

Working with agents in watsonx Orchestrate

Hands-on lab guide

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About this hands-on lab

In this lab you will learn how to set up the built in AI chat experience in watsonx Orchestrate. You will add a built-in skill, an assistant, and an external agent into your AI chat. Finally, you will experiment with asking questions directly in the chat and observe how the supervisory agent routes your queries to the appropriate skill, assistant, external agent, or built-in watsonx.ai model to provide answers.

The high-level steps to accomplish this are as follows:

1. Open the AI chat and test the built-in LLM.
2. Connect a built-in skill and make it available in the watsonx Orchestrate AI chat.
3. Create a new assistant (or reuse an existing one) and import it into the watsonx Orchestrate AI chat.
4. Create an external agent in watsonx.ai, deploy it, and import it into the watsonx Orchestrate AI chat.
5. Test the AI chat and observe how the agent routes your queries to the right skill, assistant, agent, or watsonx.ai LLM.

Watsonx Orchestrate Environment

You will need access to a watsonx Orchestrate environment: <https://ibm.biz/ai-assistants-environments>

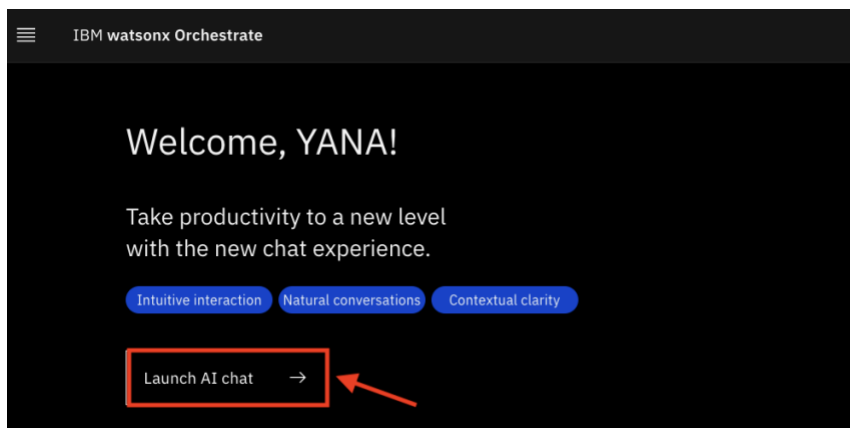
Assumptions

See lab **README** file for details

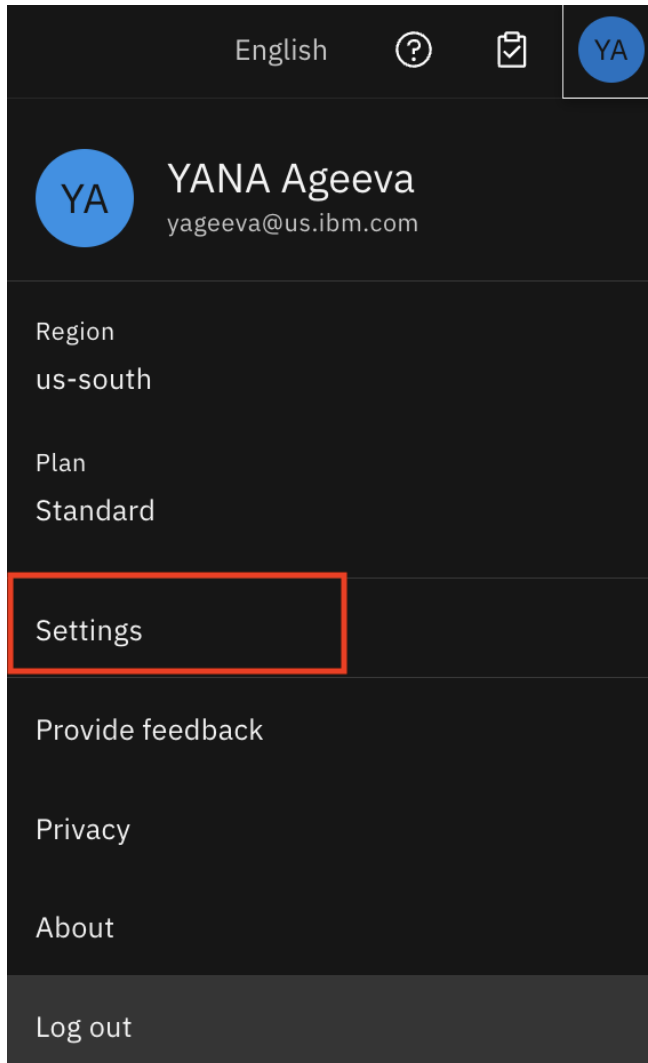
1. As of right now (February 2025) you will need Admin access or get help from someone who is an admin in order to connect skills.
2. These instructions assume you are using a watsonx Orchestrate instance on IBM Cloud, e.g. reserved through TechZone. If you are using an AWS instance, the screenshots will not match exactly, but it is still a very similar process.

1 Test the AI chat in watsonx Orchestrate

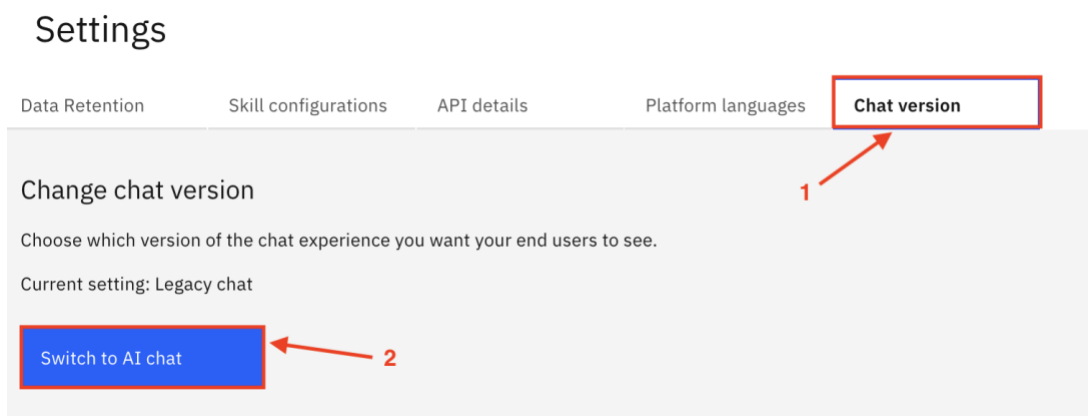
1. Log into your watsonx Orchestrate tenant.
2. Click on **AI chat**:



Note: if you do not see **Launch AI chat** on your screen and see **Continue to Legacy chat** instead, you will need to configure chat settings by going into your **Profile -> Settings**:



Then select **Chat version** panel and click on **Switch to AI chat**:



Change your chat version

×

You're about to switch from the legacy chat experience to the new AI chat experience.

Congratulations! You'll be gaining these new features:

- Seamless switching between chats
- Real-time updates and notifications
- Embedding AI chat into websites
- All skills organized within purpose-built assistants
- Connect with external watsonx Assistants via message API v2 for broader capabilities

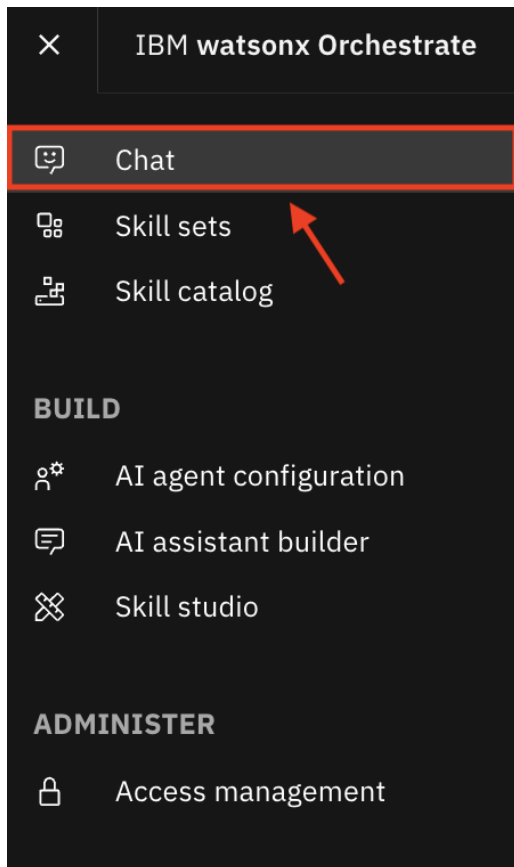
Please note these limitations:

- Personal catalog skills and those requiring user-powered credentials aren't supported.
- Additionally, conversations from the legacy chat experience won't be carried over after switching to the AI chat experience.

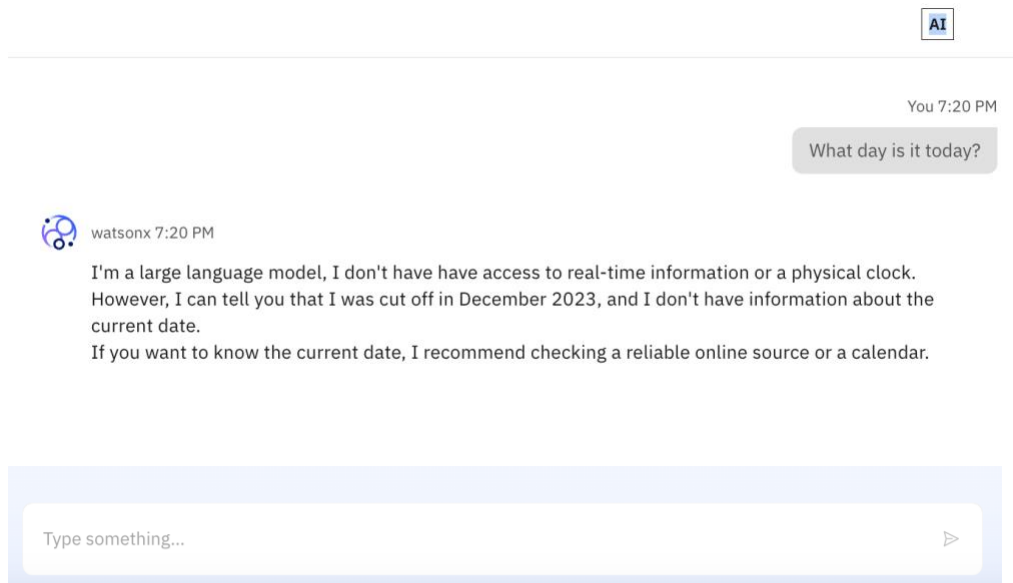
Cancel

Change to AI chat

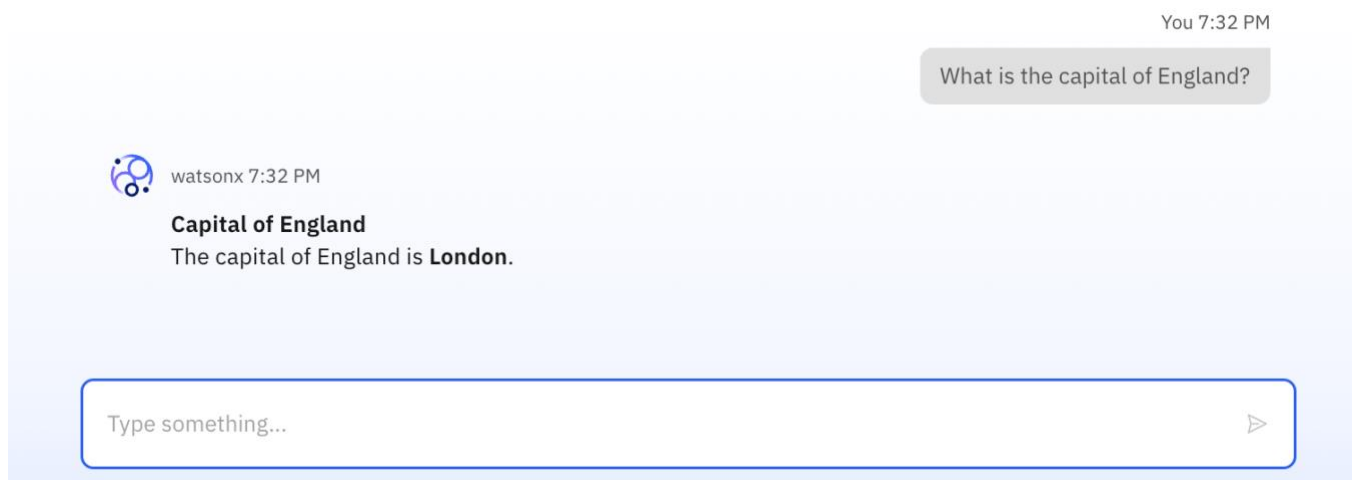
3. Click on the left hamburger menu and select **Chat**:



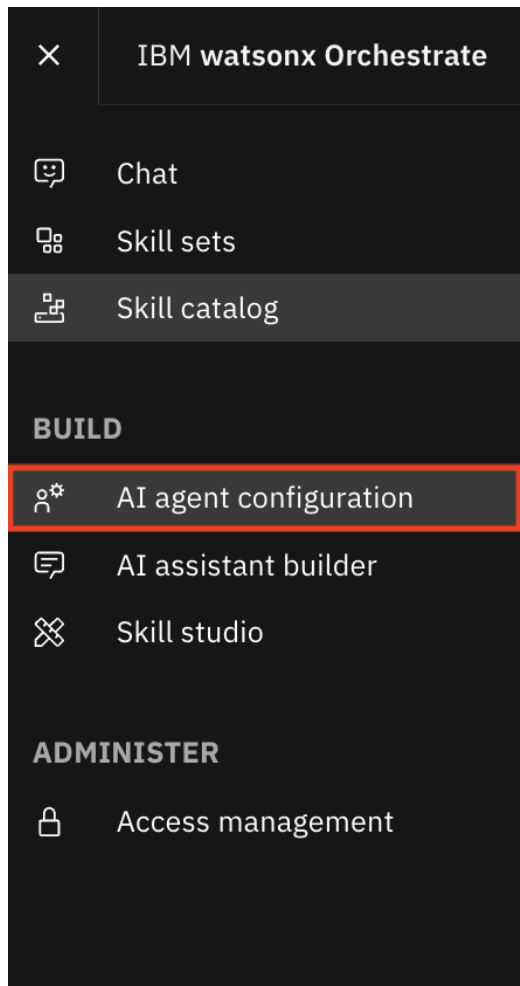
4. Type a generic question in the chat window, e.g. **What day is it today?** Note that the LLM will not know how to answer this question because it can only answer questions based on the data it was trained on:



If you ask a more generic question, e.g. **What is the capital of England?** the LLM will be able to come back with a good answer:



You can configure your own LLM and parameters, adjust the system prompt or starter prompts, if needed, in the AI agent configuration:



AI agent configuration

Agent configuration allows users to customize their chat experience according to their preferences.

Model settings

System prompt

Starter prompts

Assistants

Apps and skills

Embed chat

Model settings

Configure your AI agent model settings. Select your models and adjust your parameters for a more specified chat response.

Base model selection

Select the large language model that your AI agent uses for all base LLM functions. [Learn more](#)

Model

llama-3-1-70b-instruct (Recommended) ▾

Select the base LLM for your agent

By using the model, you agree to these terms

[Read terms](#)

Parameters

Stopping criteria ⓘ

The maximum new tokens, which means the tokens generated by the foundation model per request, is limited to 8192 for this model.

1 ⓘ

2000 ⓘ

Reset to Defaults ↺

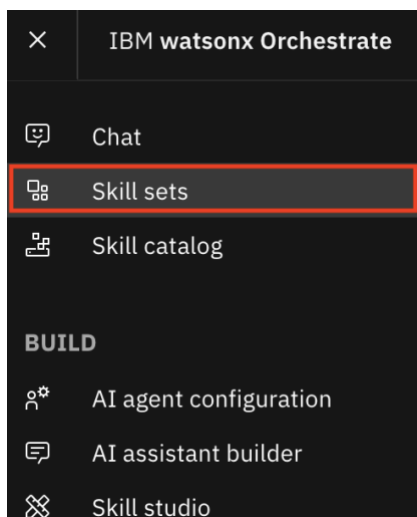
Min. tokens

Max. tokens

2 Add a built-in skill in AI chat

2.1 Connect the application that contains your skill

- Go into Skill Sets:



Note: if you are working in an AWS watsonx Orchestrate tenant, you will need to go into **Manage Team -> Skill sets**.

2. Search for an application with skills you want to use in AI chat (e.g. IBM Document Processing):
 - a. Select **Orchestrate Agent Skillset**
 - b. Select **Connections** panel
 - c. Search for application name (**IBM Document Processing**)

IBM watsonx Orchestrate

English ? [icon] YA

Orchestrate Agent Skillset

Skill sets

Orchestrate Agent Skillset

Skills **Connections**

These are the applications that are used by the skills in team skill set. Application connections are required to execute skills. Set preference at an application level to enable skills to either use personal or team credentials.

ibm doc

Application	Number of skills	Credential type	Connected by ①	Action
IBM Document Processing	5	⚠ Not specified	-	⋮

Items per page: 5 1-1 of 1 items 1 of 1 page

3. Click on ... to the right of the application name and then click on **Connect app**:

Application	Number of skills	Credential type	Connected by ①	Action
IBM Document Processing	5	⚠ Not specified	-	⋮ Connect app

Items per page: 5 1-1 of 1 items

4. Select **Team Credentials** and click on **Connect app**:

Connect to IBM Document Processing

Member credentials

Each team member uses their own credentials to connect to this app and use its skills.

Team credentials

The admin sets the credentials each team member uses to connect to this app and use its skills.

You selected **Team credentials** for the credential type. Click **Connect app** to provide the credentials your team will use and to connect to the app.

Connect app

5. Enter bearer token (in this case no credentials are needed, you can just type any 6+ characters) and click on **Connect app**:

Connect to IBM Document Processing

Bearer Token

.....

If the service uses Bearer Authentication please enter the token

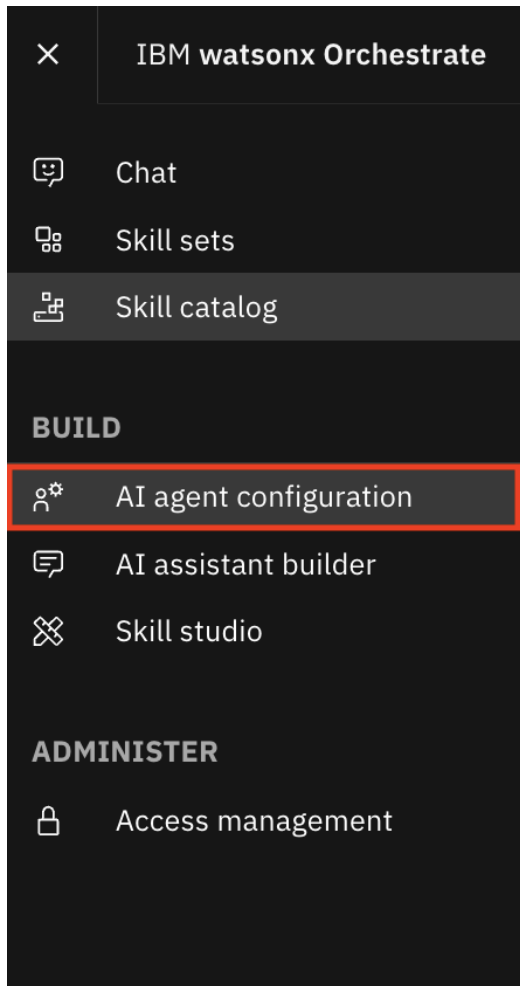
Cancel

Connect app

11

2.2 Add your skill to AI chat and test

1. Once the app has been connected, go into the **AI agent configuration**:



2. Under **Apps and skills** select the application you just connected (**IBM Document Processing**):

AI agent configuration

Agent configuration allows users to customize their chat experience according to their preferences.

Model settings

System prompt

Starter prompts

Assistants

Apps and skills

Embed chat

Apps and skills let your team connect to data and complete tasks in other applications

[Why add apps and skills?](#)

Apps

Skills are grouped by their associated application. Select an app to see all the skills in them.

Search

IBM Document Proce...	Skill flows	watsonx.ai(experi... Visible

3. Add skill to chat:

[Why add apps and skills?](#)

[Back to all apps](#)


IBM Document Processing

@ibmdocumentprocessing

Hidden Search Sort by: Alphabetically

Classify a document From IBM Document Processing	Extract invoice fields (...) From IBM Document Processing	Extract personal ident... From IBM Document Processing	Extract text From IBM Document Processing	Extract utility bill field... From IBM Document Processing
Add to chat +	Add to chat +	Add to chat +	Add to chat +	Add to chat +

4. Add a description about what the skill does, to help the supervisory agent route requests, and click on **Add skill**:



Extract text

from IBM Document Processing

×

An accurate description of the purpose and capabilities of the skill is required for the AI model to successfully activate this skill in the chat.

Routing description

Description of skill capabilities 57/500

1

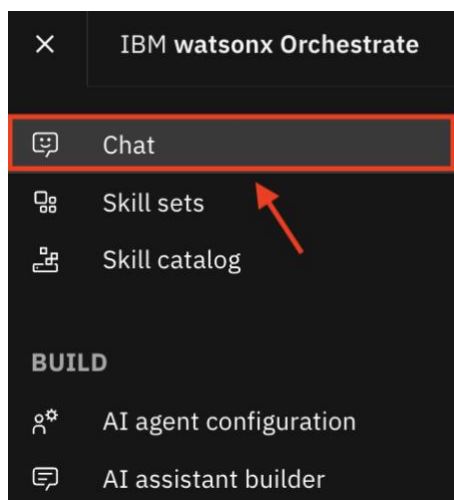
Extract text from a PDF, Word, images, or PowerPoint file

Tip: [What makes a good description?](#)

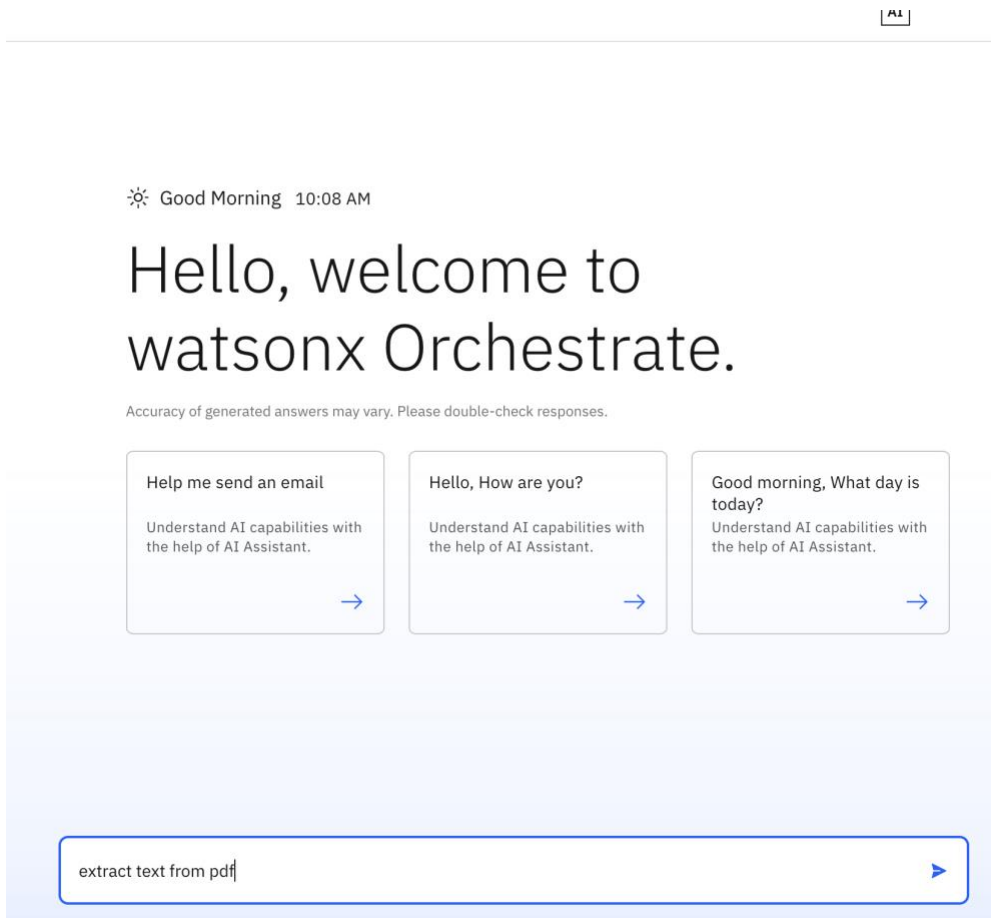
Cancel

2Add skill

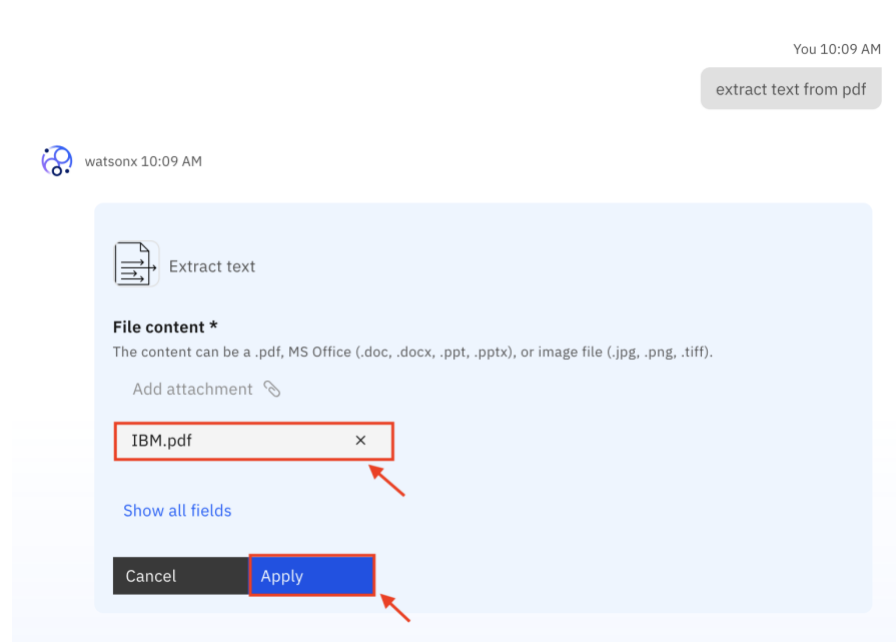
5. Open AI chat to test:



6. Type your request in the chat to test the added skill:



7. As you can see, the query got routed to the right skill. You can now upload a pdf file, as prompted, and run the skill by clicking on **Apply**:



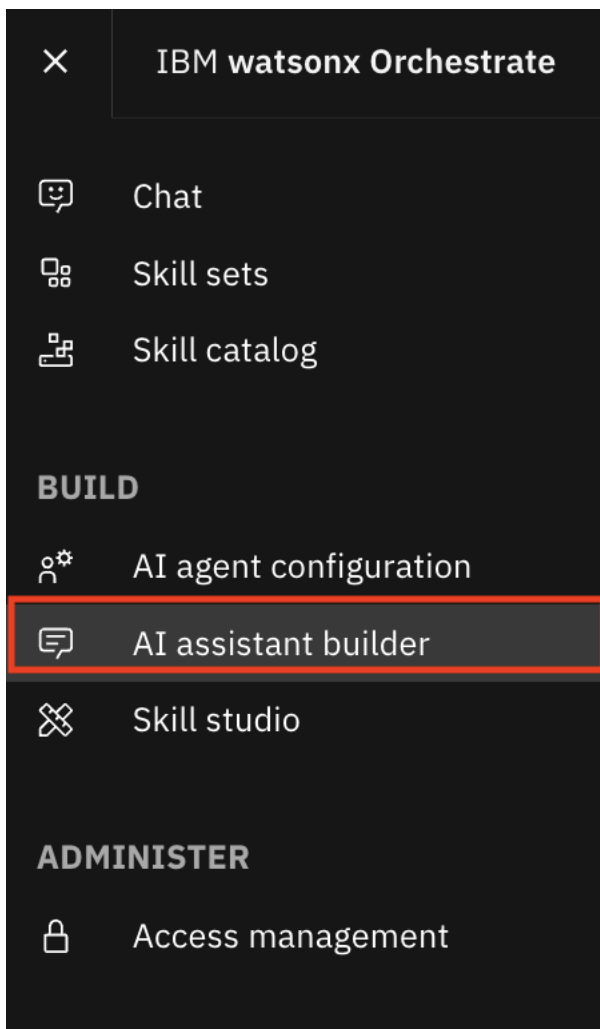
3 Implement and add an assistant in AI chat

If you have already implemented an assistant (see [Assistant Lab 2](#)), you can skip to step 3.2

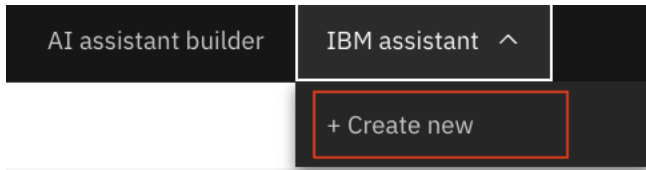
3.1 Implement an assistant

In this step we will create a very basic assistant with just one AI-guided action to answer questions about a specific topic (IBM company). Feel free to experiment with other assistant builder functionality by following [Assistant Labs 2 and 3](#) or by creating your own additional actions.

1. Open the assistant builder:



2. If there are already existing assistants in your watsonx Orchestrate tenant, they will show up in the assistant drop down at the top and you can just create a new one and skip to step 7 below:



Otherwise, continue with the following steps.

3. If no assistants have been created in your watsonx Orchestrate tenant, you will see the following screen and will need to create the first assistant instance:

4. Click **Next** and fill in the basics e.g.

Welcome to AI assistant builder


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

Create

Personalize

Customize

Preview



Personalize your assistant

Tell us where your assistant will live
You may add multiple channels from your dashboard.

Where do you plan on deploying your assistant?

Web

Tell us about yourself
This information will be used to personalize your onboarding experience.

Which industry do you work in?

Software

What is your role on the team building the assistant?

Developer

Which statement describes your needs best?

I want to provide confident answers to commc

This is what your customers will experience

watsonx Assistant

Do you have the Speed Demons in stock?

The Speed Demons are in stock at our Downtown and Northgate locations, which are both within 5 miles of you.

What size and color do you need?

I'm looking for a size 9 in white

Great news! The Speed Demons are available in white in a size 9.

You can purchase them for curbside pickup or we can ship them to you. Which

Create assistant page ?

I'll pick them up!

Ship them to me!


- Click **Next**, then **Next** once again:

Create

Personalize

Customize

Preview



Customize your chat UI

Update the style to match your brand and your website. You can change these settings later. A developer can also add more advanced styling changes with code. [Learn more](#)

Assistant's name as known by customers

Assistant

Intended purpose

☒ Standard: For virtual agents and customer support experiences.

☐ Carbon for AI: For use in internal IBM products.

Choose a theme

Light

Dark

Primary color

#FFFFFF

Secondary color

#3D3D3D


Chat header

Accent color

#0354E9

Significant and interactive objects

Size

 The size of the web chat on this page will not change by updating these fields.

Width

380px

Height

640px

IBM Watermark


Enable IBM Watermark


On


Streaming

Enable Streaming

Off



Add an avatar image 

Restart conversation 


Assistant


Hi! I'm a virtual assistant.
How can I help you today?

Example: Find nearby location

Example: Check account balance

Example: See how I can help

Type something... 

Built with IBM watsonx 

6. Click **Create** to create the assistant.

Welcome to AI assistant builder

Back Create

Preview your assistant

See what your assistant will look like as a chatbot on your website.

Certain settings do not work on this page and are disabled.

Copy link to share Change layout Customize web chat

Sample website

Assistant

Hi! I'm a virtual assistant.
How can I help you today?

Example: Find nearby location
Example: Check account balance
Example: See how I can help

Type something...

Built with IBM watsonx

7. Click on **Actions** in the assistant:

Home

Build

Generative AI

Actions

Evaluate

Preview

Deploy

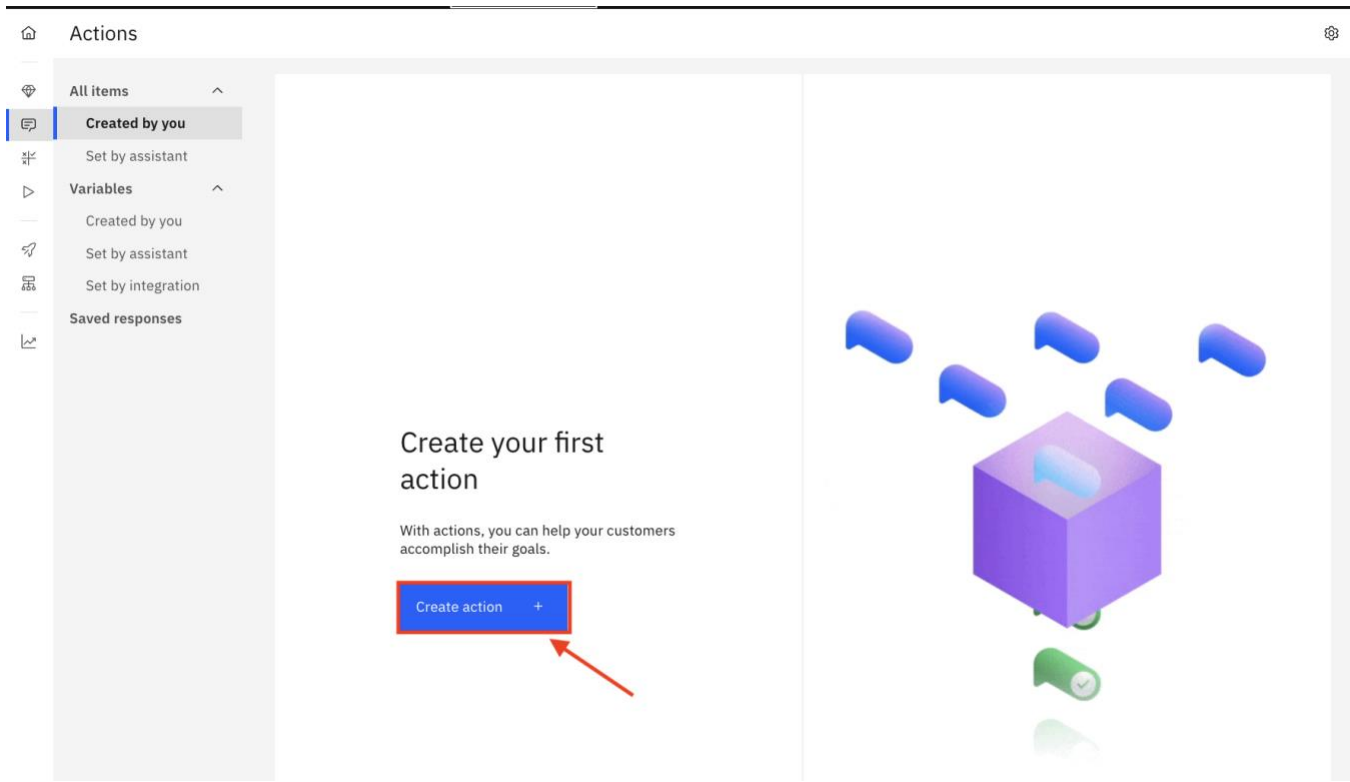
Publish

Environments

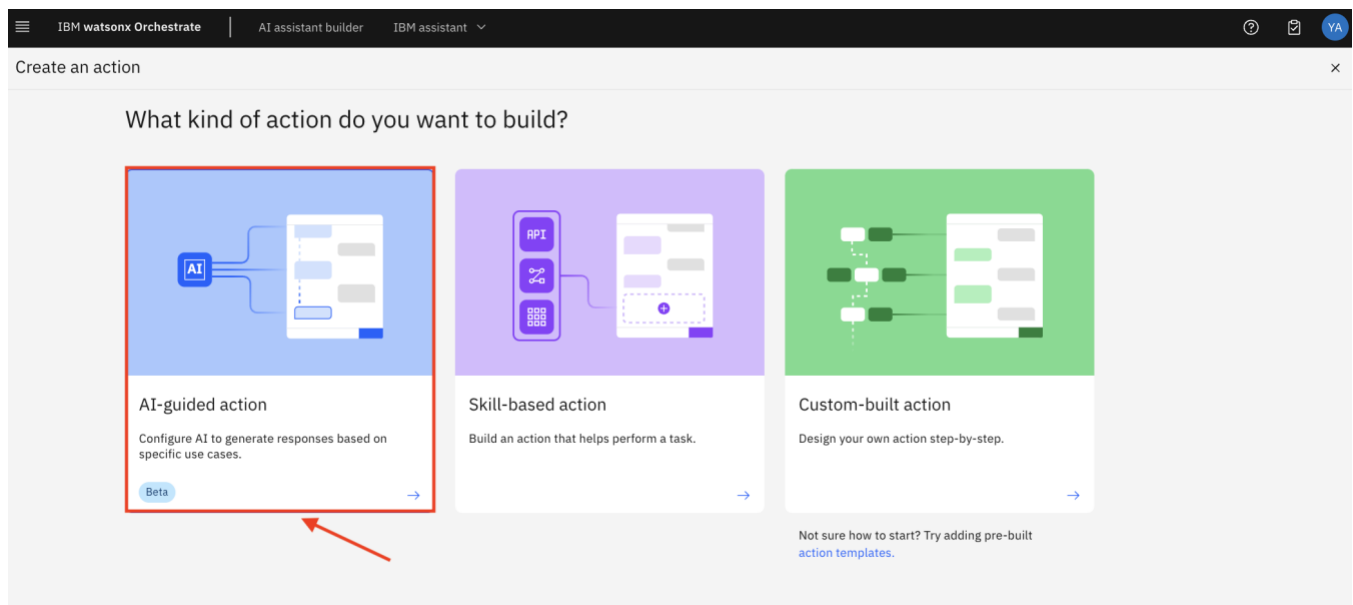
Improve

Analyze

8. Create your first action:



9. Select AI-guided action:



10. Enter several basic questions that one might want to ask about IBM:

- What year was IBM founded?
- What was IBM called when it was founded?

- When was IBM renamed to International Business Machines?

The screenshot shows the IBM Granite chat interface. On the left, there's a 'Configuration' panel with a 'Customer starts with:' field containing 'What year was IBM founded?'. Below this, it says 'Knowledge: Add knowledge' and 'Prompt Instructions: Default'. A small badge indicates 'granite-13b-chat-v2'. On the right, the 'Add example phrases:' section explains that these phrases determine the task, problem, or question. It shows a list of three example phrases: 'When was IBM renamed to International Business Machines', 'What was IBM called when it was founded?', and 'What year was IBM founded?'. A 'Total: 3' indicator is present next to the list.

11. Add the following knowledge in the corresponding knowledge field (from Wikipedia):

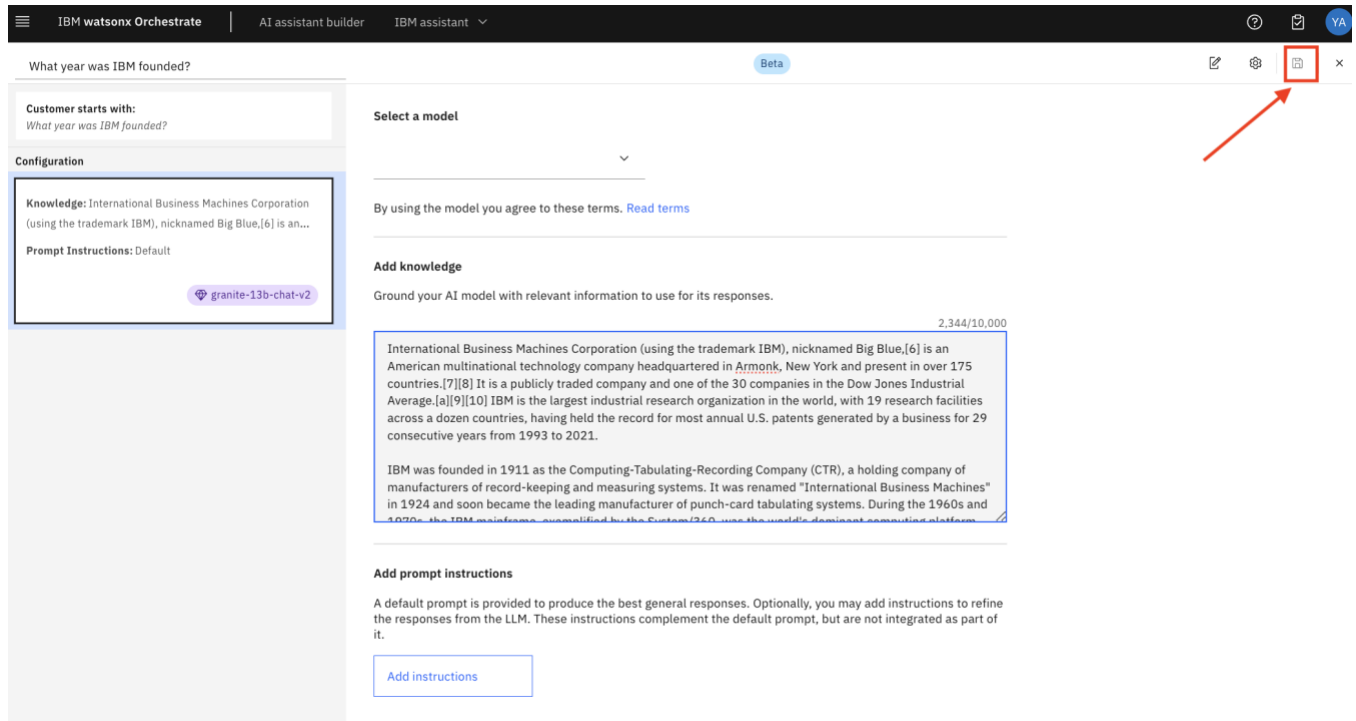
International Business Machines Corporation (using the [trademark IBM](#)), nicknamed **Big Blue**,^[6] is an American [multinational technology company](#) headquartered in [Armonk, New York](#) and present in over 175 countries.^{[7][8]} It is a [publicly traded company](#) and one of the 30 companies in the [Dow Jones Industrial Average](#).^{[a][9][10]} IBM is the largest industrial research organization in the world, with 19 research facilities across a dozen countries, having held the record for most annual [U.S. patents](#) generated by a business for 29 consecutive years from 1993 to 2021.

IBM was founded in 1911 as the [Computing-Tabulating-Recording Company](#) (CTR), a [holding company](#) of manufacturers of record-keeping and measuring systems. It was renamed "International Business Machines" in 1924 and soon became the leading manufacturer of [punch-card tabulating systems](#). During the 1960s and 1970s, the [IBM mainframe](#), exemplified by the [System/360](#), was the world's dominant [computing platform](#), with the company producing 80 percent of computers in the U.S. and 70 percent of computers worldwide.^[11]

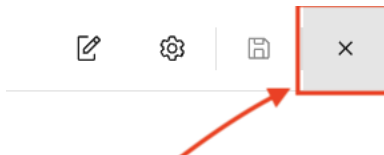
IBM debuted in the [microcomputer](#) market in 1981 with the [IBM Personal Computer](#), — its [DOS](#) software provided by [Microsoft](#), — which became the basis for the majority of [personal computers](#) to the present day.^[12] The company later also found success in the [portable](#) space with the [ThinkPad](#). Since the 1990s, IBM has concentrated on [computer services](#), [software](#), [supercomputers](#), and [scientific research](#); it sold its microcomputer division to [Lenovo](#) in 2005. IBM continues to develop mainframes, and its supercomputers have [consistently ranked](#) among the most powerful in the world in the 21st century.

As one of the world's oldest and largest technology companies, IBM has been responsible for several [technological innovations](#), including the [Automated Teller Machine](#) (ATM), [Dynamic Random-Access Memory](#) (DRAM), the [floppy disk](#), the [hard disk drive](#), the [magnetic stripe card](#), the [relational database](#), the [SQL programming language](#), and the [Universal Product Code](#) (UPC) barcode. The company has made inroads in advanced [computer chips](#), [quantum computing](#), [artificial intelligence](#), and [data infrastructure](#).^{[13][14][15]} IBM employees and alumni have won various recognitions for their scientific research and inventions, including six [Nobel Prizes](#) and six [Turing Awards](#).^[16]

12. Click Save:



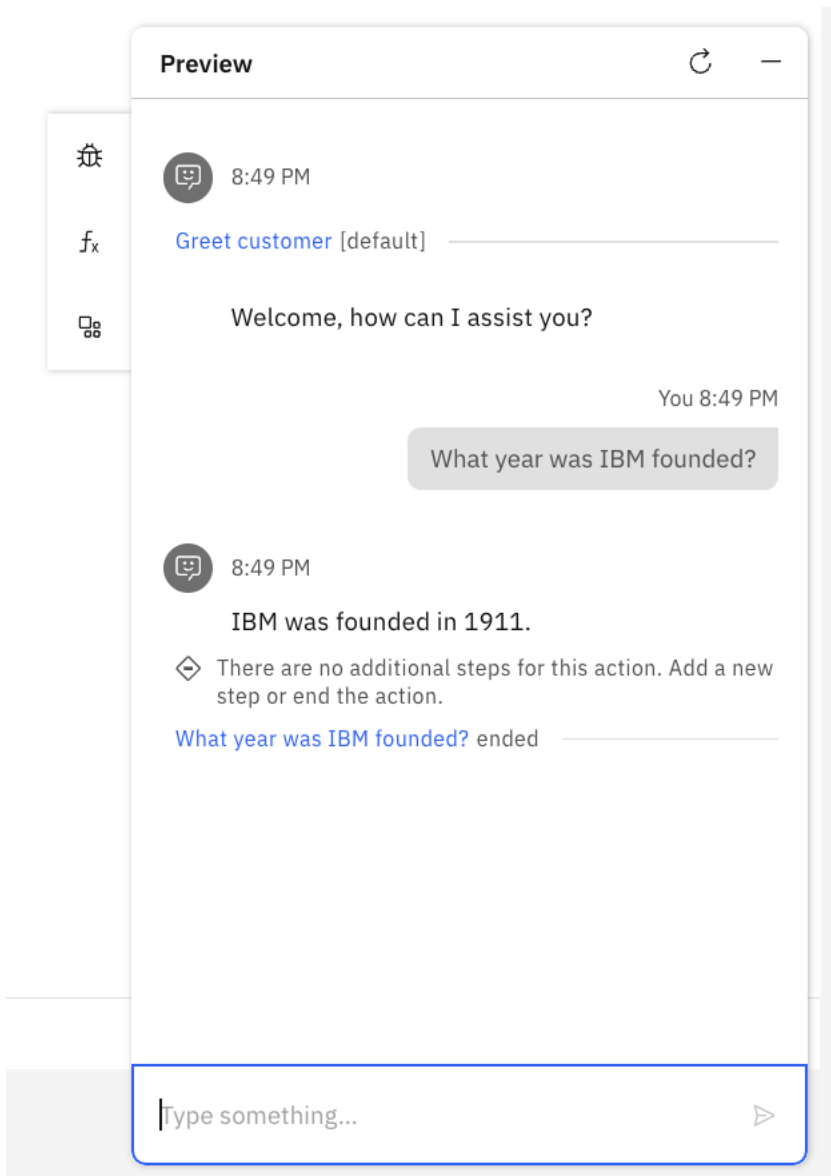
13. Close the action:



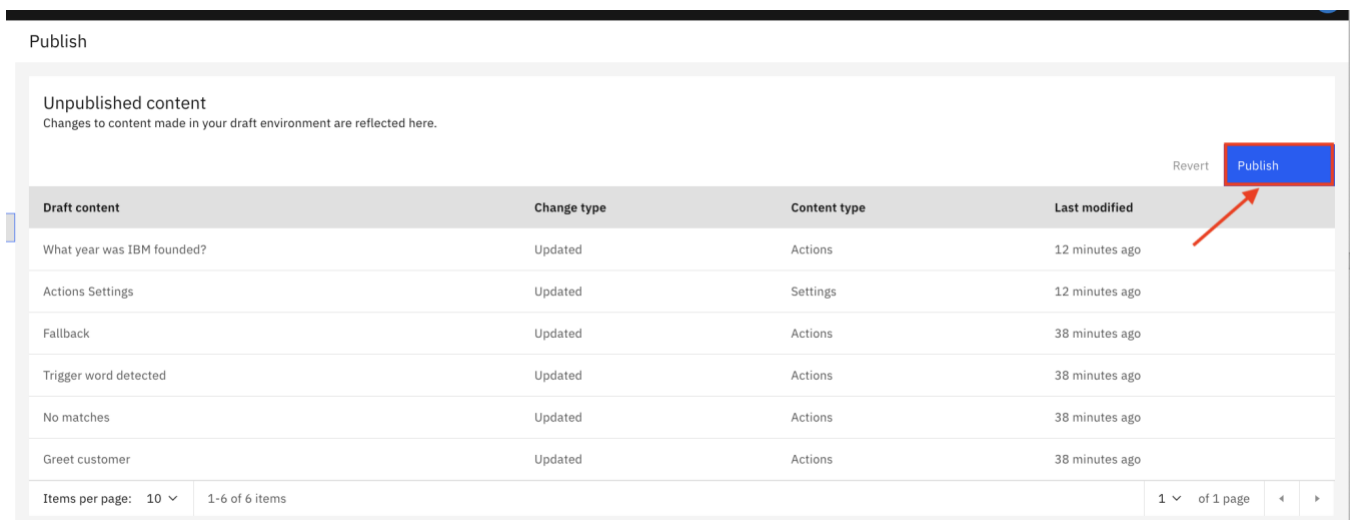
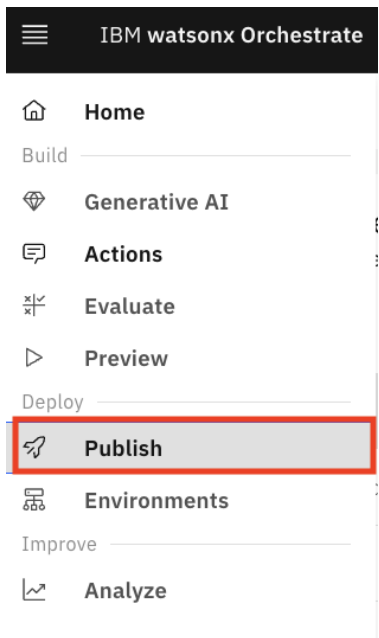
14. You can test the action by clicking on preview, entering the question:

- What year was IBM founded?

The assistant should call the AI guided action you just created:



15. Publish the assistant:



Choose **Live** for the environment:

Publish all content



Create a new version and publish it to an environment. This version replaces any content that is already in the environment.

Describe changes in this version

0/500

Example: Updated "Business hours" action

Publish to an environment

Choose environment



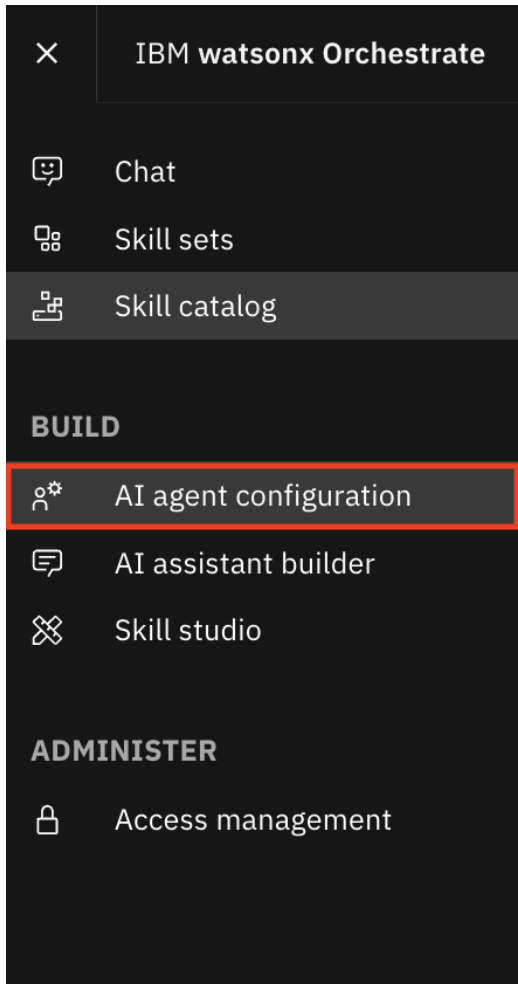
Live

Create version without publishing

Note: This step is required to add your assistant into the AI chat.

3.2 Add AI assistant from the assistant builder

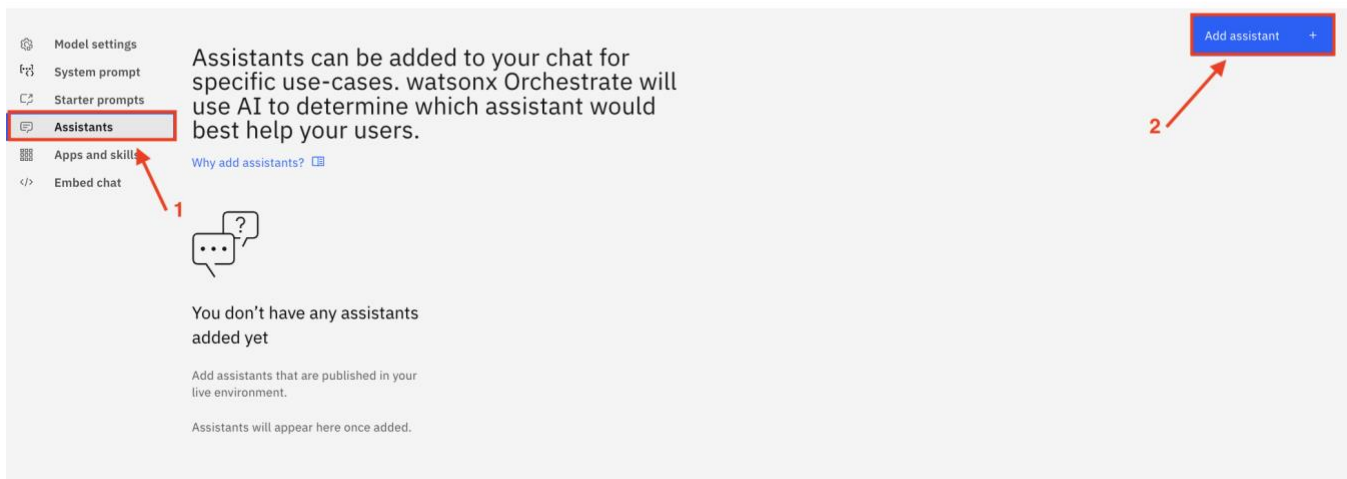
1. Go back into the AI agent configuration settings:



2. Select **Assistants** and then **Add assistant**:

AI agent configuration

Agent configuration allows users to customize their chat experience according to their preferences.



3. Select your assistant in the drop-down menu and provide a quick description. Click on **Connect**:

Assistants



Connect an assistant to your chat

Published Assistants

External Assistant

Select the existing assistant that you want to connect to your chat. Produce a description that helps the AI identify related content to this particular assistant.


Choose assistant

Assistants

IBM assistant



Don't see your assistant? Only live assistants appear in the selection menu. Make sure the assistant that you want to connect is ready to go and published into the live environment.

 Create a new assistant, make changes, or publish live from the [assistant builder](#).

Define assistant

Display name

IBM assistant

The display name for this assistant

Description of assistant capabilities

36/1000

A tool to answer questions about IBM

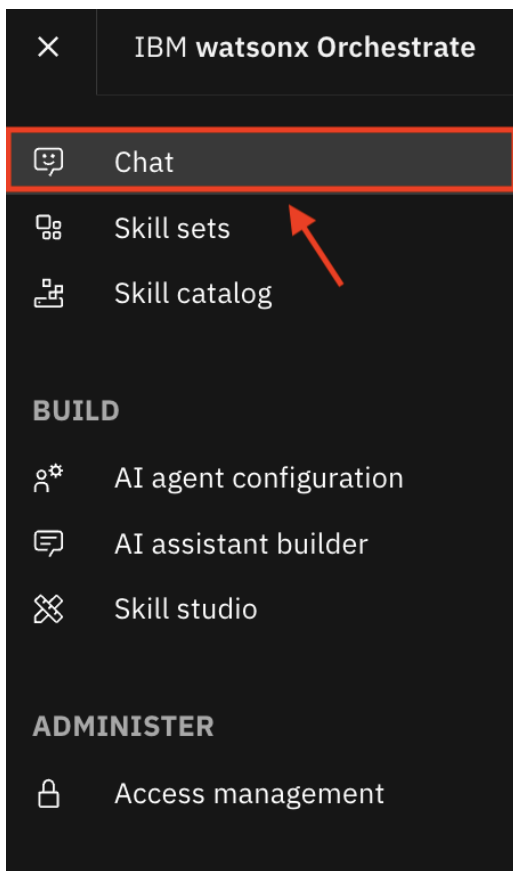
Produce a short description of what this assistant is capable of providing to your users. This will help the AI model determine the best assistant that would help your users. [What makes a good description?](#)



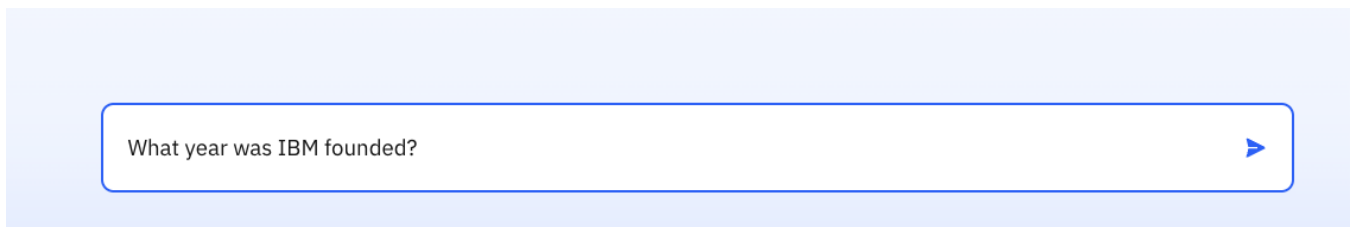
Cancel

Connect

- Now go back into the **AI chat** and test it to make sure the question gets routed to the right place, i.e. your IBM assistant:



- Type your question in the chat window at the bottom of the screen:



- You can confirm that the output is provided by your IBM assistant, as expected:



4 Implement an external agent and add it in the AI chat

In this part of the lab you will create and deploy an agent using watsonx.ai. You will then deploy a Code Engine application (sample already provided) that embeds the deployed agent. Finally, you will configure the external agent in the watsonx Orchestrate AI chat and test the AI chat to make sure your questions get routed to the external agent as expected. Please follow instructions provided here:

https://github.com/watson-developer-cloud/watsonx-orchestrate-developer-toolkit/tree/main/external_agent/examples/agent_builder