime environment** to avoid high resource consumption and quickly depleting your credits. Notebook runtimes are billed based on **Capacity Unit Hours (CUH)** at a rate of **$1.02 USD per CUH.** Learn more about capacity unit hours and watsonx.ai Studio pricing plans.

Note on available watsonx.ai services

The watsonx.ai platform is **pre-configured with only the services required** to complete the hackathon. If you notice a permission/access issue for any service or the cloud catalog, then they are not required/available for this hackathon.

These features/capabilities are out of scope for this hackathon:

- Agent Studio (Beta)
- Deploy on IBM Cloud/watsonx.ai (including Deployment space)
- Bring your own model
- Fine tuning models
- AutoAI pipeline
- SPSS Modeler
- Federated Learning
- Cloud Object Storage service

DO NOT USE the below listed models as they are out of scope for the hackathon and can negatively impact the judgment of your project submission.

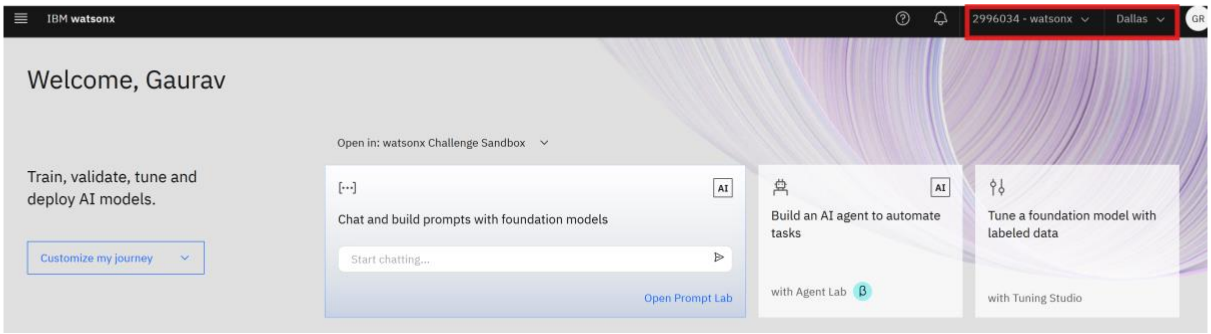
- llama-3-405b-instruct
- mistral-large
- mixtral-8x7b-instruct-v01
- mistral-medium-2502
- mistral-small-3-1-24b-instruct-2503
- pixtral-12b

The hackathon provisioned IBM Cloud account will be deactivated after the completion of the hackathon. Please plan to save your work at the end of the hackathon.

Access Prompt Lab on watsonx.ai

After successfully joining the IBM Cloud account, you can now access the Prompt Lab on watsonx.ai platform to work with the AI models supported on the platform and build your solution.

1. Log in to the watsonx.ai platform (https://dataplatform.cloud.ibm.com/wx/home?context=wx) with the email you used to access your IBM Cloud account.
2. After successful authentication, you will see “Welcome to watsonx”. You can either take the tour or skip it.
3. Next, you will see the watsonx.ai dashboard. Ensure the name of the account is “**xxxxxxx – watsonx**” and the region is “**Dallas**”.

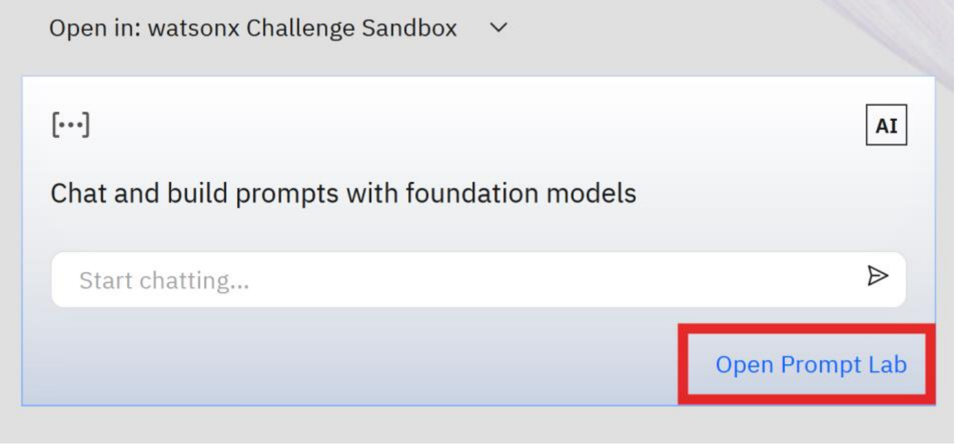


Welcome, Gaurav

Train, validate, tune and deploy AI models.

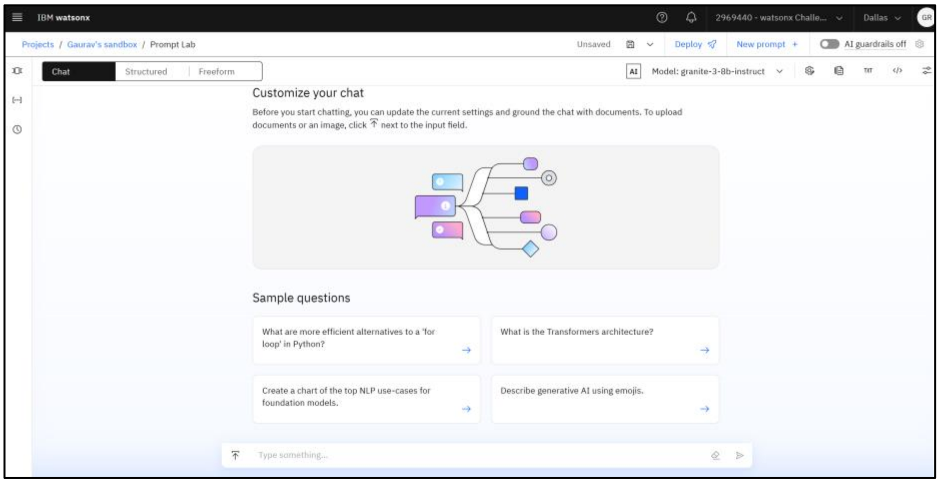
IBM watsonx
2996034 - watsonx
Dallas
GR
Customize my journey
Open in: watsonx Challenge Sandbox
Chat and build prompts with foundation models
Start chatting...
Open Prompt Lab
Build an AI agent to automate tasks
with Agent Lab
Tune a foundation model with labeled data
with Tuning Studio

4. Select the "**Open Prompt Lab**" button on the "Chat and build prompts with foundational models" widget.



Open in: watsonx Challenge Sandbox
[···]
AI
Chat and build prompts with foundation models
Start chatting...
Open Prompt Lab

5. The "Welcome to Prompt Lab" tour will be displayed. You can take the tour to get a quick introduction or skip it.
6. The Prompt Lab Editor opens with a chat window to get you started with the prompt session.



Customize your chat

Before you start chatting, you can update the current settings and ground the chat with documents. To upload documents or an image, click next to the input field.

Sample questions

What are more efficient alternatives to a 'for loop' in Python?

What is the Transformers architecture?

Create a chart of the top NLP use-cases for foundation models.

Describe generative AI using emojis.

Work with the watsonx.ai Prompt Lab

The watsonx.ai Prompt Lab is an easy-to-use prompt engineering interface where you can experiment prompting different AI foundation models, explore sample prompts, tune model parameters, integrate applications with an API endpoint, and save and share your best prompts.

Take a tour of the Prompt Lab and try the interactive demo.

You can access and use the AI models to build your innovative solution using Prompt Lab.

Prompt Lab editor

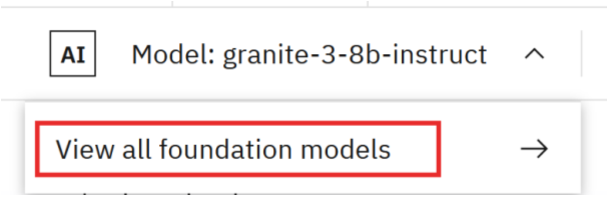
In the Prompt Lab, you can experiment with prompting different foundation models, explore sample prompts, as well as save and share your best prompts. The Prompt Lab editor is a great place to experiment and iterate with your prompts. Try the quick start lab.

However, you can also prompt foundation models in watsonx.ai programmatically. Refer to "Programmatic access (API/SDK)" section.

Selecting an AI model

A default AI model will be pre-selected in the Prompt Lab editor. You can either use the same model or change to a different model. To select a different model:

1. Select the AI Model drop-down menu at the top-right of the editor and select **View all foundation models**.

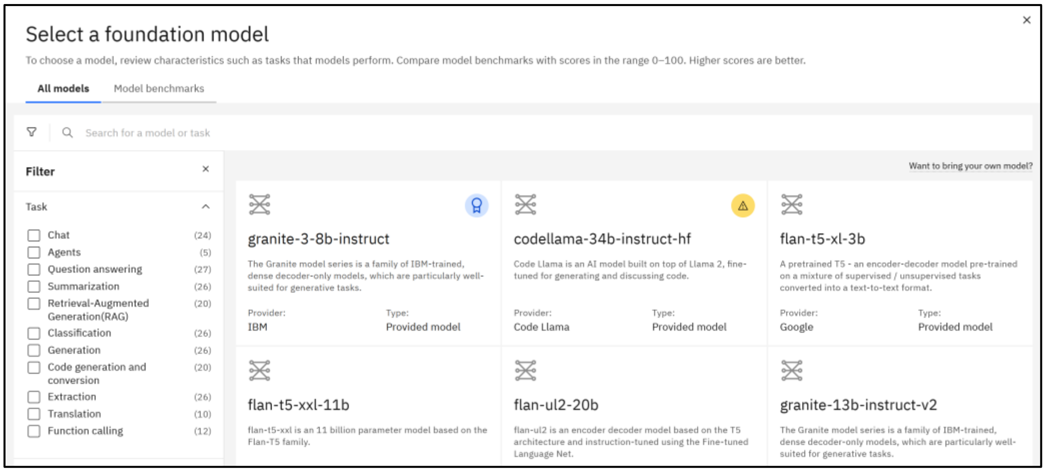


2. The **Select a foundation model** widget will appear. Clear the filters to see all the available models. You can use the filters to choose the right model for your solution building. You can select a model tile to learn about the model and use it. If you are limited to only "Chat" supported models, change the Prompt Lab editor to **Structured** or **Freeform** view and try selecting the models to see all the available model options.

   Important: **DO NOT USE the below listed models as they are out of scope for the hackathon and can negatively impact the judgment of your project submission.**

   - llama-3-405b-instruct
   - mistral-large
   - mistral-medium-2502

- mixtral-8x7b-instruct-v01
- mistral-small-3-1-24b-instruct-2503
- pixtral-12b



Select a foundation model

To choose a model, review characteristics such as tasks that models perform. Compare model benchmarks with scores in the range 0–100. Higher scores are better.

All models Model benchmarks

Search for a model or task

Filter

Task

- □ Chat (24)
- □ Agents (5)
- □ Question answering (27)
- □ Summarization (26)
- □ Retrieval-Augmented Generation(RAG) (20)
- □ Classification (26)
- □ Generation (26)
- □ Code generation and conversion (20)
- □ Extraction (26)
- □ Translation (10)
- □ Function calling (12)

Want to bring your own model?

granite-3-8b-instruct

The Granite model series is a family of IBM-trained, dense decoder-only models, which are particularly well-suited for generative tasks.

Provider: IBM Type: Provided model

codellama-34b-instruct-hf

Code Llama is an AI model built on top of Llama 2, fine-tuned for generating and discussing code.

Provider: Code Llama Type: Provided model

flan-t5-xl-3b

A pretrained T5 - an encoder-decoder model pre-trained on a mixture of supervised / unsupervised tasks converted into a text-to-text format.

Provider: Google Type: Provided model

flan-t5-xxl-11b

flan-t5-xxl is an 11 billion parameter model based on the Flan-T5 family.

flan-ul2-20b

flan-ul2 is an encoder decoder model based on the T5 architecture and instruction-tuned using the Fine-tuned Language Net.

granite-13b-instruct-v2

The Granite model series is a family of IBM-trained, dense decoder-only models, which are particularly well-suited for generative tasks.

To understand how models can address your use case, including information on model modalities, supported languages, tuning, and indemnification, see our product documentation on choosing a model.

Note: Bigger models are not always better. Learn why smaller models can be better and more cost effective.

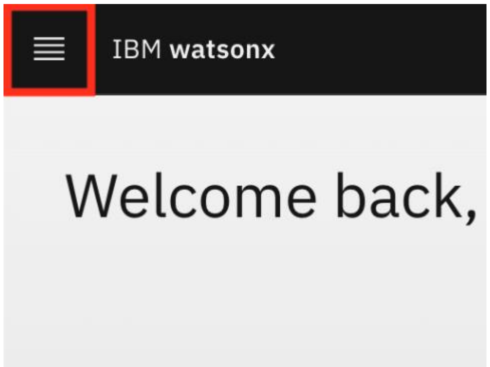
Programmatic access (API/SDK)

You can inference the watsonx.ai models with API or SDK requests.

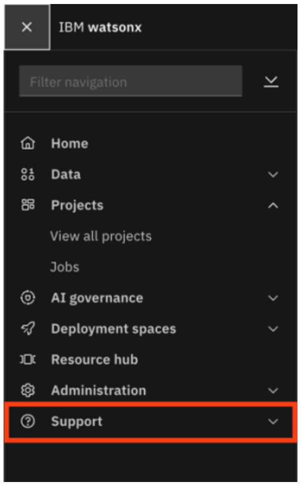
Developer access information

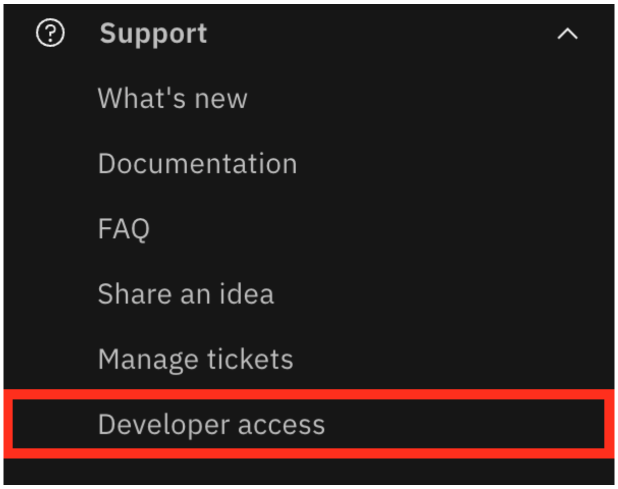
To use the supported watsonx.ai APIs/SDKs, you will need three values: a **project ID**, an **endpoint URL** and an **API key**.

- Go to watsonx.ai home page.
- Select the hamburger icon in the top left of the screen.

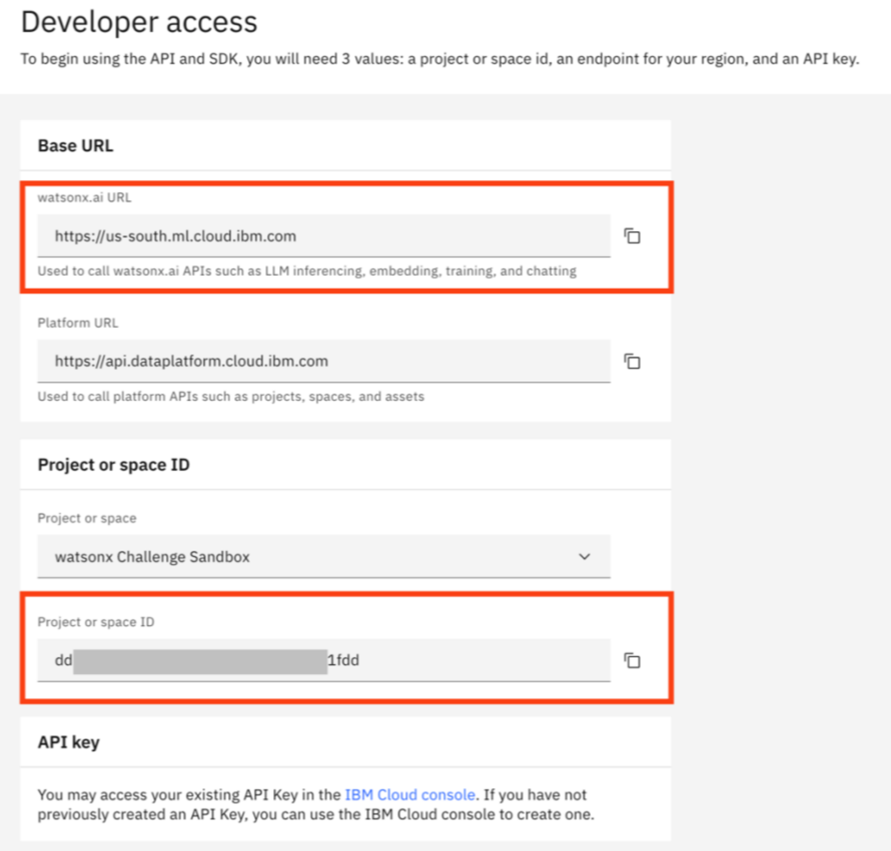


- From the drop down select *Support* > *Developer Access*.





- Once on the [Developer access]() page, in the Base URL section a default **watsonx.ai endpoint URL** will be displayed for the Dallas region. Ensure the region is always set to **Dallas** at the top right of the page.
- In the "**Project or space ID**" section you will also find your **Project ID**. Select from the "**Project or space**" drop-down, the "**watsonx Challenge Sandbox**" option if it is not already selected. A **project ID** will be displayed.
  Note: A space ID is **not required** as it is out of scope for the hackathon.



Developer access

To begin using the API and SDK, you will need 3 values: a project or space id, an endpoint for your region, and an API key.

Base URL

watsonx.ai URL

https://us-south.ml.cloud.ibm.com

Used to call watsonx.ai APIs such as LLM inferencing, embedding, training, and chatting

Platform URL

https://api.dataplatform.cloud.ibm.com

Used to call platform APIs such as projects, spaces, and assets

Project or space ID

Project or space

watsonx Challenge Sandbox

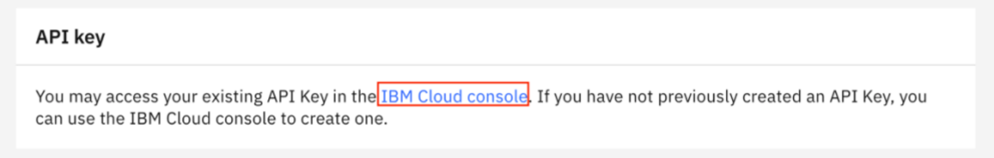
Project or space ID

dd[redacted]1fdd

API key

You may access your existing API Key in the IBM Cloud console. If you have not previously created an API Key, you can use the IBM Cloud console to create one.

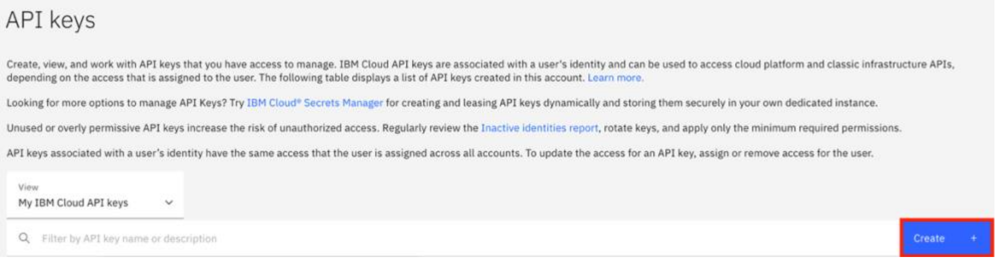
- In the “**API key**” section you will find instructions on how to access and/or create your API key. Navigate to the IBM Cloud console page linked in this section.



API key

You may access your existing API Key in the IBM Cloud console. If you have not previously created an API Key, you can use the IBM Cloud console to create one.

- If you do not already have an existing API key you would like to use, select the blue “**Create**” button.



API keys

Create, view, and work with API keys that you have access to manage. IBM Cloud API keys are associated with a user's identity and can be used to access cloud platform and classic infrastructure APIs, depending on the access that is assigned to the user. The following table displays a list of API keys created in this account. Learn more.

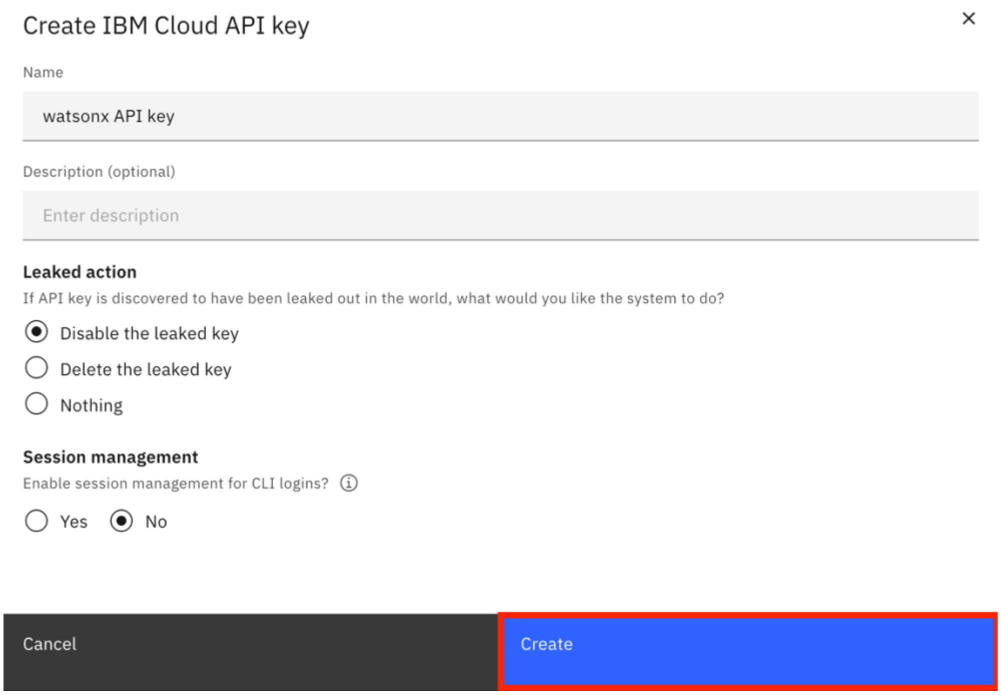
Looking for more options to manage API Keys? Try IBM Cloud® Secrets Manager for creating and leasing API keys dynamically and storing them securely in your own dedicated instance.

Unused or overly permissive API keys increase the risk of unauthorized access. Regularly review the Inactive identities report, rotate keys, and apply only the minimum required permissions.

API keys associated with a user's identity have the same access that the user is assigned across all accounts. To update the access for an API key, assign or remove access for the user.

View: My IBM Cloud API keys

- A **Create API key** dialog box will be displayed. Enter a name, provide optional description and choose the “Disable the leaked key” option. Click the “**Create**” button.



Create IBM Cloud API key

Name: watsonx API key

Description (optional): Enter description

Leaked action

If API key is discovered to have been leaked out in the world, what would you like the system to do?

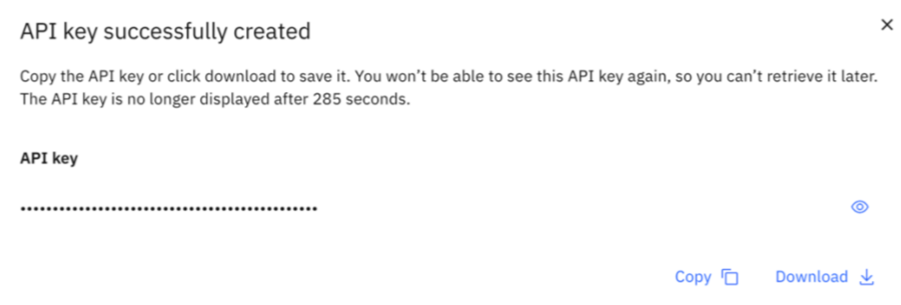
● Disable the leaked key
○ Delete the leaked key
○ Nothing

Session management

Enable session management for CLI logins?

○ Yes ● No

- An API key will be created successfully. Copy the API key and save it safely to use for calling the API/SDK. You can also download and save the file in a secure path in your system.



API key successfully created

Copy the API key or click download to save it. You won't be able to see this API key again, so you can't retrieve it later. The API key is no longer displayed after 285 seconds.

API key

••

watsonx.ai programmatic options

There are multiple options to help you get started using watsonx.ai APIs/SDKs.

Option 1: Prompt Code on Prompt Lab

Refer to the access prompt code instructions to learn how to quickly get access to the text generation API within the watsonx.ai Prompt Lab.

Option 2: Different watsonx.ai API capabilities

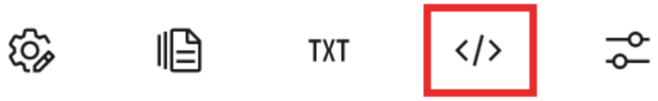
Explore and leverage different watsonx.ai API capabilities in your solution.

- Chat
- Agent-driven chat
- Tool calling
- Text generation
- Time series
- Text rerank
- Embeddings
- Text extraction

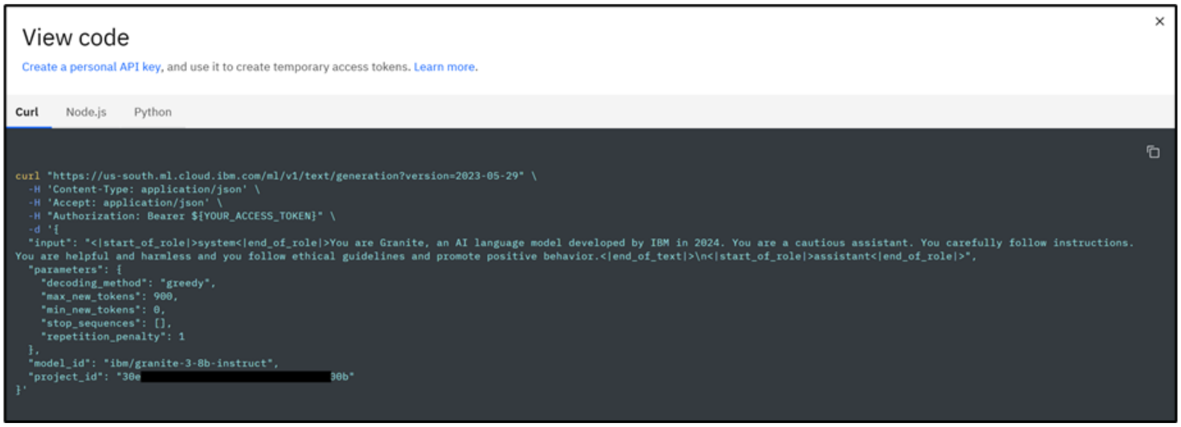
Refer supported API functionality by model here.

Access the prompt code (API) from Prompt Lab editor

To prompt an AI model programmatically, you can view and copy the prompt code by selecting the **View code** icon </> at the top-right of the prompt lab editor.



The prompt code is available as a Curl, Node.js and Python.



View code

Create a personal API key, and use it to create temporary access tokens. Learn more.

```
curl "https://us-south.ml.cloud.ibm.com/ml/v1/text/generation?version=2023-05-29" \
  -H 'Content-Type: application/json' \
  -H 'Accept: application/json' \
  -H "Authorization: Bearer ${YOUR_ACCESS_TOKEN}" \
  -d '{
  "input": "<|start_of_role|>system<|end_of_role|>You are Granite, an AI language model developed by IBM in 2024. You are a cautious assistant. You carefully follow instructions.
You are helpful and harmless and you follow ethical guidelines and promote positive behavior.<|end_of_text|>\n<|start_of_role|>assistant<|end_of_role|>",
  "parameters": {
    "decoding_method": "greedy",
    "max_new_tokens": 900,
    "min_new_tokens": 0,
    "stop_sequences": [],
    "repetition_penalty": 1
  },
  "model_id": "ibm/granite-3-8b-instruct",
  "project_id": "30e[redacted]00b"
}'
```

You will require an IAM access token to authorize the prompt code and need to replace **${YOUR_ACCESS_TOKEN}** placeholder in the prompt code. You can create an IAM access token using an API key.

- **API key:**

  Refer to Developer access information to get an API key.

- **Generate IAM Access Token:**

  Programmatically generate an IAM access token with the API key using the following cURL command:

```
curl -X POST 'https://iam.cloud.ibm.com/identity/token' -H 'Content-Type: application/x-www-form-
urlencoded' -d 'grant_type=urn:ibm:params:oauth:grant-type:apikey&apikey=MY_APIKEY'
```

- **curl -X POST** → Specifies an HTTP **POST** request.
- **URL ("https://iam.cloud.ibm.com/identity/token")** → The endpoint to request an authentication token from IBM Cloud.
- **-H "Content-Type: application/x-www-form-urlencoded"** → Sets the request header to indicate that the data is sent in form-encoded format.
- **-d (Data Payload)** → Sends the required data:
- **grant_type=urn:ibm:params:oauth:grant-type:apikey** → Specifies the OAuth grant type as API Key.
- **apikey=MY_IBM_CLOUD_API_KEY** → Replace MY_IBM_CLOUD_API_KEY with your actual IBM Cloud API key.

```
Expected Response:

{
    "access_token": "eyJhbGciOiJIUz......sgrKIi8hdFs",
    "refresh_token": "not_supported",
    "token_type": "Bearer",
    "expires_in": 3600,
    "expiration": 1473188353,
    "scope": “ibm openid”
}
```

Note: An IAM token is valid for up to 60 minutes, and it is subject to change. When a token expires, you must generate a new one. Use the property "*expires_in*" for the expiration of the IAM token that you have just created.

watsonx.ai AI agent libraries and tutorials

Explore the watsonx.ai supported AI agent framework libraries and tutorials to help you get started building your AI agent solution.

- LangChain
- LangGraph
- LlamaIndex
- CrewAI
- BeeAI
- Python SDK
- Node.js SDK

Quick start hands-on exercises

Try the quick start exercises and notebooks for sample use cases to get started with using watsonx.ai.

Important notes:

- Refer to developer access information section to use watsonx.ai credentials as you try the exercises.
- Some of the exercises could include the usage of old model version. You can replace them with newer versions for better performance and output. To check the latest supported Granite models on watsonx.ai, either follow selecting an IBM Granite model on Prompt Lab or refer to supported foundation models on watsonx.ai.
- The hackathon provisioned cloud accounts **do not support solution deployment.** You can run your solution deployment locally on your machine and showcase them in your submissions.
- **Foundation model inferencing** consumes tokens, which are measured as Resource Units (RUs). **1,000 tokens = 1 RU,** and each RU costs **$0.0001 USD.** Learn more about tokens and tokenization.
- If you are using **Jupyter Notebook editor on watsonx.ai,** consider selecting **a lower runtime environment** to avoid high resource consumption and quickly depleting your credits. Notebook runtimes are billed based on **Capacity Unit Hours (CUH)** at a rate of **$1.02 USD per CUH.** Learn more about capacity unit hours and watsonx.ai Studio pricing plans.

watsonx.ai Prompt Lab app templates:

- LangGraph LLM app template with function calling capabilities (base template)
- LlamaIndex Workflow LLM app template with function calling capabilities (base template)
- CrewAI LLM app template with function calling capabilities (base template)
- arXiv Research agent (community template)
- Agentic RAG LangGraph template (community template)

BeeAI Agent Framework:

- BeeAI framework examples

LangChain and LangGraph:

- Create a LangChain AI Agent in Python using watsonx
- Build a RAG agent using LangGraph to answer complex questions
- Build a LangChain agentic RAG system using the Granite model in watsonx.ai
- Use watsonx, and LangChain Agents to perform sequence of actions
- Use watsonx, and LangChain to make a series of calls to a language model
- arXiv Research agent
- Base LangGraph LLM app template with function calling capabilities

LlamaIndex:

- Use watsonx and LlamaIndex for Text-to-SQL task
- Use watsonx, and `llama-3-1-70b-instruct` and LlamaIndex to make simple chat conversation and tool calls
- LlamaIndex Workflow LLM app template with function calling capabilities

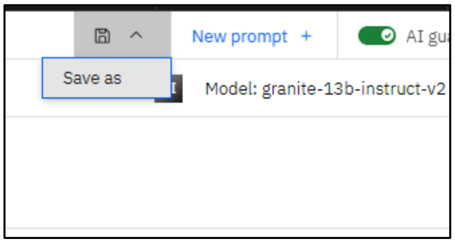
CrewAI:

- Leveraging CrewAI and IBM watsonx
- Build an agentic framework with CrewAI memory, i18n, and IBM watsonx.ai
- Base CrewAI LLM app template with function calling capabilities

Save your Prompt Lab session

You can save your Prompt Lab editor session for later use.

1. At the top of the Prompt Lab screen, select the **Save work** dropdown button and then select the **Save as** option.

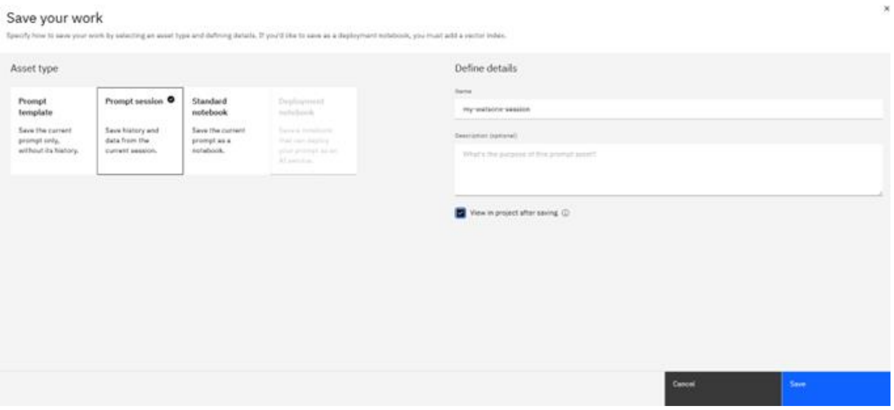


Model: granite-13b-instruct-v2

2. A **Save your work** widget will appear. Select **Prompt session** under the **Asset type** option.

3. Enter a **name** and check the **View in project after saving** option under the **Define details** section.

4. Finally, click the **Save** button. Once you save, you will see the saved work under the **Assets** tab



Save your work

Specify how to save your work by selecting an asset type and defining details. If you'd like to save as a deployment notebook, you must add a vector index.

Asset type

Prompt template: Save the current prompt only, without its history.

Prompt session: Save history and data from the current session.

Standard notebook: Save the current prompt as a notebook.

Deployment notebook: Save a notebook that can deploy your prompt as an AI service.

Define details

Name: my-watsonx-session

Description (optional): What's the purpose of this prompt asset?

☑ View in project after saving

You can also save your work as:

- **Prompt template** to save only the current prompt without its history and selecting a **Task** suitable for your prompting.

- **Notebook** to continue prompting on a Jupyter Notebook environment. Prior knowledge of notebooks and Python programming language would be helpful to work with a Jupyter notebook. Read more about notebooks.

Save your work on watsonx.ai

Make sure to save any work you want to retain for your records. IBM Cloud accounts will be deactivated at the end of the hackathon. Follow the steps below to save your work:

1. Go to your project's 'Overview' tab.

2. Select the 'Export or import project' drop down below the Bell icon in the top menu bar.

3. Click the 'Export project' option. This will open 'Export project to desktop' screen.

4. Select all the assets shown in your project (Work saved as Project session cannot be exported) and click 'Export' on the bottom-right of the screen.

5. The next screen will ask for confirmation that all sensitive information has been removed.

6. Click on 'Continue export'.

7. The download (zip) will be initiated, and the file will be saved on your computer.

2. IBM watsonx Orchestrate

After successfully [joining the IBM Cloud account](), you can now access the watsonx Orchestrate to work on the platform and build your solution.

Note on available watsonx Orchestrate services

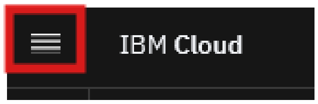
A **Trial** watsonx Orchestrate service is **pre-configured with only the services required** to complete the hackathon. If you notice a permission/access issue for any service or the cloud catalog, then they are not required/available for this hackathon.

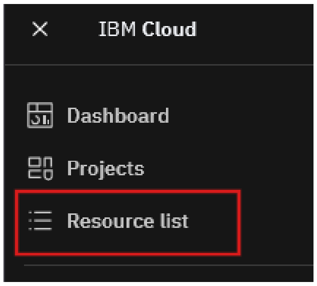
These features/capabilities are out of scope for this hackathon:

- Configuring a voice

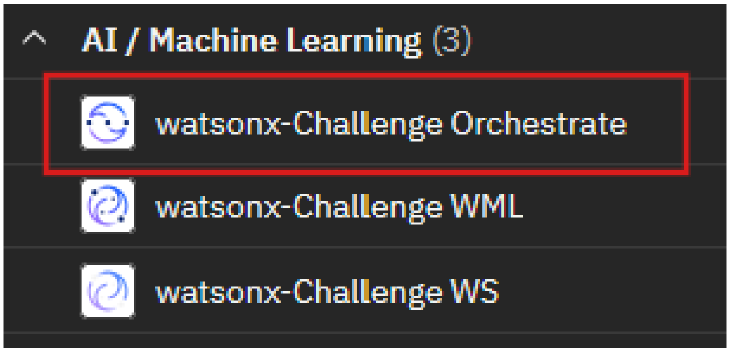
Access watsonx Orchestrate

1. In your IBM Cloud account dashboard, select the "**Navigation menu**" on the top left of the dashboard and select the "**Resource list**" option.

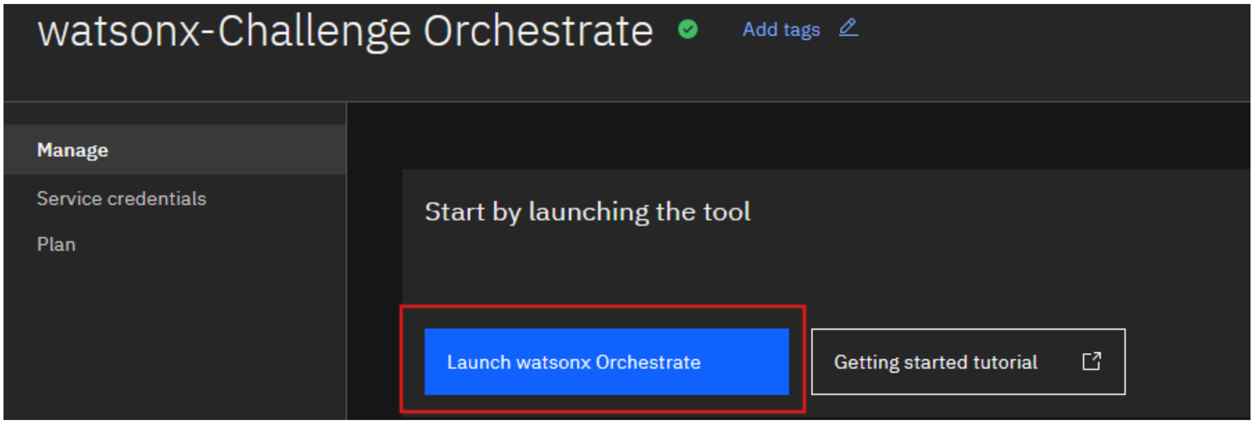




2. Expand the "**AI / Machine Learning**" section and select "**watsonx-Challenge Orchestrate**" service.



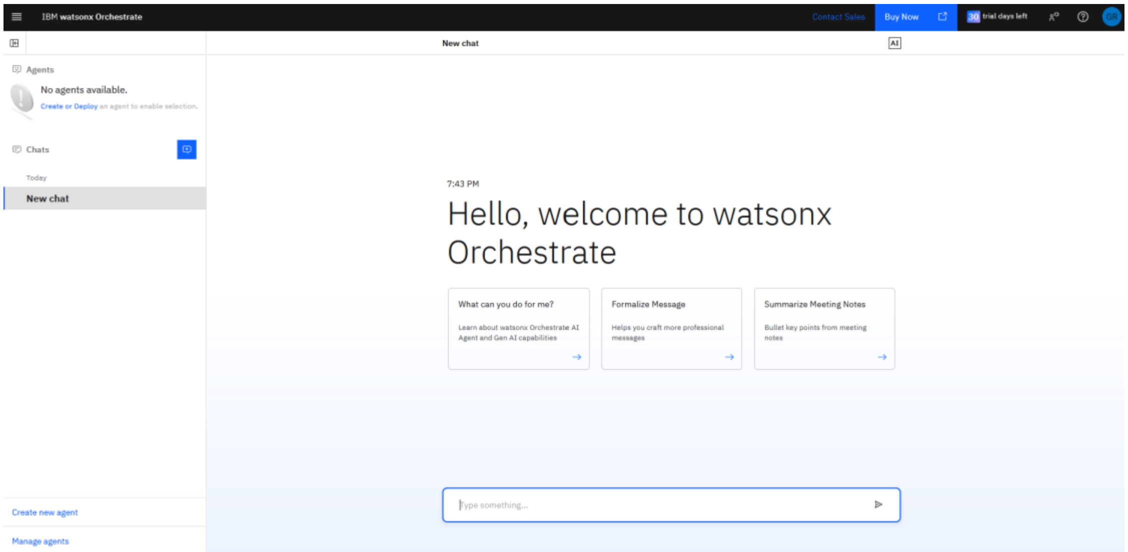
3. You will be navigated to **watsonx-Challenge Orchestrate** service instance dashboard. Select the "**Launch watsonx Orchestrate**" button.



watsonx-Challenge Orchestrate

Start by launching the tool

4. You will be navigated to the watsonx Orchestrate platform with a welcome message and a new chat window.



No agents available.
Create or Deploy an agent to enable selection.

7:43 PM

Hello, welcome to watsonx Orchestrate

What can you do for me?
Learn about watsonx Orchestrate AI Agent and Gen AI capabilities

Formalize Message
Helps you craft more professional messages

Summarize Meeting Notes
Bullet key points from meeting notes

Discover the catalog

The IBM watsonx Orchestrate catalog serves as a vast repository of prebuilt AI agents and tools, tailored to address a wide array of use cases and requirements. This extensive collection helps you to discover agents, tools, or a blend of both that align with your specific needs. Learn more about discovering the catalog here.

Create agents

You can create a new agent in IBM watsonx Orchestrate by either creating from scratch or using a pre-built template. The agent creation process involves defining its name and purpose that is suited to your specific needs. Learn more about creating agents here.

Expanding the abilities of your agent

To expand your agent's abilities, explore the following configuration options:

- Recommendations for agent descriptions

- Customizing agent styles
- Adding knowledge to agents
- Adding agents for orchestration
- Adding tools to agents
- Adding instructions to agents
- Connecting to channels
- Deploying the agent

Using agents in the chat

In IBM watsonx Orchestrate, agents collaborate to automate tasks and manage workflows. Learn more about it here.

Managing connections

To use the external applications within IBM watsonx Orchestrate, you must establish a connection between them which acts as bridge enabling communication between watsonx Orchestrate and the external applications. Learn more about it here.

Building tools

Tools can be used to enhance your agent's capabilities and allow them to perform several operations. You can use pre-built tools, create your own or import existing tools, Learn more about it here.

Quick start hands-on exercise

Try the quick start hands-on exercise to get started with using watsonx Orchestrate.

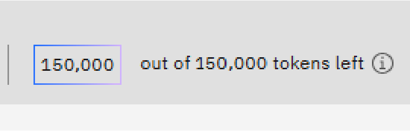
3. IBM watsonx Code Assistant (OPTIONAL)

After successfully joining the IBM Cloud account, you can now access the watsonx Code Assistant to build your solution.

Note on available watsonx Code Assistant services

A **Trial** watsonx Code Assistant service is **pre-configured with only the services required** to complete the hackathon. If you notice a permission/access issue for any service or the cloud catalog, then they are not required/available for this hackathon.

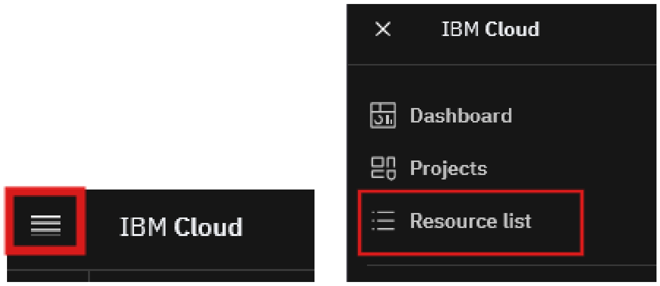
The Trial WCA service comes with a limit of 150,000 tokens, and additional tokens will not be provided for the hackathon. You can track your service token consumption on WCA service landing page or by selecting the "**Tokens and resource units"** tile on the home page**.**



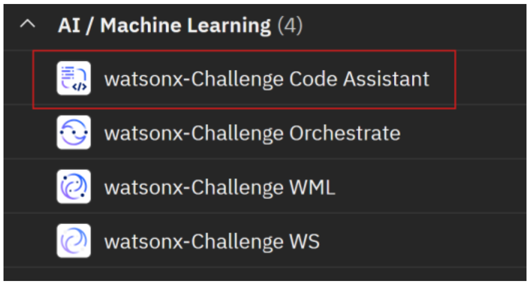
150,000 out of 150,000 tokens left

Access watsonx Code Assistant (WCA)

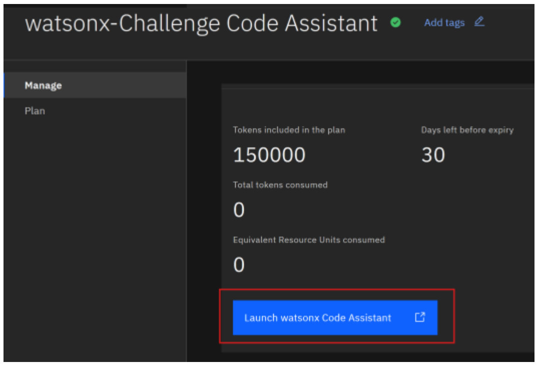
1. In your IBM Cloud account dashboard, select the “**Navigation menu**” on the top left of the dashboard and select the “**Resource list**” option.



2. Expand the “**AI / Machine Learning**” section and select “**watsonx-Challenge Code Assistant**” service.


AI / Machine Learning (4)
watsonx-Challenge Code Assistant
watsonx-Challenge Orchestrate
watsonx-Challenge WML
watsonx-Challenge WS

3. You will be navigated to **watsonx-Challenge Code Assistant** service instance dashboard. Select the “**Launch watsonx Code Assistant**” button.



watsonx-Challenge Code Assistant

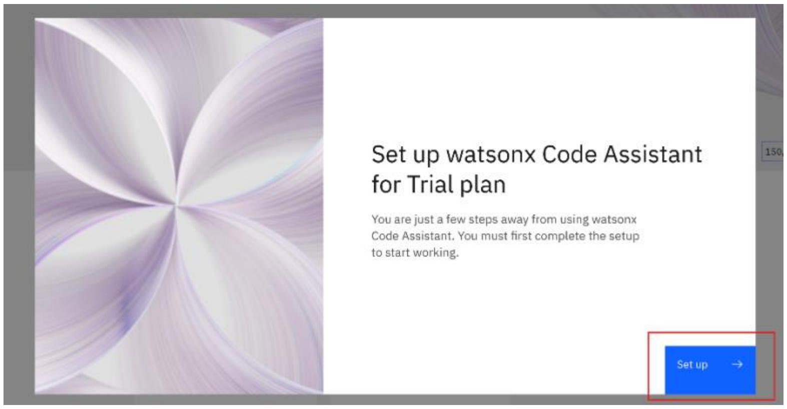
Tokens included in the plan: 150000

Days left before expiry: 30

Total tokens consumed: 0

Equivalent Resource Units consumed: 0

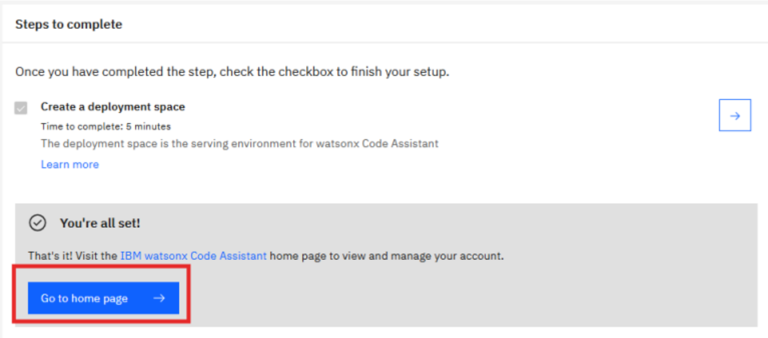
4. You will be navigated to the watsonx Code Assistant dashboard, and a setup widget will be displayed. Select the “**Set up**” button.



Set up watsonx Code Assistant for Trial plan

You are just a few steps away from using watsonx Code Assistant. You must first complete the setup to start working.

5. Once the setup is completed, you will see “**You’re all set**” confirmation. Select the “**Go to home page”** button.



Steps to complete

Once you have completed the step, check the checkbox to finish your setup.

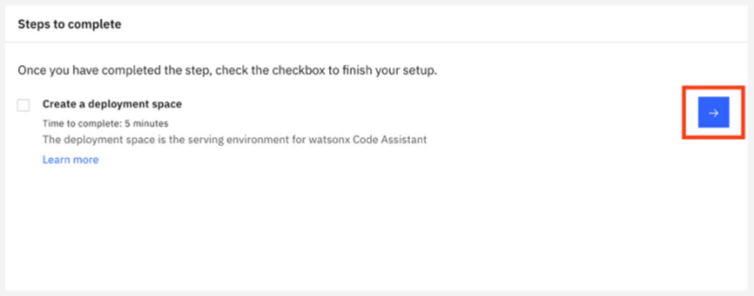
☑ **Create a deployment space**
Time to complete: 5 minutes
The deployment space is the serving environment for watsonx Code Assistant
Learn more

You're all set!

That's it! Visit the IBM watsonx Code Assistant home page to view and manage your account.

Important: If you do not see the “**You’re all set**” confirmation and selection to “Go to home page” button,

i) Click the blue checkbox beside **Create a deployment space**.

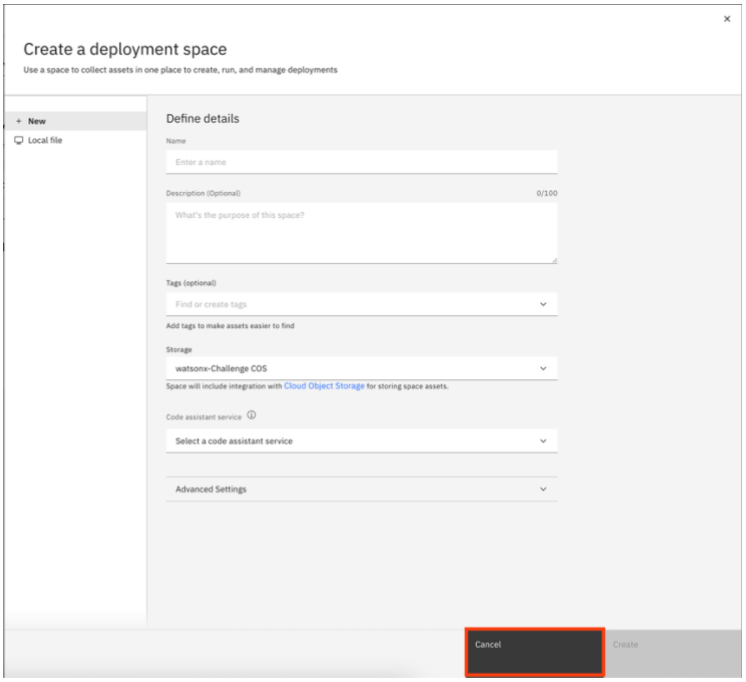


Steps to complete

Once you have completed the step, check the checkbox to finish your setup.

□ **Create a deployment space**
Time to complete: 5 minutes
The deployment space is the serving environment for watsonx Code Assistant
Learn more

ii) In the “Create a deployment space” dialog box select **Cancel** in the bottom right corner of the page.



Create a deployment space

Use a space to collect assets in one place to create, run, and manage deployments

Define details

Name: Enter a name

Description (Optional) 0/100: What's the purpose of this space?

Tags (optional): Find or create tags

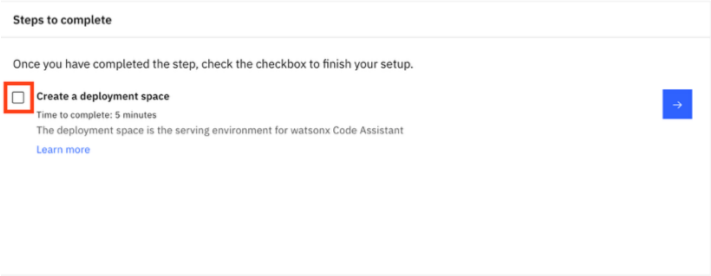
Add tags to make assets easier to find

Storage: watsonx-Challenge COS

Space will include integration with Cloud Object Storage for storing space assets.

Code assistant service: Select a code assistant service

iii) Check the checkbox beside “Create a deployment space”. Once selected you will see the “You’re all set” confirmation. Select the “Go to home page” button.



Steps to complete

Once you have completed the step, check the checkbox to finish your setup.

□ Create a deployment space

Time to complete: 5 minutes

The deployment space is the serving environment for watsonx Code Assistant

6. You will be navigated to the home page, and a welcome message will be displayed. You can either take the tour or skip it. Now you are all set and ready to install the WCA extension in your preferred IDE.

Installing the WCA IDE extension

The watsonx Code Assistant (WCA) supports extension installation for Visual Studio Code and Eclipse IDEs. Select your preferred IDE to view the installation instructions.

- Visual Studio Code
- Eclipse

Note: An IBM Cloud API key would be required to login and use the extension. Refer to Create an API key instructions to generate one and use it.

Tip: If you decide to use Visual Studio Code, as you complete the log in steps the field to enter your API key can be found in the top-center of the editor screen.

Using the WCA IDE extension

Try the interactive demo.

Refer to the following instructions to learn and try different capabilities of the product:

- Generate code suggestions
- Explaining code
- Documenting code
- Generating unit tests
- Translating code from one language to another
- Prompting guide

Appendix

Example use cases

You are not limited to these ideas, but here are several examples of how you could apply IBM watsonx to solve a specific issue within your chosen theme:

Build with agentic AI challenge

- **AI coding assistant for developer productivity**: An agent that helps software developers plan tasks, generate code snippets, resolve bugs, and learn new APIs by integrating natural language prompts with enterprise codebases and documentation.
- **Code review companion**: An AI agent that reviews pull requests for bugs, style issues, and security vulnerabilities, suggests improvements, and highlights potential regressions before human review.
- **Developer onboarding agent**: An agent that guides new engineers through environment setup, project architecture, and internal tooling by answering natural language questions and automating configuration tasks.
- **Continuous Integration and Continuous Deployment (CI/CD) monitoring and debugging assistant**: An agent that watches CI/CD pipelines, explains build failures in natural language, and suggests or auto-tests fixes by referencing build logs, commit history, and config files.
- **AI debugging and learning assistant**: An agent that explains compiler or runtime errors in simple terms, suggests fixes, and links to relevant documentation or tutorials — all tailored to the learner's skill level.
- **Academic research and study assistant**: An agent that helps university students structure research papers, track sources, create study schedules, and quiz themselves using lecture notes and external materials.
- **AI career copilot for job seekers**: An AI agent that guides individuals through job discovery, resume creation, skill development, and interview preparation.
- **Smart meeting synthesizer and follow-up agent**: An autonomous agent that joins meetings, extracts

key decisions and action items using watsonx.ai, and follows up with stakeholders to track progress.

- **Personalized learning path advisor for technical professionals**: An agent that recommends upskilling paths based on an individual's role, goals, and learning style by integrating company learning and development catalogs with open resources and certifications.
- **Travel and errand planning assistant**: An AI agent that dynamically plans daily errands, appointments, and travel routes by optimizing for traffic, store hours, and personal preferences.
- **AI companion for busy households**: An AI agent that helps parents manage family logistics by coordinating school events, meal planning, to-do lists, and reminders across multiple family members.
- **Adaptive AI tutor for neurodiverse learners**: An intelligent tutor that personalizes lessons and support for students with learning differences such as ADHD or dyslexia.
- **Micro-business operations assistant**: An AI agent that automates key business tasks like invoicing, customer communication, and marketing for solopreneurs.

Sustainable cities and communities challenge, brought to you by Call for Code

- **Urban air quality sentinel**: Develop an agent that monitors urban air quality in real-time and autonomously triggers mitigation strategies such as rerouting traffic, notifying residents, or activating urban greening systems.
- **Housing rights navigator**: Create a multilingual AI agent that assists vulnerable residents in identifying, applying for, and protecting their rights to safe and affordable housing while alerting legal or support services in case of eviction risks.
- **Inclusive urban planning co-pilot**: Build an agent that reviews urban development proposals, detects potentially exclusionary language or impacts, and recommends inclusive changes to promote equitable planning outcomes.
- **Resilient infrastructure watchdog**: Create an infrastructure agent that continuously analyzes data from roads, bridges, and utilities to predict potential failures and notify relevant authorities for proactive maintenance.
- **Green space access optimizer**: Create an agent that evaluates access to public green spaces, identifies underserved areas, and proposes data-driven locations for new parks or upgrades to existing ones.
- **Dignified housing upgrade platform**: Develop a digital platform that enables residents of informal settlements to co-design and fund dignified housing upgrades in partnership with local governments and NGOs.
- **Civic participation dashboard**: Create a civic engagement dashboard that aggregates and analyzes public feedback, ensuring inclusive participation in urban planning processes and supporting transparent governance.
- **Mobility equity analytics engine**: Build a data analytics platform that maps gaps in public transport access and recommends affordable mobility solutions like micro-transit or bike-share in underserved areas.
- **AI-based tenant assistant for renters**: An agent that helps renters manage lease agreements, submit maintenance requests, track rent payments, and communicate with landlords or property managers.
- **Urban sustainability impact tracker**: Launch a digital certification and impact tracking platform that helps buildings and neighborhoods monitor sustainability metrics and benchmark progress toward equitable, green living standards.

watsonx Orchestrate hands-on exercise

Overview

In this activity, you'll step into the role of an AI solution developer working within the IBM watsonx Orchestrate platform. The lab is designed to simulate a real-world healthcare use case by guiding you through the process of creating, configuring, and deploying intelligent agents from scratch. This activity demonstrates how intelligent agents can be configured and deployed in watsonx Orchestrate to address healthcare-specific use cases. Upon the completion you will:

- Understand the end-to-end agent creation process
- Learn how agentic AI uses context, memory, and tools to enable adaptive, natural multi-turn interactions
- Be familiar with OpenAPI-based tool integration
- Get practical experience with multi-agent solutions
- Gain experience testing and validating agent behaviour in practical scenarios

You'll be completing two core activity parts:

1. **Build your own AskBenefits agent –** a digital agent that answers questions about medical procedures and health plan benefits. It detects if a procedure is past, future, or overdue and uses the right tools to respond. It can retrieve past procedure data, flag overdue care, guide upcoming procedures, help schedule/reschedule appointments and showcase HR policies regarding eligibility criteria, dependant coverage, claims process and more (from the uploaded knowledge).

2. **Enable collaboration between AskBenefits and pre-configured AskDental agent –** an agent that supports questions about dental benefits by referencing a PDF document. It can answer a range of questions about coverage and plan details.

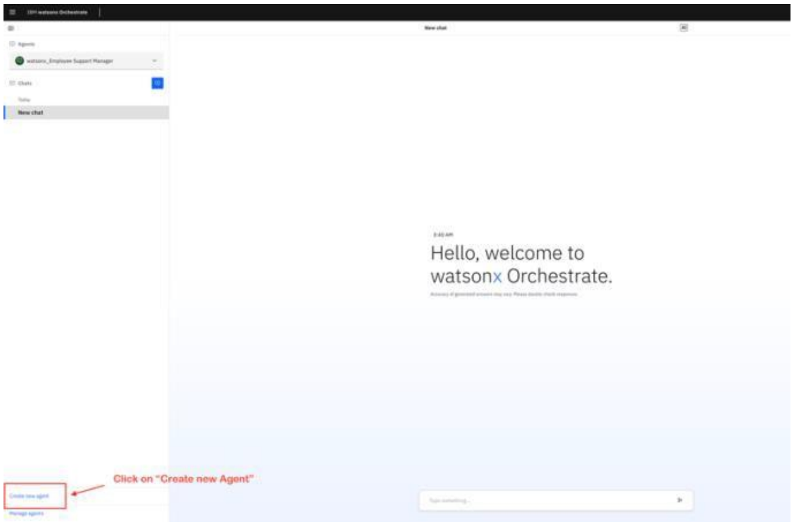
What you'll need

- The OpenAPI specification file (ask_benefits_tools.yaml) – Click here to download
- The HR policy document on medical benefits (HR_Policy_Medicalbenefits.pdf) – Click here to download
- The dental benefits file (dental_benefits_summary.pdf) – Click here to download

Part 1: Build and engage with a new AskBenefits agent

Step 1. Create a new AskBenefits agent

- Click on '**Create new Agent'** in the bottom left corner



IBM watsonx Orchestrate

New chat

Agents

watsonx_Employee Support Manager

Chats

Today

New chat

Hello, welcome to watsonx Orchestrate.

Type something...

Create new agent

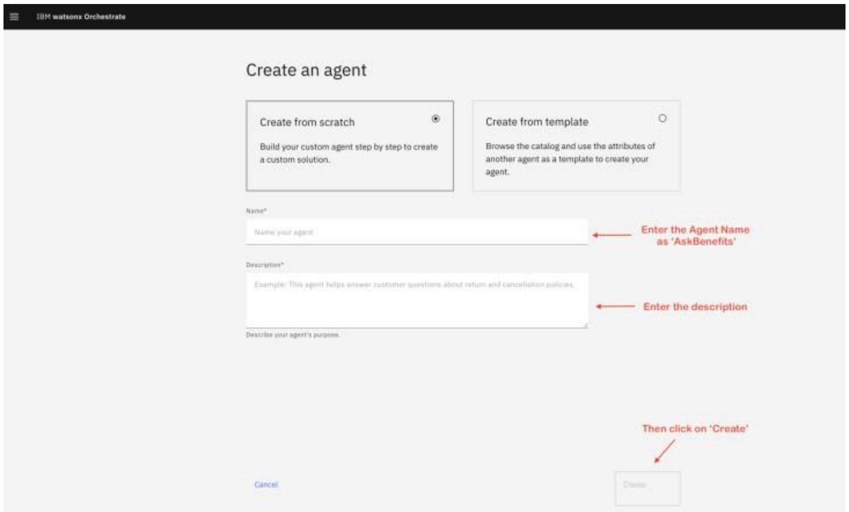
Manage agents

Click on "Create new Agent"

- Enter the Agent Name and description:

- Agent Name – <Your_Name>_AskBenefits
- Agent Description – A smart healthcare agent that classifies medical queries and uses the right tools to retrieve data, guide care, book appointments and explain coverage with clarity and empathy.

- Then click on ‘**Create**’.



IBM watsonx Orchestrate

Create an agent

● Create from scratch

Build your custom agent step by step to create a custom solution.

○ Create from template

Browse the catalog and use the attributes of another agent as a template to create your agent.

Name*

Name your agent

Description*

Example: This agent helps answer customer questions about return and cancellation policies.

Describe your agent's purpose.

Cancel

Create

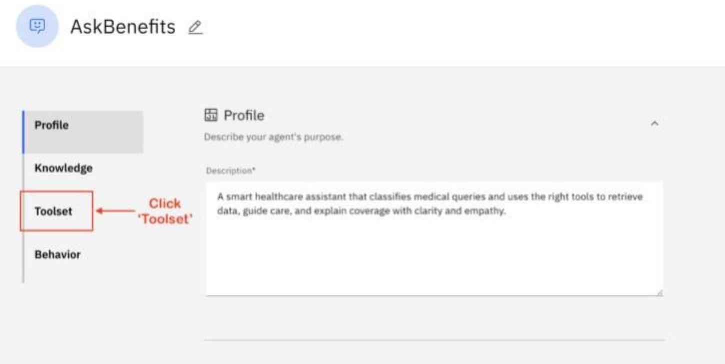
Enter the Agent Name as 'AskBenefits'

Enter the description

Then click on 'Create'

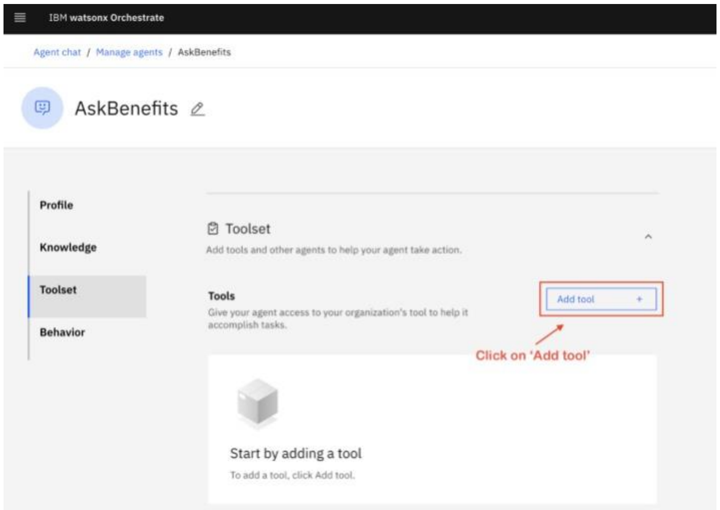
Step 2. Import and attach the tools

- Click the ‘**Toolset**’ tab on the left-hand panel.



A smart healthcare assistant that classifies medical queries and uses the right tools to retrieve data, guide care, and explain coverage with clarity and empathy.

- Click ‘**Add tool**’ button.

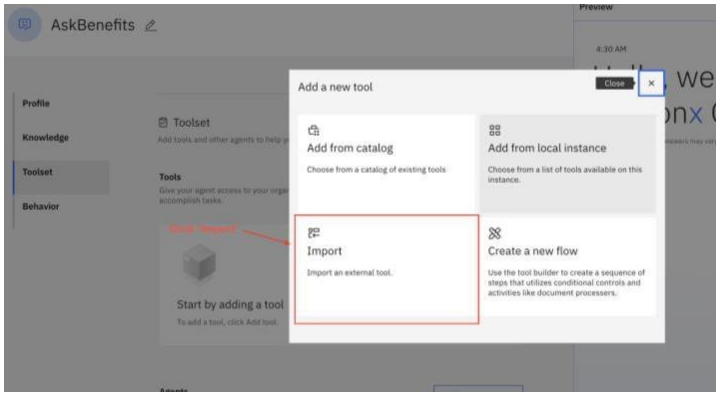


Add tools and other agents to help your agent take action.

Give your agent access to your organization's tool to help it accomplish tasks.

To add a tool, click Add tool.

- Select the ‘**Import**’ option in the pop-up window.



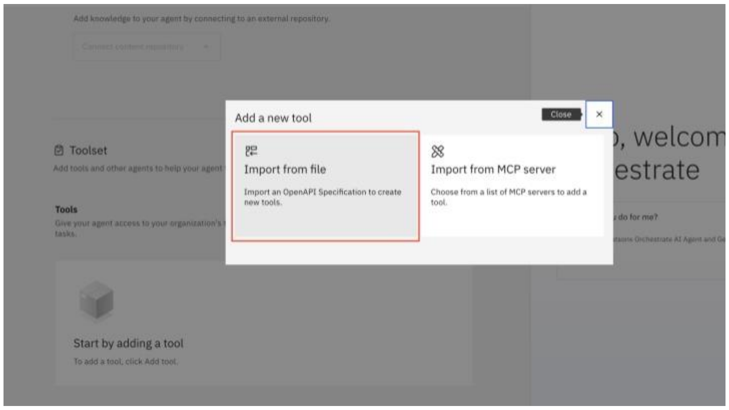
Choose from a catalog of existing tools

Choose from a list of tools available on this instance.

Import an external tool.

Use the tool builder to create a sequence of steps that utilizes conditional controls and activities like document processors.

- Select ‘**Import from file**’ option.


Add knowledge to your agent by connecting to an external repository.
Connect content repository
Toolset
Add tools and other agents to help your agent
Tools
Give your agent access to your organization's tasks.
Start by adding a tool
To add a tool, click Add tool.
Close
×
, welcom
estrate
do for me?
watsonx Orchestrate AI Agent and Ge

Add a new tool

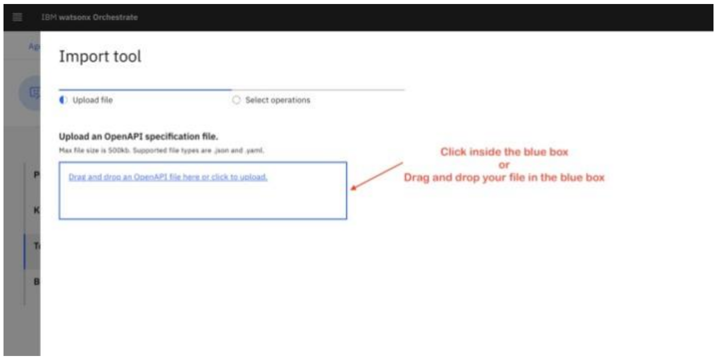
Import from file

Import an OpenAPI Specification to create new tools.

Import from MCP server

Choose from a list of MCP servers to add a tool.

- Click inside the blue box to select the ‘**ask_benefits_tools.yaml**’ file downloaded from the **What you’ll need** section above.



Import tool

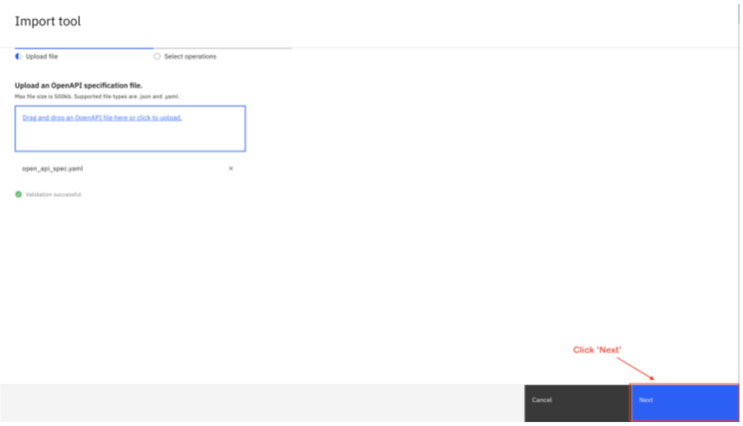
Upload an OpenAPI specification file.

Max file size is 500kb. Supported file types are .json and .yaml.

Drag and drop an OpenAPI file here or click to upload.

Click inside the blue box
or
Drag and drop your file in the blue box

- Once the file is imported successfully, click ‘**Next**’.



Import tool

Upload an OpenAPI specification file.

Max file size is 500kb. Supported file types are .json and .yaml.

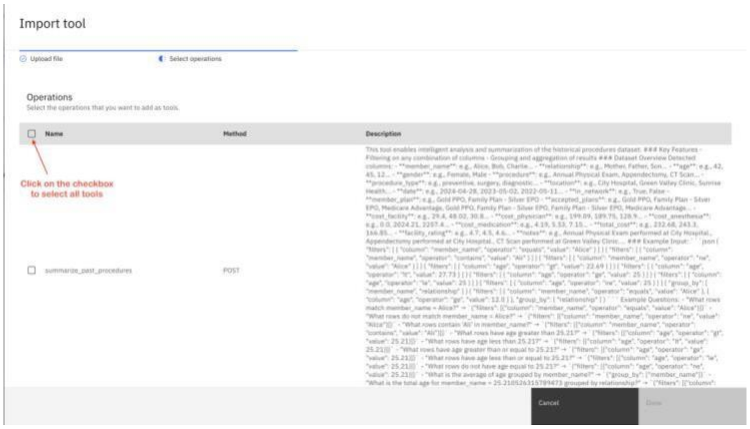
Drag and drop an OpenAPI file here or click to upload.

open_api_spec.yaml

Validation successful

Click ‘Next’

- Click ‘**Select all rows in the table**’ checkbox to select all available tools.



Import tool

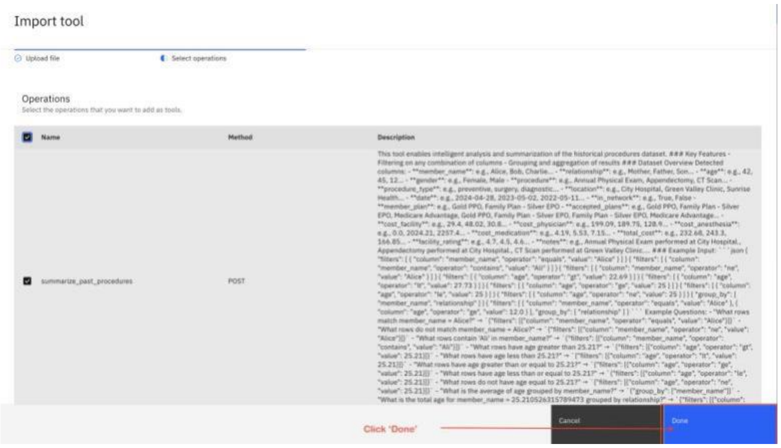
Operations

Select the operations that you want to add as tools.

☐ Name	Method	Description
☐ summarize_past_procedures	POST	This tool enables intelligent analysis and summarization of the historical procedures dataset. ### Key Features - Filtering on any combination of columns - Grouping and aggregation of results ### Dataset Overview Detected columns: - **member_name**: e.g., Alice, Bob, Charlie... - **relationship**: e.g., Mother, Father, Son... - **age**: e.g., 42, 45, 12... - **gender**: e.g., Female, Male - **procedure**: e.g., Annual Physical Exam, Appendectomy, CT Scan... - **procedure_type**: e.g., preventive, surgery, diagnostic... - **location**: e.g., City Hospital, Green Valley Clinic, Sunrise Health... - **date**: e.g., 2024-04-28, 2023-05-02, 2022-05-11... - **in_network**: e.g., True, False - **member_plan**: e.g., Gold PPO, Family Plan - Silver EPO - **accepted_plans**: e.g., Gold PPO, Family Plan - Silver EPO, Medicare Advantage, Gold PPO, Family Plan - Silver EPO, Family Plan - Silver EPO, Medicare Advantage... - **cost_facility**: e.g., 29.4, 48.02, 30.8... - **cost_physician**: e.g., 199.09, 189.75, 128.9... - **cost_anesthesia**: e.g., 0.0, 2024.21, 2257.4... - **cost_medication**: e.g., 4.19, 5.53, 7.15... - **total_cost**: e.g., 232.68, 243.3, 166.85... - **facility_rating**: e.g., 4.7, 4.5, 4.6... - **notes**: e.g., Annual Physical Exam performed at City Hospital., Appendectomy performed at City Hospital., CT Scan performed at Green Valley Clinic.... ### Example Input: ``` json { "filters": [{ "column": "member_name", "operator": "equals", "value": "Alice" }] } { "filters": [{ "column": "member_name", "operator": "contains", "value": "Ali" }] } { "filters": [{ "column": "member_name", "operator": "ne", "value": "Alice" }] } { "filters": [{ "column": "age", "operator": "gt", "value": 22.69 }] } { "filters": [{ "column": "age", "operator": "lt", "value": 27.73 }] } { "filters": [{ "column": "age", "operator": "ge", "value": 25 }] } { "filters": [{ "column": "age", "operator": "le", "value": 25 }] } { "filters": [{ "column": "age", "operator": "ne", "value": 25 }] } { "group_by": ["member_name", "relationship"] } { "filters": [{ "column": "member_name", "operator": "equals", "value": "Alice" }, { "column": "age", "operator": "ge", "value": 12.0 }], "group_by": ["relationship"] } ``` Example Questions: - "What rows match member_name = Alice?" → `{"filters": [{"column": "member_name", "operator": "equals", "value": "Alice"}]}` - "What rows do not match member_name = Alice?" → `{"filters": [{"column": "member_name", "operator": "ne", "value": "Alice"}]}` - "What rows contain 'Ali' in member_name?" → `{"filters": [{"column": "member_name", "operator": "contains", "value": "Ali"}]}` - "What rows have age greater than 25.21?" → `{"filters": [{"column": "age", "operator": "gt", "value": 25.21}]}` - "What rows have age less than 25.21?" → `{"filters": [{"column": "age", "operator": "lt", "value": 25.21}]}` - "What rows have age greater than or equal to 25.21?" → `{"filters": [{"column": "age", "operator": "ge", "value": 25.21}]}` - "What rows have age less than or equal to 25.21?" → `{"filters": [{"column": "age", "operator": "le", "value": 25.21}]}` - "What rows do not have age equal to 25.21?" → `{"filters": [{"column": "age", "operator": "ne", "value": 25.21}]}` - "What is the average of age grouped by member_name?" → `{"group_by": ["member_name"]}` - "What is the total age for member_name = 25.210526315789473 grouped by relationship?" → `{"filters": [{"column":

Click on the checkbox
to select all tools

- Then click on the blue ‘**Done**’ button at the right bottom corner.



Import tool

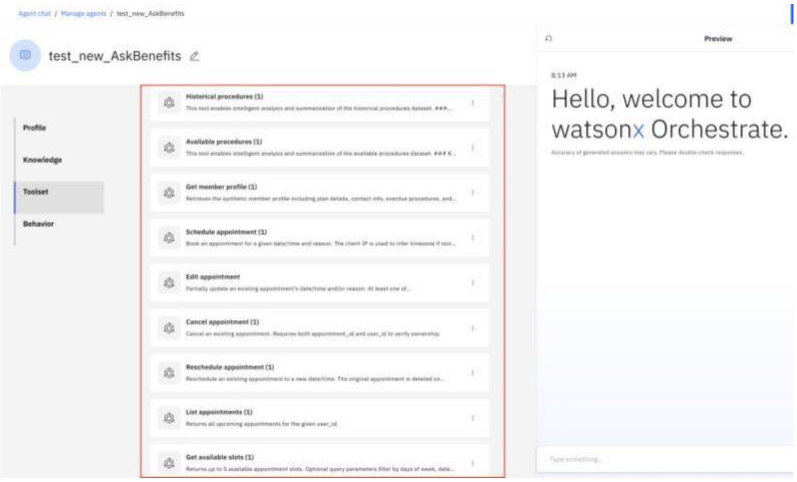
Upload file | Select operations

Operations

Select the operations that you want to add as tools.

☑ Name	Method	Description
☑ summarize_past_procedures	POST	This tool enables intelligent analysis and summarization of the historical procedures dataset. ### Key Features - Filtering on any combination of columns - Grouping and aggregation of results ### Dataset Overview Detected columns: - **member_name**: e.g., Alice, Bob, Charlie... - **relationship**: e.g., Mother, Father, Son... - **age**: e.g., 42, 45, 12... - **gender**: e.g., Female, Male - **procedure**: e.g., Annual Physical Exam, Appendectomy, CT Scan... - **procedure_type**: e.g., preventive, surgery, diagnostic... - **location**: e.g., City Hospital, Green Valley Clinic, Sunrise Health... - **date**: e.g., 2024-04-28, 2023-05-02, 2022-05-11... - **in_network**: e.g., True, False - **member_plan**: e.g., Gold PPO, Family Plan - Silver EPO - **accepted_plans**: e.g., Gold PPO, Family Plan - Silver EPO, Medicare Advantage, Gold PPO, Family Plan - Silver EPO, Family Plan - Silver EPO, Medicare Advantage... - **cost_facility**: e.g., 29.4, 48.02, 30.8... - **cost_physician**: e.g., 199.09, 189.75, 128.9... - **cost_anesthesia**: e.g., 0.0, 2024.21, 2257.4... - **cost_medication**: e.g., 4.19, 5.53, 7.15... - **total_cost**: e.g., 232.68, 243.3, 166.85... - **facility_rating**: e.g., 4.7, 4.5, 4.6... - **notes**: e.g., Annual Physical Exam performed at City Hospital., Appendectomy performed at City Hospital., CT Scan performed at Green Valley Clinic.... ### Example Input: ``` json { "filters": [{ "column": "member_name", "operator": "equals", "value": "Alice" }] } { "filters": [{ "column": "member_name", "operator": "contains", "value": "Ali" }] } { "filters": [{ "column": "member_name", "operator": "ne", "value": "Alice" }] } { "filters": [{ "column": "age", "operator": "gt", "value": 22.69 }] } { "filters": [{ "column": "age", "operator": "lt", "value": 27.73 }] } { "filters": [{ "column": "age", "operator": "ge", "value": 25 }] } { "filters": [{ "column": "age", "operator": "le", "value": 25 }] } { "filters": [{ "column": "age", "operator": "ne", "value": 25 }] } { "group_by": ["member_name", "relationship"] } { "filters": [{ "column": "member_name", "operator": "equals", "value": "Alice" }, { "column": "age", "operator": "ge", "value": 12.0 }], "group_by": ["relationship"] } ``` Example Questions: - "What rows match member_name = Alice?" → `{"filters": [{"column": "member_name", "operator": "equals", "value": "Alice"}]}` - "What rows do not match member_name = Alice?" → `{"filters": [{"column": "member_name", "operator": "ne", "value": "Alice"}]}` - "What rows contain 'Ali' in member_name?" → `{"filters": [{"column": "member_name", "operator": "contains", "value": "Ali"}]}` - "What rows have age greater than 25.21?" → `{"filters": [{"column": "age", "operator": "gt", "value": 25.21}]}` - "What rows have age less than 25.21?" → `{"filters": [{"column": "age", "operator": "lt", "value": 25.21}]}` - "What rows have age greater than or equal to 25.21?" → `{"filters": [{"column": "age", "operator": "ge", "value": 25.21}]}` - "What rows have age less than or equal to 25.21?" → `{"filters": [{"column": "age", "operator": "le", "value": 25.21}]}` - "What rows do not have age equal to 25.21?" → `{"filters": [{"column": "age", "operator": "ne", "value": 25.21}]}` - "What is the average of age grouped by member_name?" → `{"group_by": ["member_name"]}` - "What is the total age for member_name = 25.210526315789473 grouped by relationship?" → `{"filters": [{"column":

- The 9 tools have now been added to your Agent.



Agent chat / Manage agents / test_new_AskBenefits

test_new_AskBenefits

Historical procedures (1)
This tool enables intelligent analysis and summarization of the historical procedures dataset. ###...

Available procedures (1)
This tool enables intelligent analysis and summarization of the available procedures dataset. ### K...

Get member profile (1)
Retrieves the synthetic member profile including plan details, contact info, overdue procedures, and...

Schedule appointment (1)
Book an appointment for a given date/time and reason. The client IP is used to infer timezone if non...

Edit appointment
Partially update an existing appointment's date/time and/or reason. At least one of...

Cancel appointment (1)
Cancel an existing appointment. Requires both appointment_id and user_id to verify ownership.

Reschedule appointment (1)
Reschedule an existing appointment to a new date/time. The original appointment is deleted on...

List appointments (1)
Returns all upcoming appointments for the given user_id.

Get available slots (1)
Returns up to 5 available appointment slots. Optional query parameters filter by days of week, date...

Preview

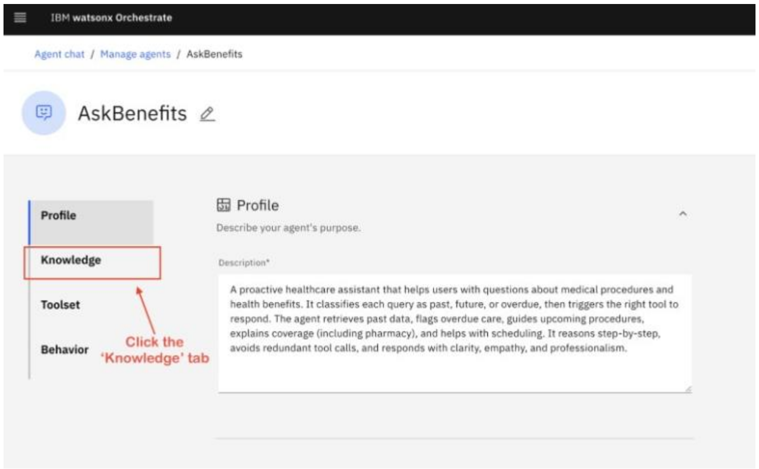
8:13 AM

Hello, welcome to watsonx Orchestrate.

Accuracy of generated answers may vary. Please double-check responses.

Step 3. Upload knowledge document

- Click the ‘**Knowledge**’ tab in the left-hand panel.



Agent chat / Manage agents / AskBenefits

AskBenefits

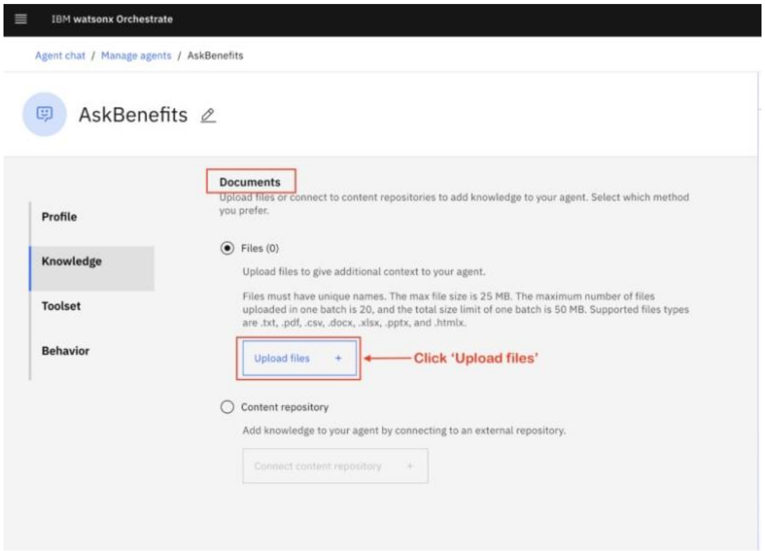
Profile

Describe your agent's purpose.

Description*

A proactive healthcare assistant that helps users with questions about medical procedures and health benefits. It classifies each query as past, future, or overdue, then triggers the right tool to respond. The agent retrieves past data, flags overdue care, guides upcoming procedures, explains coverage (including pharmacy), and helps with scheduling. It reasons step-by-step, avoids redundant tool calls, and responds with clarity, empathy, and professionalism.

- In the ‘**Document**’ section click on ‘**Upload files**’.



Upload files or connect to content repositories to add knowledge to your agent. Select which method you prefer.

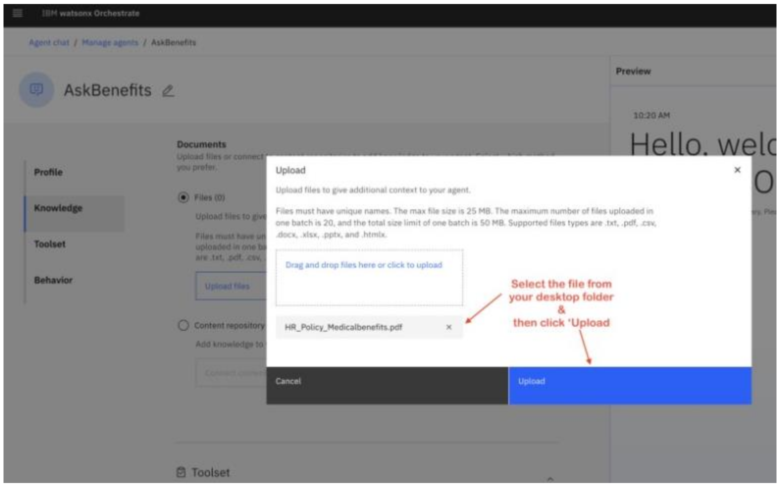
Upload files to give additional context to your agent.

Files must have unique names. The max file size is 25 MB. The maximum number of files uploaded in one batch is 20, and the total size limit of one batch is 50 MB. Supported files types are .txt, .pdf, .csv, .docx, .xlsx, .pptx, and .htmlx.

Add knowledge to your agent by connecting to an external repository.

Click 'Upload files'

- Select the **HR_Policy_Medicalbenefits.pdf** file downloaded from the '**What you'll need**' section.



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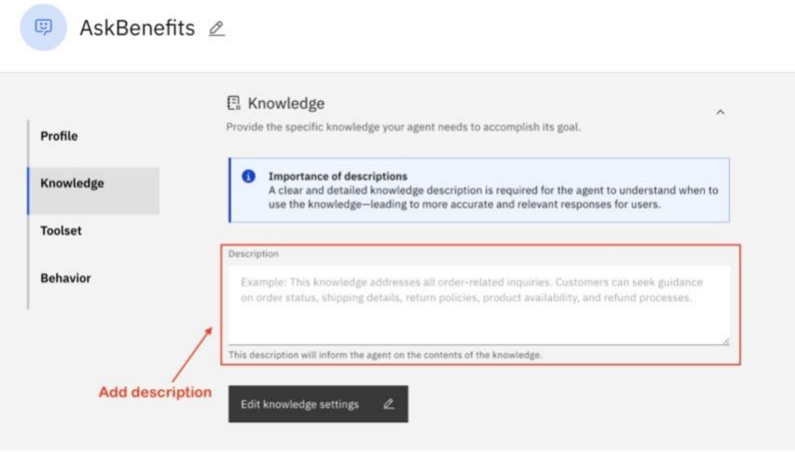
Select the file from your desktop folder & then click 'Upload

- As a best practice, in the '**Knowledge**' description field, add the below context to inform the agent on the contents of the knowledge:

"This document covers key healthcare benefit policies—eligibility, coverage, claims, exclusions, and post-employment options. Use it to answer employee questions related to health benefits"



AskBenefits

Knowledge

Provide the specific knowledge your agent needs to accomplish its goal.

Importance of descriptions
A clear and detailed knowledge description is required for the agent to understand when to use the knowledge—leading to more accurate and relevant responses for users.

Description

Example: This knowledge addresses all order-related inquiries. Customers can seek guidance on order status, shipping details, return policies, product availability, and refund processes.

This description will inform the agent on the contents of the knowledge.

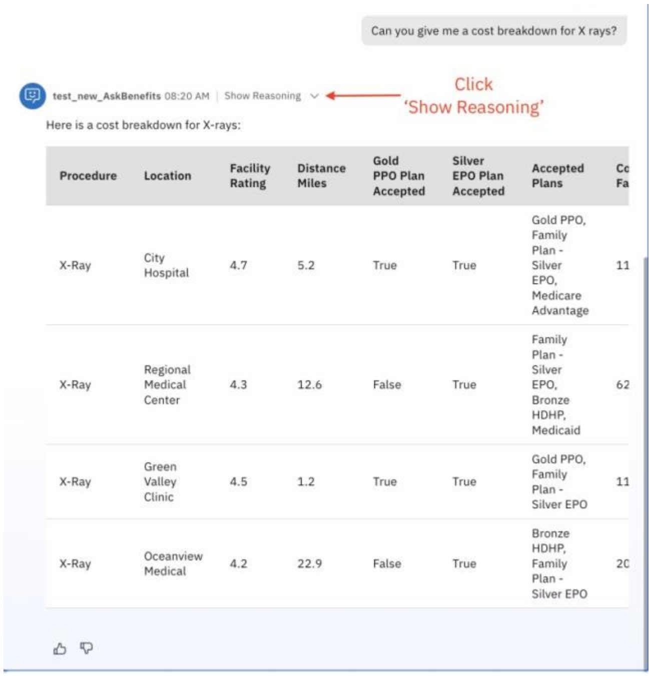
Step 4. Test the agent

In the Preview panel enter the below prompts one-by-one in the “Type something…” field and press **Enter**.

- **Prompt 1**: Can you give me a cost breakdown for X rays?

  Expected outcome: The agent displays the X-ray cost breakdown across multiple hospitals, including facility, physician, anesthesia, and medication charges.

  What’s happening behind the scenes? To understand that click ‘**Show reasoning**’ and expand the steps.



Can you give me a cost breakdown for X rays?

test_new_AskBenefits 08:20 AM | Show Reasoning

Here is a cost breakdown for X-rays:

Procedure	Location	Facility Rating	Distance Miles	Gold PPO Plan Accepted	Silver EPO Plan Accepted	Accepted Plans	Co Fa
X-Ray	City Hospital	4.7	5.2	True	True	Gold PPO, Family Plan - Silver EPO, Medicare Advantage	11
X-Ray	Regional Medical Center	4.3	12.6	False	True	Family Plan - Silver EPO, Bronze HDHP, Medicaid	62
X-Ray	Green Valley Clinic	4.5	1.2	True	True	Gold PPO, Family Plan - Silver EPO	11
X-Ray	Oceanview Medical	4.2	22.9	False	True	Bronze HDHP, Family Plan - Silver EPO	20

Key Observations: When you insert the prompt, the agent:

1. Understands User Intent: The agent correctly interprets the request as requiring a filtered view of cost-related procedure data.

1. Dynamic Tool Invocation: It selects the correct tool ‘A*vailable_procedures’*, which is appropriate for analyzing procedure costs from a dataset.

2. StructuredReasoningviaFilters:Itcreatesastructuredqueryusing:

```
"filters": "[{\"column\": \"procedure\", \"operator\": \"equals\", \"value\": \"X ray\"}]"
```

This shows the agent’s ability to construct a parameterized request dynamically based on the user’s natural language.

- **Prompt 2:** *Which among them is the cheapest?*

  Expected Outcome: The agent compares total costs and responds with the hospital offering the lowest price.

  Key Observation: This is a strong example of co-referencing, where the agent correctly interprets the user's use of “them” based on prior context. It also demonstrates the use of memory to retain and build on prior context—both key aspects of agentic behaviour.

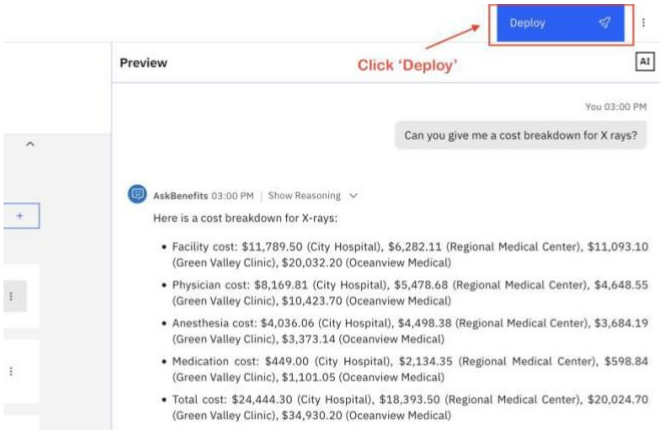
- **Prompt 3**: Am I eligible to add my spouse to my health insurance?

  Expected Outcome*:* The agent confirms that spouses are eligible dependents and advises the employee to provide supporting documents during enrolment.

  Key Observation*:* The agent intelligently processes the document, identifies the relevant section on dependent coverage, and retrieves a precise answer—demonstrating context-aware document parsing and retrieval.

Step 5. Testing the agent

- Click “**Deploy**” to publish your AskBenefits agent.



Can you give me a cost breakdown for X rays?

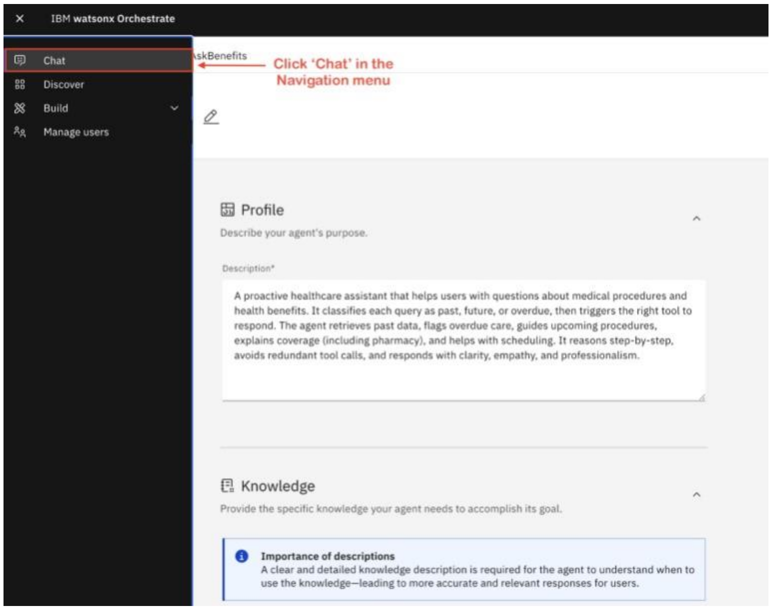
Here is a cost breakdown for X-rays:

- Facility cost: $11,789.50 (City Hospital), $6,282.11 (Regional Medical Center), $11,093.10 (Green Valley Clinic), $20,032.20 (Oceanview Medical)
- Physician cost: $8,169.81 (City Hospital), $5,478.68 (Regional Medical Center), $4,648.55 (Green Valley Clinic), $10,423.70 (Oceanview Medical)
- Anesthesia cost: $4,036.06 (City Hospital), $4,498.38 (Regional Medical Center), $3,684.19 (Green Valley Clinic), $3,373.14 (Oceanview Medical)
- Medication cost: $449.00 (City Hospital), $2,134.35 (Regional Medical Center), $598.84 (Green Valley Clinic), $1,101.05 (Oceanview Medical)
- Total cost: $24,444.30 (City Hospital), $18,393.50 (Regional Medical Center), $20,024.70 (Green Valley Clinic), $34,930.20 (Oceanview Medical)

- Congratulations! You successfully deployed the AskBenefits Agent.

Step 6. Identify the knowledge gap

- Click on ‘**Chat**’ in the Navigation menu.

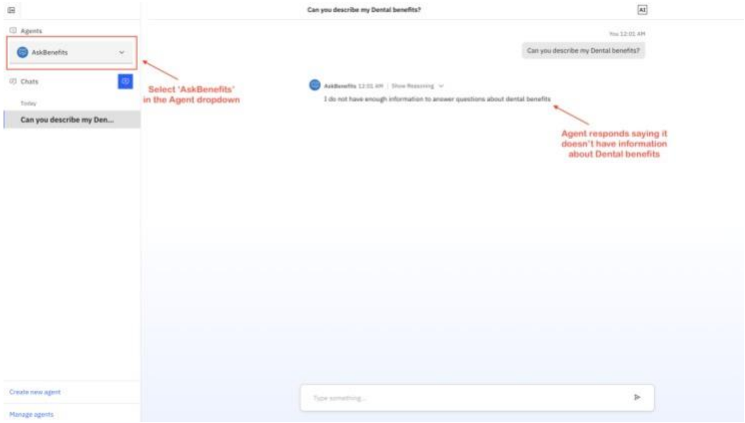

IBM watsonx Orchestrate
Chat
Discover
Build
Manage users
AskBenefits
Click 'Chat' in the Navigation menu
Profile
Describe your agent's purpose.
Description*
Knowledge
Provide the specific knowledge your agent needs to accomplish its goal.

A proactive healthcare assistant that helps users with questions about medical procedures and health benefits. It classifies each query as past, future, or overdue, then triggers the right tool to respond. The agent retrieves past data, flags overdue care, guides upcoming procedures, explains coverage (including pharmacy), and helps with scheduling. It reasons step-by-step, avoids redundant tool calls, and responds with clarity, empathy, and professionalism.

Importance of descriptions
A clear and detailed knowledge description is required for the agent to understand when to use the knowledge—leading to more accurate and relevant responses for users.

- Select the '**AskBenefits**' agent in the Agent dropdown and enter the below prompt in the 'Type something…' field. Then press '**Enter**'.

Prompt*: Can you describe my Dental benefits?*


Can you describe my Dental benefits?
Agents
AskBenefits
Chats
Today
Can you describe my Den...
Select 'AskBenefits' in the Agent dropdown
You 12:01 AM
Can you describe my Dental benefits?
AskBenefits 12:01 AM | Show Reasoning
Agent responds saying it doesn't have information about Dental benefits
Type something...
Create new agent
Manage agents

I do not have enough information to answer questions about dental benefits

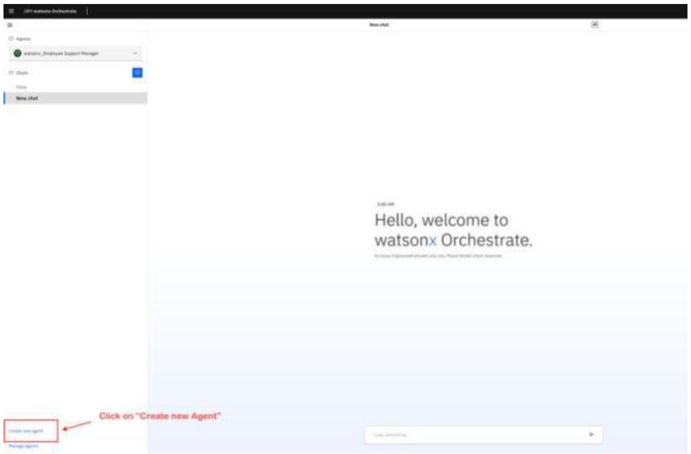
Agent response: *I do not have enough information to answer questions about dental benefits.*

- Let's now look at how the above information can be retrieved from the AskBenefits agent. A collaborator agent is used by AskBenefits to retrieve answers related to Dental benefits.

Part 2: Create a new collaborator agent – AskDental

Step 1. Create a new AskDental agent

- Click on '**Create new Agent**' in bottom left corner.

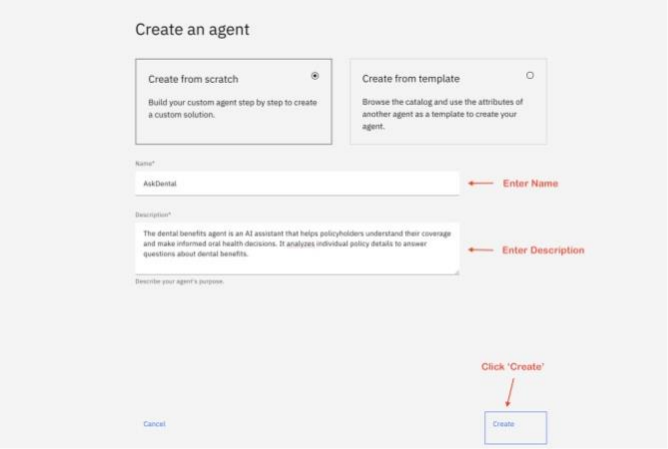


Click on "Create new Agent"

- Enter the Agent Name and description:

1. Name – AskDental
2. Agent Description – The dental benefits agent is an AI assistant that helps policyholders understand their coverage and make informed oral health decisions. It analyzes individual policy details to answer questions about dental benefits.

- Then click on ‘**Create**’.



Create an agent

● Create from scratch

Build your custom agent step by step to create a custom solution.

○ Create from template

Browse the catalog and use the attributes of another agent as a template to create your agent.

Name*

AskDental

Enter Name

Description*

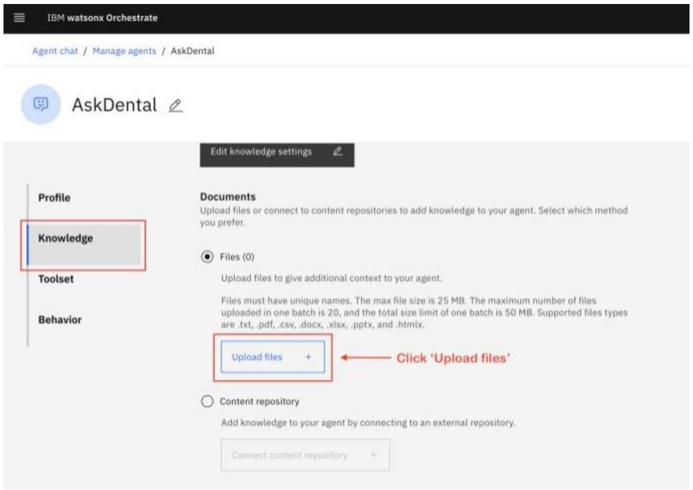
The dental benefits agent is an AI assistant that helps policyholders understand their coverage and make informed oral health decisions. It analyzes individual policy details to answer questions about dental benefits.

Enter Description

Describe your agent's purpose.

Click ‘Create’

- Click ‘**Upload files**’ under the ‘**Knowledge**’ tab



Documents

Upload files or connect to content repositories to add knowledge to your agent. Select which method you prefer.

● Files (0)

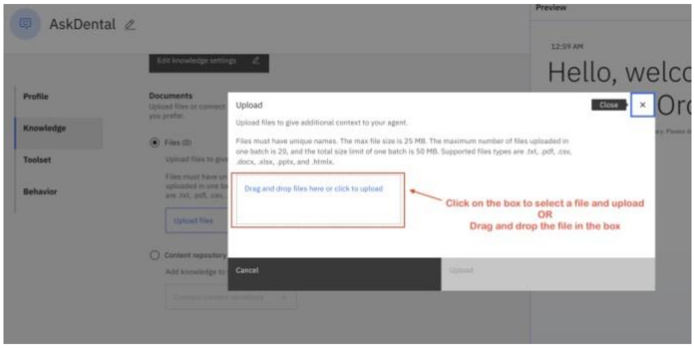
Upload files to give additional context to your agent.

Files must have unique names. The max file size is 25 MB. The maximum number of files uploaded in one batch is 20, and the total size limit of one batch is 50 MB. Supported files types are .txt, .pdf, .csv, .docx, .xlsx, .pptx, and .htmlx.

○ Content repository

Add knowledge to your agent by connecting to an external repository.

- Select the file containing **Dental Benefit information *dental_benefits_summary.pdf*** you downloaded from *What you'll need* section.

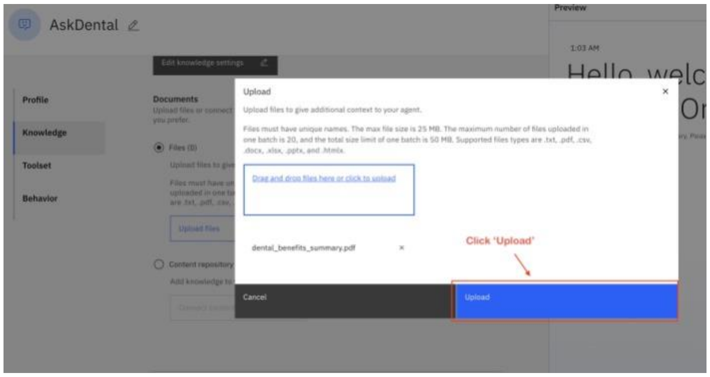

AskDental
Preview
12:59 AM
Hello, welc
Ord
Edit knowledge settings
Profile
Knowledge
Toolset
Behavior
Close
×
Drag and drop files here or click to upload
Click on the box to select a file and upload
OR
Drag and drop the file in the box
Cancel
Upload

Upload

Upload files to give additional context to your agent.

Files must have unique names. The max file size is 25 MB. The maximum number of files uploaded in one batch is 20, and the total size limit of one batch is 50 MB. Supported files types are .txt, .pdf, .csv, .docx, .xlsx, .pptx, and .htmlx.

- Click '**Upload**'. The document upload process can take a few seconds.



Upload

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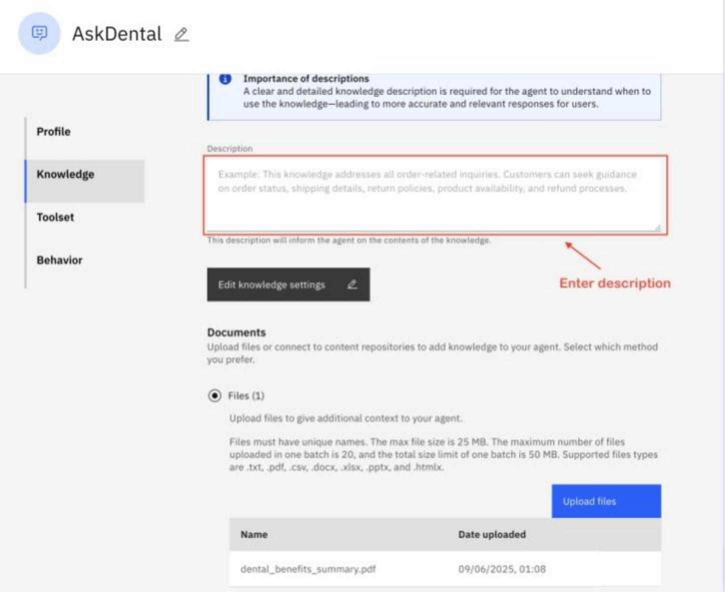
- In the Knowledge '**description**' field enter the following description:

  "This knowledge file outlines dental benefits and is used to answer policyholder questions. It includes details about individual coverage and policies. If a question cannot be answered using the available content, do not respond directly. Instead, forward the query verbatim to the supervisor agent for further handling."



AskDental

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Description

Example: This knowledge addresses all order-related inquiries. Customers can seek guidance on order status, shipping details, return policies, product availability, and refund processes.

This description will inform the agent on the contents of the knowledge.

Documents
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● Files (1)

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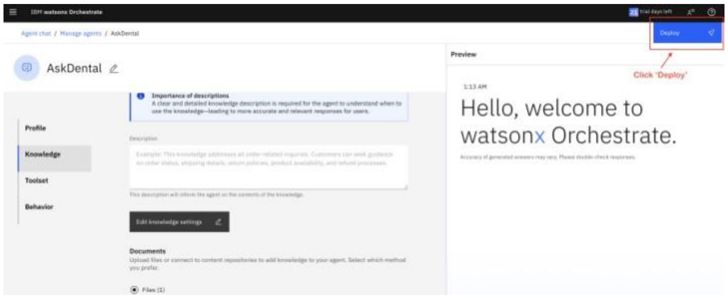
Name	Date uploaded
dental_benefits_summary.pdf	09/06/2025, 01:08

- Click ‘**Deploy**’.



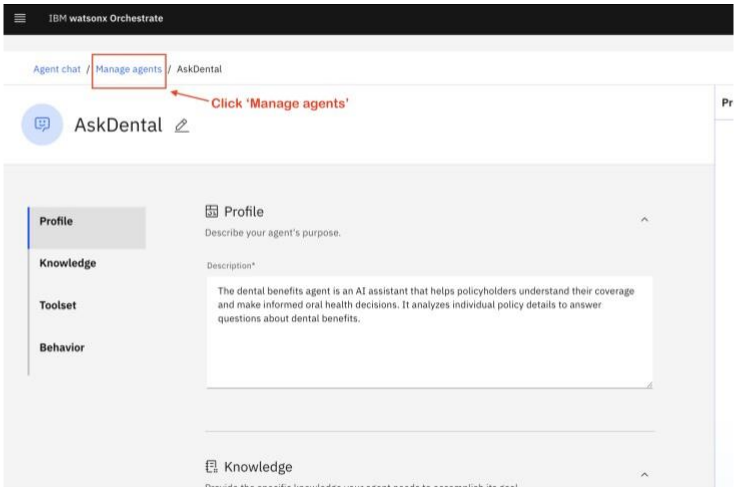
1:13 AM

Hello, welcome to watsonx Orchestrate.

Accuracy of generated answers may vary. Please double-check responses.

Step 2. **Add AskDental agent as a collaborator**

- Click ‘**Manage agents**’.



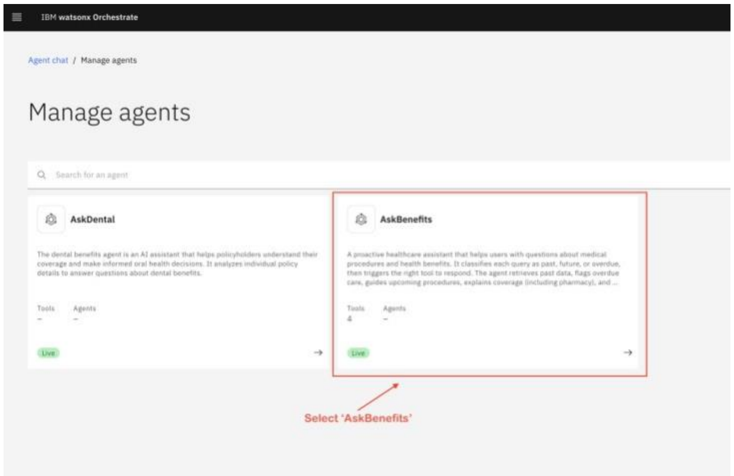
Profile
Describe your agent's purpose.

Description*

The dental benefits agent is an AI assistant that helps policyholders understand their coverage and make informed oral health decisions. It analyzes individual policy details to answer questions about dental benefits.

Knowledge

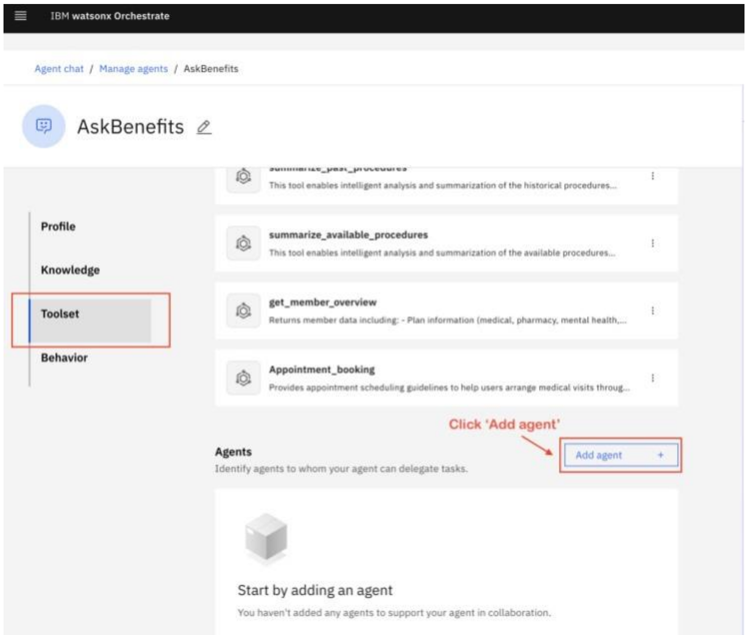
- Select ‘**AskBenefits**’.



The dental benefits agent is an AI assistant that helps policyholders understand their coverage and make informed oral health decisions. It analyzes individual policy details to answer questions about dental benefits.

A proactive healthcare assistant that helps users with questions about medical procedures and health benefits. It classifies each query as past, future, or overdue, then triggers the right tool to respond. The agent retrieves past data, flags overdue care, guides upcoming procedures, explains coverage (including pharmacy), and ...

- Click '**Add agent**' under the '**Toolset**' tab.



This tool enables intelligent analysis and summarization of the historical procedures...

This tool enables intelligent analysis and summarization of the available procedures...

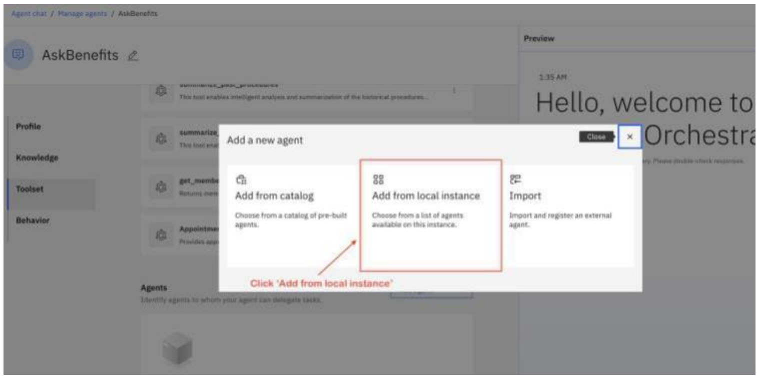
Returns member data including: - Plan information (medical, pharmacy, mental health,...

Provides appointment scheduling guidelines to help users arrange medical visits throug...

Identify agents to whom your agent can delegate tasks.

You haven't added any agents to support your agent in collaboration.

- Click '**Add from local instance**'.



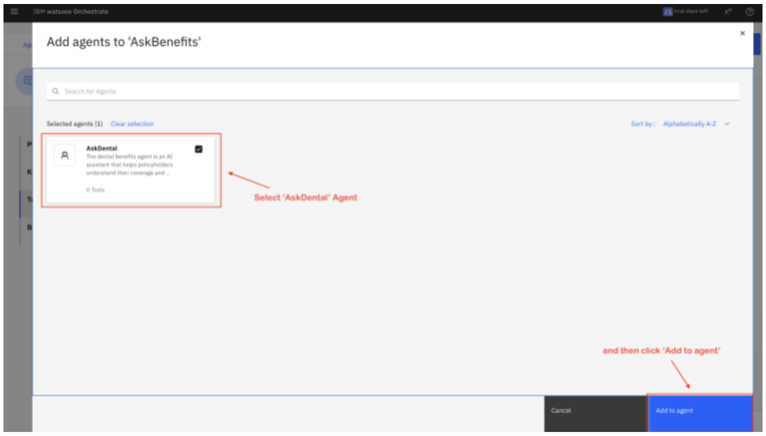
Choose from a catalog of pre-built agents.

Choose from a list of agents available on this instance.

Import and register an external agent.

Identify agents to whom your agent can delegate tasks.

- Select '**AskDental**' agent and then click '**Add to agent**'.



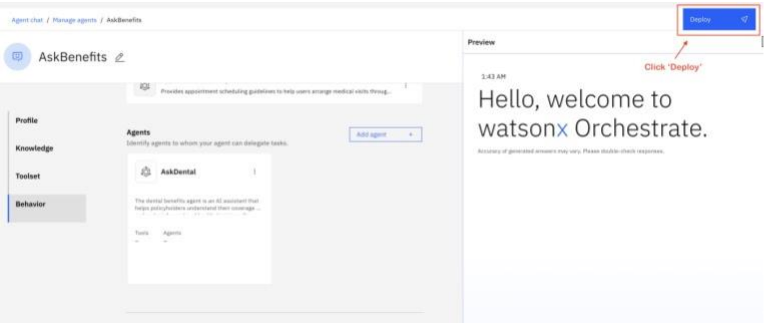
Add agents to 'AskBenefits'

The dental benefits agent is an AI assistant that helps policyholders understand their coverage and ...

Select 'AskDental' Agent

and then click 'Add to agent'

- Click ‘**Deploy**’.



Provides appointment scheduling guidelines to help users arrange medical visits throug...

Identify agents to whom your agent can delegate tasks.

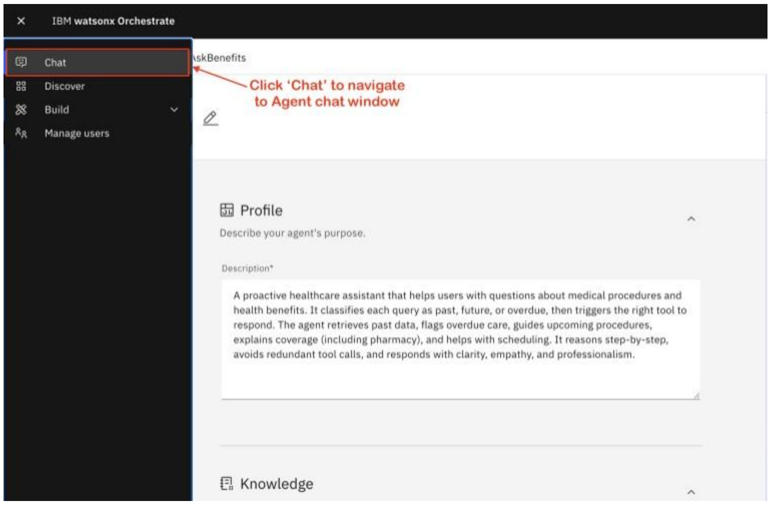
The dental benefits agent is an AI assistant that helps policyholders understand their coverage ...

Hello, welcome to watsonx Orchestrate.

Accuracy of generated answers may vary. Please double-check responses.

Click 'Deploy'

- Click ‘**Chat**’ to navigate to the Agent chat screen.



Click 'Chat' to navigate to Agent chat window

Describe your agent's purpose.

Description*

A proactive healthcare assistant that helps users with questions about medical procedures and health benefits. It classifies each query as past, future, or overdue, then triggers the right tool to respond. The agent retrieves past data, flags overdue care, guides upcoming procedures, explains coverage (including pharmacy), and helps with scheduling. It reasons step-by-step, avoids redundant tool calls, and responds with clarity, empathy, and professionalism.

Step 3. **Testing scenarios**

After successful deployment, select the ‘**AskBenefits**’ agent in the Agent dropdown and test the same prompt to verify how the collaborator agent added to AskBenefits helps in answering Dental related queries.

- **Prompt**: *Can you describe my dental benefits?*

  Expected Outcome: The AskBenefits agent routes the query to the AskDental agent, which responds with a detailed summary of dental benefits including deductible, coverage, and plan-specific details—retrieved from the uploaded dental policy document.

Key Observation*:* The AskBenefits agent correctly routes the dental benefits query to the AskDental agent, which retrieves a detailed response from its underlying document—demonstrating effective agent collaboration and document-grounded reasoning.

- **Try some more prompts:**
  1. What procedures have we had at City Hospital in the last year?
  2. Show some appointment slots available for Dental checkup?
  3. Can you show the available slots on weekends instead?
  4. Book an appointment for <Enter an available slot>
  5. List my upcoming appointments
  6. Give me a summary of my insurance plan