

# IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide

Description	IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide
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# Welcome

Welcome to the IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide (lab guide). The lab guide is part of the IBM watsonx Assistant for Z for Technical Sales Level 4 learning plan for IBM and Business Partner Technical Sales and related badge. The learning plan is intended to teach technical sellers and Business Partners how to conduct a proof of experience (PoX) for a client.



## In a fast-paced world, things change

The products and services may appear differently than what is shown in the lab guide. This can occur if the product or service is updated with a new version.

Responses generated by IBM watsonx Assistant for Z are likely to change over time. The responses you see when you run the queries in this section may differ from the screen images captured in the lab guide.

This lab guide covers the setup, configuration, and usage of watsonx Assistant for Z. This lab guide uses the [IBM watsonx Assistant for Z Velocity collection](#) and the three Velocity Pilot lab environments in IBM Technology Zone (ITZ).

The lab guide also enables dedicated lab environments for customized client PoXs and demonstrations. If you are preparing for an actual pilot engagement, refer to the [Pilot Scoping Guide for watsonx Assistant for Z](#) for additional information.

The lab guide provides the following guidance to:

- Provisioning the lab environments
- Creating an assistant and configuring conversational search
- Configuring assistant settings
- Testing conversational search
- Deploying a dedicated instance of OpenSearch for client document ingestion (Optional)
- Importing skills for z/OS automations
- Connecting apps to assistants
- Creating assistant actions
- Creating skill flows and custom-built actions
- Importing pre-packaged z/OS skills
- Publishing and deploying your assistant

## Support

Think something is down? Check the applicable status pages for any known issues such as a site or service not being available:

- [IBM Technology Zone status](#)

For issues with provisioning the ITZ environment for this lab (for example, a failed reservation request due to insufficient quota capacity), open a ticket with ITZ support:

- Web: [IBM Technology Zone ticket system](#)
- Email: [techzone.help@ibm.com](mailto:techzone.help@ibm.com)

For issues related to specific steps found in the demonstration guide after the ITZ environment is provisioned, contact the authors:

- Slack:
  - [#watsonx-assistant-z-technical](#) - IBM only
  - [#wxo-practitioners](#) - IBM only - for questions that are related to the software as a service (SaaS) instance of watsonx Orchestrate
- Email: [andrewj@us.ibm.com](mailto:andrewj@us.ibm.com) and [maxwell.g.weiss@ibm.com](mailto:maxwell.g.weiss@ibm.com)

Business Partners, use the IBM Training live Chat Support service or other support methods that are found on the IBM Training portal [here](#).

## Using the demonstration guide

Use these helpful tips to take full advantage of the IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide.

### 🖨 Printing the demonstration guide

**⚠ Printed or saved copies can be out of date**

The IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide changes regularly to match the IBM watsonx Assistant for Z offering and associated ITZ environment. Printed or saved copies of the demonstration guide can become out-of-date quickly and result in failed steps.

A ready-to-print PDF version of the IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide is [here](#).

### 🖼 Viewing images

Images in the demonstration guide can be enlarged by clicking on the image. Press the **Esc** key or click the **X** to dismiss the enlarged image.

Reserve the IBM Technology Zone environment

IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide

Welcome

Reserve the IBM Technology Zone environment

Pilot setup

Next steps

2. Click **Reserve now**.  
The **Reserve now** option creates a reservation for immediate use. Optionally, schedule the reservation for a later date, like when you will be at your client's office.



3. Complete the reservation request and click **Submit**.  
The first two reservations will be similar to the first image below and have fields a-e that will need to be completed.

- a. Optionally, change the **Name** field for the reservation.
- b. Select the **Education** purpose tile.
- c. Enter a **Purpose description**.
- d. Select the region nearest your physical location in the **Preferred Geography** drop-down.
- e. The **End date and time** will be set to 2 days after the current date and time.
- f. Accept the IBM Technology Zone's terms and conditions and security policies.
- g. When satisfied with the parameters, click **Submit**.



## Image highlighting

In some images, the following styles of highlighting are used:

- **Solid highlight box:** This style of box highlights where to click, enter, or select an item.



- **Dash highlight box:** This style of box highlights one of two things: the path to follow to get to a specific location in the user interface, or areas to explore on your own.



## Copying commands and prompts

Copying and pasting commands and prompts from this demonstration guide is easy and can eliminate typographical errors.

Click the highlighted copy icon and then use your operating system's paste function. For example,  $\text{[ } \wedge \text{Ctrl} \text{]} + \text{[V]}$  or right-click and select Paste.

Prompt 1

What is the APF list in z/OS? Provide a detailed explanation.





## Acronyms and terminology



IBM employees and the tech industry in general, tend to use acronyms. In the demonstration guide, most acronyms will appear with a dashed underline. Hover over the acronym to learn its meaning. A question mark (?) icon will first appear and after a second the tool tip with the acronym's meaning is displayed. Try it here: LPAR.

Guidance for delivering a demonstration

IBM watsonx Assistant for Z

Welcome

Reserve the IBM Technology Zone environment

Guidance for delivering a demonstration

Demonstration scenarios >

Next steps

Specific guidance for IBM watsonx Assistant for Z and the ITZ environment

Following the scripts provided in the IBM watsonx Assistant for Z for Technical Sales Level 3 Demonstration Guide will help guarantee a successful demonstration. Use these tips to help insure success with IBM watsonx Assistant for Z and the ITZ environment:

- Follow the scripts in the IBM watsonx Assistant for Z for Technical Sales Level 3 Demonstration Guide for the automations and skills to execute as expected.

Table of contents

General demonstration guidance

Specific guidance for IBM watsonx Assistant for Z and the ITZ environment



## The Lab Guide table of contents

This **Demonstration Guide** uses a responsive browser-based interface to ensure pages are usable on various devices with different screen sizes. The Demonstration Guide table of contents may be displayed as highlighted in the green dashed box in this image:

The screenshot shows a browser window for the "IBM watsonx Assistant for Z for Technical Sales Level 3 Demonstration Guide". The title bar includes the course name, a refresh icon, and a search bar. The main content area has a green dashed box highlighting the left sidebar, which contains the Table of Contents. The sidebar lists chapters such as Welcome, Guidance for delivering a demonstration, Reserve the IBM Technology Zone environment, Demonstration scenarios, Introduction to scenarios, Scenario 1: Authorized Program Facility, Scenario 2: Certificate renewal, Scenario 3: Db2 versioning, Scenario 4: Initial Program Load on Z, Additional IBM Z related prompts, Summary, Next steps, Printing the guide, and Instructions. The main content area displays the "Welcome" page, which includes an introduction to the course, information about end-user skills, and a note about Velocity Pilot information.

However, if the browser window is sized smaller, the table of contents can be accessed by clicking the main menu icon (≡):

The screenshot shows the same browser window after the main menu icon (≡) was clicked. The sidebar is now collapsed, and the main content area displays the "Welcome" page. The main menu icon is highlighted with a green box.

Click the main menu icon (≡) to expand the table of contents.

Continue to the [Reserve the IBM Technology Zone environments](#) section to begin the journey to obtain the IBM watsonx Assistant for Z Technical Sales Advanced badge.

# IBM Technology Zone environment

To enable sellers to learn how to deliver client pilots of IBM Watsonx Assistant for Z, multiple environments are available in IBM Technology Zone (ITZ). The following environments are used for the Watsonx Assistant for Z Velocity lab environment and can be found in the [IBM Watsonx Assistant for Z collection](#):

- **Watsonx Assistant for Z lab – Watsonx Orchestrate:** a dedicated environment with Watsonx Orchestrate on IBM Cloud that is used for creating and configuring the assistant, configuring conversational search, importing skills, and configuring actions.
- **Ansible Automation Platform (AAP) & z/OS:** a pre-configured instance of AAP and Wazi z/OS. The environment includes preinstalled Ansible playbooks that can be imported as skills within Watsonx Orchestrate and connected to your assistant. The environment provides preinstalled templates for various use cases that are covered in a later section. Learn more about AAP [here](#). Learn more about Wazi, [here](#).
- **Single Node OpenShift with NFS storage:** used to provision a single-node Red Hat OpenShift cluster (SNO) on IBM Cloud. The cluster is used to install a dedicated instance of [OpenSearch](#) for Watsonx Assistant for Z. This environment enables ingestion of client-supplied documents.



All activities in this lab guide are required.

While all three environments may not be required for every client pilot, to complete the Level 4 learning plan and earn the IBM Watsonx Assistant for Z Technical Sales Advanced badge, you must provision all three ITZ environments and complete all sections in the lab guide. **Any statements in the ITZ collection regarding optional environments or tasks should be ignored.**

Follow the instructions in to create new reservation requests, extend the reservations, and access the ITZ demonstration environments. Provisioning the SNO environment in ITZ can take several hours, while the other two environments typically provisioning in under 30 minutes.

## Create a reservation request

1. Click each of the links that follow to open a browser to the reservation pages of the [IBM Watsonx Assistant for Z](#) ITZ environments.



You may be asked to authenticate to IBM Technology Zone.

The steps to authenticate to ITZ are not detailed here as they may vary between users.

[Watsonx Assistant for Z lab – Watsonx Orchestrate - reservation page](#)

[Ansible Automation Platform \(AAP\) & z/OS - reservation page](#)

## Single Node OpenShift with NFS storage - reservation page

 The next two steps are for one of the three environments. Repeat for all three environments.

Be sure to follow these steps to create a reservation in ITZ for all three environments.

### 2. Select Reserve now.

The **Reserve now** option creates a reservation for immediate use. Optionally, schedule the reservation for a later date, for example, when you are at your client's office to start a pilot.



The screenshot shows the 'Create a reservation' interface. At the top, there are tabs for 'Select a environment/infrastructure', 'Select a reservation type', 'Fill out your reservation', and 'Complete'. Below these tabs, there is a section titled 'Single environment reservation options:' with two radio buttons: 'Reserve now' (which is selected and highlighted with a green box) and 'Schedule for later'.

### 3. Complete the reservation request form and then click Submit.

The first two reservations are similar to the first image and have fields **a-e** that need to be completed.

- a.** Name: specify a name for the reservation (optional).
- b.** Purpose: select the **Education** purpose tile.



#### For client pilots...

For client pilots, set the **Purpose** field in the reservation to **Pilot** and provide an opportunity number to receive a longer reservation.

- c.** Purpose description: enter a description, for example: Level 4 education.
- d.** Preferred geography: select the region nearest to your physical location for improved performance and reduced network latency.
- e.** End date and time: the initial maximum will be set to two days after the current date and time. Instructions follow to extend the reservation end date.
- f.** Accept the IBM Technology Zone's terms and conditions and security policies.
- g.** Click **Submit**.

**Create a reservation**

IBM Watsonx Assistant for Z

Name  a

Select a reservation type  b

Purpose  c

Sales Opportunity number  d

Preferred Geography  e

End date and time  f

Notes

I agree to IBM Technology Zone's [Terms & Conditions](#) and [End User Security Policies](#)  g

Submit

In addition to the preceding fields, the reservation for the **Single Node OpenShift with NFS storage** has these additional fields:

- h.** OCP/Kubernetes cluster network: leave the default setting of **10.128.0.0/14**.
- i.** Enable FIPS security: leave the default setting of **No**. Learn more about the Federal Information Processing Standards (FIPS) [here](#).
- j.** Master single node flavor: select **16 vCPU x 64 GB - 300 GB ephemeral storage**.
- k.** OpenShift version: select **4.14**.
- l.** OCP/Kubernetes service network: leave the default setting of **172.30.0.0/16**.
- m.** Accept the IBM Technology Zone's terms and conditions and security policies.
- n.** Click **Submit**.

IBM Technology Zone | My TechZone | Help

Enter date and time Select a date 11/01/2024 Select a time 11:51 AM America/Chicago

Reservation policy: Recommended 2 days, but can be reserved up to 2 days on this reservation form. Extend later for 2 days increments up to 4 days total. Max time 6 days total.

OCP/Kubernetes Cluster Network 10.128.0.0/14

Enable FIPS Security No

Master Single Node Flavor 16 vCPU x 64 GB - 300 GB ephemeral storage

OpenShift Version 4.14

OCP/Kubernetes Service Network 172.30.0.0/16

Notes Enter any notes you would like to attach to this reservation

I agree to IBM Technology Zone's [Terms & Conditions](#) and [End User Security Policies](#)

**Submit**

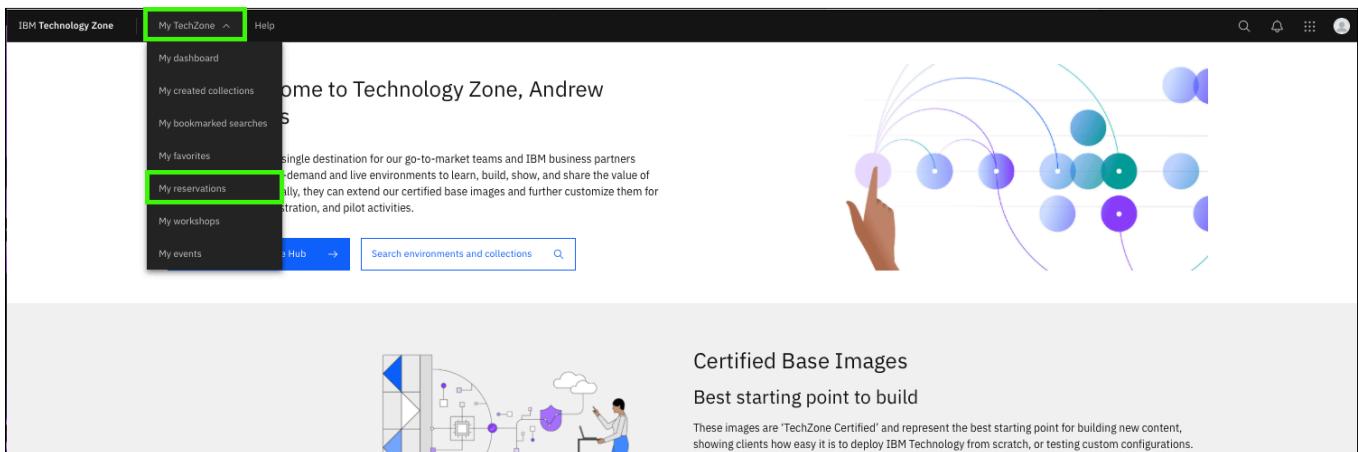
During the provisioning process, multiple emails are sent to you from ITZ as the provisioning process runs. One email states the reservation is provisioning and the other email states that the environment is **Ready**.

In rare cases, the provisioning process may fail. If you receive an email stating the reservation failed, try again by repeating Steps 1-3 for the environment that failed to provision. In addition, review the [Troubleshooting](#) section that follows. If issues continue, open an [ITZ support ticket](#) by using the methods that are mentioned in the [Support](#) section.

## Extend the reservation

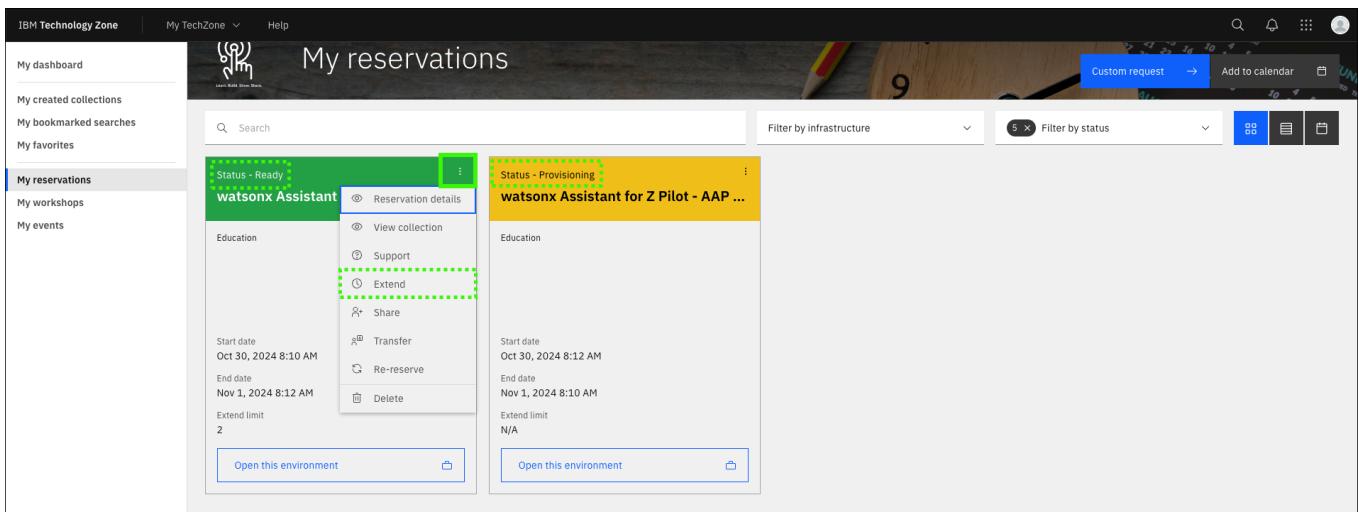
When the reservations are in the **Ready** state, you can extend each reservation to a total of six days.

1. In the IBM Technology Zone portal, expand **My TechZone** and select **My Reservations**.



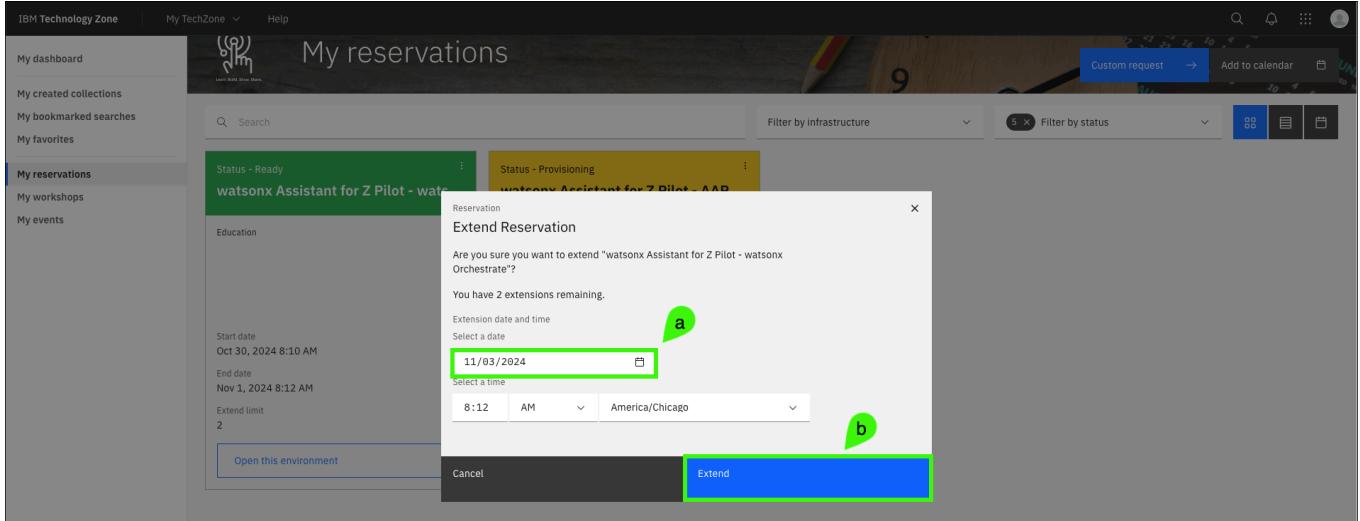
The screenshot shows the IBM Technology Zone homepage. The navigation bar at the top has 'IBM Technology Zone' on the left, 'My TechZone' with a dropdown arrow in the middle, and 'Help' on the right. A green box highlights the 'My TechZone' dropdown arrow. Below the navigation bar is a sidebar with links: 'My dashboard', 'My created collections', 'My bookmarked searches', 'My favorites', 'My reservations' (which is also highlighted with a green box), 'My workshops', and 'My events'. To the right of the sidebar is a main content area with a welcome message 'Welcome to Technology Zone, Andrew' and a 'Search environments and collections' input field. On the far right, there's a decorative graphic of a hand pointing at a cluster of colored circles.

2. Click the overflow icon (≡) on the reservation tile and select **Extend**.



The screenshot shows the 'My reservations' page. The navigation bar at the top has 'IBM Technology Zone' on the left, 'My TechZone' with a dropdown arrow in the middle, and 'Help' on the right. The sidebar on the left is identical to the one in the previous screenshot. The main content area displays two reservation tiles. The first tile, for 'watsonx Assistant', shows a status of 'Status - Ready' and an 'Extend' option in its details menu. The second tile, for 'watsonx Assistant for Z Pilot - AAP ...', shows a status of 'Status - Provisioning'. Both tiles have 'Open this environment' buttons at the bottom. The top right of the screen shows various navigation and search tools.

3. Click the **Select a date** option, (a) specify the date to extend to, and then (b) click **Extend**.



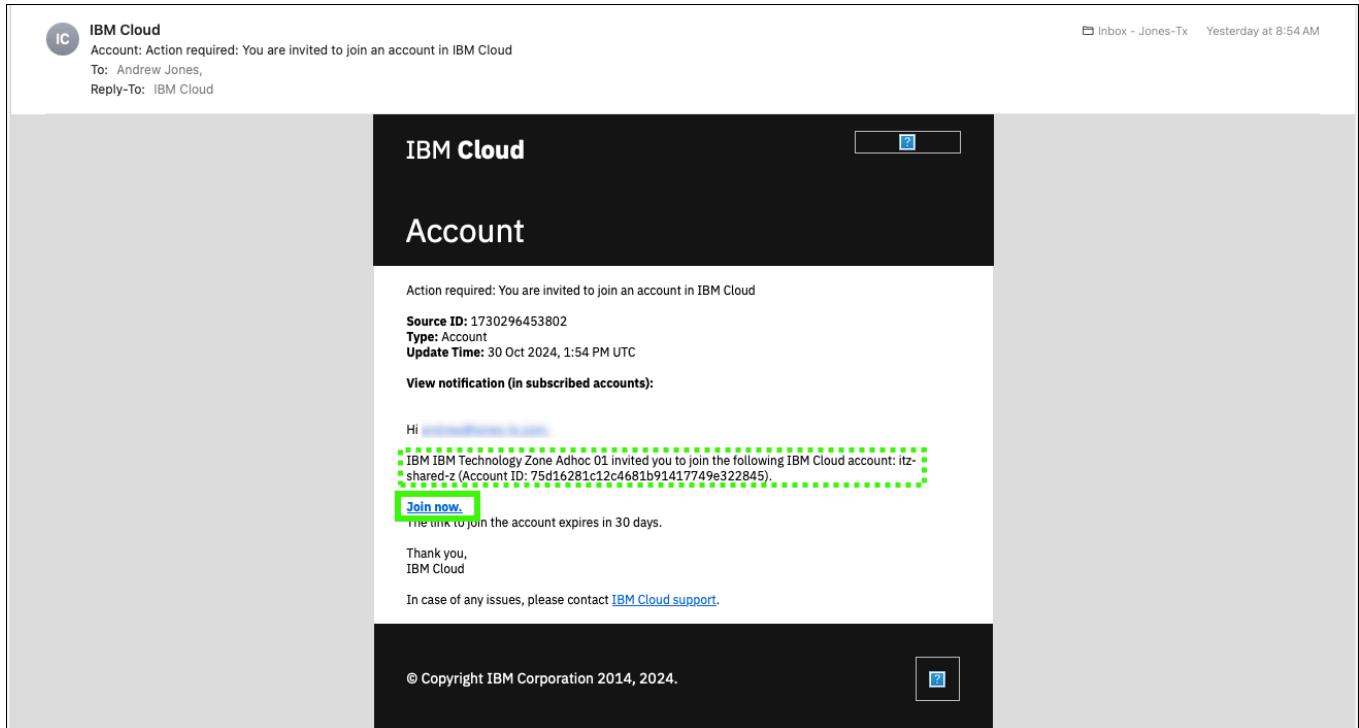
If you anticipate needing more time, repeat Steps 5-6 to extend the reservation to the maximum of six days. Repeat these steps for the other two reservations.

## Join the ITZ IBM Cloud account

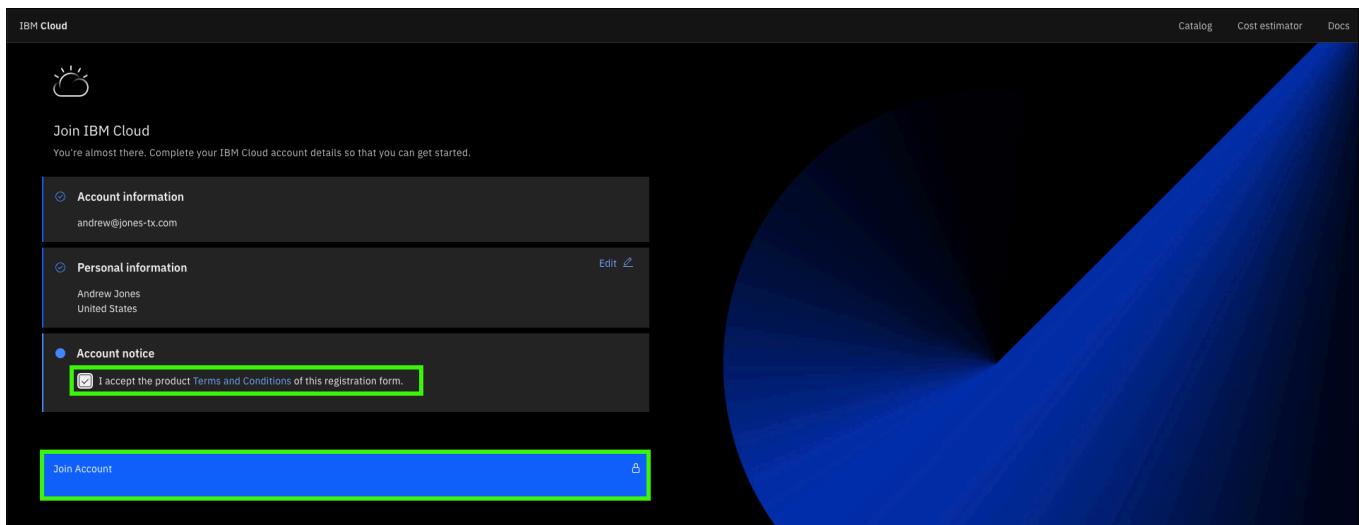
Both the **watsonx Assistant for Z lab – watsonx Orchestrate** and the **Ansible Automation Platform (AAP) & z/OS** environments add you to an IBM Cloud account while your reservation is active. During the provisioning process of these **ITZ** environments, you receive two emails from IBM Cloud.

You only need to accept the invitation to the **watsonx Assistant for Z lab – watsonx Orchestrate** environment.

1. Open the email from **IBM Cloud** and click the **Join now** links.



2. In the **Join IBM Cloud** browser window that opens, select the **I accept the product Terms and Conditions** of the registration form, and then click **Join Account**.

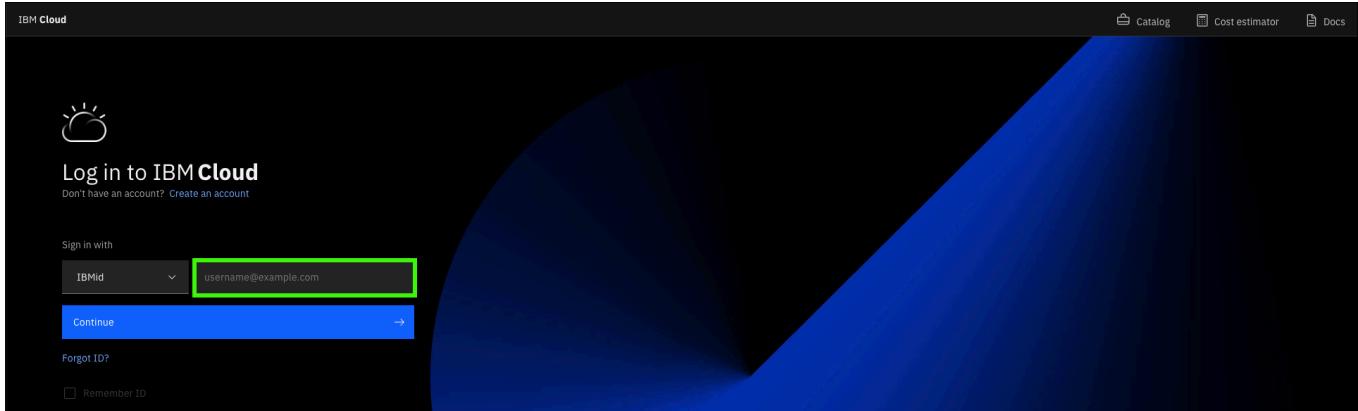


After joining the account, verify that the account appears in your available account list in the IBM Cloud portal.

- Click the following link to open a browser to the IBM Cloud portal.

### IBM Cloud portal

- Follow the directions to complete the authentication to IBM Cloud using the same email address you used to login to ITZ. The login steps vary depending on any two-factor authentication methods enabled.



- Click the **account** menu and verify access to the IBM Cloud account listed in your ITZ reservation.

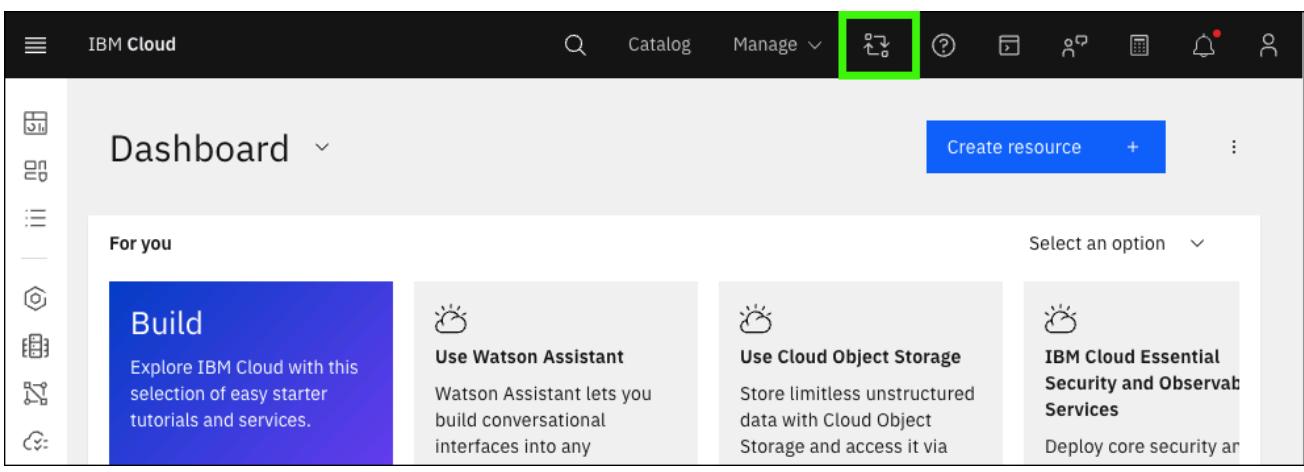


#### The account may change within ITZ.

Over time, the account may change for the environments. The account names should align with the account named in the invitation email you received.

 Does your IBM Cloud portal view look different?

If your IBM Cloud portal looks different from the images above, it could be because the IBM Cloud portal has gone through a design change, or your browser window is set to smaller size. Instead of the current selected account appearing in the top menu, you may see this **change account** icon:  Click this icon to view the list of accounts you can access.



## Accessing the environments

Each reservation provides access to its respective environment. Details for accessing each environment are provided in the **Pilot setup** sections that follow in the lab guide.

After all three reservations are in the **Ready** state and you accept the invitations to the IBM Cloud accounts, proceed to the next section to complete the pilot setup.

## Troubleshooting



### If your reservation for the Single Node OpenShift environment fails...



If your reservation for the Single Node OpenShift environment fails, try selecting one of the **eu-gb region** options as the **Preferred Geography**.

## Pilot setup

# Creating an assistant and configuring conversational search

You use [watsonx Orchestrate](#) to create the assistant and configure conversational search. You can configure your assistant to use conversational search by using a hosted [OpenSearch](#) instance. The pre-configured instance in IBM Technology Zone (ITZ) has over 220 knowledge sources and supports Retrieval Augmented Generation (RAG). The large language model (LLM) providing the conversational AI augments this knowledge based on IBM Z documentation. All of these elements create IBM Z context-aware responses to queries with its content-grounded knowledge.

Access the ITZ IBM Cloud account for the watsonx Assistant for Z Pilot environment

1. In the IBM Technology Zone portal, expand **My TechZone** and select **My Reservations**, or click the following link.

## ITZ My reservations

Welcome to Technology Zone, Andrew

Single destination for our go-to-market teams and IBM business partners to find and live environments to learn, build, show, and share the value of IBM Z. Additionally, they can extend our certified base images and further customize them for development, test, and pilot activities.

**Certified Base Images**

Best starting point to build

These images are 'TechZone Certified' and represent the best starting point for building new content, showing clients how easy it is to deploy IBM Technology from scratch, or testing custom configurations.

2. Click the **watsonx Assistant for Z Pilot - watsonx Orchestrate** tile.

Status	Name	Description
Ready	watsonx Assistant for Z Pilot - AAP & z/OS	Education
Ready	watsonx Assistant for Z Pilot - watsonx O...	Education
Ready	Single Node OpenShift (VMware on IBM C...	Education

3. Record the ITZ IBM Cloud account name associated with the reservation.

**Purpose**

- Purpose
- Education
- Opportunity Product(s)
- Customer(s)

**Environment**

Reservation ID	Type
672a09a1a8f85062f891e081	IBM Cloud
Request method	Transaction ID
watsonx-orchestrate	115897c9-58a1-4f17-af9c-b16dc2a97590
ITZ-WATSONX-036	Geo
Region	americas
us-south	Datacenter
Customer data	dal10
false	Environment
Idle runtime limit	watsonx-orchestrate-wusdf
10800	Timeout action

**Reservation Details**

IBM Cloud Login  
<https://icloud.ibm.com/resources>

#### 4. Click the IBM Cloud Login link.

**Purpose**

- Purpose
- Education
- Opportunity Product(s)
- Customer(s)

**Environment**

Reservation ID	Type
672a09a1a8f85062f891e081	IBM Cloud
Request method	Transaction ID
watsonx-orchestrate	115897c9-58a1-4f17-af9c-b16dc2a97590
Cloud Account	Geo
ITZ-WATSONX-036	americas
Region	Datacenter
us-south	dal10
Customer data	Environment
false	watsonx-orchestrate-wusdf
Idle runtime limit	Timeout action
10800	

**Reservation Details**

IBM Cloud Login  
<https://icloud.ibm.com/resources>



#### Steps to authenticate to IBM Cloud are not illustrated here.

You may need to authenticate to IBM Cloud after clicking the link. These steps are not shown here as they may vary by individual.

#### 5. Verify that the current IBM Cloud account is the same as the account name recorded in step 3. If the account is not the same, switch to the proper account.

**Note:** The formatting of the name can appear differently than what is shown in the ITZ reservation.

The screenshot shows the IBM Cloud Resource list interface. At the top right, there is a dropdown menu labeled '2953593 - Itz-watsonx-036'. This dropdown is highlighted with a green border. Below the dropdown, there is a 'Create resource' button.

If the proper account is not listed, click the account drop down and select the proper account.

**Note:** If your browser window is narrow, the account drop down can be depicted with the Switch Account icon (  ).

This screenshot is similar to the one above, but the account dropdown menu is open, showing a list of accounts. The account '2953593 - Itz-watsonx-036' is highlighted with a green border.

## Create your Assistant

1. Click the **Resources** icon (  ).

The screenshot shows the IBM Cloud Dashboard. The 'Resources' icon (represented by three horizontal lines) is highlighted with a green border. Other icons include 'Dashboard', 'Watson Assistant', 'Watson Studio', and 'Watson Assistant' again.

2. Expand the **AI / Machine Learning** section and click the **watsonx Orchestrate** instance listed (the instance name is different than shown in the following image).

Resource list

Name	Group	Location	Product	Status	Tags
itzwxo-2700039nft-erspw	watsonx-orchestrate-erspw	Dallas	watsonx Orchestrate	Active	-

### 3. Click Launch watsonx Orchestrate.

itzwxo-2700039nft-erspw Active Add tags

Manage Service credentials

Start by launching the tool

**Launch watsonx Orchestrate**

Credentials

API key: [Download](#) [Show credentials](#)

URL: <https://api.us-south.assistant-builder.watson.cloud.ibm.com/instances/a7675d8e-e885-489f>

Plan Essentials Plan

### 4. Click the AI assistant builder tile to start creating a new assistant.

Welcome, Andrew Jones!

Take productivity to the next level.

Try Skills in Chat →

**AI assistant builder**

Start building the skills, conversations, and automations your team needs here.

Boost productivity and customer care by creating conversational experiences.

**Skill studio**

Build the skills your team needs to get their work done more quickly.

**Automate how your business works**

Standard plan | Skill studio

Learn more →

### 5. Enter a name and optional description for your assistant and click Next.

Welcome to AI assistant builder

Create your first assistant

Let's get your assistant up and running. Name your assistant, add a description, and choose a language. In following steps we'll gather more information, show you basic customizations, and give you a preview of what your assistant will look like.

Assistant name: Zeeves

Description (optional): Zeeves, the Jeeves for everything IBM Z.

Assistant language: English (US)

**Next**

## 6. Complete the **Personalize your assistant** form and click **Next**.

Explore the personalization options. In creating an assistant for a client pilot, consider specifying attributes that align with the client's business.

- Select **Web**.
- Select the industry of your choice.
- Select the role of your choice.
- Select the need of your choice.

Welcome to AI assistant builder

Personalize your assistant

Tell us where your assistant will live  
Where do you plan on deploying your assistant?

a. Web

Tell us about yourself  
Which industry do you work in?

b. Software

c. Developer

d. I want to automate common tasks in a natural way

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 would you prefer?

I'll pick them up! Ship them to me!

Type something... ▶

**Next**

## 7. Complete the **Customize your chat UI** form and click **Next**.

Explore the customization options. When creating an assistant for a client pilot, consider specifying attributes that align with the client (for example, colors and logos).

## 8. Preview your assistant and then click **Create**.

The assistant is now created.

**Enhance your assistant**

Further improve and customize your assistant with these recommendations.

**Assistant architecture**

Here's an overview that depicts the structure of your assistant.

The architecture diagram shows the following flow:

```

graph TD
    DB[Default behavior] --> Z[Zeeves]
    DB --> S[Search]
    DB --> AG[AI-guided]
    DB --> SB[Skill-based]
    DB --> CB[Custom-built]
    DB --> LA[Live agent]
    Z --> S
    Z --> AG
    Z --> SB
    Z --> CB
    Z --> LA
    AG --> Fallback[Fallback]
    SB --> Fallback
    CB --> Fallback
    LA --> Fallback
  
```

**Legend (Items listed on the right):**

- Build actions
- Customize your greeting
- Create a fallback plan
- Set up search
- Preview & debug
- Customize web chat
- Set up a channel
- Set up live agent
- Publ...  
assists  
Cho...  
envir...  
want assis...

## Configure conversational search

In the next steps you will be to configure **conversational search** for your assistant that uses a hosted instance of OpenSearch.

1. Click **Generative AI** menu item (💡) in the left navigation.

**Generative AI**

The left sidebar shows the 'Generative AI' menu item is selected. The rest of the interface is identical to the previous screenshot, displaying 'Enhance your assistant' recommendations and the 'Assistant architecture' diagram.

2. Review the base large language model (LLM) settings.

Notice the other LLM models available. For most pilots, the **granite-3-8b-instruct** model is appropriate.

Base large language model (LLM) (Beta)

Select a model

granite-3-8b-instruct (recommended)

By using the model you agree to these terms.

Add prompt instructions

Answer behavior

General-purpose answering

Chat with an LLM that can converse on a wide array of general topics

Conversational search

Conversational search isn't enabled

Set up the Search Integration by enabling the conversational button in your Draft environment to access this feature.

Set up your Search Integration →

Preview

1:03 PM Greet customer [default]

Welcome, how can I assist you?

### 3. Click Set up your Search Integration.

By default, conversational search is not enabled when an assistant is created. Conversational search takes priority over general-purpose answering if both are enabled. Learn more about conversational search in watsonx here.

Base large language model (LLM) (Beta)

Select a model

granite-3-8b-instruct (recommended)

By using the model you agree to these terms.

Add prompt instructions

Answer behavior

General-purpose answering

Chat with an LLM that can converse on a wide array of general topics

Conversational search

Conversational search isn't enabled

Set up the Search Integration by enabling the conversational button in your Draft environment to access this feature.

Set up your Search Integration →

Preview

1:03 PM Greet customer [default]

Welcome, how can I assist you?

### 4. Click Custom service.

## 5. Complete the **Custom service (a-c)** form and then click **Next (d)**.

a. Select **By providing credentials**.

b. Enter the following value in the **URL** field (use the copy icon to avoid typographical errors). This is the **URL** for the a shared **OpenSearch** instance. In later sections you will created and customize a dedicated instance.

```
https://wxa4z-opensearch-wrapper-wxa4z-demo.wxo4z-opc-opensearch-clus-47e063e6a3ad1f71bf2e58f91c3b4c2e-0000.us-south.containers.appdomain.cloud/v1/query
```

c. Select **None** in the **Choose an authentication type** drop-down list.

## 6. Enable **conversational search** and then click **Save**.

## 7. Update the conversational search **custom service** settings based on your requirements.

**Note:** The **Settings** page is divided into two sections in the following images to enhance the visibility of the screen captures.

Learn more about these **custom service** settings [here](#).

The following settings are proven to work well. You can experiment with these settings to see how they affect queries for your client's pilot.

a. Enable **Conversational search**.

b. Select **Single turn**. Enabling **multi-turn conversation** (by selecting Entire conversation) is not yet supported for the solution on-premises. Be mindful in using this option and help ensure that the client understands what is supported in the solution.

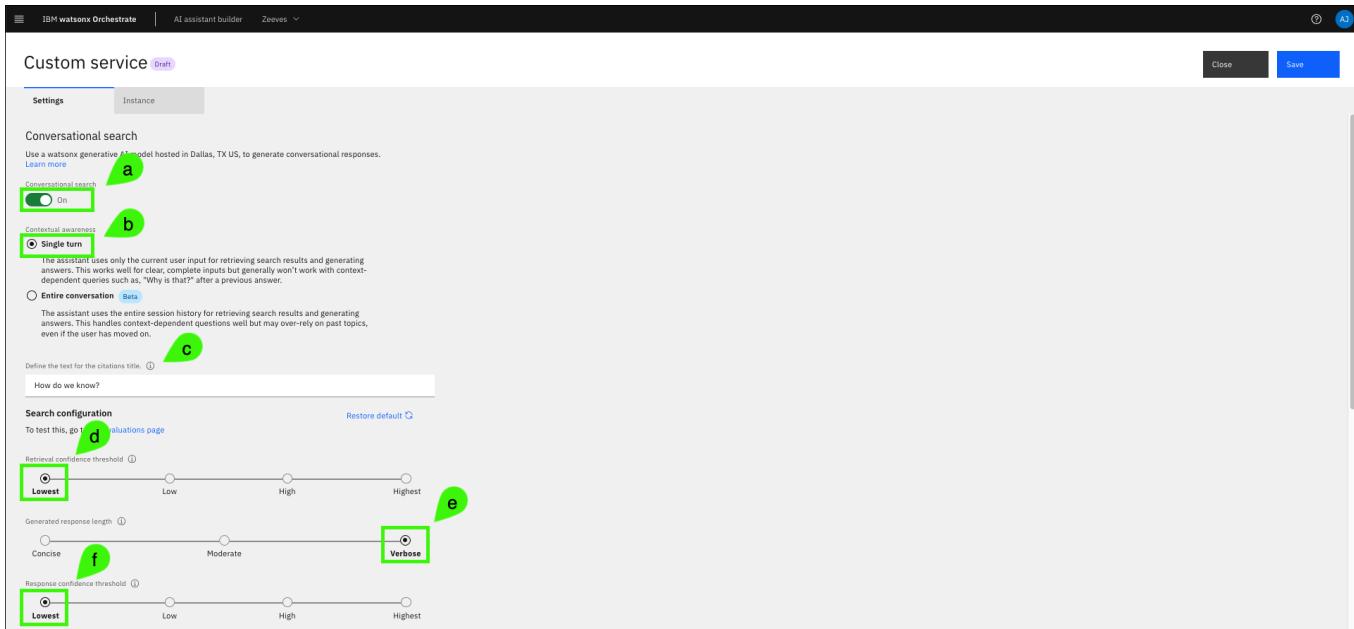
c. Specify the text that appears to instruct the user to expand the list of citations in the assistant (except web chat client).

d. Select **Lowest** for the **retrieval confidence threshold** setting. This setting checks the confidence of the retrieved citations before a response is generated.

e. Select **Verbose** for the **generated response length**. This setting affects the average response length.

Depending on user input, variations from the selected length can occur.

f. Select **Lowest** for the **response confidence threshold**. This setting checks the confidence of the generated citations after the response is generated.



g. Keep the default setting of **All** for the listing of citations.

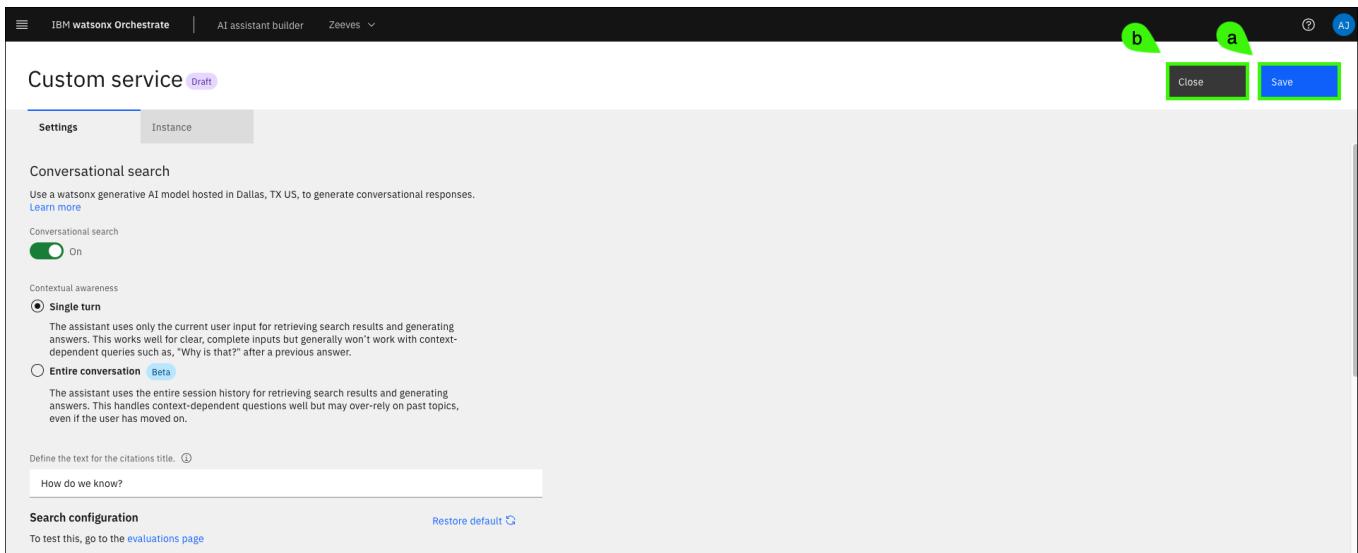
h. Keep the **Default filter** field empty.

i. The **Metadata** field provides a way to adjust your assistant's behavior during conversational search for your OpenSearch instance. This option is explored in detail in the [Installing and using zassist to ingest client documents](#). Leave the field empty for now.

j. The **Search display text** options specify the default text displayed when no results are found or when connectivity issues to the backend search service occur. You can keep the defaults or customize the service.



8. Click **Save** (a) and then click **Close** (b).



## Complete the configuration

After you save and close the **Conversational search** configuration page, a few more configurations are needed to get the best experience from your conversational chat. Details on these settings are available [here](#).

1. Hover over the **Generative AI** icon (💡) in the left navigation and click **Actions**.

The screenshot shows the IBM Watsonx Orchestrate interface. On the left, there's a sidebar with options like Home, Generative AI (which is selected and highlighted with a green box), Actions, Deploy, Publish, Environments, Improve, and Analyze. The main content area is titled "Generative AI" and "Large language model (LLM) (Beta)". It includes sections for "Instructions" and "Actions". A "Preview" window on the right shows a conversation where the AI says "Welcome, how can I assist you?".

## 2. Click Set by assistant under the All items menu.

The screenshot shows the "Actions" section of the AI assistant builder. On the left, there's a sidebar with "All items" expanded, showing "Created by you" and "Set by assistant" (which is highlighted with a green box). The main content area has a heading "Create your first action" and a "Create action" button.

## 3. Click No matches.

The screenshot shows the "Set by assistant" table. The columns are Name, Last edited, Examples Count, and Status. There are four rows: "Greet customer" (last edited 3 hours ago, 1 example, green status), "Trigger word detected" (last edited 3 hours ago, 1 example, green status), "No matches" (last edited 3 hours ago, 0 examples, green status), and "Fallback" (last edited 3 hours ago, 0 examples, green status).

## 4. Click Step 1 under Conversation steps.

The screenshot shows the "Conversation steps" editor. On the left, there's a sidebar with "Customer starts with:" and "Conversation steps". The "Conversation steps" section shows a step labeled "1" with a message "I'm afraid I don't understand. Please rephrase your question." and an "Action complete" button. This step is highlighted with a green box. To the right, there's a "Action starts" section and an "Additional training examples (optional)" section.

## 5. Select without conditions (a) in the Is taken drop-down menu and then click Clear conditions (b).

**Note:** the **Is taken** value does not change from **with conditions** after selecting **without conditions**.

Step 1

Is taken: with conditions

Conditions:

If All of this is true:

No matches count <= 3

and Add condition +

New condition group

Assistant says

I'm afraid I don't understand. Please rephrase your question.

Cancel Clear conditions

## 6. Delete the default text in the **Assistant says** entry field.

Step 1

Is taken: without conditions

Assistant says

For example: Please select from the following options:

Define customer response

And then

End the action

## 7. Expand the **And then** drop-down menu and select **Search for the answer**.

Step 1

Is taken: without conditions

Assistant says

For example: Please select from the following options:

Define customer response

And then

End the action

Search for the answer

Continue to next step

Re-ask previous step(s)

Go to a subaction

Use an extension

Search for the answer

Connect to agent

End the action

## 8. Click **Edit settings**.

## 9. Click After generation.

## 10. Select End the action after this step and then click Apply.

## 11. Click Save (💾).

The screenshot shows the AI assistant builder interface with the 'Editor' tab selected. On the left, there's a 'Conversation steps' panel with two steps: Step 1 ('Search for the answer') and Step 2 ('No matches count > 3'). Step 2 has a condition 'If All of this is true:' with a single condition 'No matches count > 3'. The top right corner of the main window area is highlighted with a green box.

## 12. Select Step 2 (No matches count) under Conversation steps and click delete (🗑).

This screenshot is similar to the previous one, but Step 2 is now selected in the 'Conversation steps' list. The delete icon for Step 2 is highlighted with a green box. The rest of the interface remains the same, with the 'Editor' tab active.

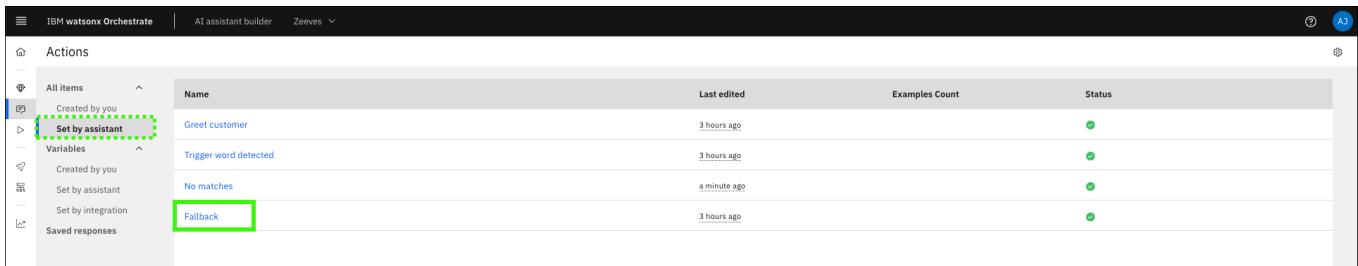
## 13. Click Delete in the confirmation dialog to delete Conversation step 2.

A confirmation dialog box is displayed in the center of the screen, asking 'Are you sure you want to delete step 2? You will not be able to recover this data once deleted.' At the bottom right of this dialog is a red box highlighting the 'Delete' button. The background shows the AI assistant builder interface with Step 2 selected in the 'Conversation steps' list.

## 14. Click Close (the x icon) the Editor window.

The screenshot shows the AI assistant builder interface after the Editor window has been closed. The title bar is no longer present, and the main workspace shows the 'Conversation steps' panel with Step 1 selected. The top right corner of the main window area is highlighted with a green box.

## 15. Click Fallback in the Actions table.

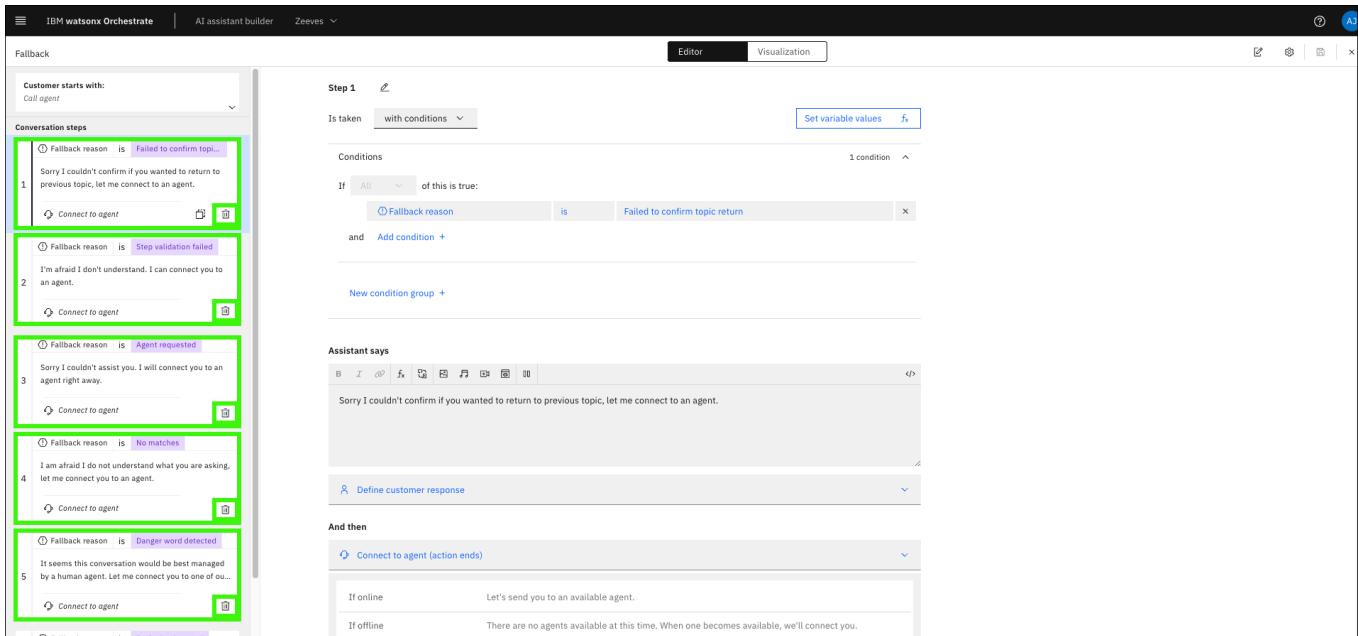


The screenshot shows the 'Actions' section of the IBM Watsonx Orchestrator interface. A green box highlights the 'Set by assistant' category, which contains the 'Fallback' item. The 'Fallback' row is selected, indicated by a blue border.

Name	Last edited	Examples Count	Status
Greet customer	3 hours ago	1	Green
Trigger word detected	3 hours ago	1	Green
No matches	a minute ago	1	Green
Fallback	3 hours ago	1	Green

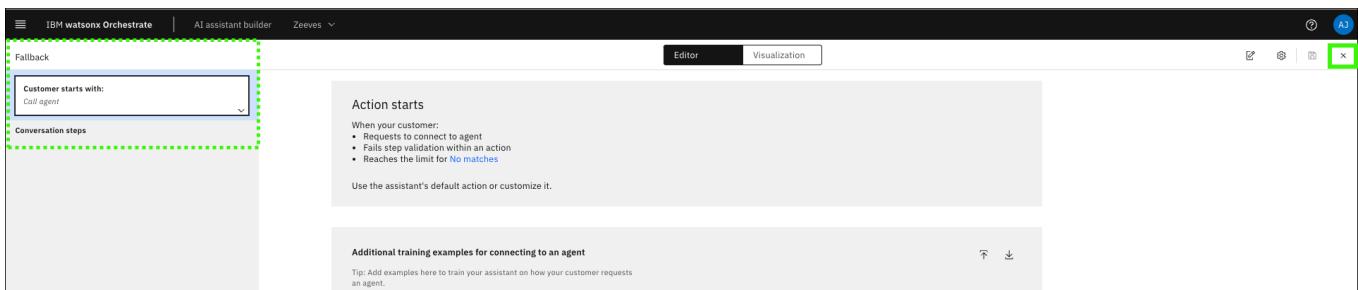
## 16. Delete all of the Conversation steps.

**Note:** The following image is edited. Only five steps are shown, but all six need to be deleted. You need to select each step individually. Click **delete** (trash icon) and confirm the deletion.



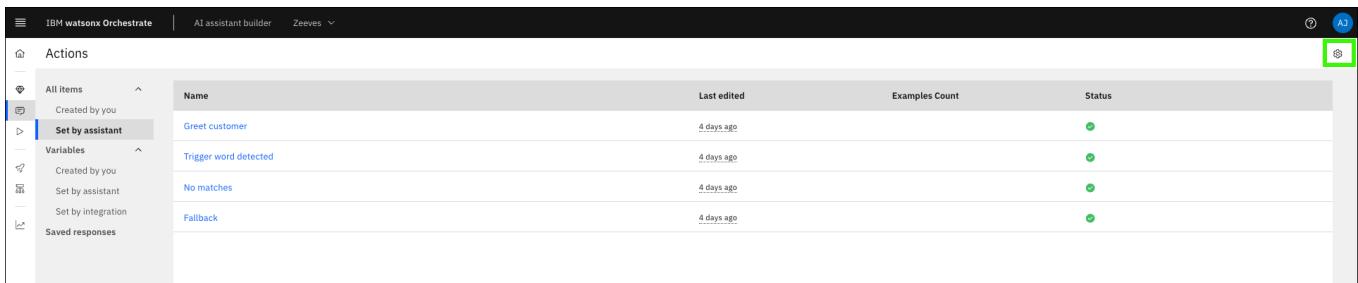
The screenshot shows the 'Editor' window for the 'Fallback' conversation. On the left, the 'Conversation steps' list contains five items, each with a delete button (trash icon). The items are: 1. Fallback reason is Failed to confirm topic..., 2. Fallback reason is Step validation failed, 3. Fallback reason is Agent requested, 4. Fallback reason is No matches, and 5. Fallback reason is Danger word detected. The right side of the window shows the step configuration for 'Step 1' and the generated response text: 'Sorry I couldn't confirm if you wanted to return to previous topic, let me connect you to an agent.'

## 17. Verify that all Conversation steps are deleted and then click the x to close the Editor window.



The screenshot shows the 'Editor' window for the 'Fallback' conversation. The 'Conversation steps' list is now empty, indicated by a dashed green border around the list area. The right side of the window shows the step configuration for 'Step 1' and the generated response text: 'Sorry I couldn't confirm if you wanted to return to previous topic, let me connect you to an agent.'

## 18. Click the Global settings (⚙️).



The screenshot shows the 'Actions' section of the IBM Watsonx Orchestrator interface. A green box highlights the 'Set by assistant' category, which contains the 'Fallback' item. The 'Fallback' row is selected, indicated by a blue border.

Name	Last edited	Examples Count	Status
Greet customer	4 days ago	1	Green
Trigger word detected	4 days ago	1	Green
No matches	4 days ago	1	Green
Fallback	4 days ago	1	Green

## 19. Click No matches under the Conversation routing tab.

**Global settings**

**Conversation routing** Change conversation topic Generative AI **New!** Autocorrection Display formats Algorithm Version Upload/Download

**No matches**

Your assistant can show options to users when multiple actions seem to match what the customer wants. [Learn more about asking a clarifying question](#)

Enable disambiguation  On

**Assistant says**  
Introduction text before listing the options.  
Did you mean:

**No matches**  
Option for when the user doesn't see relevant options. Leave blank to omit.  
None of the above

**Beta Response modes**  
 Off

**One action matches**  
Option for when user doesn't want to start the matched action  
Something else

**Connection to support**  
Can be any alternative help, such as a live agent or contact information  
Connect to support

**Example of asking a clarifying question**

**Important** Make sure your action names are short and clear to your customers. Action names will appear in the list of choices.

**Bank Bot**

open an account

Did you mean:

- Open a new savings account
- Open a new checking account
- I want to apply for a mortgage loan
- None of the above

## 20. Move the slider to **More often** (or select **More often** in the drop-down).

The setting helps ensure that actions are triggered less often unless the user's query specifically matches the action's input.

**Global settings**

**Conversation routing** Change conversation topic Generative AI **New!** Autocorrection Display formats Algorithm Version Upload/Download

**No matches**

Unrecognized input by customers triggers the **No matches** action that can be configured to fetch answers from a [search integration](#) or trigger the **Fallback** action.

By setting this threshold, you can affect how often your assistant routes customers to the "No matches" action.

Use "No matches"  More often

## 21. Click **Autocorrection**.

**Global settings**

Conversation routing Change conversation topic Generative AI **New!** **Autocorrection** Display formats Algorithm Version Upload/Download

**No matches**

Unrecognized input by customers triggers the **No matches** action that can be configured to fetch answers from a [search integration](#) or trigger the **Fallback** action.

By setting this threshold, you can affect how often your assistant routes customers to the "No matches" action.

Use "No matches"  More often

## 22. Click the autocorrection toggle to turn the feature **Off**.

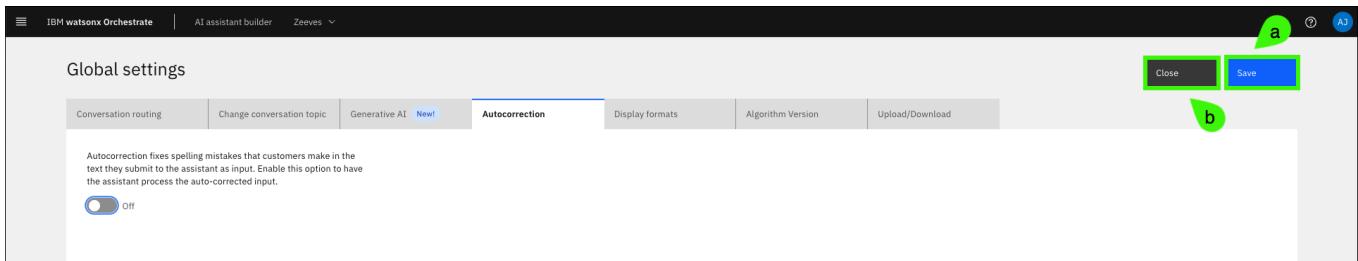
**Global settings**

Conversation routing Change conversation topic Generative AI **New!** **Autocorrection** Display formats Algorithm Version Upload/Download

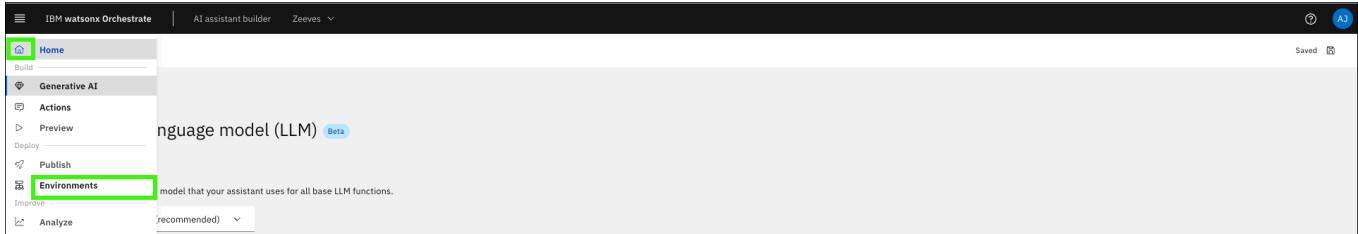
Autocorrection fixes spelling mistakes that customers make in the text they submit to the assistant as input. Enable this option to have the assistant process the auto-corrected input.

Off

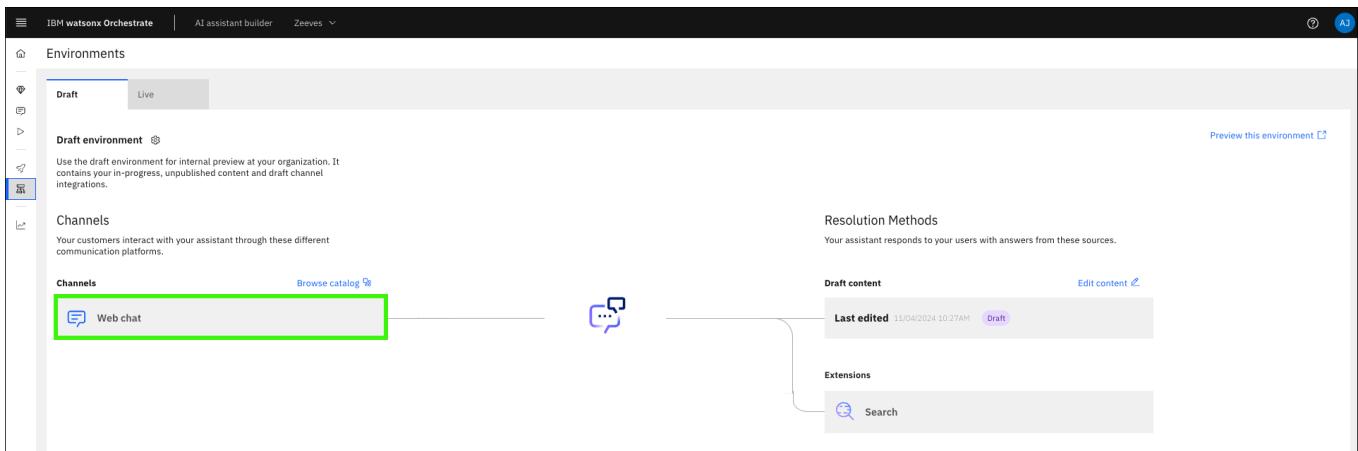
## 23. Click **Save** (a) and then **Close** (b).



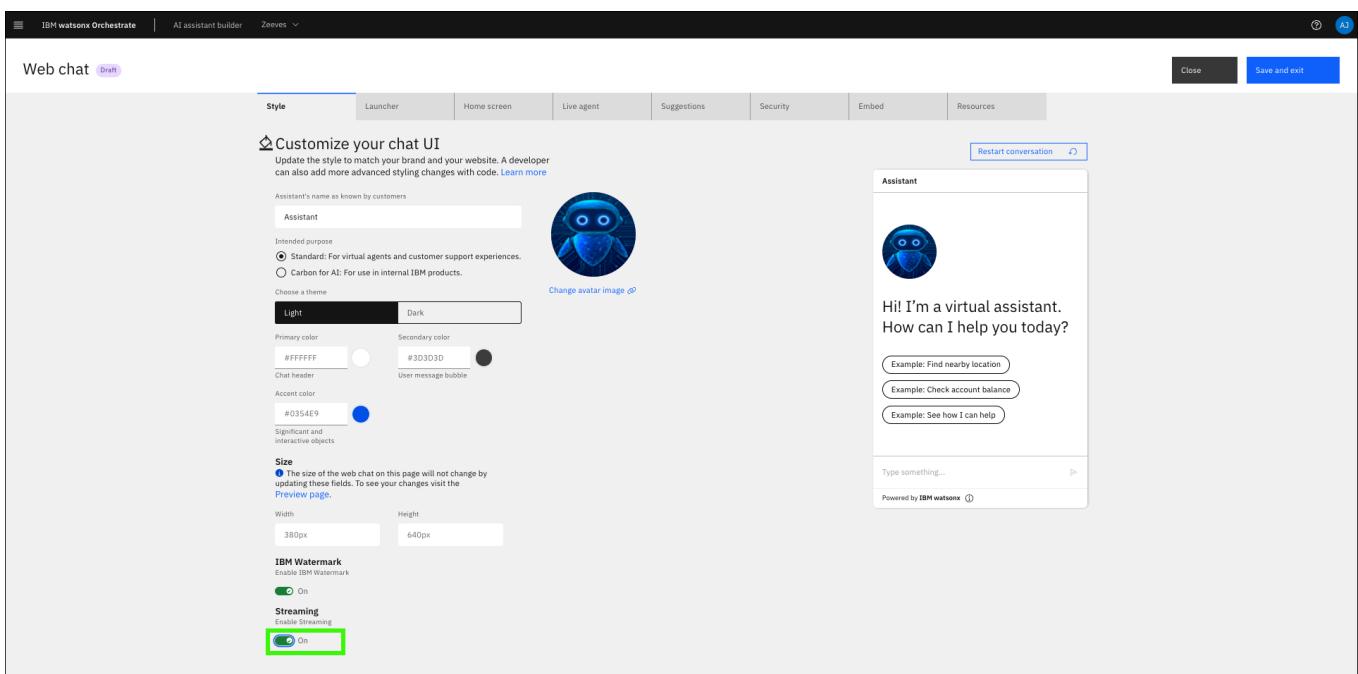
## 24. Hover over the Home (🏠) and click Environments.



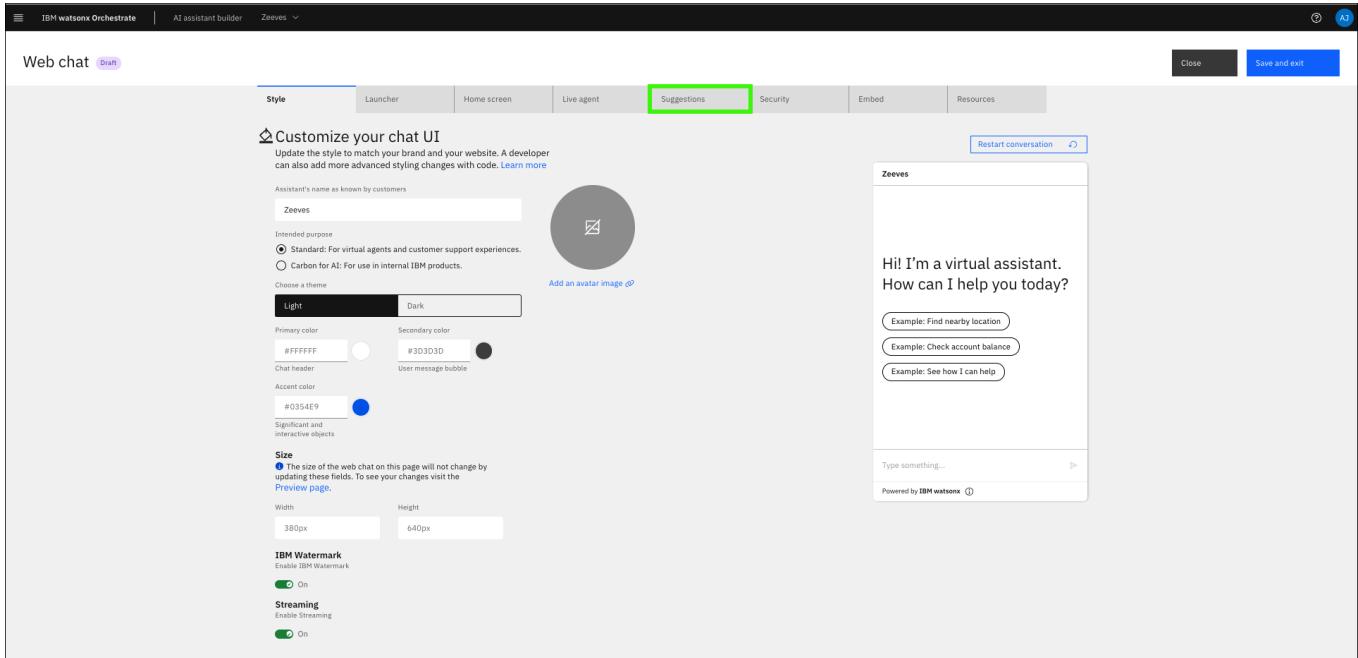
## 25. Click Web chat.



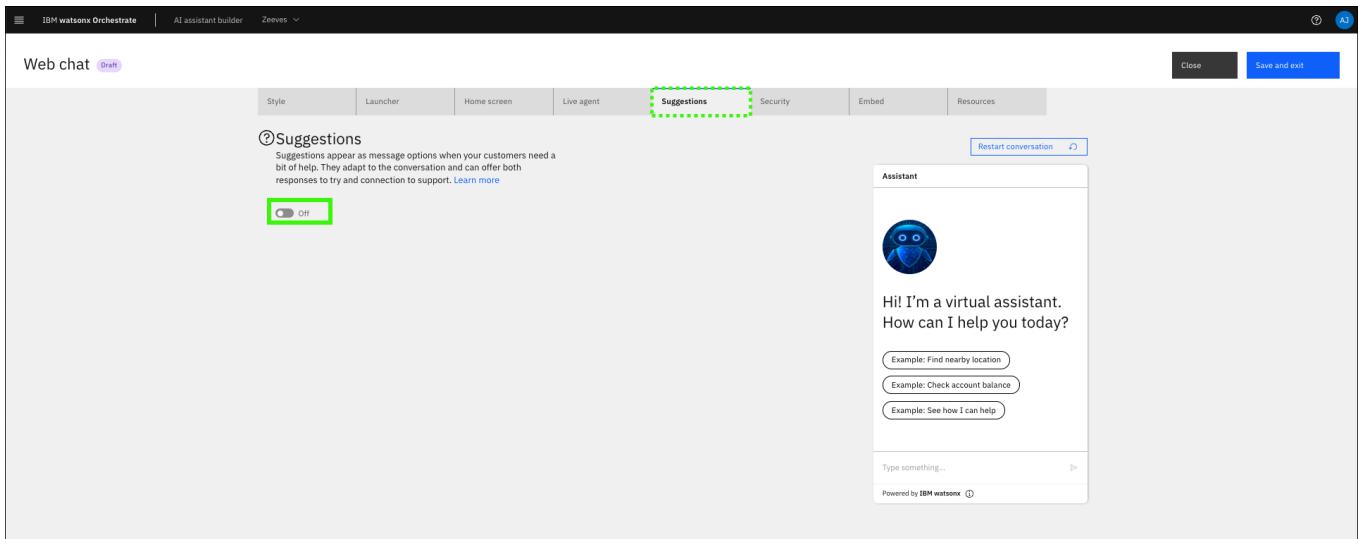
## 26. On the Style tab, click the Streaming toggle to enable streaming.



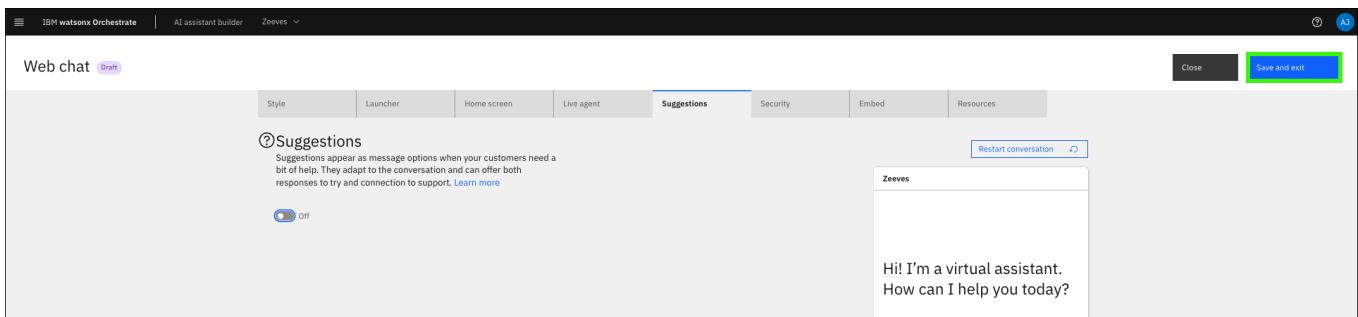
## 27. Click **Suggestions**.



## 28. Click the **Suggestions** toggle to turn this feature **Off**.



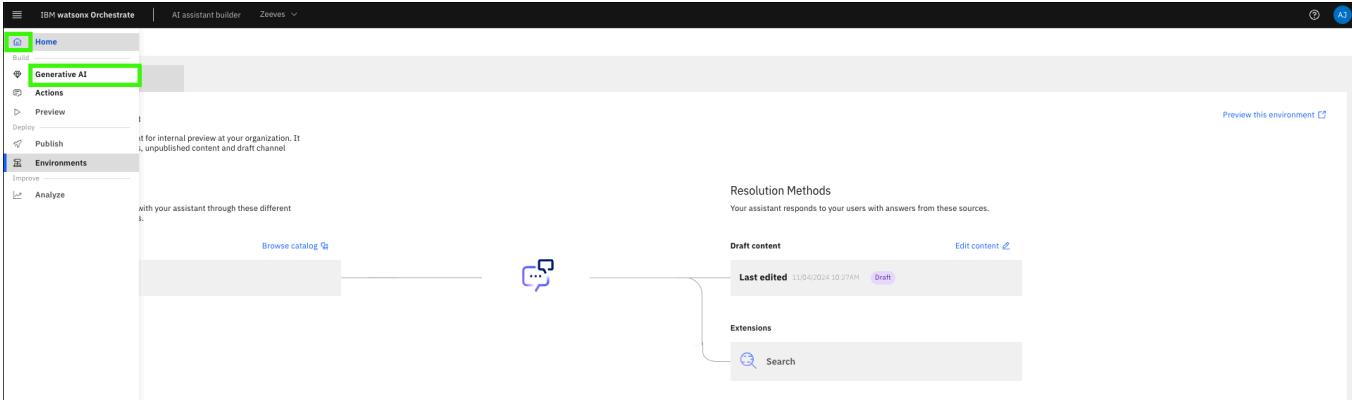
## 29. Click **Save and exit**.



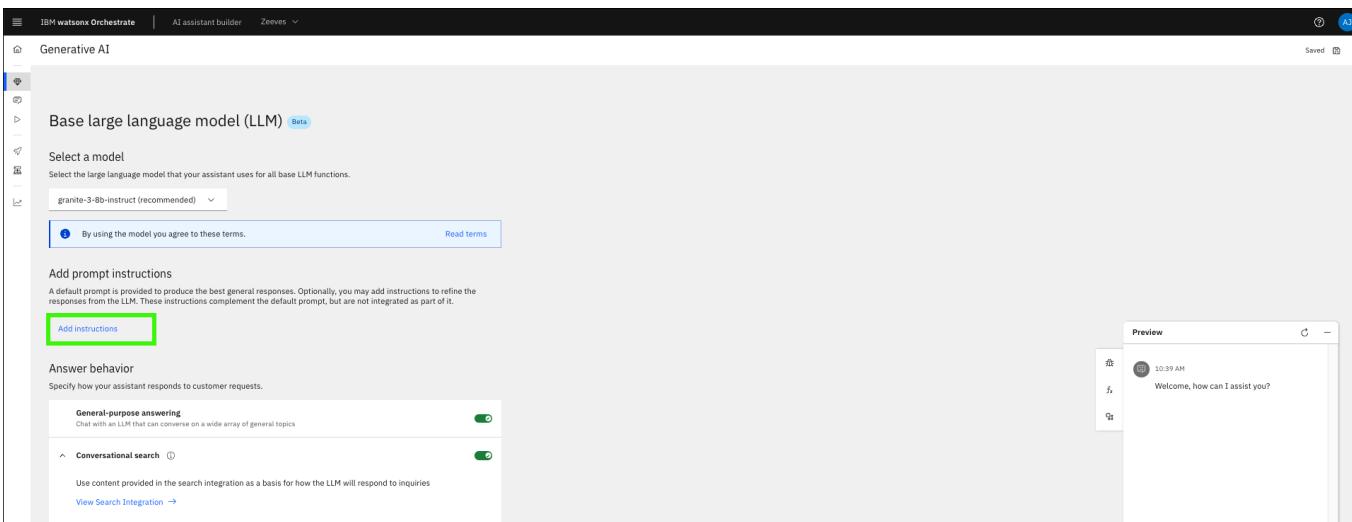
Configure the base large language model

After the preceding steps are completed, there are enhancements you can make to configure how the large language model (LLM) responds to your queries including adding prompt instructions and configuring the LLM's answer behavior. These options can be summarized [here](#).

### 1. Hover over the Home ( ) and click Generative AI.



### 2. Click Add instructions.



### 3. Enter a prompt instruction.

This option instructs the LLM in your assistant to give refined responses by adding prompt instructions. The instructions help the LLM guide the conversations by clarifying how to achieve the end-goal of an action.

Enter prompt instructions in the field. The maximum number of characters you can enter in the prompt instruction field is 1,000.

The following is an example prompt instruction that works well. Experiment with different prompt instructions.

You are a subject matter expert on mainframe systems. Please respond to all prompts with truth and accuracy. Keep all answers short and concise, unless requested to provide details.

**Note:** When the instructions are typed in, they are automatically saved and the LLM is immediately trained on them.

The screenshot shows the 'Generative AI' configuration page. In the 'Answer behavior' section, the 'General-purpose answering' toggle switch is off (indicated by a green box), while the 'Conversational search' toggle switch is on (also indicated by a green box). The preview window on the right shows a sample interaction where the assistant greets a customer.

#### 4. Toggle General-purpose answering to Off.

The ability exists to configure the answering behavior of your assistant to provide responses that are based on the preinstalled content or general content.

On the **Generative AI** page (under **Prompt Instructions**), you see the **Answer behavior** section. After you configure **Conversational search**, you see that it is enabled (toggled on) with the search integration added.

If you enable both general-purpose answering as well as conversational search, the conversational search answering takes precedence over General-purpose answering.

**Recommendation:** For purposes of retrieving Z-specific answers and responses, it is recommended that you turn off general-purpose answering and leave only conversational search turned on.

The screenshot shows the 'Generative AI' configuration page. In the 'Answer behavior' section, the 'General-purpose answering' toggle switch is off (indicated by a green box), while the 'Conversational search' toggle switch is on (also indicated by a green box). The preview window on the right shows a sample interaction where the assistant greets a customer.

## Testing conversational search

Now you can begin issuing queries to test the assistant's responses.

**Important:** Many of the settings configured earlier can be iteratively modified based on your assessment of the quality of responses. The settings can be reviewed and changed at any time. For example, adding extra prompt instructions, changing the verbosity of the responses, and modifying the indexes used for OpenSearch.

1. Hover over the **Home** ( ) and click **Preview**.

2. Experiment with different prompts and validate that the answers are reasonable and related to IBM Z.

Other prompts and responses follow.

**Note:** The responses that you receive can vary from the ones shown.

#### Prompt:

What is the APF list in z/OS? Provide a detailed explanation?

#### Example output:

#### Prompt:

Why is Db2 different than other database systems?

#### Example output:

### Prompt:

What happens during an IPL on IBM Z?

### Example output:

You now have a working assistant that uses IBM watsonx Assistant for Z. Take time to explore different prompt instructions and settings. If you encounter any issues, the Troubleshooting section that follows can help resolve them.

Continue to the [Creating a stand-alone OpenSearch instance for document ingestion](#) to learn how to configure a dedicated OpenSearch instance for ingesting client-specific documentation into the RAG model.

## Troubleshooting

The following are issues that you may encounter. If the provided resolutions do not work, contact support by using the methods that are mentioned in the [Support](#) section.

 **Assistant responds to all prompts with, "I might have information related to your query to share, but am unable to connect to my knowledge base at the moment"** 

This Assistant is unable to connect to the custom service URL specified. This could be a network issue, the service may be down, the service may be restarting, or the service is no longer running at that URL.

Before reaching out to [Support](#), try the following:

- Wait a few minutes and try again. It may be the service was in the process of restarting.
- If you printed this demonstration guide or saved a copy, verify you are using the most current version of the [lab guide](#) and the correct service URL (<https://wxa4z-opensearch-wrapper-wxa4z-demo.wxo4z-opc-opensearch-clus-47e063e6a3ad1f71bf2e58f91c3b4c2e-0000.us-south.containers.appdomain.cloud/v1/query>). The URL may have changed since you saved or printed the lab guide.

## Ingesting client documents

# Creating a stand-alone OpenSearch instance for document ingestion

Next, learn to enable a client to ingest their own documentation into the Retrieval Augmented Generation (RAG) used by IBM watsonx Assistant for Z. The first step is to deploy a dedicated [OpenSearch](#) instance. The dedicated search instance is referred to as bring-your-own-search (BYOS).

Earlier, you provisioned three IBM Technology Zone (ITZ) environments. One of which was a single-node Red Hat OpenShift (SNO) cluster. If you have not reserved this environment, or it is not in the **Ready** state, return to the [IBM Technology Zone environment](#) section to complete the reservation.

## Install the Red Hat OpenShift command-line interface utility

The Red Hat OpenShift command-line interface (CLI) utility, which is known as **oc**, must be installed on your local workstation. If you already installed the **oc** utility, you can proceed to [log in to the SNO cluster](#).

1. Click the following link to open a browser window to your ITZ reservations.

[ITZ My reservations](#)

2. Click the **Single Node OpenShift** tile.

The screenshot shows the 'My reservations' section of the IBM Technology Zone interface. On the left, a sidebar lists 'My dashboard', 'My created collections', 'My bookmarked searches', 'My favorites', and 'My reservations'. The 'My reservations' item is selected and highlighted with a blue background. The main area displays three environment tiles:

- Single Node OpenShift (VMware on IBM Cloud)**: Status - Ready. This tile is highlighted with a green border around its title and the 'Open this environment' button below it. It shows the following details:
  - Education
  - Start date: Oct 31, 2024 7:02 AM
  - End date: Nov 6, 2024 6:49 AM
  - Extend limit: 0
  - Open this environment**
- watsonx Assistant for Z Pilot - AAP & z/OS**: Status - Ready. This tile shows the following details:
  - Education
  - Start date: Oct 30, 2024 8:12 AM
  - End date: Nov 5, 2024 7:53 AM
  - Extend limit: 0
  - Open this environment**
- watsonx Assistant for Z Pilot - watsonx O...**: Status - Ready. This tile shows the following details:
  - Education
  - Start date: Oct 30, 2024 8:10 AM
  - End date: Nov 5, 2024 7:12 AM
  - Extend limit: 0
  - Open this environment**

3. Scroll down and record the **Cluster Admin Username** and **Cluster Admin Password**.

**Reservation Details**

API URL  
<https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443>

Bastion Password [REDACTED]

Bastion RDP Address  
api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:43389

Bastion SSH connection  
ssh itzuser@api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com -p 40222

Bastion Username  
itzuser

Cluster Admin Username  
kubeadmin

Cluster Admin Password [REDACTED]

OCP Console  
<https://console.openshift-console.apps.672371d38376796fb96a6c4d.ocp.techzone.ibm.com>

OCP Version  
4.14

vCenter  
itzeu-vc.eu.cloud.techzone.ibm.com

Download kubeconfig [\[button\]](#)

#### 4. Click the **OCP Console** link.

**Note:** OCP stands for OpenShift Container Platform.

**Reservation Details**

API URL  
<https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443>

Bastion Password [REDACTED]

Bastion RDP Address  
api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:43389

Bastion SSH connection  
ssh itzuser@api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com -p 40222

Bastion Username  
itzuser

Cluster Admin Username  
kubeadmin

Cluster Admin Password [REDACTED]

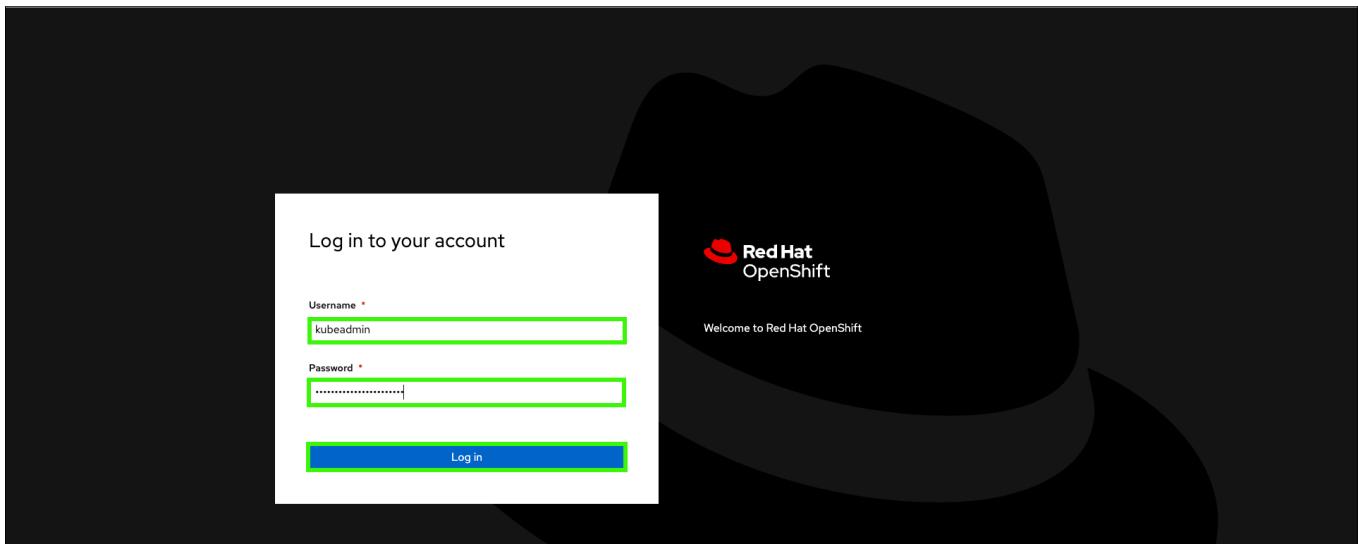
OCP Console  
<https://console.openshift-console.apps.672371d38376796fb96a6c4d.ocp.techzone.ibm.com>

OCP Version  
4.14

vCenter  
itzeu-vc.eu.cloud.techzone.ibm.com

Download kubeconfig [\[button\]](#)

#### 5. Enter the **Cluster Admin Username** and **Cluster Admin Password** values from step 3 and click **Log in**.



6. Click Help (?) and then click **Command Line Tools**.

7. Click the link under **oc - OpenShift Command Line Interface (CLI)** for the operating system of your local machine.

Clicking the preceding link automatically downloads either a **.zip** or **.tar** file specific to your operating system. Unzip or untar the file. Place the **oc** binary for your operating system (OS) in a directory that is in your default PATH, or set the PATH environment variable to include the location of the **oc** binary.

8. Verify the installation by running the **oc** command on your local workstation.

```
oc --help
```

### Sample output:

```
andrewjones@Andrews-MBP ~ % oc --help
OpenShift Client

This client helps you develop, build, deploy, and run your applications on any
OpenShift or Kubernetes cluster. It also includes the administrative
commands for managing a cluster under the 'adm' subcommand.

Basic Commands:
  login           Log in to a server
  new-project     Request a new project
  new-app          Create a new application
  status           Show an overview of the current project
  project          Switch to another project
  projects         Display existing projects
  explain          Get documentation for a resource

Build and Deploy Commands:
  rollout          Manage a Kubernetes deployment or OpenShift deployment
  config           Revert part of an application back to a previous deployment
```



#### Mac/OS users may need to adjust security settings.



The **oc** binary may cause a security exception. Adjust the security settings by opening the **System Settings** utility and clicking **Privacy & Security**. Under **Security** locate the message about the **oc** binary and click **Allow Anyway**. Return to the terminal window and try the `oc --help` command again and click **Allow Anyway** when prompted.

## Prepare to ingest documents

Before ingesting documents, complete the following setup steps.

### Log in to the OpenShift cluster from your local terminal

**Note:** If you just installed the **oc** utility, skip the next 5 steps.

1. Click the following link to open a browser window to your ITZ reservations.

[ITZ My reservations](#)

2. Click the **Single Node OpenShift** tile.

**My reservations**

Status - Ready  
Single Node OpenShift (VMware on IBM Cloud)

Education

Start date: Oct 31, 2024 7:02 AM  
End date: Nov 6, 2024 6:49 AM  
Extend limit: 0

[Open this environment](#)

Status - Ready  
watsonx Assistant for Z Pilot - AAP & z/OS

Education

Start date: Oct 30, 2024 8:10 AM  
End date: Nov 5, 2024 7:53 AM  
Extend limit: 0

[Open this environment](#)

Status - Ready  
watsonx Assistant for Z Pilot - watsonx O...

Education

Start date: Oct 30, 2024 8:10 AM  
End date: Nov 5, 2024 7:12 AM  
Extend limit: 0

[Open this environment](#)

3. Scroll to the bottom of the reservation page and record the **Cluster Admin Username** and **Cluster Admin Password**.

**Reservation Details**

API URL  
<https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443>

Bastion Password

Bastion RDP address  
api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:43389

Bastion SSH connection  
ssh itzuser@api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com -p 40222

Bastion Username  
itzuser

Cluster Admin Username  
kubeadmin

Cluster Admin Password

OCP Console  
<https://console.openshift-console.apps.672371d38376796fb96a6c4d.ocp.techzone.ibm.com>

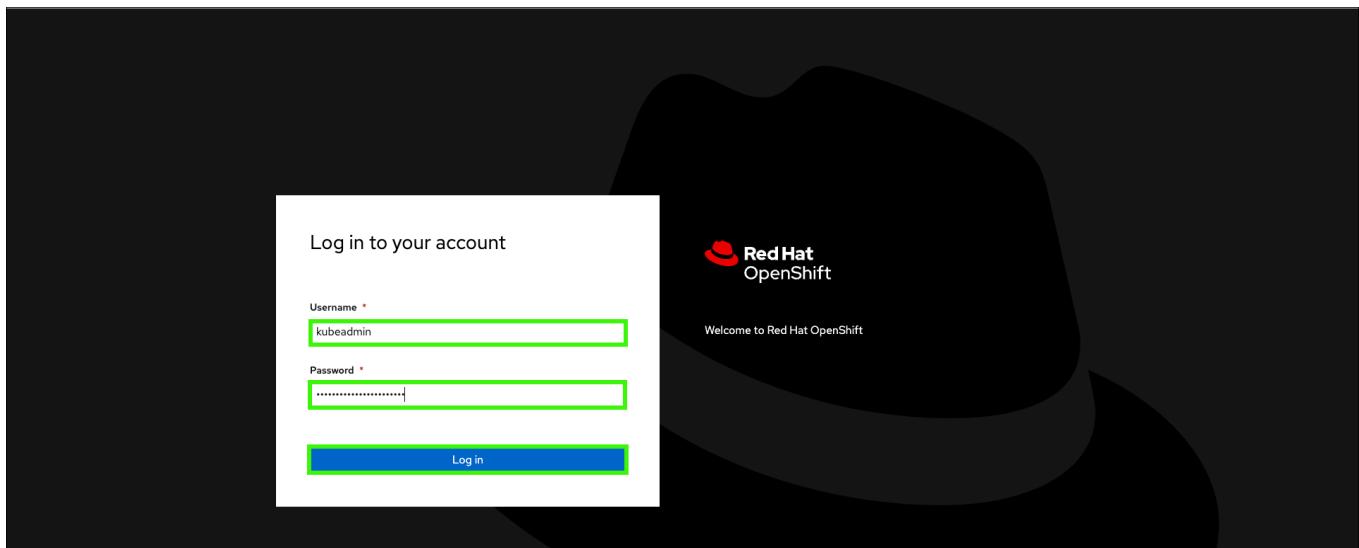
OCP version  
4.14

vCenter  
itzeu-vc.eu.cloud.techzone.ibm.com

[Download kubeconfig](#)

4. Click the **OCP Console** link.

5. Enter the **Cluster Admin Username** and **Cluster Admin Password** values from step 3 and click **Log in**.



6. Click the **kube:admin** profile drop-down and click **Copy login command**.

7. Click **Display Token**.



8. Select and copy the **Log in with this token** string.

For most operating systems, double-click the value, then right-click and select **Copy**.

Your API token is  
sha256~zuWR0KDnkYniIY0m8g8iKoUXPdFFFmou-o4s5FsrDNA

**Log in with this token**

```
oc login --token=sha256~zuWR0KDnkYniIY0m8g8iKoUXPdFFFmou-o4s5FsrDNA --server=https://api.672b79320c7a71b728e523b4.ocp.techzone.ibm.com:6443
```

**Use this token directly against the API**

```
curl -H "Authorization: Bearer sha256~zuWR0KDnkYniIY0m8g8iKoUXPdFFFmou-o4s5FsrDNA" "https://api.672b79320c7a71b728e523b4.ocp.techzone.ibm.com:6443/v1/users/~"
```

**Request another token**

[Logout](#)

A context menu is open over the token value, with the 'Copy' option highlighted.

9. Open a command prompt or terminal window on your local workstation.

10. Paste the login command and press **enter**.

```
andrewjones@Andrews-MBP ~ % oc login --token=sha256~mJ4L8K6cUMyNyk2Z69KMm3vbP1sWc8SW0eeOdVqtA94 --server=https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443
Logged into "https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443" as "kube:admin" using the token provided.
You have access to 70 projects, the list has been suppressed. You can list all projects with 'oc projects'
Using project "default".
andrewjones@Andrews-MBP ~ %
```

## Create a working directory

1. Create a directory to store the configuration files that you will create in the next steps.



**Instructions vary by your local workstation's operating system.**

The directions that follow may vary depending on your operating system. The examples provided are based upon MacOS.

```
mkdir watsonxAssistant
```

2. Change to the new directory.

```
cd watsonxAssistant
```

```
andrewjones@Andrews-MBP ~ % oc login --token=sha256~mJ4L8K6cUMyNyk2Z69KMm3vbP1sWc8SW0eeOdVqtA94 --server=https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443
Logged into "https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443" as "kube:admin" using the token provided.
You have access to 70 projects, the list has been suppressed. You can list all projects with 'oc projects'
Using project "default".
andrewjones@Andrews-MBP ~ % mkdir watsonxAssistant
andrewjones@Andrews-MBP ~ % cd watsonxAssistant
andrewjones@Andrews-MBP watsonxAssistant %
```

## Install IBM Certificate Manager on Red Hat OpenShift

1. In a text editor, create a file named `catalogCertManager.yaml` and paste the following text in the file.



### Formatting of the yaml file is critical!

The content of the YAML file must be formatted exactly as shown. Use the **Copy** icon to prevent typographical errors.

File name:

```
catalogCertManager.yaml
```

File contents:

```
apiVersion: operators.coreos.com/v1alpha1
kind: CatalogSource
metadata:
  name: ibm-cert-manager-catalog
  namespace: openshift-marketplace
spec:
  displayName: ibm-cert-manager-4.2.7
  grpcPodConfig:
    securityContextConfig: restricted
    image: icr.io/cpopen/ibm-cert-manager-operator-
catalog@sha256:4dcf4ace4b5f166f83b31063f7e6404dbf78d8e98a9d4fcf52fedf576a55ca6c
  publisher: IBM
  sourceType: grpc
  updateStrategy:
    registryPoll:
      interval: 30m0s
```

2. Install the IBM Certificate Manager operator in the Red Hat OpenShift cluster.

```
oc apply -f catalogCertManager.yaml
```

The preceding command returns a message that states the **ibm-cert-manager-catalog** was created.

3. In the OpenShift web console, click **Operators** and then select **OperatorHub**.

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar has a navigation menu with items like 'Administrator', 'Home', 'Operators' (which is expanded to show 'OperatorHub' and 'Installed Operators'), 'Workloads', and 'Networking'. The 'OperatorHub' item is highlighted with a green box. The main content area has a header 'Command Line Tools' and a sub-section 'oc - OpenShift Command Line Interface (CLI)'. It provides instructions for using the 'oc' command and links to download it for various platforms (Linux, Mac, Windows, ARM). The top right corner shows the user is 'kubeadmin'.

4. Click the **Project** to pull-down menu and click the **Show default projects** toggle.

The screenshot shows the Red Hat OpenShift interface on the OperatorHub page. The left sidebar has 'OperatorHub' selected. The main area shows a dropdown menu for 'Project: All Projects' with a green border around it. Below it is a search bar with 'Select project...' placeholder text. A toggle switch labeled 'Show default projects' is also visible. The central part of the screen lists 'Projects' under 'All Projects', including 'default', 'kube-node-lease', and 'kube-public'. At the bottom right, there are tabs for 'Community', 'Marketplace', and 'Community' again.

## 5. Scroll down and select **openshift-marketplace**.

This screenshot shows the same interface as above, but the list of installed operators has been scrolled down. The 'openshift-marketplace' operator is now highlighted with a green border. Other operators listed include 'openshift-kube-controller-manager-operator', 'openshift-kube-scheduler', 'openshift-kube-scheduler-operator', 'openshift-kube-storage-version-migrator', 'openshift-kube-storage-version-migrator-operator', 'openshift-machine-api', 'openshift-machine-config-operator', and 'openshift-node'. The right side of the screen displays tiles for various operators categorized by provider: CrowdStrike, Hazelcast, Red Hat, and others.

## 6. Enter IBM Cert Manager in the search field and then click the IBM Cert Manager tile.

**Be patient.**  
It may take a minute or two for the **IBM Cert Manager** tile to appear.

**Note:** The current version of the operator may differ than the one shown in the image below.

The screenshot shows the Red Hat OpenShift interface with the search bar at the top containing 'IBM Cert Manager'. The search results show one item: 'ibm-cert-manager-4.2.7' provided by IBM. This item is highlighted with a green border. The left sidebar shows the 'OperatorHub' section selected. The right side of the screen shows other operator tiles.

## 7. Click **Install**.

The screenshot shows the Red Hat OpenShift on IBM Techzone interface. The left sidebar is the OperatorHub. In the center, under the 'Operators' section, the 'OperatorHub' tab is selected. A search bar at the top right says 'All Items' and 'Q. IBM Cert Manager'. Below it, a card for 'ibm-cert-manager-4.2.7' is displayed, which is the 'IBM Cert Manager' provided by IBM. The card includes a brief description: 'Operator for managing deployment of cert-manager service.' At the bottom right of the card is a large green 'Install' button, which is also highlighted with a green box.

## 8. Keep the default settings and click **Install**.

The screenshot shows the 'Install Operator' configuration page. The left sidebar is the OperatorHub. The main area has a heading 'Install Operator' and a sub-heading 'Install your Operator by subscribing to one of the update channels to keep the Operator up to date. The strategy determines either manual or automatic updates.' It includes fields for 'Update channel \*' (set to v4.2), 'Version \*' (set to 4.2.7), and 'Installation mode \*' (set to 'All namespaces on the cluster (default)'). Below these are sections for 'Installed Namespace \*' (set to 'Operator recommended Namespace: ibm-cert-manager') and 'Update approval \*' (set to 'Automatic'). On the right side, there are several cards for 'Provided APIs': 'IBM Cert Manager' (provided by IBM), 'CertificateRequest', 'CMO Cert Manager Config', 'Challenge', 'ClusterIssuer', and 'Issuer'. At the bottom are two buttons: a large green 'Install' button and a blue 'Cancel' button.

The installation process takes a few minutes. Do not continue until you see the following message: **Installed operator: ready for use.**

The screenshot shows the Red Hat OpenShift OperatorHub interface. On the left, a sidebar menu includes options like Home, Operators, Workloads, Networking, Storage, Builds, Observe, Compute, User Management, and Administration. The 'Operators' section is expanded, and 'OperatorHub' is selected. In the main content area, there is a card for 'IBM Cert Manager' with the subtext 'ibm-cert-manager-operatorv4.2.7 provided by IBM'. A green dashed box highlights this card. Below it, a message says 'Installed operator: ready for use' with buttons for 'View Operator' and 'View installed Operators in Namespace ibm-cert-manager'. At the top of the page, a message states 'You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.' The top right corner shows the user 'kube:admin'.

## Install the watsonx Assistant for Z Operator (for OpenSearch)

1. In your command prompt or terminal window, create a new namespace called `wxa4z-byos` in the Red Hat OpenShift cluster.

```
oc create namespace wxa4z-byos
```

2. Create or obtain your IBM Container Software production entitlement key.

A production entitlement key is required to pull the container images that get deployed by the operator.

To create or retrieve your existing entitlement key, follow the instructions [here](#).

After locating your existing key or creating a new key, continue to the next step.

3. Click **copy** and record your entitlement key for future use in a secure location.

The screenshot shows the IBM Container Software and Cloud Pak Access Management interface. The left sidebar has links for 'My IBM', 'Profile', 'Billing', 'Entitlement keys' (which is selected), and 'Container software library'. The main content area is titled 'Entitlement keys (1)'. It contains a section for 'Access your container software' explaining that an entitlement key allows access to all container software in the IBM Entitled Registry. It also lists 'Active entitlement keys' with a note that you can have a maximum of 5 entitlement keys. A button 'Add new key' is available. At the bottom, there is a box containing the 'Issue date: October 17, 2022' and an entitlement key represented as a long string of asterisks. To the right of this box are 'Copy' and 'Delete' buttons, with 'Copy' highlighted by a green border.

4. In your command prompt or terminal window, set an environment variable with your production entitlement key.

Substitute your production entitlement key copied in the last step for <entitlement key> .

```
export IBM_CS_ENT_KEY=<entitlement key>
```

#### 5. Enter the following command to create a pull secret for the Container Registry.

```
oc -n wxa4z-byos create secret docker-registry icr-pull-secret --docker-server=cp.icr.io --  
docker-username=cp --docker-password=$IBM_CS_ENT_KEY
```

The screenshot shows a terminal session on a Mac OS X system (Andrews-MBP). The user has created a new namespace named 'wxa4z-byos'. They then export their entitlement key as \$IBM\_CS\_ENT\_KEY. Finally, they run the command to create a Docker pull secret named 'icr-pull-secret' for the container registry at cp.icr.io, using their credentials and the previously exported entitlement key.

```
andrewjones@Andrews-MBP watsonxAssistant % oc create namespace wxa4z-byos  
namespace/wxa4z-byos created  
andrewjones@Andrews-MBP watsonxAssistant % export IBM_CS_ENT_KEY=  
andrewjones@Andrews-MBP watsonxAssistant % oc -n wxa4z-byos create secret docker-registry icr-pull-secret --docker-server=cp.icr.io --  
docker-username=cp --docker-password=$IBM_CS_ENT_KEY  
secret/icr-pull-secret created  
andrewjones@Andrews-MBP watsonxAssistant %
```

#### 6. In a text editor, create a file named catalogSource.yaml and paste the following text in the file.

**Formatting of the yaml file is critical!**

The content of YAML files must be formatted exactly as shown. Use the copy icon to prevent typographical errors.

File name:

```
catalogSource.yaml
```

File contents:

```
apiVersion: operators.coreos.com/v1alpha1
kind: CatalogSource
metadata:
  name: ibm-wxa4z-operator-catalog
  namespace: wxa4z-byos
spec:
  displayName: "IBM watsonx Assistant for Z Operator Catalog"
  image: icr.io/cpopen/ibm-wxa4z-
  catalog:2.0.2@sha256:d457aa24af07c23d7b36727a9cff95995ca1c4ed49fb980ef4f386fd09a29b4
  publisher: 'IBM'
  sourceType: grpc
  secrets:
  - icr-pull-secret
```

#### 7. Create your document catalog in the Red Hat OpenShift operator.

```
oc apply -f catalogSource.yaml
```

```
andrewjones@Andrews-MBP watsonxAssistant % oc create namespace wxa4z-byos
namespace/wxa4z-byos created
andrewjones@Andrews-MBP watsonxAssistant % export IBM_CS_ENT_KEY=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJJQk0gTWFya2V0cGxhY2UiLCJpYQoIe2NjYwMTk1ODAsImp0aSI6ijNkOWUyMzzjZTAzMzVnNTJhYTkzMWNmOTcyMDR1In0.4M3XRD4XZkHMSOKFNJ4uKvCwZ6SnEAZ03eL_11A2Y
andrewjones@Andrews-MBP watsonxAssistant % oc -n wxa4z-byos create secret docker-registry icr-pull-secret --docker-server=cp.icr.io --docker-username=cp --docker-password=$IBM_CS_ENT_KEY
secret/icr-pull-secret created
andrewjones@Andrews-MBP watsonxAssistant % vi catalogSource.yaml
andrewjones@Andrews-MBP watsonxAssistant % vi catalogSource.yaml
andrewjones@Andrews-MBP watsonxAssistant % oc apply -f catalogSource.yaml
catalogsource.operator.coreos.com/ibm-wxa4z-operator-catalog created
andrewjones@Andrews-MBP watsonxAssistant %
```

8. In the Red Hat OpenShift web console, click **OperatorHub** and select the **wxa4z-byos** project.

9. Enter **ibm watsonx** in the search field and the click the **IBM watsonx Assistant for Z Operator Catalog** tile.

**Be patient.**

It may take a minute or two for the **IBM watsonx Assistant for Z Operator Catalog** tile to appear.

**Note:** The current version of the operator may differ than the one shown in the image below.

10. Click **Install**.

The screenshot shows the Red Hat OpenShift OperatorHub interface. On the left, there's a sidebar with navigation links like Home, Operators, Workloads, Networking, Storage, Builds, Observe, Compute, User Management, and Administration. The main area is titled 'OperatorHub' and displays search results for 'ibm watsonx'. One result, 'IBM watsonx Assistant for Z provided by IBM', is highlighted with a green box around its 'Install' button. To the right of the search results, there's a detailed view of the operator, including fields for Channel (stable), Version (2.0.1), Capability level (Basic Install selected), Source (IBM watsonx Assistant for Z Operator Catalog), Provider (IBM), Repository (N/A), Container image (N/A), and Created at (Oct 4, 2024, 1:31 PM).

11. Select **A specific namespace on the cluster (a)** under **Installation mode** and **wxa4z-byos (b)** for the **Installed Namespace**, then click **Install (c)**.

The screenshot shows the 'Install Operator' dialog. It includes fields for 'Update channel' (stable), 'Version' (2.0.1), 'Installation mode' (radio buttons for 'All namespaces on the cluster (default)' and 'A specific namespace on the cluster' - the latter is highlighted with a green box labeled 'a'), 'Installed Namespace' (dropdown menu showing 'wxa4z-byos' - highlighted with a green box labeled 'b'), and 'Update approval' (radio buttons for 'Automatic' and 'Manual' - 'Automatic' is selected and highlighted with a green box labeled 'c'). There are also sections for 'Provided APIs' (BYOS, BYOSearch) and 'Not available'.

The installation process takes a few minutes. Do not continue until you see the following message: **Installed operator: ready for use.**

12. In your command prompt or terminal window, run the following commands to add the Container Registry credential to the operator's service account.

```
oc project wxa4z-byos
```

```
oc patch serviceaccount ibm-wxa4z-operator-controller-manager --type merge -p
'{"imagePullSecrets": [{"name": "icr-pull-secret"}]}'
```

```
andrewjones@Andrews-MBP watsonxAssistant % oc create namespace wxa4z-byos
namespace/wxa4z-byos created
andrewjones@Andrews-MBP watsonxAssistant % export IBM_CS_ENT_KEY=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJJQk0gTWFya2V0cGxhY2UiLCJpYXQiOjE2NjYwMTk1ODAsImp0aSI6IjNkOWUyMZZjZTAzM0QzMzVhNTJhYTkzMWNmOTcyMDR1In0.4M3XRDXzKHM5okFNJ4uKVcWZ6SnEA0Z03eL_11A2xY
andrewjones@Andrews-MBP watsonxAssistant % oc -n wxa4z-byos create secret docker-registry icr-pull-secret --docker-server=cp.icr.io --docker-username=cp --docker-password=$IBM_CS_ENT_KEY
secret/icr-pull-secret created
andrewjones@Andrews-MBP watsonxAssistant % vi catalogSource.yaml
andrewjones@Andrews-MBP watsonxAssistant % vi catalogSource.yaml
andrewjones@Andrews-MBP watsonxAssistant % oc apply -f catalogSource.yaml
catalogsource.coreos.com/ibm-wxa4z-operator-catalog created
andrewjones@Andrews-MBP watsonxAssistant % oc project wxa4z-byos
Now using project "wxa4z-byos" on server "https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443".
andrewjones@Andrews-MBP watsonxAssistant % oc patch serviceaccount ibm-wxa4z-operator-controller-manager --type merge -p '{"imagePullSecrets": [{"name": "icr-pull-secret"}]}'
serviceaccount/ibm-wxa4z-operator-controller-manager patched.
andrewjones@Andrews-MBP watsonxAssistant %
```

13. In the Red Hat OpenShift web console, under **Workloads**, click **Pods**.

14. Verify the two pods that start with **ibm-wxa4z-operator** have a status of **Running** and that all pods are **Ready**.

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
ld126367b1ca53dcf2b0c93acd733e33875cdb4b6c382dd5eb4120322032ac2hse6	Completed	0/1	0	ld126367b1ca53dcf2b0c93acd733e33875cdb4b6c382dd5eb412032ac42b38	-	-	Nov 4, 2024, 4:44 PM
ibm-wxa4z-operator-catalog-1m95m	Running	1/1	0	ibm-wxa4z-operator-catalog	19.0 MiB	0.003 cores	Nov 4, 2024, 4:32 PM
ibm-wxa4z-operator-controller-manager-7c7898d7d4-871tm	Running	2/2	0	ibm-wxa4z-operator-controller-manager-7c7898d7d4	31.0 MiB	0.001 cores	Nov 4, 2024, 4:44 PM

15. Run the following command to set the administrative policy for the workspace.

```
oc -n wxa4z-byos adm policy add-scc-to-user privileged -z byos
```

```
andrewjones@Andrews-MBP watsonxAssistant % oc create namespace wxa4z-byos
namespace/wxa4z-byos created
andrewjones@Andrews-MBP watsonxAssistant % export IBM_CS_ENT_KEY=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJJQk0gTWFya2V0cGxHb2UiLCJpYXQiOjE2NjYwMTk1ODAsImp0aSI6IjNkOWUyMzZjZTAzMDQzMzVhNTJhYTkzMWNmOTcycMDRIIn0.4M3XRDXzkHMS0kFNJ4uKVcWZ6SnEA0Z03eL_11A2xY
andrewjones@Andrews-MBP watsonxAssistant % oc -n wxa4z-byos create secret docker-registry icr-pull-secret --docker-server=cp.icr.io --docker-username=cp --docker-password=$IBM_CS_ENT_KEY
secret/icr-pull-secret created
andrewjones@Andrews-MBP watsonxAssistant % vi catalogSource.yaml
andrewjones@Andrews-MBP watsonxAssistant % vi catalogSource.yaml
andrewjones@Andrews-MBP watsonxAssistant % oc apply -f catalogSource.yaml
catalogsource.operator.coreos.com/ibm-wxa4z-operator-catalog created
andrewjones@Andrews-MBP watsonxAssistant % oc project wxa4z-byos
Now using project "wxa4z-byos" on server "https://api.672371d38376796fb96a6c4d.ocp.techzone.ibm.com:6443".
andrewjones@Andrews-MBP watsonxAssistant % oc patch serviceaccount ibm-wxa4z-operator-controller-manager --type merge -p '{"imagePullSecrets": [{"name": "icr-pull-secret"}]}'
serviceaccount/ibm-wxa4z-operator-controller-manager patched
andrewjones@Andrews-MBP watsonxAssistant % oc -n wxa4z-byos adm policy add-scc-to-user privileged -z byos
clusterrole.rbac.authorization.k8s.io/system:openshift:scc:privileged added: "byos"
andrewjones@Andrews-MBP watsonxAssistant %
```

## Deploy required secrets and the custom bring-your-own-search (BYOSearch) resource

1. In a text editor, create a file named `os-secret.yaml` and paste the following text in the file.

File name:

```
os-secret.yaml
```

Substitute a secure password of your choosing for the string `<OPENSEARCH_PASSWORD>`.

File contents:

```
apiVersion: v1
stringData:
  password: <OPENSEARCH_PASSWORD>
kind: Secret
metadata:
  name: opensearch-creds
  namespace: wxa4z-byos
  type: Opaque
```

2. Create the secret by running the following command.

```
oc apply -f os-secret.yaml
```

3. In a text editor, create a file named `client-ingestion-secret.yaml` and paste the following text in the file.

File name:

```
client-ingestion-secret.yaml
```

Substitute a secure authentication key of your choosing for the string `<CLIENT_INGESTION_AUTHKEY>`. The authentication key can be a random password.

File contents:

```
apiVersion: v1
stringData:
  authkey: <CLIENT_INGESTION_AUTHKEY>
kind: Secret
metadata:
  name: client-ingestion-authkey
  namespace: wxa4z-byos
  type: Opaque
```

4. Create the secret by running the following command.

```
oc apply -f client-ingestion-secret.yaml
```

5. Obtain and record your cluster domain that is used for routes by running the following command.

```
oc -n openshift-ingress-operator get ingresscontroller default -o jsonpath=".status.domain"
```



**The output from the command does not include a newline.**

The value returned for the cluster domain does not include a newline. When copying the value do not include the character or characters used for your command line prompt. Do not include the your prompt in the next step!

**Note:** The output of the command will be a string similar to:

**apps.672b79320c7a71b728e523b4.ocp.techzone.ibm.com**

6. In a text editor, create a file named `byos.yaml` and paste the following text in the file.

File name:

```
byos.yaml
```

Substitute the domain name recorded in the previous step for the string `<YOUR_CLUSTER_DOMAIN>`.

File contents:

```

apiVersion: wxa4z.watsonx.ibm.com/v1
kind: BYOSearch
metadata:
  name: byosearch
  namespace: wxa4z-byos
spec:
  imagePullSecrets:
    - name : icr-pull-secret
  namespace: wxa4z-byos
  clusterName: wxa4z-byos-cluster
  clusterDomain: <YOUR_CLUSTER_DOMAIN>

  opensearch:
    secretName: opensearch-creds

  persistence:
    enabled: true
    storageClass: "managed-nfs-storage"
    accessModes:
      - ReadWriteOnce
    size: 24Gi

  wrapper:
    createRoute: true
    resources:
      requests:
        cpu: 4
        memory: "500Mi"
      limits:
        cpu: 4
        memory: "1Gi"

  clientIngestion:
    secretName: client-ingestion-authkey

    resources:
      limits:
        cpu: "500m"
        memory: 2Gi
        nvidia.com/gpu: "0"
      requests:
        cpu: "500m"
        memory: 1Gi
        nvidia.com/gpu: "0"
    pvc:
      storageClass: "managed-nfs-storage"
      enabled: true
      size: 24Gi

```

7. Run the following command to deploy BYOS on your cluster.

```
oc apply -f byos.yaml
```

**Important:** The BYOS deployment can take 20 minutes or more to complete.

Verify all the required pods are running and get the network route to your BYOS instance

### 1. Verify that all pods have the status of **Running** or **Completed**.

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
da80909aab1563ff0c15b7c6d	Completed	0/1	0	da80909aab1563ff0c15b7c6da81 a8bfefabaa605065bb6c6b490e87 0e87f0k96l	-	-	Nov 6, 2024, 9:26 AM
ibm-wxa4z-operator-catalog-cfvw	Running	1/1	0	ibm-wxa4z-operator-catalog	25.0 MiB	0.004 cores	Nov 6, 2024, 9:25 AM
ibm-wxa4z-operator-controller-manager-556fcf98bb-4bhmk	Running	2/2	0	ibm-wxa4z-operator-controller-manager-556fcf98bb	142.8 MiB	0.023 cores	Nov 6, 2024, 9:26 AM
wxa4z-byos-cluster-0	Running	1/1	0	wxa4z-byos-cluster	1,095.8 MiB	0.017 cores	Nov 6, 2024, 10:22 AM
wxa4z-byos-cluster-1	Running	1/1	0	wxa4z-byos-cluster	1,169.1 MiB	0.016 cores	Nov 6, 2024, 10:22 AM
wxa4z-byos-cluster-2	Running	1/1	0	wxa4z-byos-cluster	1,113.3 MiB	0.015 cores	Nov 6, 2024, 10:22 AM
wxa4z-client-ingestion-719b8d6c58-9bzth	Running	1/1	0	wxa4z-client-ingestion-719b8d6c58	501.8 MiB	0.071 cores	Nov 6, 2024, 12:18 PM
wxa4z-opensearch-wrapper-5cb879f5fb-qw7qt	Running	1/1	0	wxa4z-opensearch-wrapper-5cb879f5fb	547.1 MiB	0.031 cores	Nov 6, 2024, 10:22 AM
wxa4z-snapshot-setup-job-nsqtz	Completed	0/1	0	wxa4z-snapshot-setup-job	-	-	Nov 6, 2024, 10:22 AM

When deployment completes and all the pods have a status of "Ready", "Running", or "Completed", the next step is to retrieve your BYOS endpoint URL.

### 1. In the OCP console, under **Networking**, click **Routes**.

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
da80909aab1563ff0c15b7c6d	Completed	0/1	0	da80909aab1563ff0c15b7c6da81 a8bfefabaa605065bb6c6b490e87 0e87f0k96l	-	-	Nov 6, 2024, 9:26 AM
ibm-wxa4z-operator-catalog-cfvw	Running	1/1	0	ibm-wxa4z-operator-catalog	25.0 MiB	0.004 cores	Nov 6, 2024, 9:25 AM
ibm-wxa4z-operator-controller-manager-556fcf98bb-4bhmk	Running	2/2	0	ibm-wxa4z-operator-controller-manager-556fcf98bb	141.2 MiB	0.022 cores	Nov 6, 2024, 9:26 AM
wxa4z-byos-cluster-0	Running	1/1	0	wxa4z-byos-cluster	1,095.8 MiB	0.016 cores	Nov 6, 2024, 10:22 AM
wxa4z-byos-cluster-1	Running	1/1	0	wxa4z-byos-cluster	1,169.1 MiB	0.016 cores	Nov 6, 2024, 10:22 AM
wxa4z-byos-cluster-2	Running	1/1	0	wxa4z-byos-cluster	1,113.3 MiB	0.015 cores	Nov 6, 2024, 10:22 AM
wxa4z-client-ingestion-719b8d6c58-9bzth	Running	1/1	0	wxa4z-client-ingestion-719b8d6c58	534.6 MiB	0.087 cores	Nov 6, 2024, 12:18 PM
wxa4z-opensearch-wrapper-5cb879f5fb-qw7qt	Running	1/1	0	wxa4z-opensearch-wrapper-5cb879f5fb	547.1 MiB	0.030 cores	Nov 6, 2024, 10:22 AM
wxa4z-snapshot-setup-job-nsqtz	Completed	0/1	0	wxa4z-snapshot-setup-job	-	-	Nov 6, 2024, 10:22 AM

### 2. Copy and record the location for the **wxa4z-opensearch-wrapper** route.

Name	Status	Location	Service
wxa4z-client-ingestion	Accepted	https://wxa4z-client-ingestion-wxa4z-byos.apps.672b79320c7a71b728e523b4.ocp.techzone.ibm.com	wxa4z-client-ingestion
wxa4z-opensearch-wrapper	Accepted	https://wxa4z-opensearch-wrapper-wxa4z-byos.apps.672b79320c7a71b728e523b4.ocp.techzone.ibm.com	wxa4z-opensearch-wrapper

## Update your assistant with the new BYOS instance route

You are now ready to configure your assistant with the route to your BYOS instance.

1. Using the network route for your BYOS instance, append the string /v1/query to complete the URL endpoint.

The URL should look similar to:

```
https://wxa4z-opensearch-wrapper-wxa4z-
byos.apps.672b79320c7a71b728e523b4.ocp.techzone.ibm.com/v1/query
```

**Important:** The above URL will not work for you. Use the value of your specific OpenSearch instance that is recorded in the previous step.

2. Update your assistant's custom search integration URL.

Next, you need to return to your assistant in the watsonx Orchestrate AI assistant builder and update the custom search integration URL. The steps to update the URL are illustrated in the animated gif that follows. You can review the steps to accomplish this [here](#) (be sure to use your BYOS URL and not the shared URL specified in the lab guide).

The screenshot shows the 'Routes' section of the Red Hat OpenShift interface. The left sidebar shows 'Operators' and 'Workloads' sections. Under 'Workloads', 'Routes' is selected. The main area displays a table of routes. Two routes are listed: 'wxa4z-client-ingestion' and 'wxa4z-opensearch-wrapper'. Both routes have a status of 'Accepted'. The 'wxa4z-client-ingestion' row has a yellow box highlighting the URL column, which contains the URL <https://wxa4z-client-ingestion-wxa4z-byos.apps.672b79320c7a7b728e523b4.ocp.techzone.ibm.com>. A cursor icon is pointing at this URL.

## Troubleshooting

The following are issues that you may encounter. If the provided resolutions do not work, contact support by using the methods that are mentioned in the [Support](#) section.

### ✖ Pods have a status of ErrImagePull or ImagePullBackoff

If the pods starting with **ibm-wxa4z-operator** have a status of “ErrImagePull” or “ImagePullBackoff”, you can delete the pod and it will automatically restart and pull the image successfully. Wait until the pod is re-created successfully.

### ✖ The wxa4z-client-ingestion pod does not start

Did you include the % character in the **clusterDomain** name when creating the **byos.yaml**? To resolve, edit the **byos.yaml** file and run the following command again. The current pod will be terminated and a new one started. This will take about 20 minutes to start.

```
oc apply -f byos.yaml
```

# Installing and using zassist to ingest client documents

With bring-your-own-search (BYOS) installed and configured in your assistant, you can now prepare for document ingestion. Currently, only PDF, HTML, and DOCX file formats are supported for ingestion.

To prepare for document ingestion, you can also reference the setup instructions that are located [here](#).

## Install the zassist utility

The **zassist** utility is an executable program that automates the ingestion of client documentation into the [RAG](#) for watsonx Assistant for Z. A version of zassist is available for download for IBMers and Business Partners for conducting pilots. Follow the steps below to download and install **zassist**.



### How do clients get the zassist utility?

The utility is available to clients through [IBM Passport Advantage](#).

1. Click the following link and download the **zassist.zip** file.

<https://ibm.box.com/s/j3nt5iw4fqd5w2jgcqwxnjlsu8bpvl77>

A screenshot of a web-based file download interface. At the top, there's a header with the IBM logo and the text "Box@IBM". Below the header, the file "zassist.zip" is shown with a download button highlighted in green. A search bar is present above the file list. The file list table has columns for Name, Modified, and Size. One item, "zassist", is listed with a modification date of "Sep 5 at 9:15 AM".

2. Extract the **zassist.zip** file.
3. Locate the appropriate file for your local workstation's operating system.

Name	Date Modified	Size	Kind
byos.yaml	Today at 12:17 PM	956 bytes	YAML
ca.crt	Today at 11:36 AM	Zero bytes	certificate
catalogCertManager.yaml	Today at 9:15 AM	476 bytes	YAML
catalogSource.yaml	Today at 9:25 AM	397 bytes	YAML
client-ingestion-secret.yaml	Today at 10:05 AM	155 bytes	YAML
os-secret.yaml	Today at 10:04 AM	149 bytes	YAML
<b>zassist</b>	Sep 5, 2024 at 11:15 AM	--	Folder
linux	Sep 18, 2024 at 8:15 AM	--	Folder
mac	Sep 18, 2024 at 8:15 AM	--	Folder
<b>zassist</b>	Sep 18, 2024 at 8:17 AM	10.2 MB	Unix Executable File
mac-arm	Sep 18, 2024 at 8:15 AM	--	Folder
windows	Sep 18, 2024 at 8:15 AM	--	Folder
zassist.zip	Today at 1:47 PM	23 MB	ZIP archive

4. Either copy the appropriate **zassist** file to a directory in your PATH, or add the appropriate directory to your PATH environment variable.

Additional information for running the preceding tasks can be found [here](#).

5. Run the **zassist** command to verify it is working.

```
zassist
```

```
andrewjones@Andrews-MacBook-Pro watsonxAssistant % PATH=$PATH:.../zassist/zassist
andrewjones@Andrews-MacBook-Pro watsonxAssistant % zassist
zassist: error: expected one of "version", "init", "login", "ingest", "load", ...
andrewjones@Andrews-MacBook-Pro watsonxAssistant %
```



#### Mac/OS users may need to adjust security settings.



The **zassist** binary may cause a security exception. Adjust the security settings by opening the **System Settings** utility and clicking **Privacy & Security**. Under **Security** locate the message about the **zassist** binary and click **Allow Anyway**. Return to the terminal window and try running the command again.

## Ingest client documentation using zassist

With the **zassist** command installed, you are now able to begin ingesting data.

Step-by-step guidance for ingesting documents using zassist is provided in the IBM watsonx Assistant for Z documentation.

Follow the directions [here](#) to ingest documents using zassist.

These steps are not repeated in this lab guide. The following video illustrates the steps to ingest a single document. The document that is ingested in the video is a compressed PDF of the **IBM z/OS Continuous Delivery Red Piece**. You can download a copy of this document [here](#).

**Note:** The video has no audio.

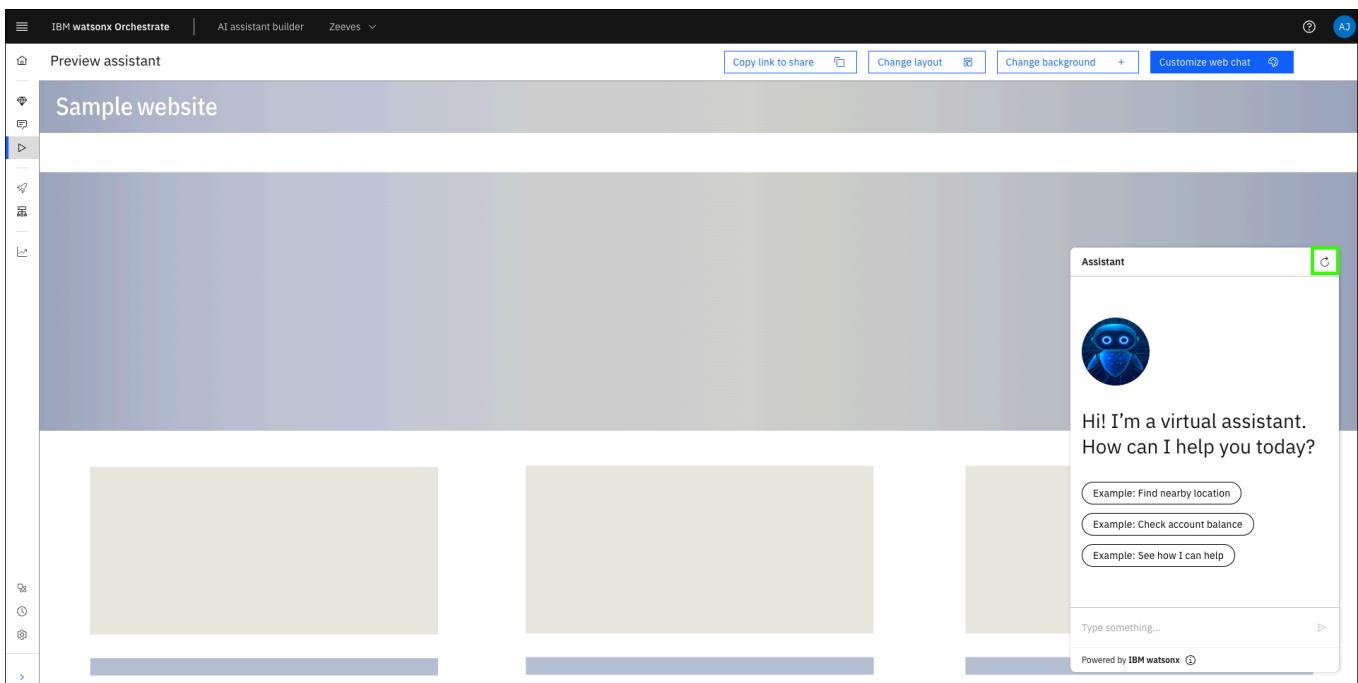
**i** Don't see the video in the PDF version of the lab guide? ▼

If you are viewing the [PDF](#) of the lab guide, you can access the video [here](#).

Verify the document that is ingested is now returned as a source file for a query.

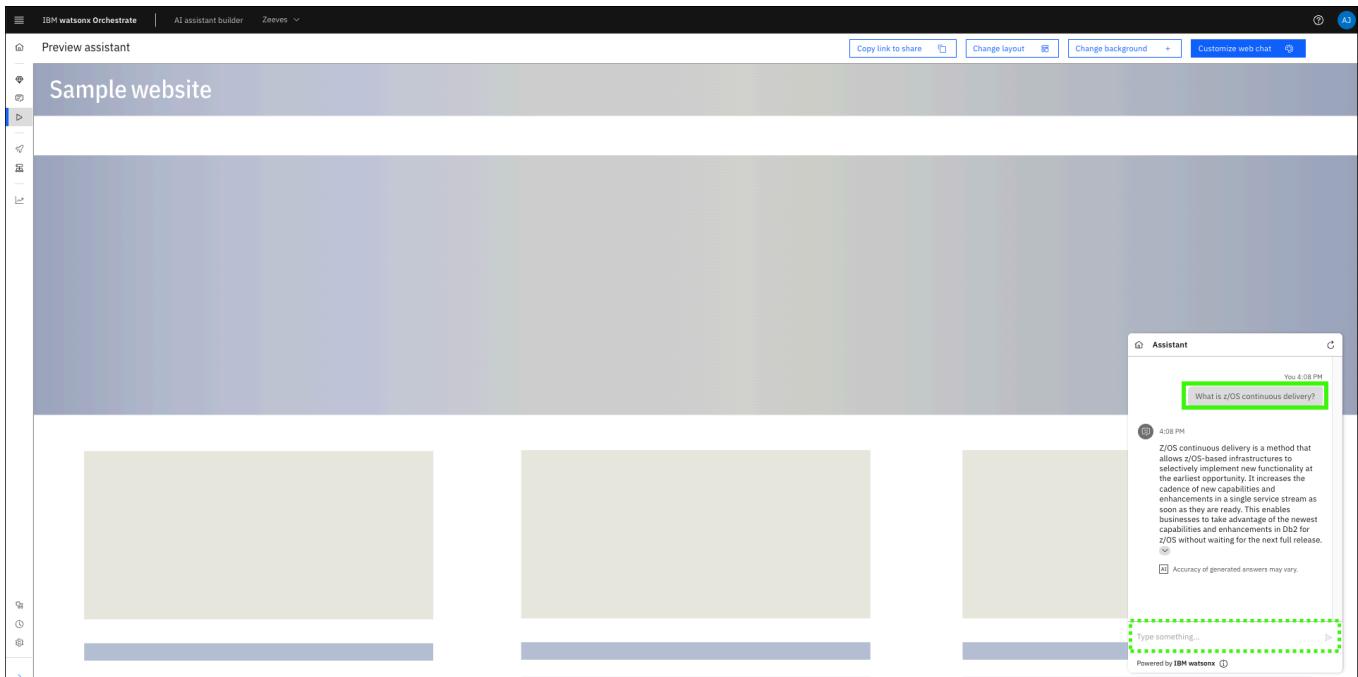
Use the watsonx Orchestrate AI assistant builder to verify your document ingestion.

1. Hover over the **Home** () icon and click **Preview**.
2. Click the **Restart conversation** () icon.

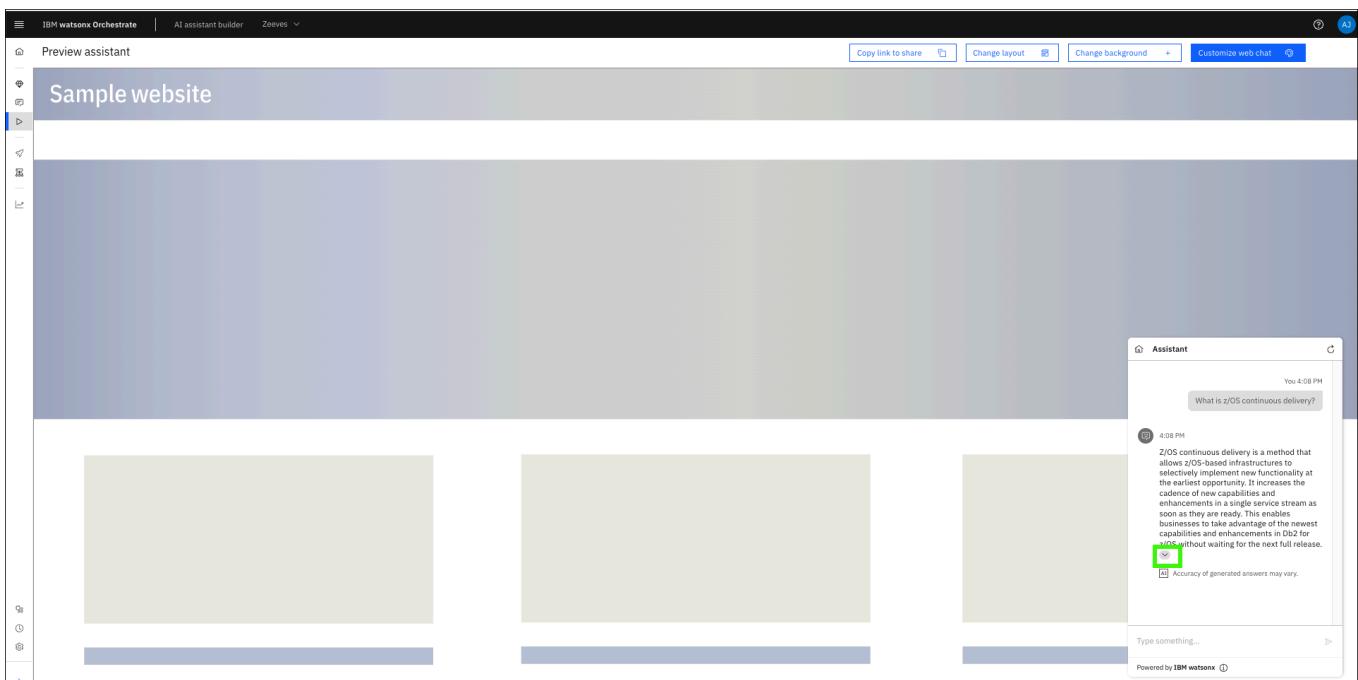


3. Enter the following prompt in your assistant.

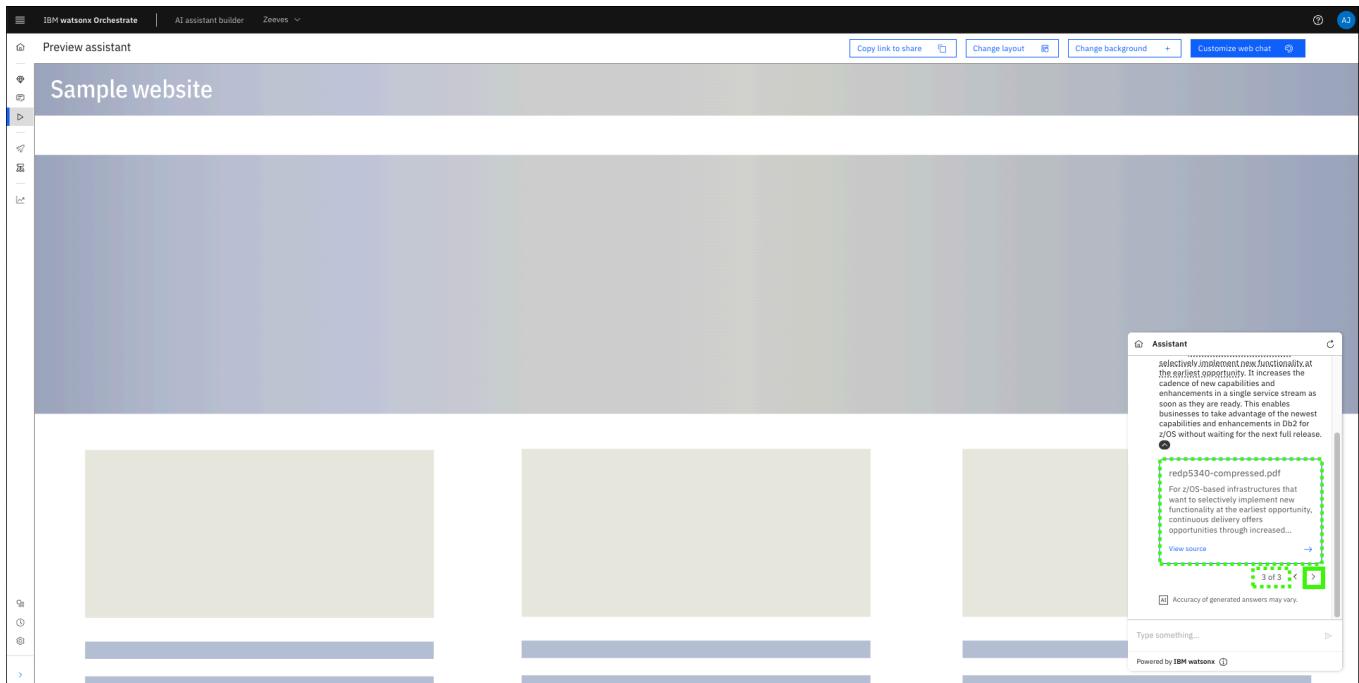
What is z/OS continuous delivery?



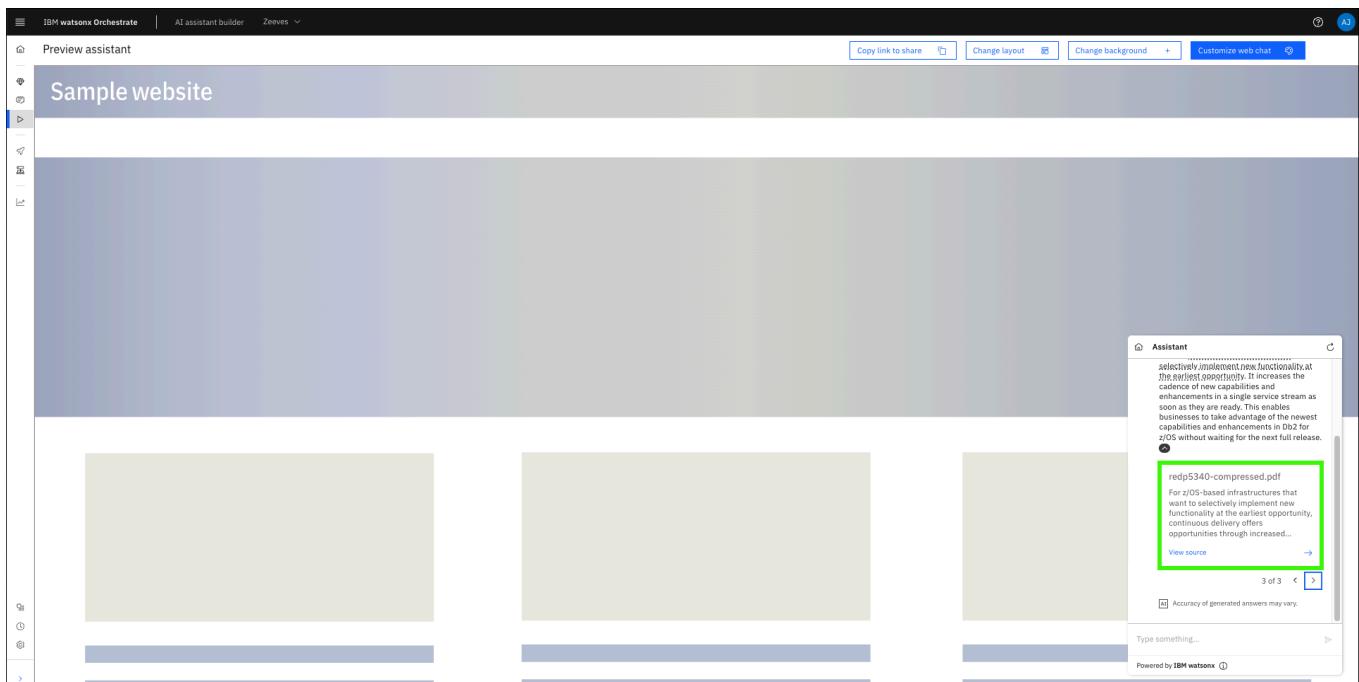
#### 4. Clicking the Down arrow (▼).



#### 5. Click through the list of resources and find the reference to the Red Piece document you ingested.

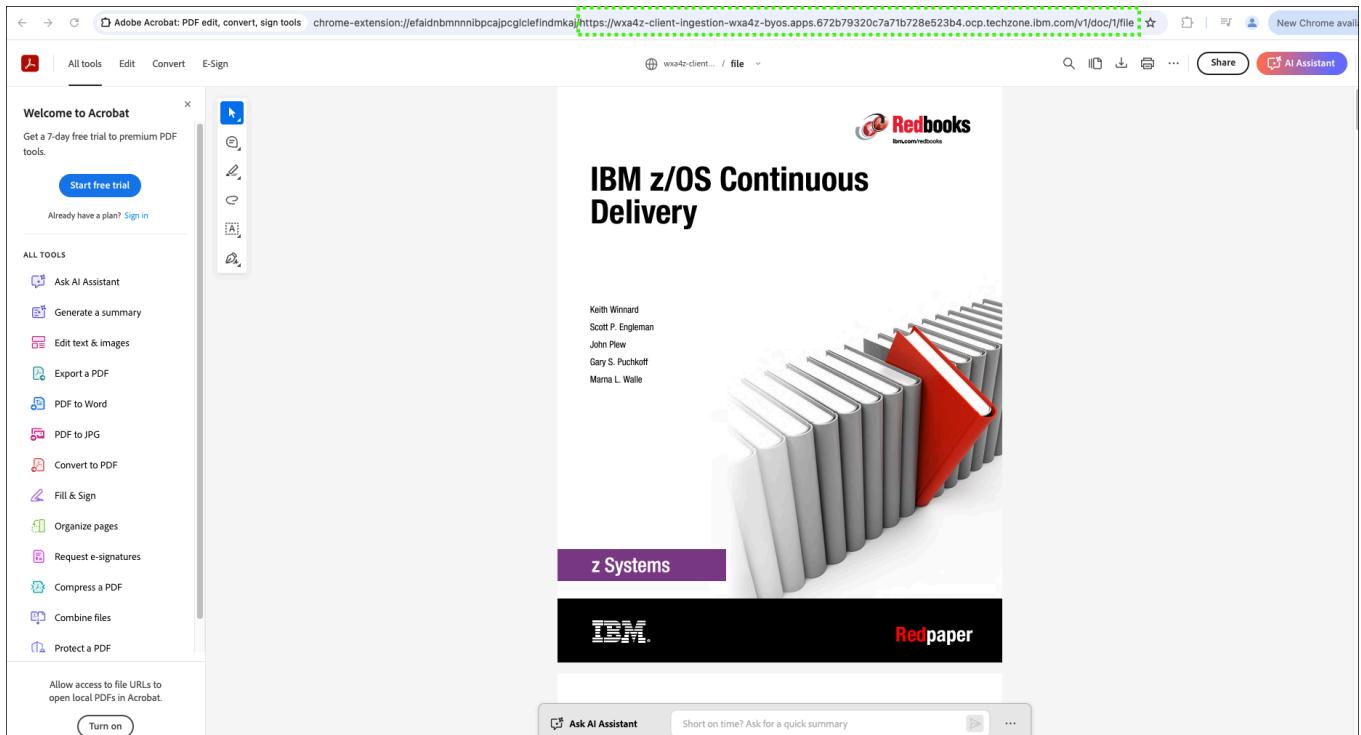


#### 6. Click the ingested document reference.



#### 7. Accept the security risk to view the source document.

The steps to accept the security risk for the document are not shown. The risk occurs because the certificate for the connection to the SNO instance is not secure. Notice that the URL contains the path to your SNO instance route.



## Adjusting the search behavior

Do you recall the **Metadata** field when you configured your assistant?

Custom service Draft

**Settings** Instance

even if the user has moved on.

Define the text for the citations title. ⓘ

How do we know?

Tendency to say "I don't know":

Rarely	Less often	More often	Most often
--------	------------	------------	------------

Generated response length:

Concise	Moderate	Verbose
---------	----------	---------

**Default filter**

Can be anything (plain text, JSON, etc)

**Metadata**

```
JSON example:
{
  "example_field": "example_value",
  "other_example_field": 7
}
```

**Search display text**

Define the text your search will display to the end user

No results found Connectivity issue

I searched my knowledge base, but did not find anything related to your query

The Metadata field provides a way to adjust your assistant's behavior during conversational search for your OpenSearch instance. Now that you have your own docs that are ingested for conversational search, you can set the metadata field for your assistant to use those documents in its content-grounded search. If you leave the metadata field empty, then it defaults to settings found to perform well. This replaces having to paste a complicated search string.

By default (without any string in the Metadata field), it searches all the default IBM provided documentation and all ingested customer documentation using the following value:

```
{"ibm_indices": "*_ibm_docs_slate",
"customer_indices": "customer_*"}
```

Replacing the wildcard string with an explicit list of indices allows for personalization. The metadata setting is where you can input specific indices (pointing to the underlying documentation) that you want your assistant to use for the content-grounded search. There are over 220 products and topics that the OpenSearch instance has IBM Documentation for. You can find those indices and products [here](#).

You can input a subset of indices into the “Metadata” field in cases where you only want your assistant to gather context for specific IBM products or topics. The specific indices can be listed out in this format:

```
{"ibm_indices": "<comma separated index values>", "customer_indices": "customer_*"}
```

For example, if you only want your assistant to reference documentation for “Db2 Analytics Accelerator for z/OS” and no ingested client documentation, you can enter the following into the metadata field:

```
{"ibm_indices": "ss4lq8_ibm_docs_slate"}
```

If you have a mix of IBM Documentation and client documentation ingested, then there’s an optional search string that you can use to set the “weights” used for each.

For example:

```
{"doc_weight": {
"product_docs": 0.5,
"customer_docs": 0.5},
"ibm_indices": "*_ibm_docs_slate",
"customer_indices": "customer_*"
}
```

In this case, “product\_docs” is the weight that is assigned to “ibm\_indices” and “customer\_docs” is the weight that is assigned to “customer\_indices”.

After you have configured all the settings for Conversational Search on the page, click “Save” in the upper-right of the page.

For more information on customizing the metadata field for conversational search, refer to this supplemental video found [here](#).

You are encouraged to experiment with the metadata field!

**Try setting the metadata field to the following, which weights ingested docs higher than the product docs:**

```
{"doc_weight":  
{"product_docs":0.2,  
"customer_docs":0.8},  
"ibm_indicies": "*_ibm_docs_slate",  
"customer_indicies": "customer_*"  
}
```

Now, repeat steps 6 through 8 (make sure you restart the assistant preview (⟳)). Notice that the ingested Red Piece document is now the first sited reference!

The screenshot shows the IBM Watsonx Assistant interface. At the top, there's a navigation bar with 'IBM Watsonx Orchestrate', 'AI assistant builder', and 'Zeeves'. Below the navigation is a toolbar with 'Preview assistant', 'Copy link to share', 'Change layout', 'Change background', and 'Customize web chat'. The main area is titled 'Sample website' and displays three placeholder cards. In the bottom right corner, there's an 'Assistant' panel titled 'Assistant' with a file icon and '650 MB'. It contains a list of bullet points about Z/OS continuous delivery, followed by a file card for 'redp5340-compressed.pdf'. The file card includes a preview thumbnail, a download button, and a 'View source' link. At the bottom of the assistant panel, there's a search bar with 'Type something...' and a 'Powered by IBM Watsonx' footer.

## Guidance for the pilot environment

If you or your client have other documents to ingest, you can do so by repeating the steps using zassist. The Velocity Pilot ITZ environment is limited in compute and storage capacity. The following limits should be adhered to:

- Greater than 15,000 documents is not supported.
- Individual documents should be less than 10 megabytes (MB).
- Larger documents greater than 50 MB should work if the document contains mostly images.
- Loading documents can take a long time, especially with > 100 MB of text.
- It is recommended to run large loads late at night.
- When loading, ensure your workstations does not sleep during the process.
- If you receive a **batch time error**, set the batch size to a lower number for that command. For example:

```
zassist ingest . -s 50
```

After ingesting all your additional documents, proceed to the next section to learn about adding skills to your assistant.

## Adding skills to the assistant

# Getting started with skills and actions

Watsonx Assistant for Z can import skills to automate a range of IBM Z related tasks through assistant interactions. Each skill is a pre-defined automation that runs tasks to accomplish some unit or units of work. For example, you can use a skill to view z/OS IPL information, or work with z/OS datasets.

IBM Watsonx Assistant for Z provides an extension within Watsonx Orchestrate to build new skills from Ansible Automation platform or z/OS Management Facility (z/OSMF). The Z Skills Accelerator extension connects Ansible and z/OS application programming interfaces (APIs) and can import automation as Ansible Playbooks, JCL, or REXX as skills. Learn more importing and building skills [here](#).

## Environments

### Watsonx Orchestrate

The Z Skills Accelerator extension is already configured in your Watsonx Orchestrate IBM Technology Zone (ITZ) environment. You can use this component to import new skills.

### Ansible Automation Platform and Wazi as a Service

To import skills for automations, you use Ansible Automation Platform (AAP) and Wazi as a Service (Wazi aaS) to serve as the z/OS back-end. Learn more about AAP [here](#). Learn more about Wazi, [here](#).

The two resources are provisioned together in the ITZ environment that you reserved earlier. This environment enables the ability to manage and automate z/OS tasks and subsystems with various preinstalled ansible playbooks. It includes a z/OS back-end (Wazi as a Service) with all needed prerequisites.

The playbooks provided cover various use cases for automating z/OS management. Ansible's capabilities for automating various Z-specific tasks are not limited to the use cases that are preinstalled in the AAP instance. The preinstalled playbooks are tasks from the 'IBM z/OS core collection'. Using this environment accelerates the ability to showcase the value of Watsonx Assistant for Z, and to get started with simple automations that can be expanded.

The ITZ environment gives you access to AAP, which is preconfigured to target the accompanying z/OS Wazi system, along with web-based access to AAP to experiment with different playbook templates. These templates are imported into Watsonx Orchestrate as skills and connected to your assistant.

For more information on the AAP and Wazi z/OS environments, refer to this document.

The playbook templates that are preinstalled in AAP cover various use cases, which you can explore, including:

- z/OS Certificate Management (create, delete, list, and renew certificates)
- dataset management (create, delete, fetch datasets)
- Submit JCL
- Run Operator commands

- Run TSO commands
- And more

Each of the sections that follow build upon each other. Complete each to successfully enhance your assistant by starting with [Explore Ansible Automation Platform](#).

# Explore Ansible Automation Platform

After you reserved the Ansible Automation Platform (AAP) and Wazi z/OS environment in IBM Technology Zone (ITZ) and the reservation is in the **Ready** state, follow these steps to explore AAP.

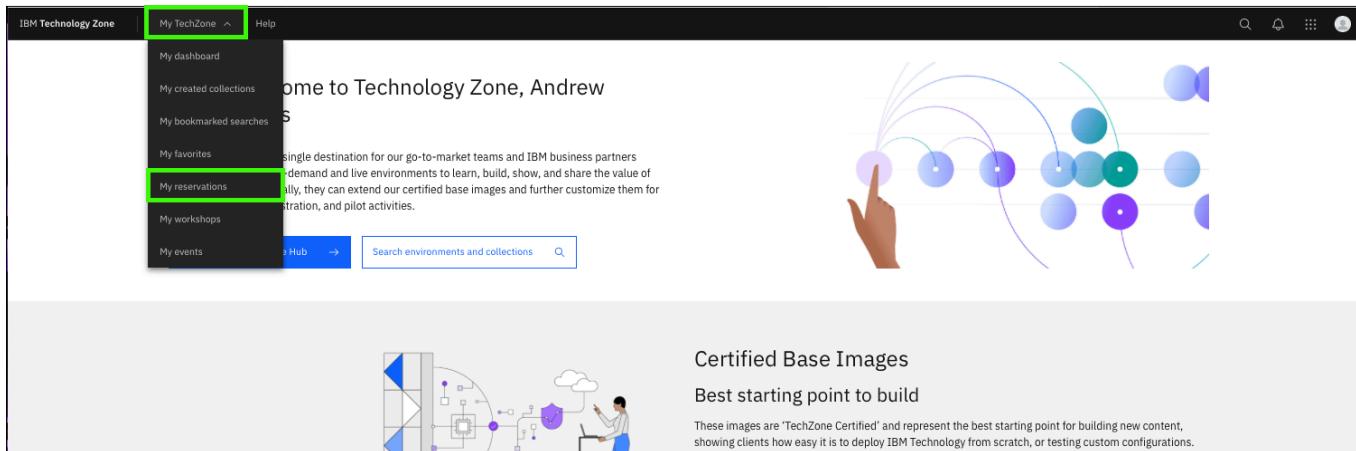
## Access the AAP and Wazi as a Service environment

### Be sure to record the information as instructed

Several of the steps below instruct you to record values from your ITZ reservation. Be sure to do this as they will not only be used in this section, but also in later sections of the lab guide.

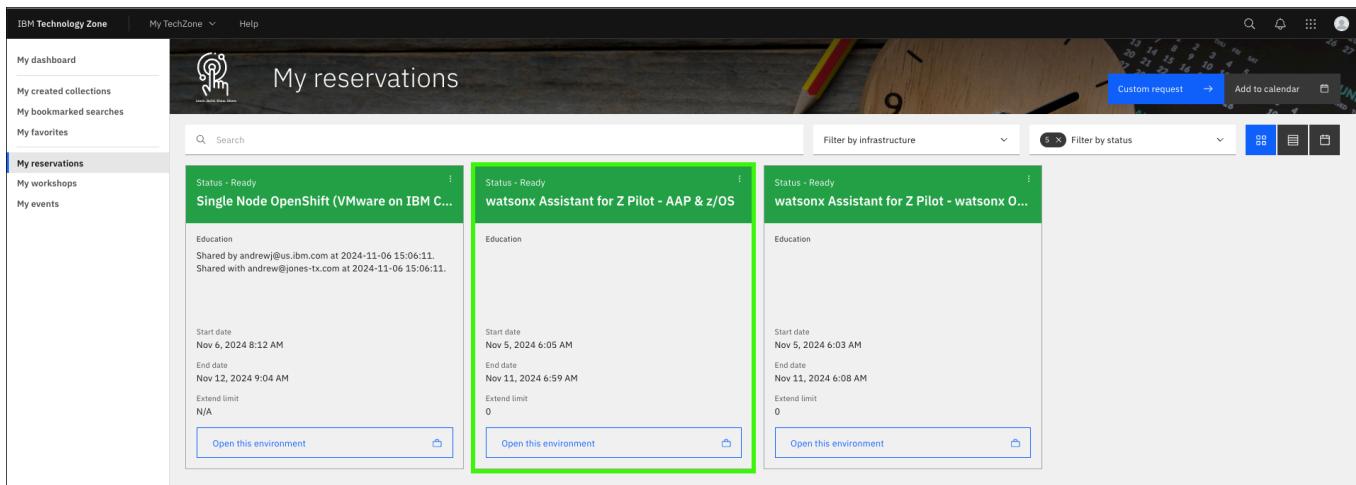
1. In the IBM Technology Zone portal, expand **My TechZone** and select **My Reservations**, or click the following link.

#### [ITZ My reservations](#)



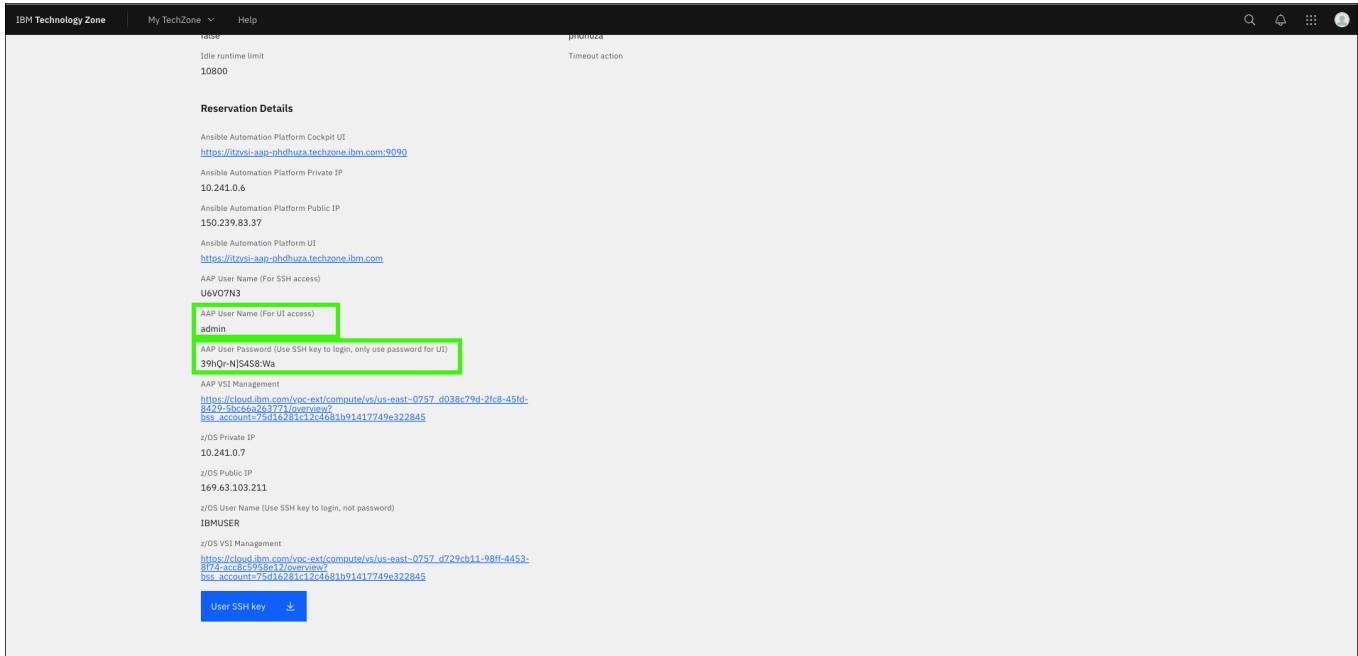
Certified Base Images  
Best starting point to build  
These images are "TechZone Certified" and represent the best starting point for building new content, showing clients how easy it is to deploy IBM Technology from scratch, or testing custom configurations.

2. Click the **watsonx Assistant for Z Pilot - AAP & z/OS** tile.

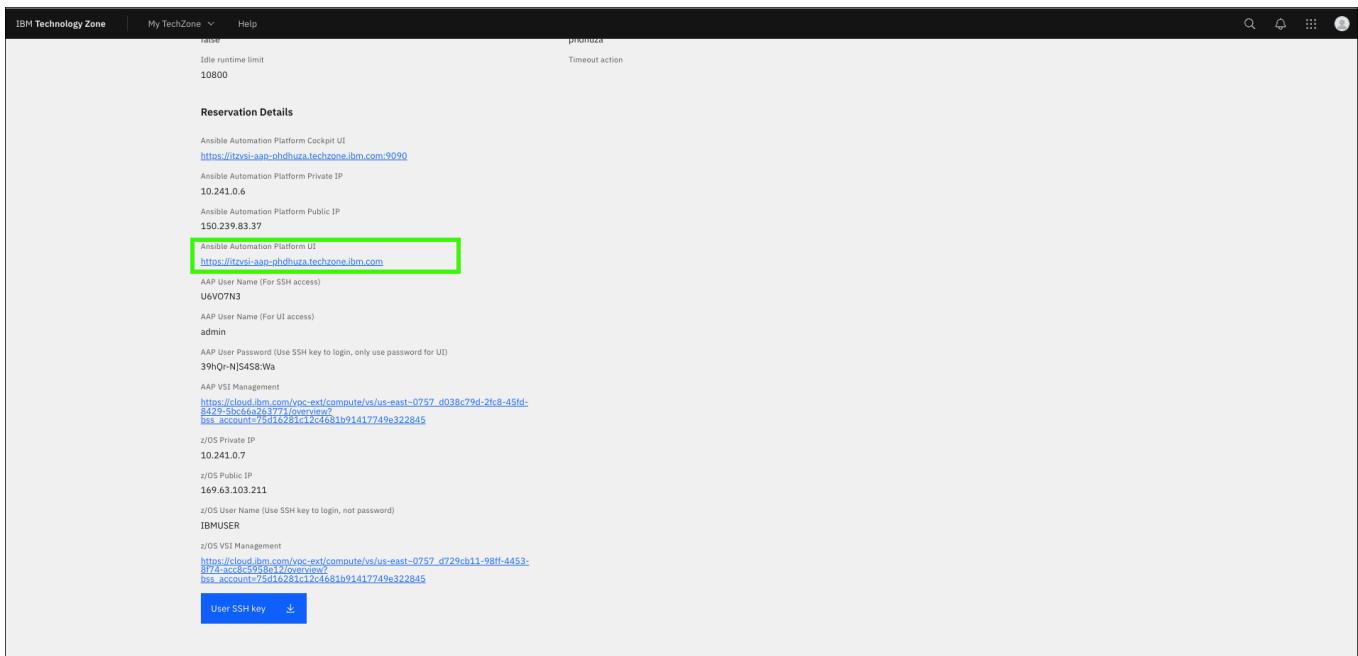


Reservation Type	Status	Start Date	End Date	Extend Limit	Action
Single Node OpenShift (VMware on IBM Cloud)	Ready	Nov 6, 2024 8:12 AM	Nov 12, 2024 9:04 AM	N/A	<a href="#">Open this environment</a>
watsonx Assistant for Z Pilot - AAP & z/OS	Ready	Nov 5, 2024 6:05 AM	Nov 11, 2024 6:59 AM	0	<a href="#">Open this environment</a>

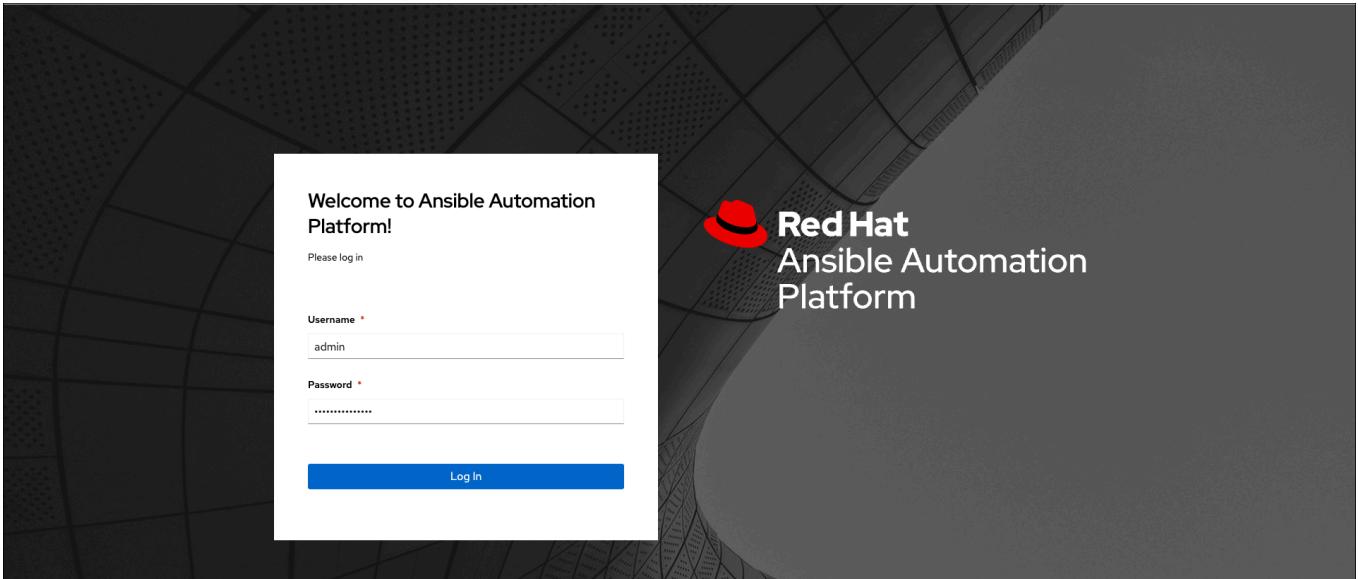
3. Locate and record the **AAP User Name (For UI access)** and **AAP User Password** fields.



#### 4. Record and then click the Ansible Automation Platform UI link.



#### 5. Enter the **Username** and **Password** that is recorded in step 3 and click **Log In**.

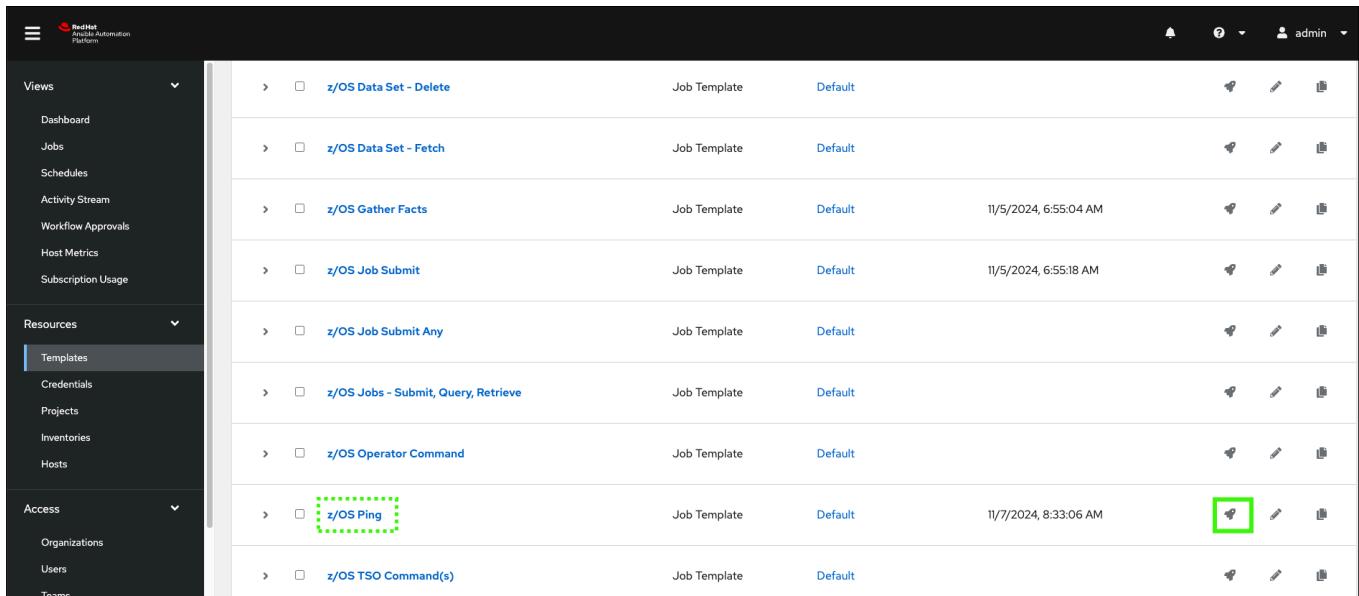


6. Click **Templates** under the **Resources** section.

**i** The AAP instance is preconfigured to the Wazi aaS instance

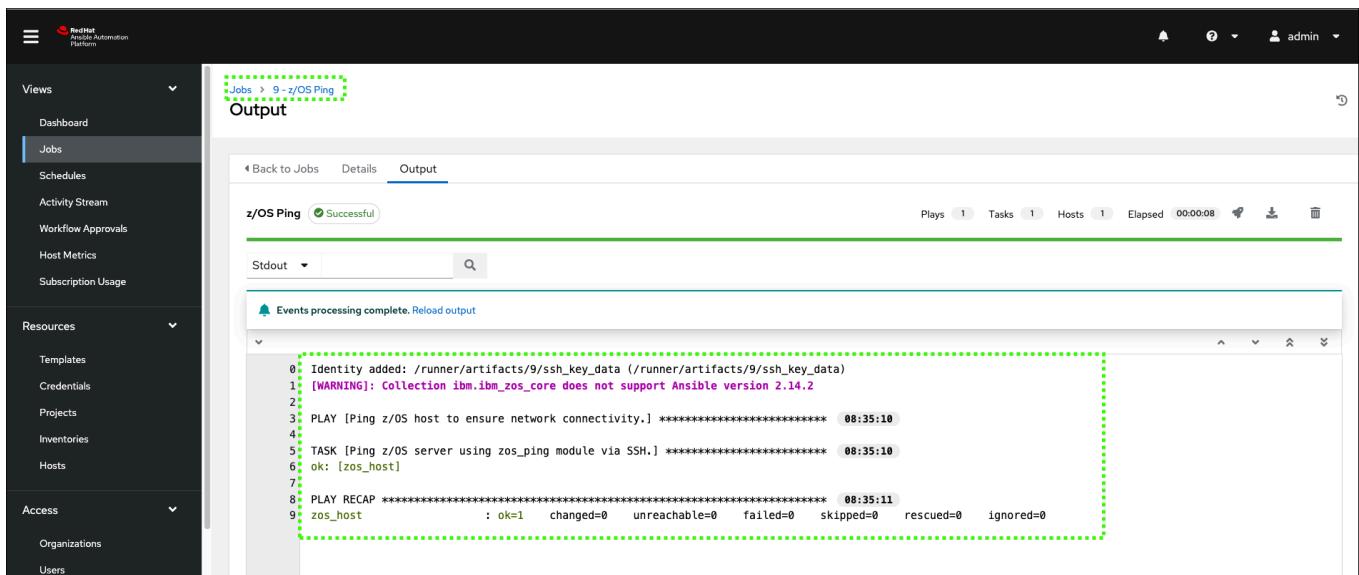
Note that because the AAP instance and the back-end z/OS system are preconfigured, no changes are needed to execute the templates and they will target your provisioned z/OS system by default.

7. Locate the **z/OS Ping** template and click the rocket (🚀) icon to start the template.



Views	<a href="#">z/OS Data Set - Delete</a>	Job Template	Default			
Dashboard	<a href="#">z/OS Data Set - Fetch</a>	Job Template	Default			
Schedules	<a href="#">z/OS Gather Facts</a>	Job Template	Default	1/5/2024, 6:55:04 AM		
Activity Stream	<a href="#">z/OS Job Submit</a>	Job Template	Default	1/5/2024, 6:55:18 AM		
Workflow Approvals	<a href="#">z/OS Job Submit Any</a>	Job Template	Default			
Host Metrics	<a href="#">z/OS Jobs - Submit, Query, Retrieve</a>	Job Template	Default			
Subscription Usage	<a href="#">z/OS Operator Command</a>	Job Template	Default			
Resources	<a href="#">z/OS Ping</a>	Job Template	Default	1/7/2024, 8:33:06 AM		
Templates	<a href="#">z/OS TSO Command(s)</a>	Job Template	Default			
Credentials						
Projects						
Inventories						
Hosts						
Access						
Organizations						
Users						
Teams						

## 8. Observe the z/OS Ping job run.



The screenshot shows the 'Jobs' section of the Red Hat Ansible Automation Platform. A specific job named 'z/OS Ping' is selected and its output is displayed. The output window shows the execution of an Ansible playbook. The output text includes:

```

Events processing complete. Reload output
-----
0 Identity added: /runner/artifacts/9/ssh_key_data (/runner/artifacts/9/ssh_key_data)
1 [WARNING]: Collection ibm.ibm_zos_core does not support Ansible version 2.14.2
2
3 PLAY [Ping z/OS host to ensure network connectivity.] **** 08:35:10
4
5 TASK [Ping z/OS server using zos_ping module via SSH.] **** 08:35:10
6 ok: [zos_host]
7
8 PLAY RECAP **** 08:35:11
9 zos_host : ok=1    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

```

Take time to explore the other templates that are ready to use. Learn more about the automation capabilities [here](#).

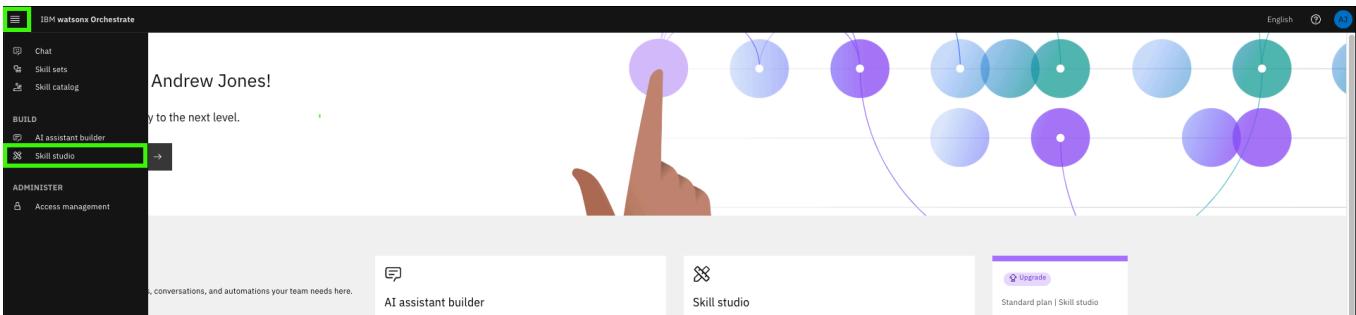
# Importing skills from Ansible Automation Platform

Now that you understand Ansible Automation Platform (AAP) and the preinstalled automations available, you can import them as skills into your watsonx Orchestrate instance, which is used for assistant guided actions.

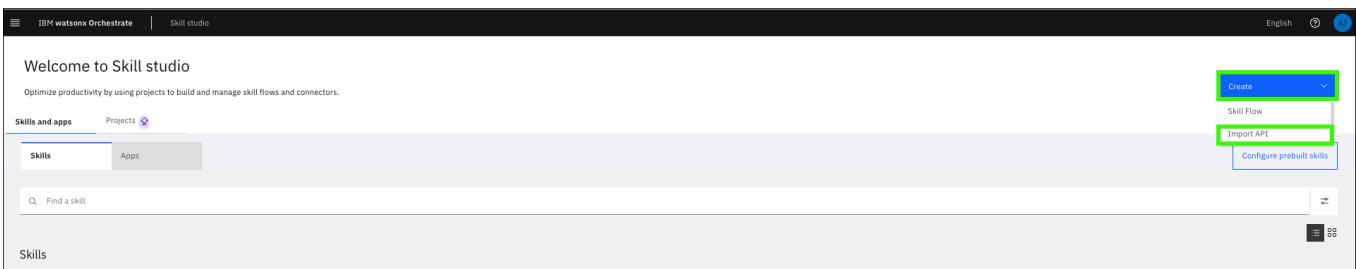
## Import skills into your assistant

The next steps assume that you have an active browser window to the watsonx Orchestrate ITZ cloud account. If you do not, refer to the initial steps in [Creating an assistant and configuring conversational search](#).

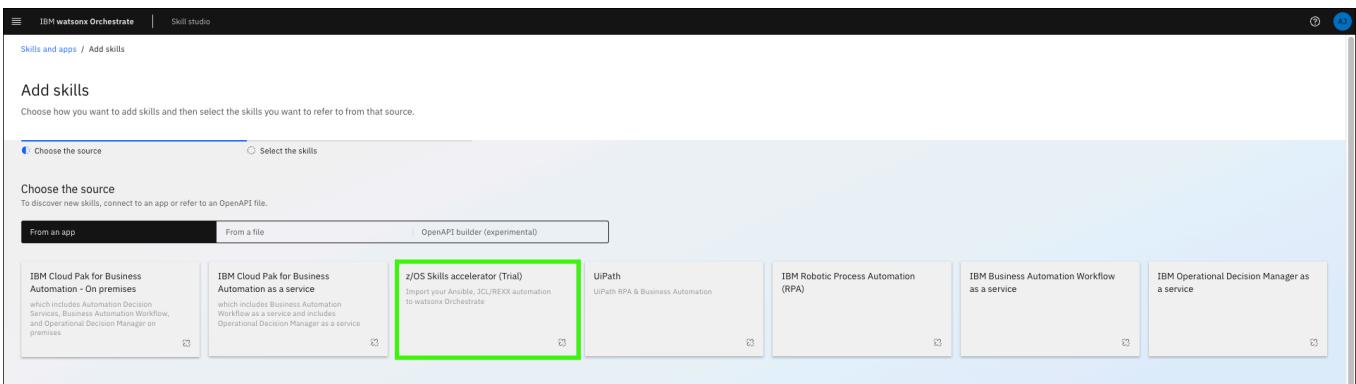
1. Return to your watsonx Orchestrate instance and expand the main menu and click **Skill studio**.



2. Expand **Create** and click **Import API**.



3. Click the **z/OS Skills accelerator (Trial)** tile.



4. Enter the following values in the **z/OS Skills accelerator** form and then click **Connect**.

Use the **URL**, **User Name**, and **Password** values recorded in the [Explore Ansible Automation Platform](#) section earlier.

**a:** Connection Type: **ansible**

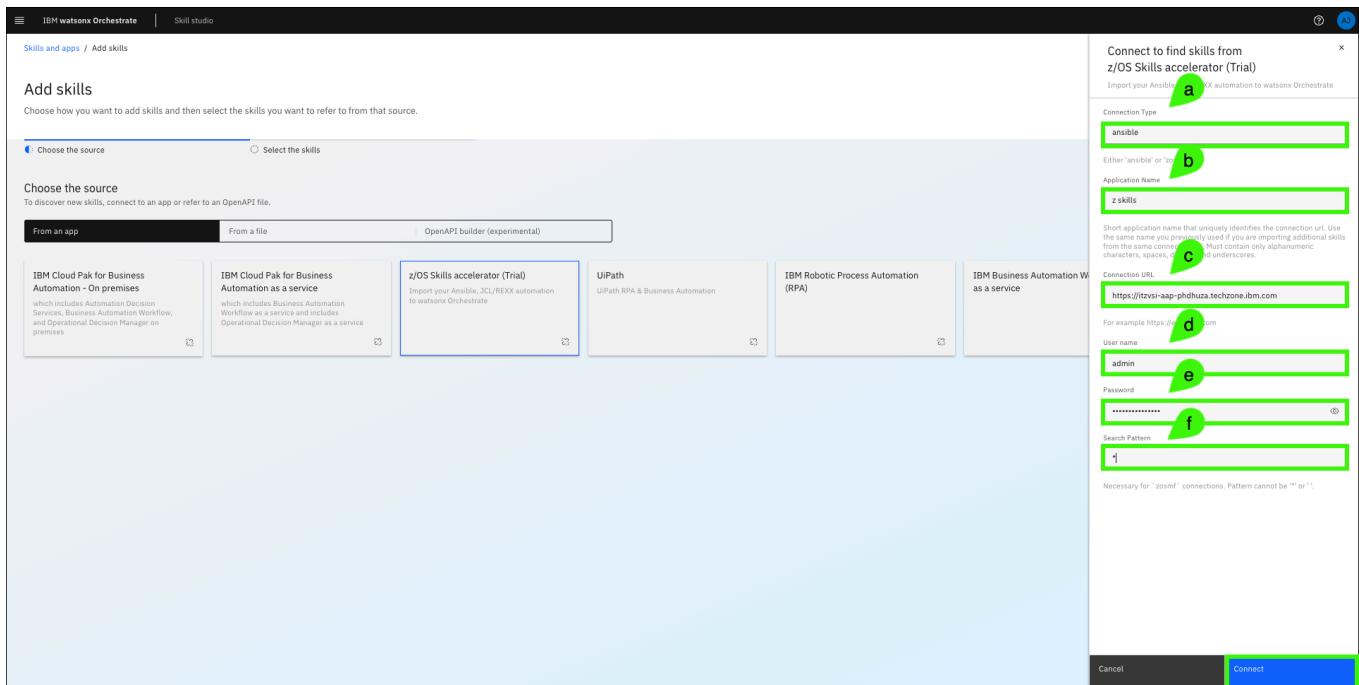
**b:** Application Name: <enter a meaningful name for the skills that you will import> - *be sure to remember this name, you will need in the next section*

**c:** Connection URL: <enter the URL for your AAP UI>

**d:** User Name: <enter the AAP User Name (for UI access)>

**e:** Password: <enter the AAP User Password>

**f:** Search Pattern: \*

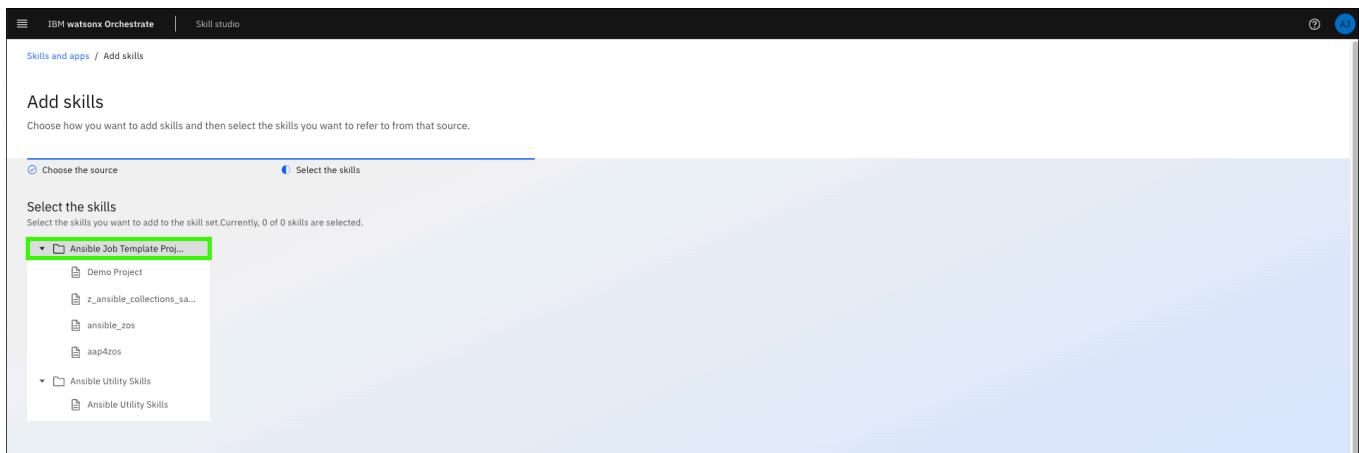


## 5. Expand the Ansible Job Template Proj... folder.



### Explore the other available skills

Take time to explore the available skills. There are many utility skills provided out of the box with the "Z Skills Accelerator" which are needed for actions such as retrieving the output of an Ansible skill. Consider importing these utility skills to enable more complete automation execution flows.



## 6. Click **aap4zos**.

Skill	Description	Status
Z/os ping	Z skills - this playbook pings...	Ready to add
Z/os gather facts	Z skills - this sample playbook...	Ready to add
Z/os job submit	Z skills - this playbook shows...	Ready to add
Z/os job submit any	Z skills - a playbook for subm...	Ready to add
Z/os jobs - submit, query, ret...	Z skills - this sample playbook...	Ready to add

## 7. Select the skills you want to import into your application and then click **Save as draft**.

For this lab, select the **Z/os ping** and **Z/os gather facts** skills.

Skill	Description	Status
Z/os ping	Z skills - this playbook pings...	Ready to add
Z/os gather facts	Z skills - this sample playbook...	Ready to add
Z/os job submit	Z skills - this playbook shows...	Ready to add
Z/os job submit any	Z skills - a playbook for subm...	Ready to add
Z/os users - add	Z skills - this playbook shows...	Ready to add
Z/os data set - basics	Z skills - this sample playbook...	Ready to add
Z/os data set - create	Z skills - this playbook creat...	Ready to add
Z/os data set - delete	Z skills - this playbook delet...	Ready to add
Z/os data set - fetch	Z skills - this playbook fetch...	Ready to add
Z/os certs - health checker se...	Z skills - this playbook enabl...	Ready to add
Z/os certs - create keyring	Z skills - this playbook delet...	Ready to add
Z/os certs - delete keyring	Z skills - this playbook delet...	Ready to add
Z/os certs - create cert	Z skills - this playbook creat...	Ready to add
Z/os certs - delete cert	Z skills - this playbook delet...	Ready to add

## 8. Click the ellipses (⋮) for the first skill and select **Enhance this skill**.

Welcome to Skill studio

Optimize productivity by using projects to build and manage skill flows and connectors.

**Skills and apps** Projects

**Skills** Apps

Find a skill

**Skills**

Name	Step in the process	Status	Skill type	Author	Last edited
z/OS Gather Facts	Just 1 step away to be ready	Ready to publish	Imported	andrew@jones-tx.com	November 19 2024
z/OS Ping	Just 1 step away to be ready	Ready to publish	Imported	andrew@jones-tx.com	November 19 2024

Configure prebuilt skills

## 9. Review the skill enhancement options and then click **Publish**.

On the **Enhance this skill** page, you can specify enhancements to the default skill. Refer to this documentation for more information on enhancing skills.

Skills and apps / Enhance this skill

Enhance the "z/OS Gather Facts" skill

Add details that will make people want to use this skill.

**Name** Input Output Security Phrases Next best skills

Name and describe this skill in a way that tells users how it's used and why they would want to use it.

**Name\*** z/OS Gather Facts

Description 0/100  
z skills - This sample playbook demonstrates the z/OS gather facts module, which pulls z/OS-specific information from the z/OS host.

Categories

App

Ansible Controller Skills - z skills

**Preview**

The skill will look like this in the catalog.

**z/OS Gather Facts**  
z skills - This sample playbook demonstrates the z/OS gather facts...

The skill will look like this in the skill set.

**z/OS Gather Facts**

Cancel Publish Save as draft

## 10. Repeat steps 8 and 9 for each skill you imported.

Welcome to Skill studio

Optimize productivity by using projects to build and manage skill flows and connectors.

**Skills and apps** Projects

**Skills** Apps

Find a skill

**Skills**

Name	Step in the process	Status	Skill type	Author	Last edited
z/OS Gather Facts	Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
z/OS Ping	Just 1 step away to be ready	Ready to publish	Imported	andrew@jones-tx.com	November 19 2024

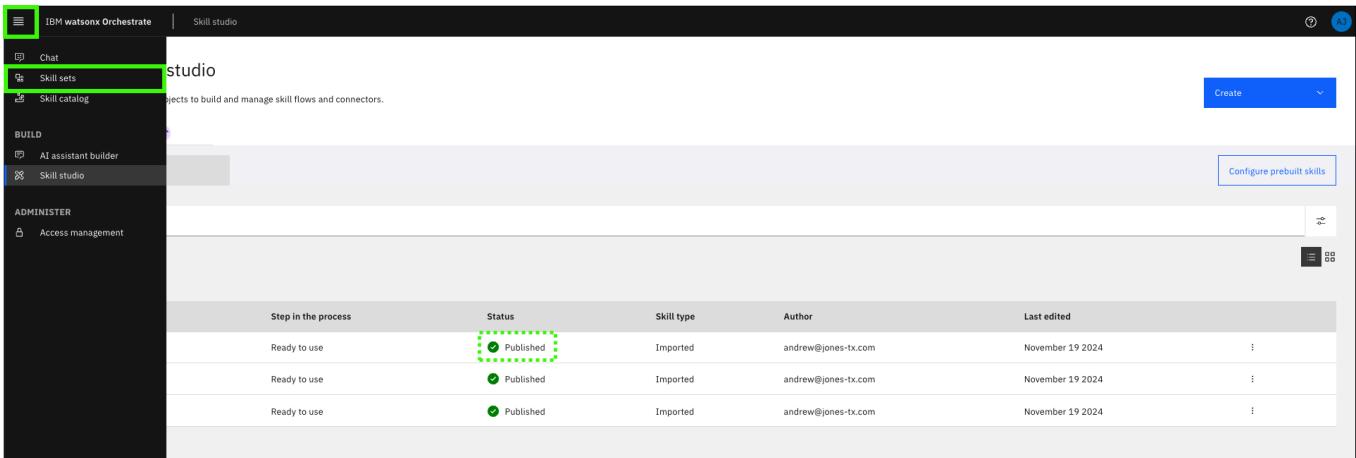
Configure prebuilt skills

The selected skills are now ready for use and available to your assistant. In the next section, learn how to connect them to your assistant.

# Connecting skills to your assistant

Once you have a subset of skills published, the application you created can be connected to your assistant.

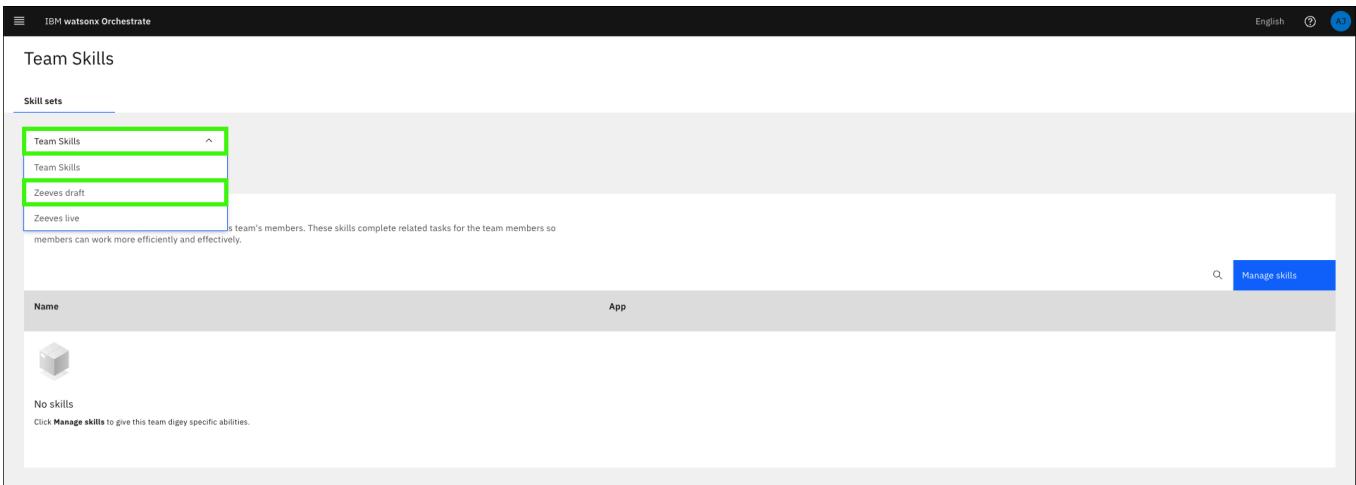
1. Expand the main menu and select **Skill sets**.



The screenshot shows the IBM Watsonx Orchestrate interface. The left sidebar has sections for Chat, Skill sets (which is highlighted with a green box), and Skill catalog. The main area is titled "Skill studio" and contains a table of skills:

Step in the process	Status	Skill type	Author	Last edited
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024

2. Click the **Team Skills** drop-down and select the **Draft** of your assistant.

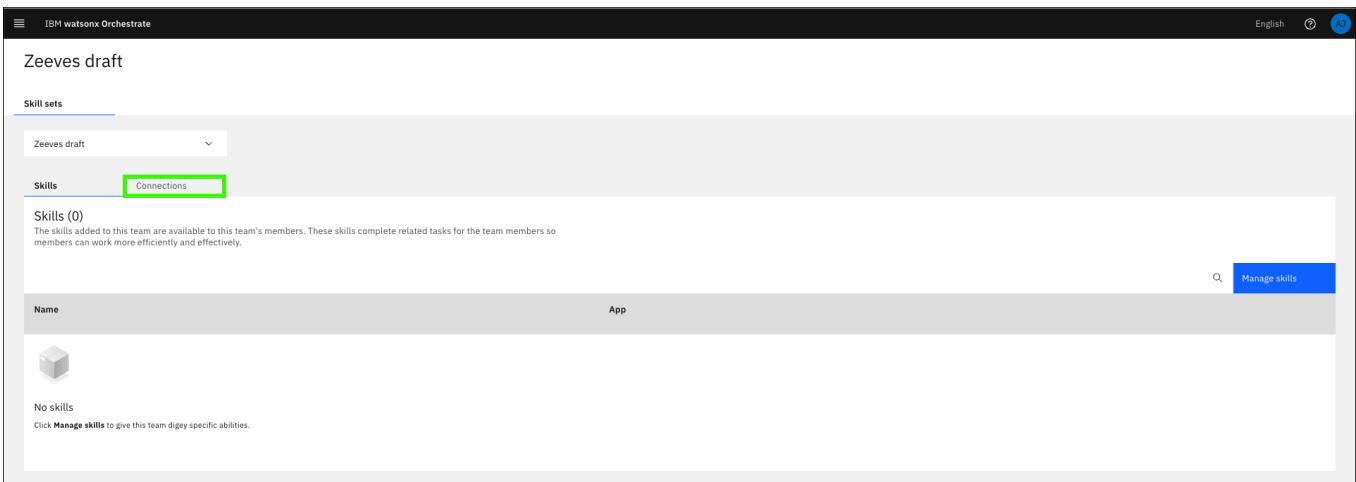


The screenshot shows the "Team Skills" page. The "Skill sets" dropdown menu is open, showing "Team Skills" and "Zeeves draft" (which is highlighted with a green box). Below the dropdown, there is a message about team skills. The main area shows a table with one row:

Name	App

Below the table, it says "No skills" and "Click Manage skills to give this team digest specific abilities."

3. Click the **Connections** tab.



The screenshot shows the "Zeeves draft" page with the "Skills" tab selected (highlighted with a green box) and the "Connections" tab visible below it. There is a message about skills for this team. The main area shows a table with one row:

Name	App

Below the table, it says "No skills" and "Click Manage skills to give this team digest specific abilities."

4. Click the **Search (🔍)** icon.

Application	Number of skills	Credential type	Connected by ⓘ	Action
Activate or deactivate attracting candidates using ThisWay Global	4	⚠️ Not specified	-	⋮
Adobe Workfront	37	⚠️ Not specified	-	⋮
Alliance Virtual Office	2	⚠️ Not specified	-	⋮
Amazon S3	8	⚠️ Not specified	-	⋮
Amazon SES	10	⚠️ Not specified	-	⋮

Items per page: 5 | 1-5 of 78 items | 1 ⚏ of 16 pages | ⌂ ⌃

5. Search for the application name you specified in the previous section.

Application	Number of skills	Credential type	Connected by ⓘ	Action
Ansible Controller Skills - z skills	2	⚠️ Not specified	-	⋮

Items per page: 5 | 1-1 of 1 items | 1 ⚏ of 1 page | ⌂ ⌃

6. Click the ellipses (⋮) and click **Connect app**.

Application	Number of skills	Credential type	Connected by ⓘ	Action
Ansible Controller Skills - z skills	2	⚠️ Not specified	-	⋮

Items per page: 5 | 1-1 of 1 items | Connect app | 1 ⚏ of 1 page | ⌂ ⌃

7. On the **Connect to Ansible Controller Skills** form, keep the defaults and click **Connect app**.

Application	Number of skills	Credential type
Ansible Controller Skills - z skills	2	Not specified

8. Enter the (a) **username** and (b) **password** using the username (**admin**) and password for your IBM Technology Zone (ITZ) watsonx Assistant for Z Pilot - AAP & z/OS reservation (**AAP User Password (Use SSH key to login, only use password for UI)**), and then click **Connect app**.

The application is now connected to the draft version of your assistant.

Application	Number of skills	Credential type	Connected by	Action
Ansible Controller Skills - z skills	2	Team	andrew@jones-tx.com	⋮

Continue to the next section to create actions for your assistant.

# Creating actions for your assistant

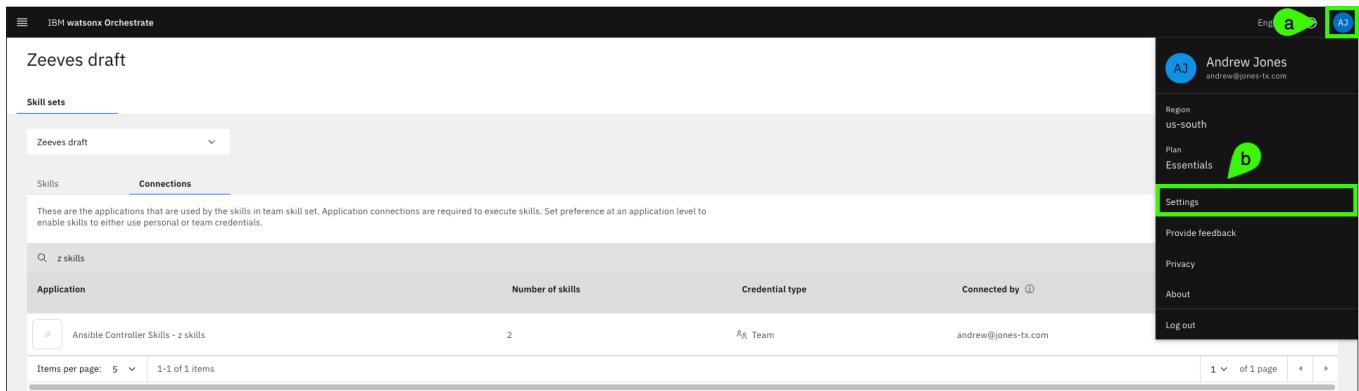
Once the skills in your application are connected to your assistant, you're ready to begin creating actions tied to those skills. Learn more about building actions [here](#)

## Configure the number of input fields

Before configuring actions, it's important to modify a setting within watsonx Orchestrate that allows triggered skills to display as forms (versus conversational skills).

### 1. Click your (a) profile icon and then click (b) **Settings**

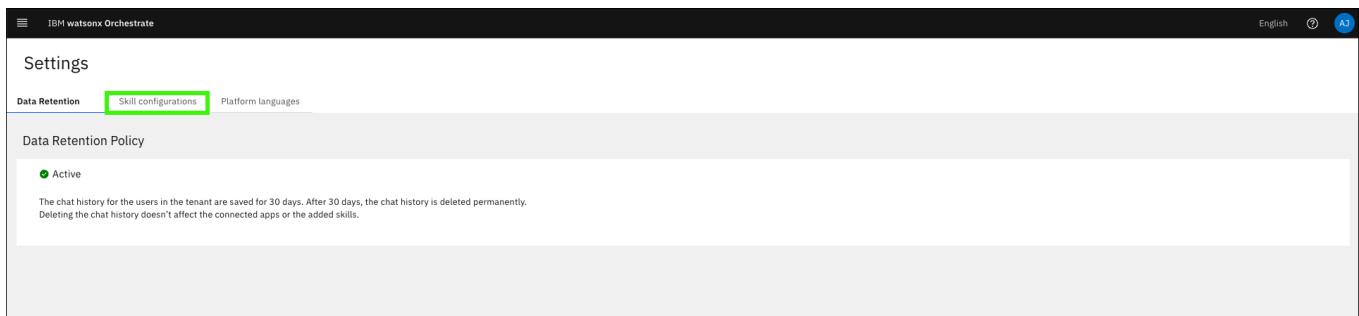
Learn more about configuring input fields [here](#).



The screenshot shows the IBM Watsonx Orchestrate interface. At the top right, there is a user profile icon (a green circle with 'AJ') and a gear icon. A green callout bubble labeled 'a' points to the user profile icon. Another green callout bubble labeled 'b' points to the 'Settings' link in the sidebar menu.

The main area displays a 'Skill sets' section for 'Zeeves draft'. It lists one skill: 'Ansible Controller Skills - z skills' (Number of skills: 2, Credential type: Team, Connected by: andrew@jones-tx.com). Below this is a pagination bar showing 'Items per page: 5' and '1-1 of 1 items'.

### 2. Click the **Skill configurations** tab.



The screenshot shows the 'Settings' page in IBM Watsonx Orchestrate. The 'Skill configurations' tab is highlighted with a green border. The 'Data Retention' and 'Platform languages' tabs are also visible.

The 'Skill configurations' section contains a sub-section titled 'Data Retention Policy' with the status 'Active' (radio button selected). A note states: 'The chat history for the users in the tenant are saved for 30 days. After 30 days, the chat history is deleted permanently. Deleting the chat history doesn't affect the connected apps or the added skills.'

### 3. Enter **0** for the **Number of form fields**.



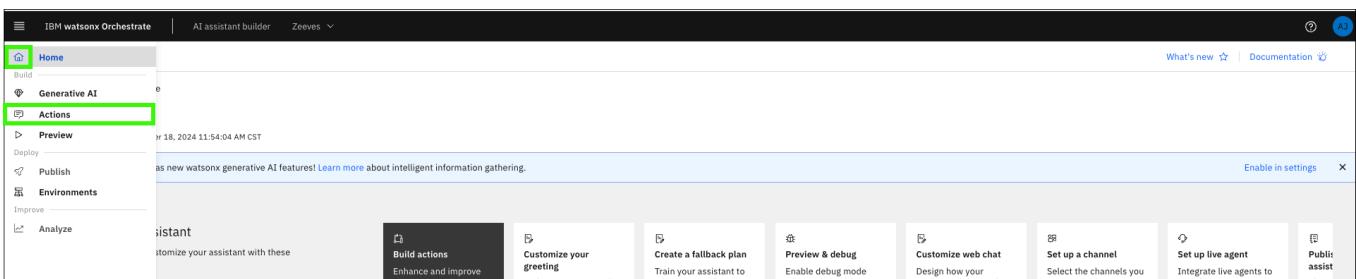
The screenshot shows the 'Settings' page again, with the 'Skill configurations' tab selected. In the 'Skill configurations' section, there is a note: 'Set default for maximum number of fields to consider a skill to be conversational'. Below this is an input field labeled 'Number of form fields' containing the value '0'. To the right of the input field are minus and plus buttons.

## Create actions

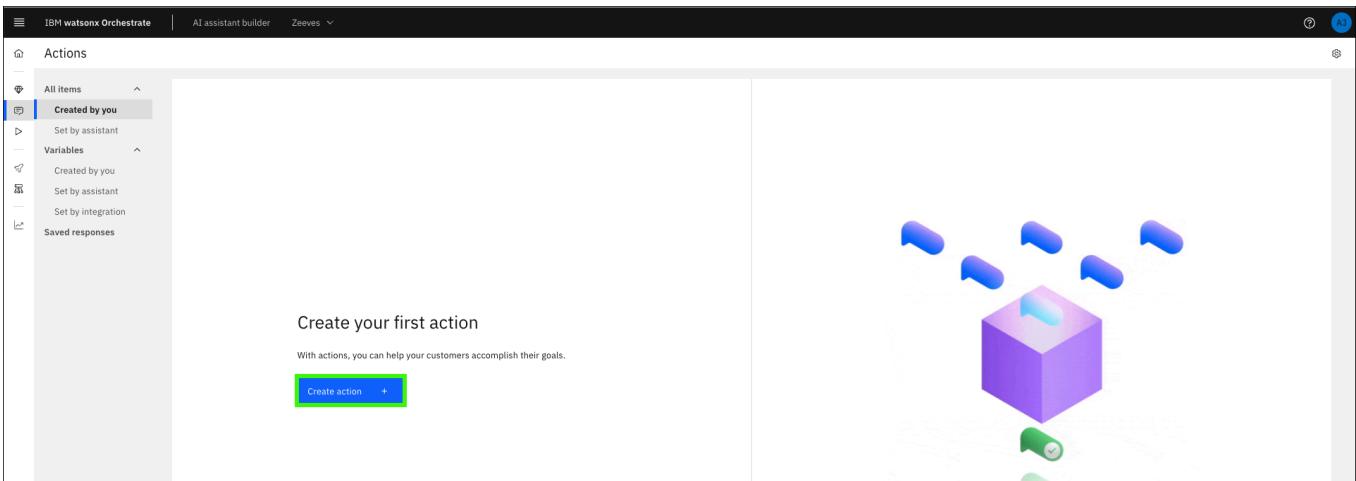
4. Click the main menu and select **AI assistant builder**.



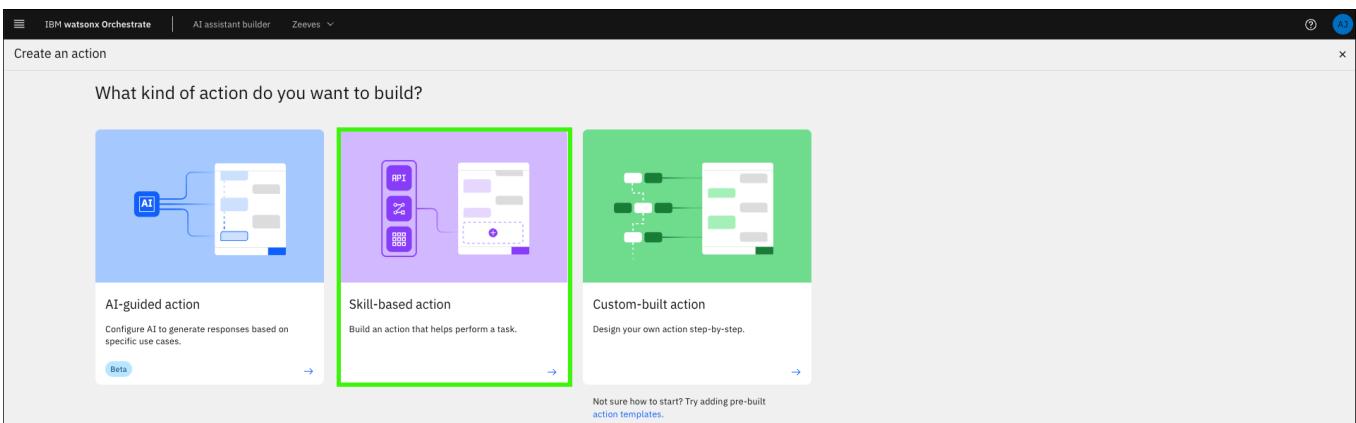
5. Hover over the **Home** icon (🏠) and click **Actions**.



6. Click **Create action**.



7. Click the **Skill-based action** tile.



8. Select the **z/OS Gather Facts** tile and click **Next**.

Note, it may take a minute for the page to display the action tiles. The date shown in the **z/OS Gather Facts** tile reflects when you added the skill to your application.

Build an action from a skill

Select a skill  
Choose a conversational skill published as a foundation of your action.

Search a skill

<b>z/OS Ping</b> z skills - This playbook pings the z/OS host to test connectivity. Last updated: 2024-11-19T15:58:20.567Z	<b>z/OS Gather Facts</b> z skills - This sample playbook demonstrates the z/OS gather facts module, which pulls z/OS-specific information from the z/OS host. Last updated: 2024-11-19T15:56:26.843Z	Summarize the Webex meeting transcript in watsonx.ai Last updated: 2024-11-04T10:49:16.502Z	Summarize the Box content in watsonx.ai Last updated: 2024-11-04T10:49:12.077Z	Summarize a Zendesk ticket in watsonx.ai Last updated: 2024-11-04T10:49:09.476Z
Summarize a ServiceNow incident in watsonx.ai Last updated: 2024-11-04T10:49:05.828Z	Summarize a Salesforce opportunity in watsonx.ai Last updated: 2024-11-04T10:49:01.769Z	Sharepoint document summary in watsonx.ai Last updated: 2024-11-04T10:48:55.707Z	Salesloft email summary in watsonx.ai Last updated: 2024-11-04T10:48:51.522Z	Salesforce case summarization in watsonx.ai Last updated: 2024-11-04T10:48:48.195Z
Salesforce case sentiment analyze	Outlook email summary	Github issue summarization	Github issue sentiment	Generate an email

- On the **New action** dialog, (a) enter a prompt a user of the assistant might use to initiate the action and then (b) click **Save**.

Sample prompts:

Get z/OS facts

Gather z/OS facts

Customer starts with:  
Example: I want to pay my credit card bill.

Configuration

Skill Name: z/OS Gather Facts  
Skill ID: Ansible-Controller-Skills-z-skills-\_1.0.\_launchJobTemplate12

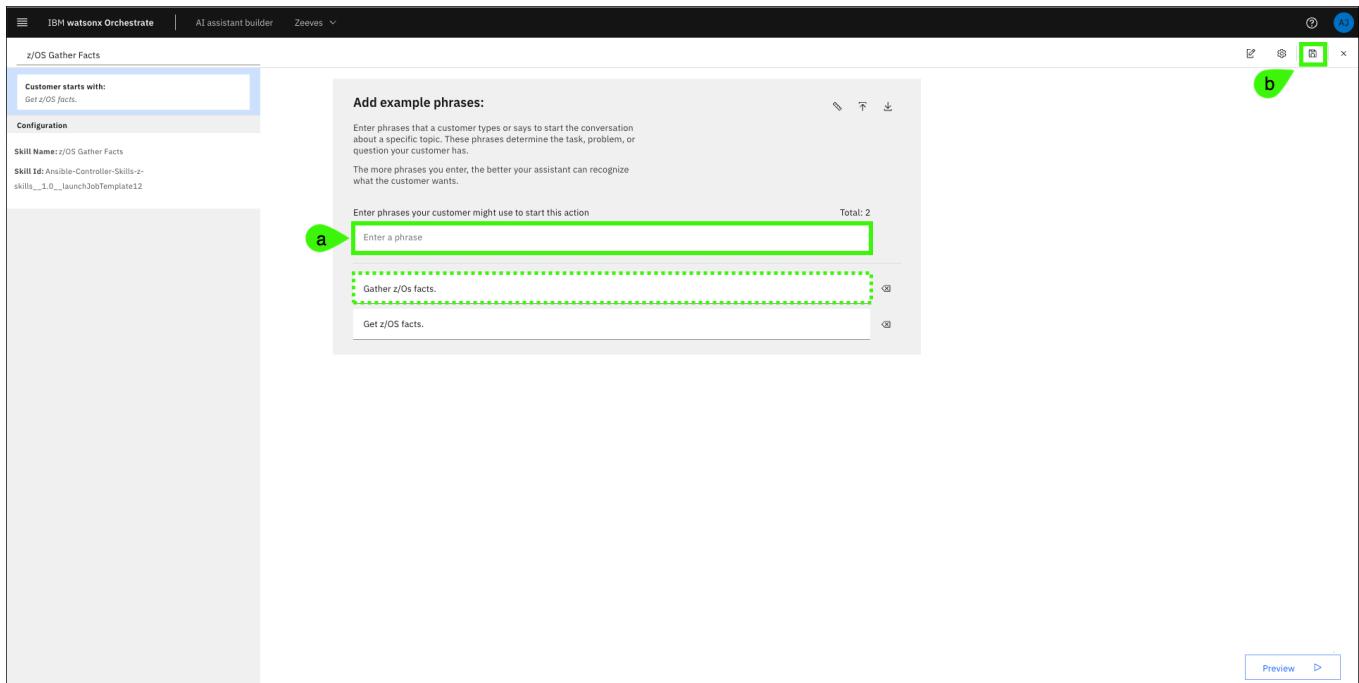
Add example phrases:

Enter phrases a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has. The more phrases you enter, the better your assistant can recognize what the customer wants.

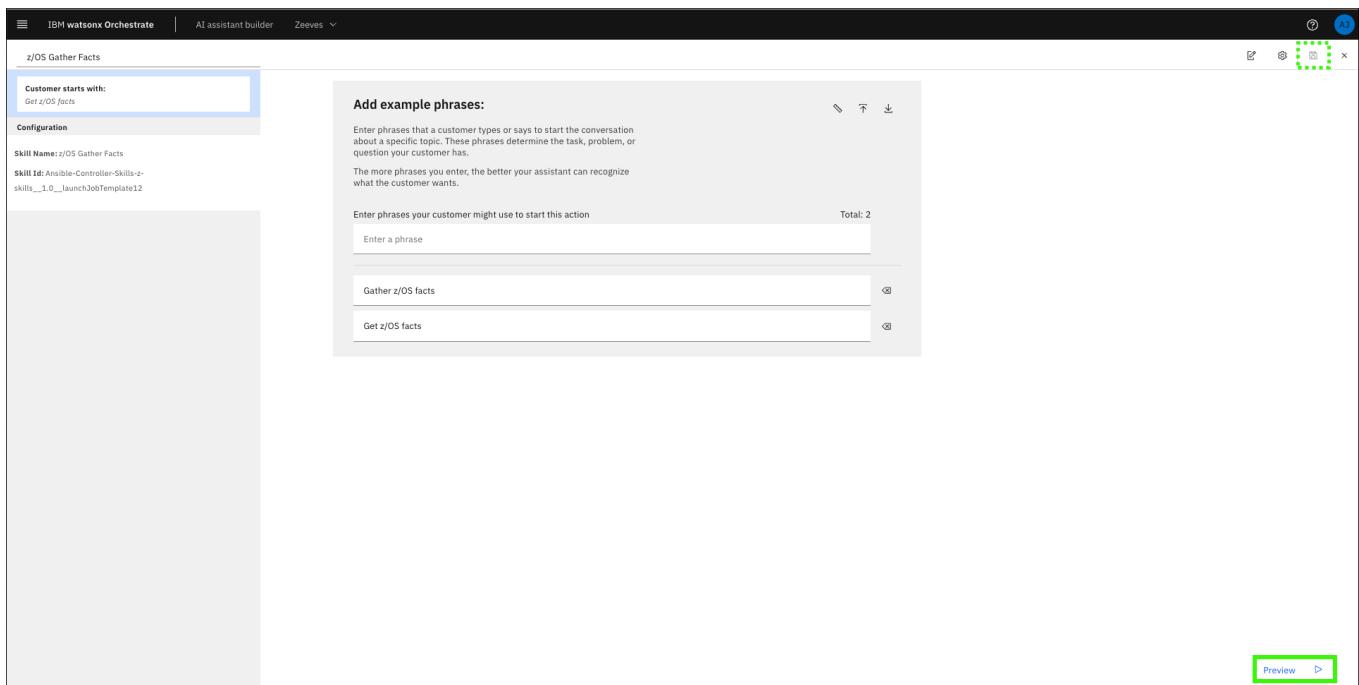
Enter phrases your customer might use to start this action  
Total: 0  
Example: I want to pay my credit card bill.

New action  
What does your customer say to start this interaction?  
Get z/OS facts.  
Cancel Save

- Add any (a) additional prompts and then (b) click the save ( ).



## 11. Click Preview.



## 12. Enter one of the prompts you specified in step 9 or 10.

**Prompt:**

Get z/OS facts

**Customer starts with:**  
Get z/OS facts

**Add example phrases:**

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action  
Total: 2

Enter a phrase

Gather z/OS facts  
Get z/OS facts

**Preview**

12:55 PM  
Greet customer [default]

Welcome, how can I assist you?

Get z/OS facts

### 13. Review the returned results.

**Customer starts with:**  
Get z/OS facts

**Add example phrases:**

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action  
Total: 2

Enter a phrase

Gather z/OS facts  
Get z/OS facts

**Preview**

12:55 PM  
Greet customer [default]

Welcome, how can I assist you?

You 1:04 PM  
Get z/OS facts

1:05 PM  
Conversational skill called z/OS Gather Facts recognized

job : 12  
status : pending

There are no additional steps for this action. Add a new step or end the action.

Use the up arrow for prior messages

In the execution of this skill-based action, the skill executed properly and the output is the job id. If an error is generated, review the [Troubleshooting](#) section below.

Learn more about building actions [here](#).

# Verify the job in the Ansible Automation Platform console

Return to the Ansible Automation Platform (AAP) console and review the job information.

14. Click **Jobs** and expand the **## - z/OS Gather Facts** job.

The screenshot shows the AAP Jobs page. The left sidebar has 'Views' expanded, with 'Jobs' selected. The main area displays a table of jobs. One job, '## - z/OS Gather Facts', is highlighted with a green dashed box. A larger green dashed box surrounds its detailed view below. The job details are as follows:

Launched By	admin	Job Template	z/OS Gather Facts	Inventory	AAP z/OS
Project	aap4zos	Execution Environment	aap4zos EE		
Credentials	SSH: z/OS Host SSH ...				
Job Slice	0/1				

As seen in the assistant, the actual contents of the output aren't displayed. The utility skills are used to retrieve the job output. It is also possible to create a skill flow that executes the **z/OS Gather Facts** skill followed by the **Retrieve job output** utility skill in sequence; passing the job id from the first skill to the second, in order to view the output within the assistant. Creating a skill flow is covered in the next section.

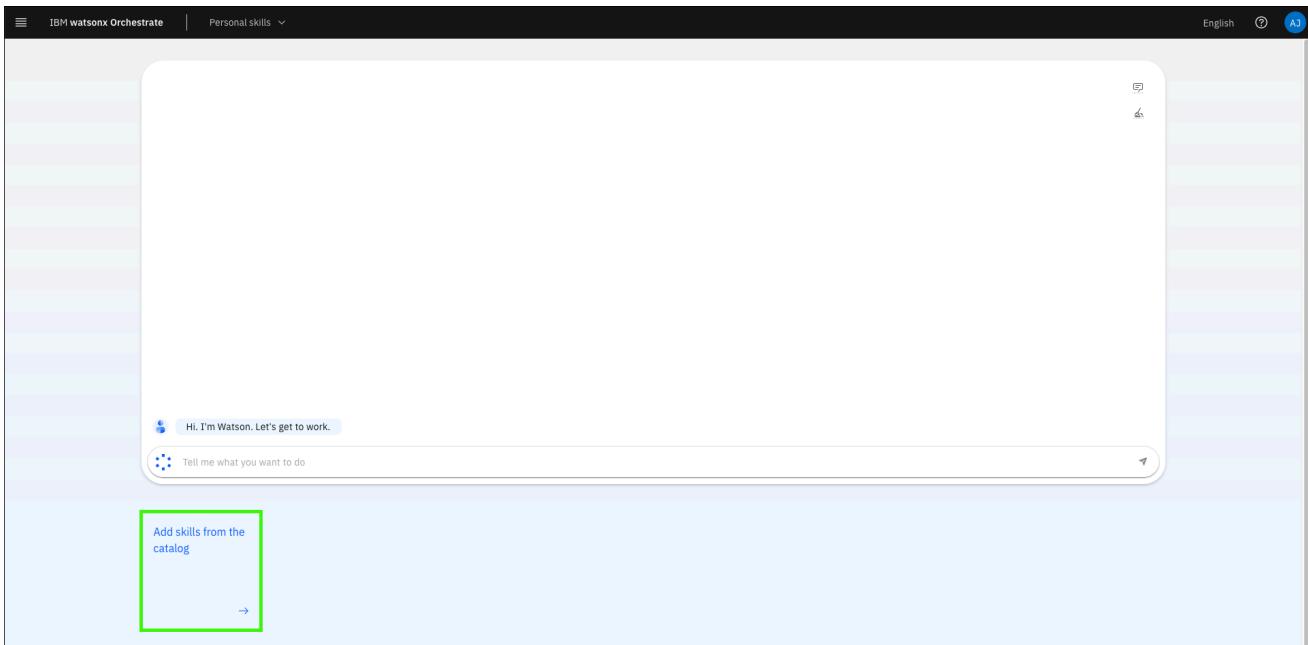
## Troubleshooting

Skill returns "Sorry, we're having issues generating a response".

This error appears to be an intermittent issue when a skill is first added. To resolve, add the skill to your personal skills catalog using the steps that follow.

1. Expand the main menu and select **Chat**.

2. Click **Add skills from the catalog**.



### 3. Search for the skill app you created earlier and click the tile for your app.

The screenshot shows the 'Skill catalog' page. At the top, there's a search bar with the text "z skills". Below the search bar, there's a grid of app tiles. One specific tile, "Ansible Controller Skills - z skills", is highlighted with a green box. Other visible tiles include Saleslift, Cognos, Skill flows, Adobe Workfront, Webex, IBM Process Mining, Salesforce Chatter, Interview top candidates using ..., Reveal your existing applicants..., Seismic, FreshService, Workday HCM, and ZoomInfo.

### 4. Click Add skill for all the skills you want to add.

The screenshot shows the details for the "Ansible Controller Skills - z skills" app. It lists two skills: "z/OS Gather Facts" and "z/OS Ping". Each skill card has an "Add skill +" button at the bottom, which is highlighted with a green box. There's also a "Connect app" button in the top right corner.

### 5. Click Connect app.

Ansible Controller Skills - z skills (2)

**z/OS Gather Facts**  
z skills - This sample playbook demonstrates the z/OS gather facts module, which pulls z/OS...  
**z/OS Ping**  
z skills - This playbook pings the z/OS host to test connectivity.

**Connect app**

6. Enter the (a) **username** and (b) **password** using the username (admin) and password for your IBM Technology Zone (ITZ) watsonx Assistant for Z Pilot - AAP & z/OS reservation (AAP User Password (Use SSH key to login, only use password for UI)), and then click **Connect app**.

Connect to Ansible Controller Skills - z skills

username: admin  
password: \*\*\*\*\*

Cancel **Connect app**

7. Expand the main menu and select **Chat**.

Skills - z skills

**z/OS Ping**  
z skills - This playbook pings the z/OS host to test connectivity.

8. Try one of the prompts you created for your skill.

Prompt:

Gather z/OS facts

The screenshot shows the IBM Watsonx Assistant interface. At the top, it says "IBM Watsonx Orchestrate" and "Personal skills". On the right, there are icons for English, a profile, and a help button. The main area has a blue header bar with a "Tell me what you want to do" input field. Below this, a green box highlights the results of a skill named "Gather z/OS facts". Inside this box, it says "Here are the results of the z/OS Gather Facts skill." and lists "z/OS Gather Facts" under "job". It shows a status of "pending" and a progress bar at 12%. To the left, a blue box says "Add skills from the catalog" with an arrow pointing to a green box labeled "Ansible Controller Skills - z skills" which contains "2 skills".

You should now be able to run the skill through the assistant preview.

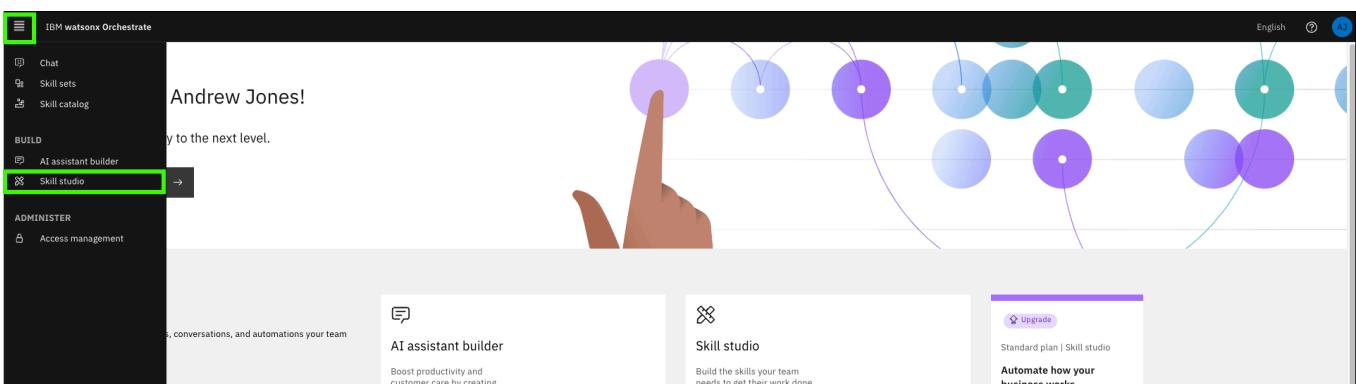
# Creating skill flows

As seen in the previous section, running the Ansible skill to **Gather z/OS facts**, the skill executed successfully and was verified within the Ansible Automation Platform (AAP) console by viewing the job output. However, the output wasn't displayed by the assistant. To enable this scenario, a skill flow is needed. Skills are often more valuable when combined with other skills. You can create a skill flow to use two or more skills together to finish a task (like returning the output of a previous skill). When you create a skill flow, you map the output of one skill as the input for subsequent skills. Learn more about creating skill flows [here](#).

As mentioned in a previous section, there are some default utility skills that are provided out of the box with the "Z Skills Accelerator" which are leveraged to return the output of a skill. To accomplish this, we will import the Ansible Utility skill called **Retrieve job output**.

## Add the utility skill

1. Open IBM watsonx Orchestrate **Skill studio**.



2. Expand **Create** and click **Import API**.

Name	Step in the process	Status	Skill type	Author	Last edited
z/OS Ping	Ready to use	<span>Published</span>	Imported	andrew@jones-tx.com	November 19 2024
z/OS Gather Facts	Ready to use	<span>Published</span>	Imported	andrew@jones-tx.com	November 19 2024

3. Click the **z/OS Skills accelerator (Trial)** tile.

The screenshot shows the 'Add skills' interface in IBM Watsonx Orchestrate. At the top, there are two tabs: 'Choose the source' (selected) and 'Select the skills'. Below this, a section titled 'Choose the source' with the sub-instruction 'To discover new skills, connect to an app or refer to an OpenAPI file.' contains three buttons: 'From an app' (selected), 'From a file', and 'OpenAPI builder (experimental)'. A list of skill sources is shown in cards. The 'z/OS Skills accelerator (Trial)' card is highlighted with a green border. Other visible cards include 'IBM Cloud Pak for Business Automation - On premises', 'IBM Cloud Pak for Business Automation as a service', 'UiPath', 'IBM Robotic Process Automation (RPA)', and 'IBM Business Automation Workflow as a service'. Each card has a small icon and a close button.

#### 4. Enter the following values in the **z/OS Skills accelerator** form and then click **Connect**.

Use the **URL**, **User Name**, and **Password** values recorded in the **Explore Ansible Automation Platform** section earlier.

**a:** Connection Type: **ansible**

**b:** Application Name: <use the same application name as in previous section> - \*

**c:** Connection URL: <enter the URL for your AAP UI>

**d:** User Name: <enter the AAP User Name (for UI access)>

**e:** Password: <enter the AAP User Password>

**f:** Search Pattern: \*

The screenshot shows the configuration dialog for the 'z/OS Skills accelerator (Trial)'. It includes a header with 'z/OS Skills accelerator (Trial)' and 'Import your Ansible, JCL/REXX automation to Watsonx Orchestrate'. The main area has a 'Connection Type' dropdown set to 'ansible' (labeled 'a'). An 'Application Name' input field contains 'z skills' (labeled 'b'). A 'Connection URL' input field contains 'https://itzvi-aap-phdhuzza.techzone.ibm.com' (labeled 'c'). A 'User name' input field contains 'admin' (labeled 'd'). A 'Password' input field contains a masked password (labeled 'e'). A 'Search Pattern' input field contains a single quote character (labeled 'f'). At the bottom are 'Cancel' and 'Connect' buttons, with 'Connect' being highlighted with a blue border.

#### 5. Expand **Ansible Utility Skills** and click **Ansible Utility Skills**.

## 6. Select **Retrieve job output** and click **Save as draft**.

## 7. Click the ellipses (...) for the **Retrieve job output** skill and select **Enhance this skill**.

## 8. Review the skill settings and then click **Publish**.

Name: Retrieve job output  
Input: 0/100  
Output: 0/100  
Security: None  
Phrases: None  
Next best skills: None  
API version: 1.0

**Preview**

The skill will look like this in the catalog.

Retrieve job output  
z skills - Retrieve job output by job Id

The skill will look like this in the skill set.

Retrieve job output

**Cancel** **Publish** **Save as draft**

## 9. Select Skill sets from the main menu.

Step in the process	Status	Skill type	Author	Last edited
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024

## 10. Select (a) your draft assistant in the Team Skills drop-down list and (b) click the Connections tab.

Application	Number of skills	Credential type	Connected by	Action
Activate or deactivate attracting candidates using ThisWay Global	4	Not specified	-	⋮
Adobe Workfront	37	Not specified	-	⋮
Alliance Virtual Office	2	Not specified	-	⋮
Amazon S3	8	Not specified	-	⋮
Amazon SES	10	Not specified	-	⋮

Items per page: 5 | 1-5 of 78 items

11. Click the **Search (🔍)** icon.

Application	Number of skills	Credential type	Connected by ⓘ	Action
Activate or deactivate attracting candidates using ThisWay Global	4	⚠️ Not specified	-	⋮
Adobe Workfront	37	⚠️ Not specified	-	⋮
Alliance Virtual Office	2	⚠️ Not specified	-	⋮
Amazon S3	8	⚠️ Not specified	-	⋮
Amazon SES	10	⚠️ Not specified	-	⋮

Items per page: 5 | 1-5 of 78 items | 1 ⚏ of 16 pages | ⌂ ⌃

12. Search for the application name you specified earlier.

Application	Number of skills	Credential type	Connected by ⓘ	Action
Ansible Controller Skills - z skills	2	⚠️ Not specified	-	⋮

Items per page: 5 | 1-1 of 1 items | 1 ⚏ of 1 page | ⌂ ⌃

13. Click the (a) ellipses (⋮) for your application and (b) click **Edit connection**.

Application	Number of skills	Credential type	Connected by ⓘ	Action
Ansible Controller Skills - z skills	3	⚠️ Team	andrew@jones-tx.com	⋮

a  
b  
Edit connection  
Delete connection

Items per page: 5 | 1-1 of 1 items | 1 ⚏ of 1 page | ⌂ ⌃

14. Verify the application is (a) **Connected** and then (b) click the x to close the dialog.

Zeeves draft

Skill sets

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.

Application	Number of skills	Credential type
Ansible Controller Skills - z skills	3	Team

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

Edit the Ansible Controller Skills - z skills connection **b**

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

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

You have an active connection set using **Team credentials**. If you wish to update connection details click on the **Edit** **a** below.

Connected **a**

## Add the skills to your Personal skills

### 15. Click **Skill catalog** in the main menu.

Chat

Skill sets

**Skill catalog**

AI assistant builder

Skill studio

Administrations

Access management

Number of skills	Credential type	Connected by <b>a</b>	Action
3	Team	andrew@jones-tx.com	<b>b</b>

1 of 1 items

### 16. Search for the application name you specified earlier.

Skill catalog

Skills are grouped by app. Select an app to see all the skills that use that app.

Personal skills

**z skills** **a**

Most popular skills

Send an email from Gmail	Create a lead in Salesforce	Send an email using Outlook
--------------------------	-----------------------------	-----------------------------

All Apps

Coupa	ZoomInfo	HubSpot CRM	Apptio Targetprocess	Salesforce	Zendesk Service
Calendly	Square	Oracle E-Business Suite	GitLab	Toggl Track	Microsoft Teams

### 17. Click the tile for your application.

Note, the tile name is proceeded by **Ansible Controller Skills**.

Skill catalog  
Skills are grouped by app. Select an app to see all the skills that use that app.

Personal skills

Q z skills X

Ansible Controller Skills - z ... 3 skills

Apps

- ZoomInfo 26 skills
- Workday HCM 36 skills
- FreshService 25 skills
- Seismic 22 skills
- Reveal your existing applic... 7 skills
- Interview top candidates u... 2 skills
- Salesforce Chatter 5 skills
- IBM Process Mining 2 skills
- Webex 14 skills
- Adobe Workfront 37 skills
- Skill flows 167 skills
- Cognos 8 skills
- Salessoft 47 skills
- Ansible Controller Skills - z ... 3 skills**

18. Click **Add skill** for each of the skills you want to add to the flow.

Skill catalog / Ansible Controller Skills - z skills (3)

Personal skills

Q Search skills

Ansible Controller Skills - z skills

- Retrieve job output  
z skills - Retrieve job output by job Id
- Add skill +**
- z/OS Gather Facts  
z skills - This sample playbook demonstrates the z/OS gather facts module, which pulls...
- Add skill +**
- z/OS Ping  
z skills - This playbook pings the z/OS host to test connectivity.
- Add skill +**

Connect app ⚙

## Create the skill flow

19. Click **Skill studio** in the main menu.

IBM Watsonx Orchestrate

English ⚙

Chat

Skill sets

Skill catalog

BUILD

AI assistant builder

**Skill studio**

ADMINISTER

Access management

Skills - z skills (3)

z skills

z/OS Gather Facts  
z skills - This sample playbook demonstrates the z/OS gather facts module, which pulls...

**Added ✓**

z/OS Ping  
z skills - This playbook pings the z/OS host to test connectivity.

**Added ✓**

Add skill +

Connect app ⚙

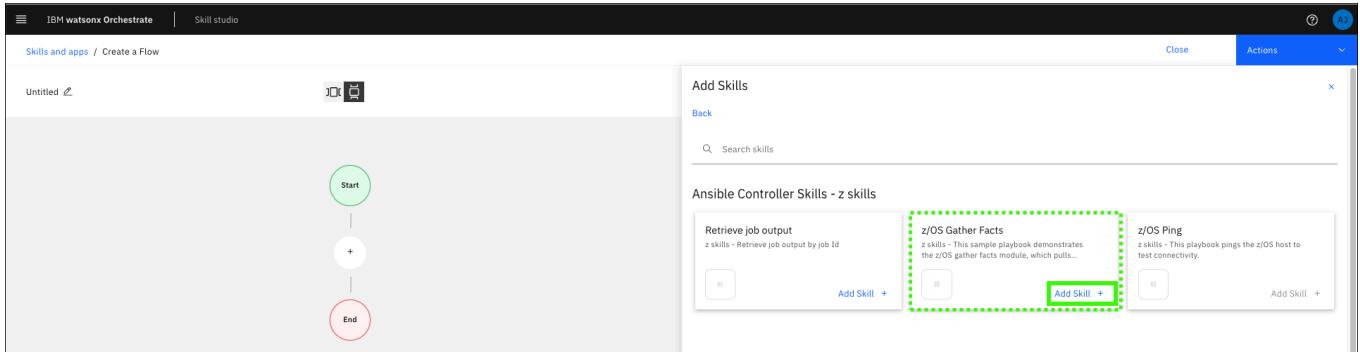
20. Expand the **Create** drop-down menu and click on **Skill flow**.

21. Click the + icon.

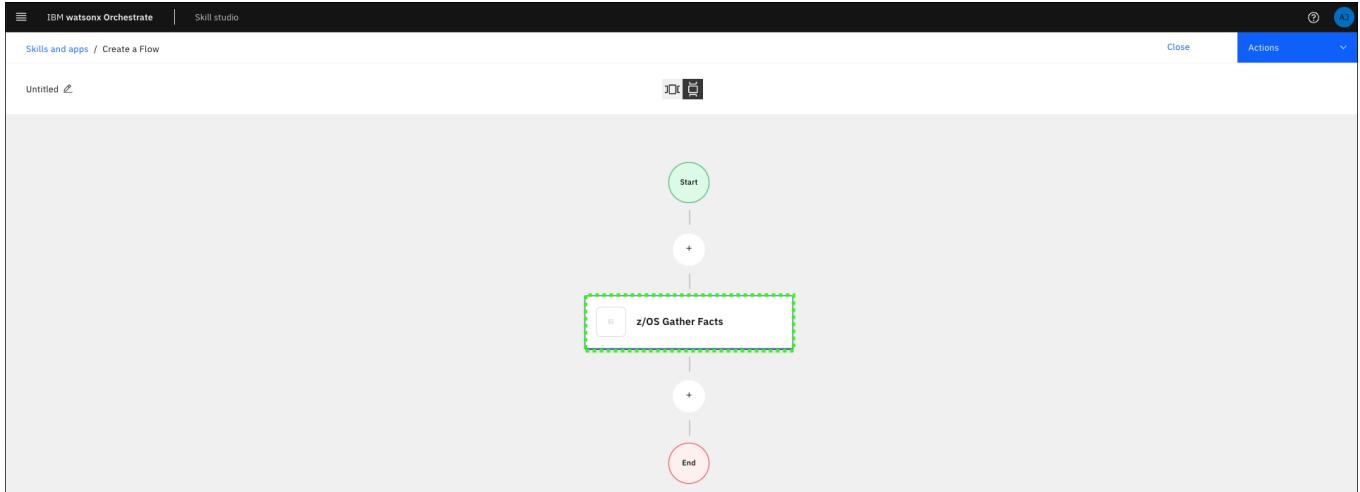
Next, you need to add the **z/OS Gather Facts** skill and the **Retrieve job output** skill to the skill flow. Use the **Search apps** function to locate the skills.

22. Search for the application name you specified earlier and click its tile.

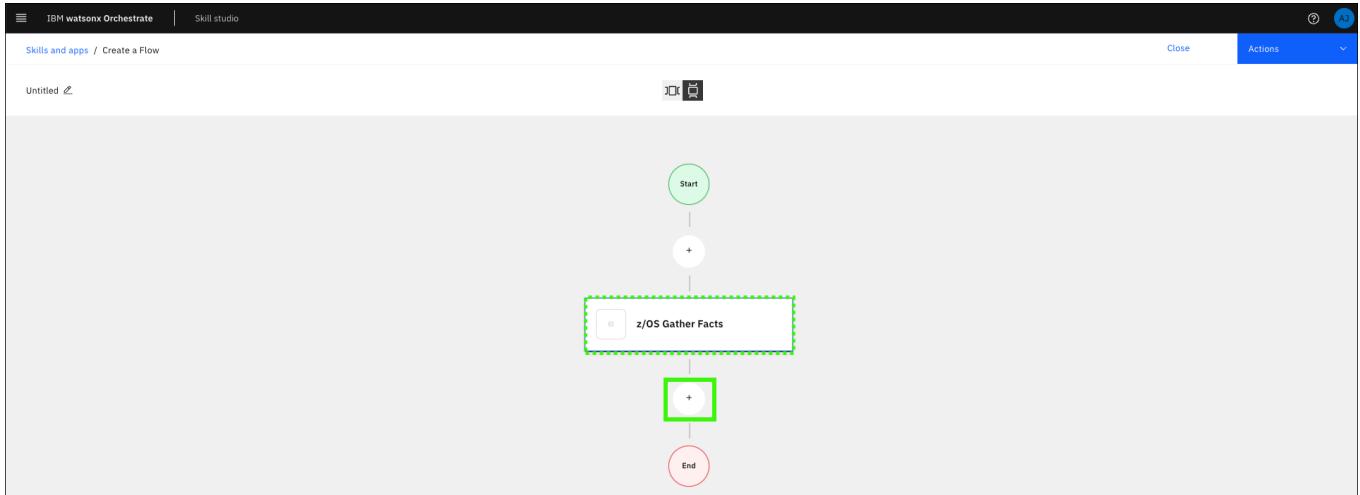
23. Click Add Skill in the **z/OS Gather Facts** tile.



24. Verify the **z/OS Gather Facts** skill is added to the skill flow.

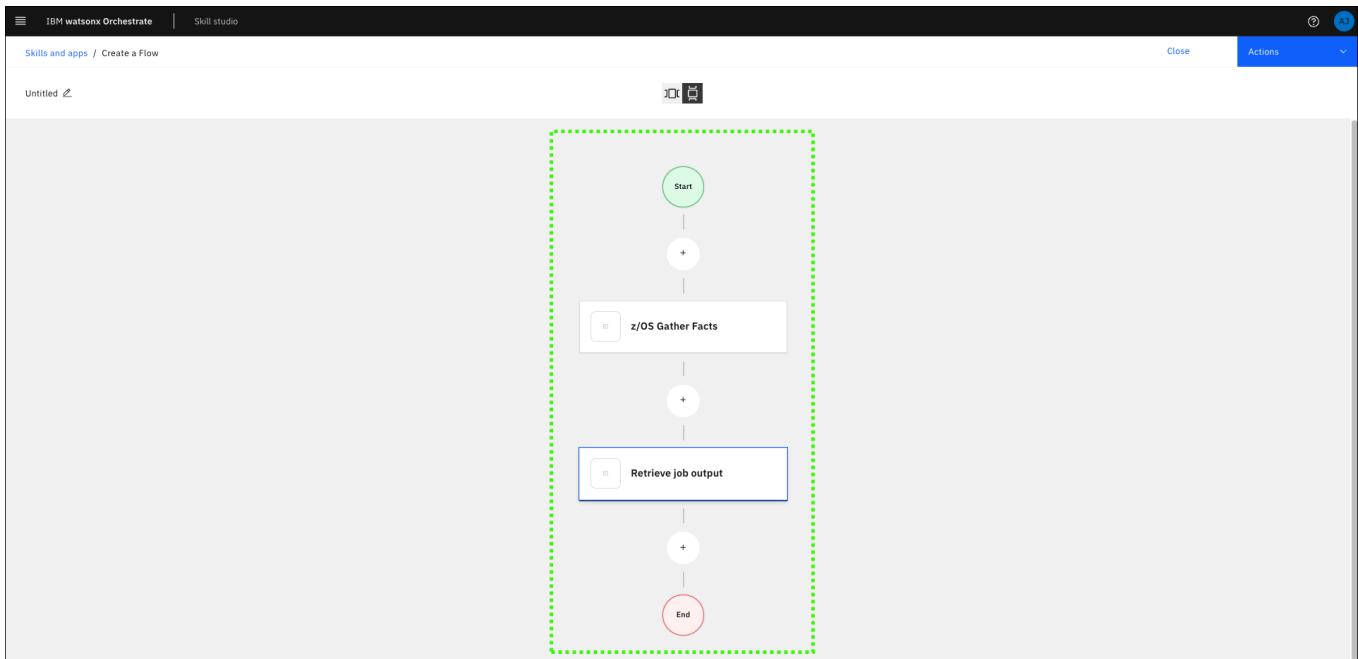


25. Click the + icon after the **z/OS Gather Facts** tile.



26. Repeat steps 22 and 23 for the **Retrieve job output** skill.

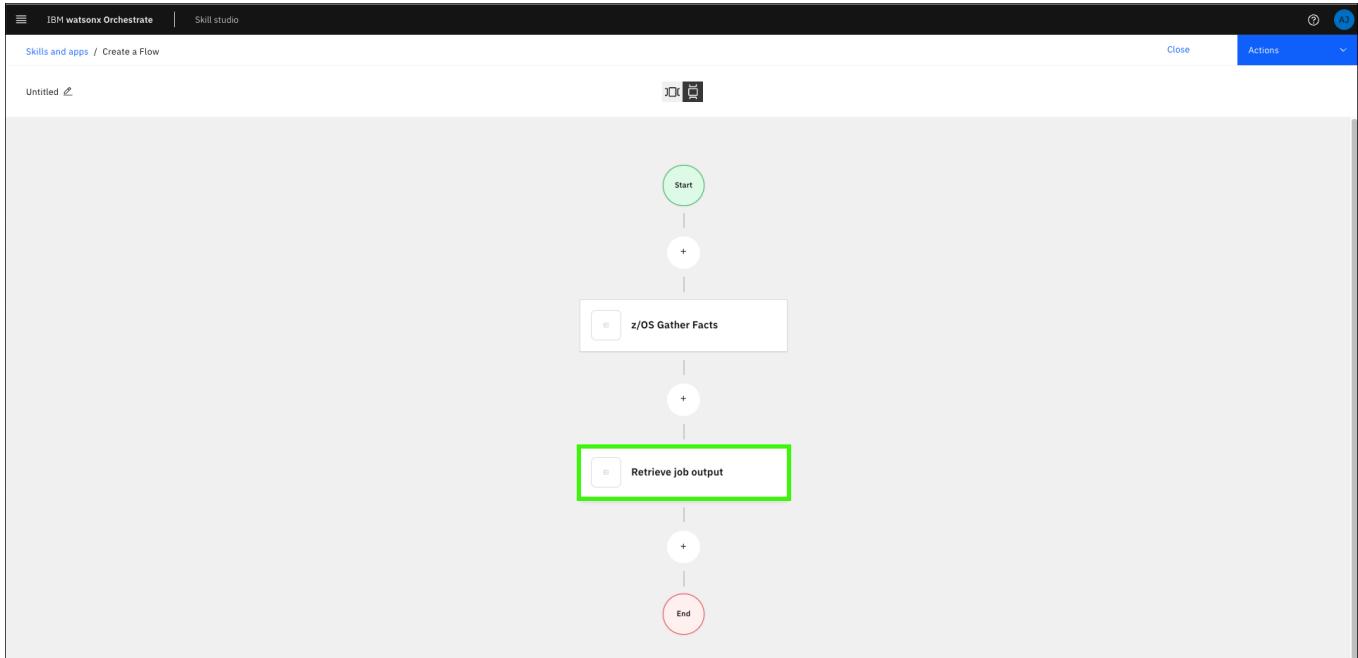
After adding the **Retrieve job output** skill, your skill flow should look like:



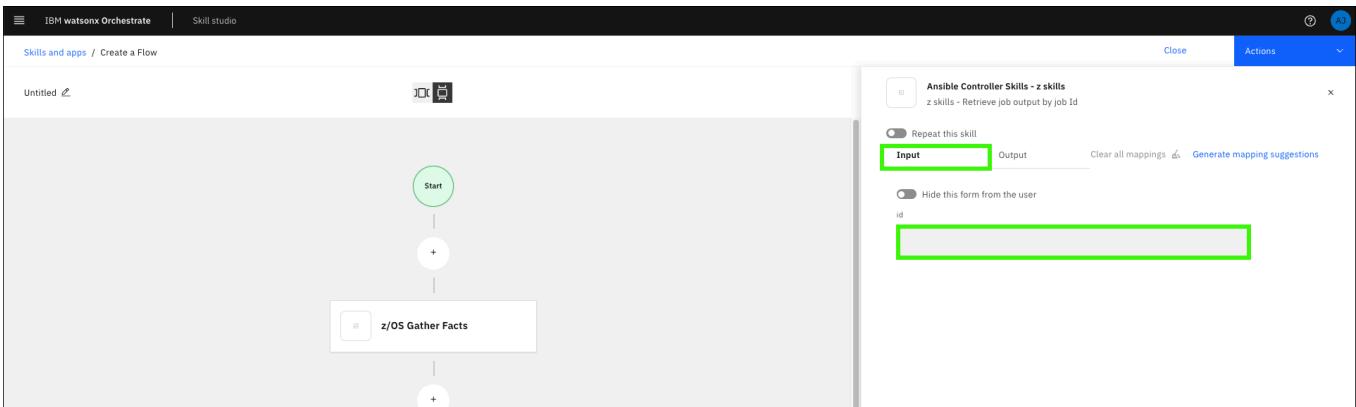
## Map the outputs and inputs of the skills

Next you must map the output values of the first skill to the input of the second skill. In this case, pass the "job id" output from **z/OS Gather Facts** as an input for **Retrieve job output**.

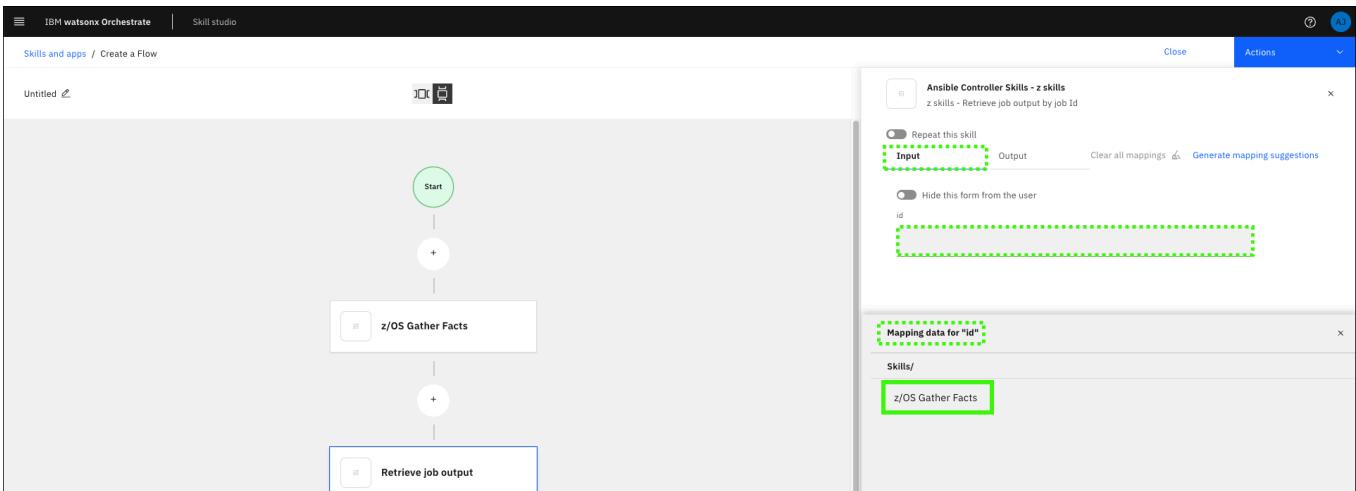
27. Click the **Retrieve job output** tile.



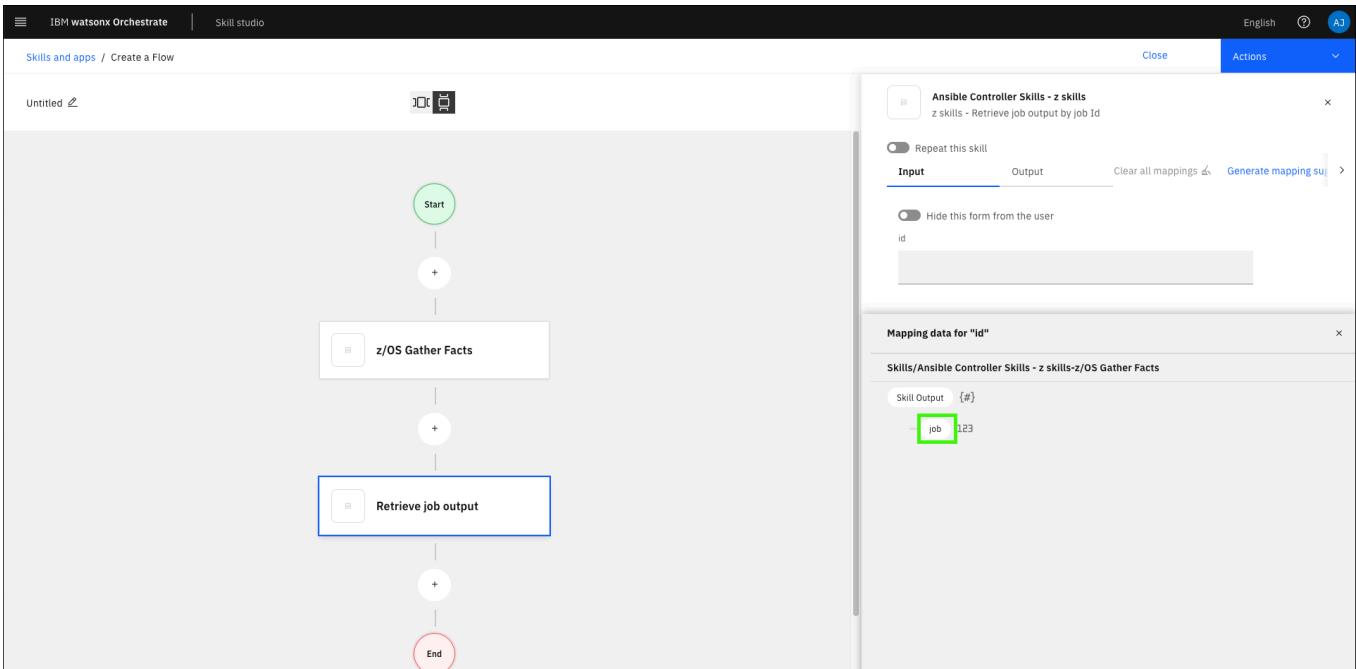
28. Select the **Input** tab and click in the **id** field.



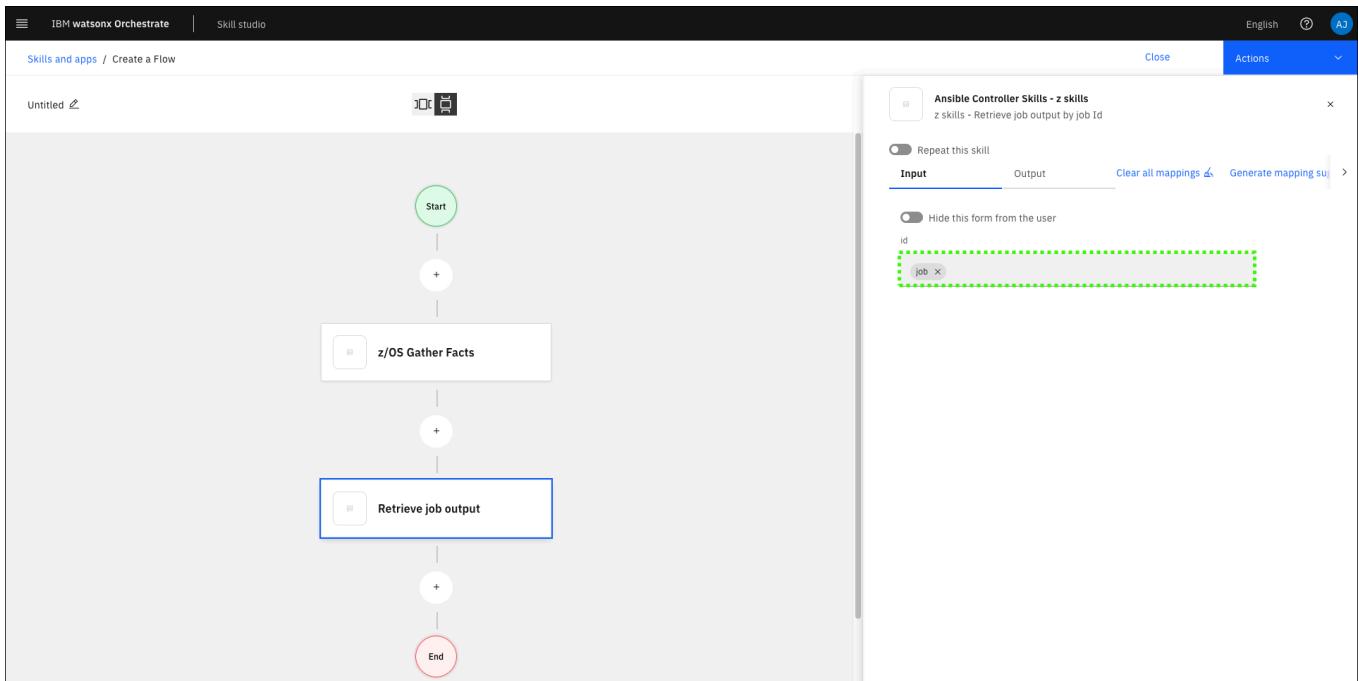
29. Click the **z/OS Gather Facts** skill in the **Mapping data for "id"** section.



30. Click the **job** icon.

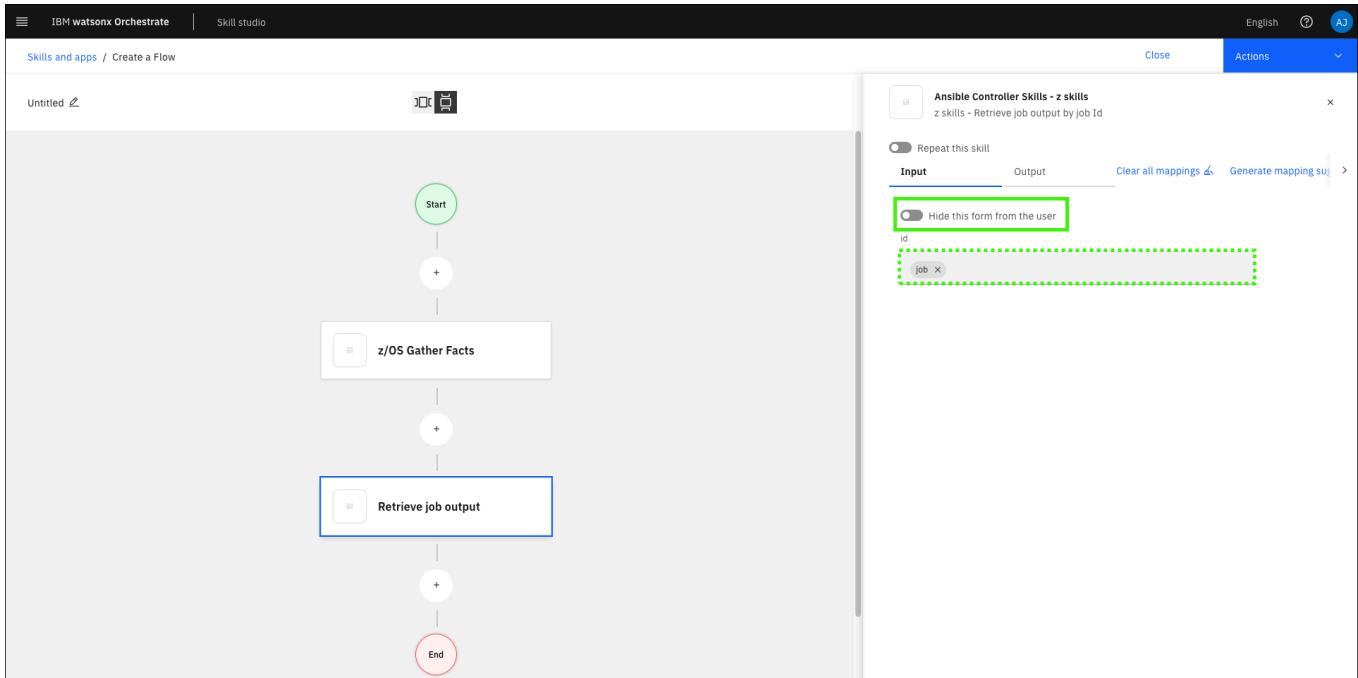


31. Verify the **job** appears in the **id** field.

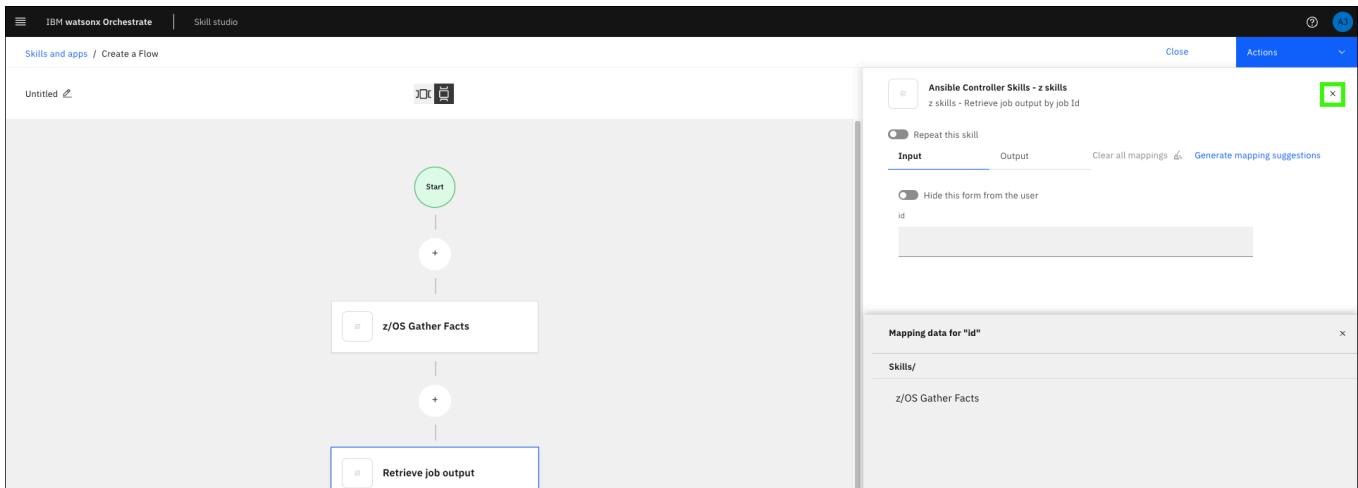


32. Optionally, toggle the **Hide this from the user** setting.

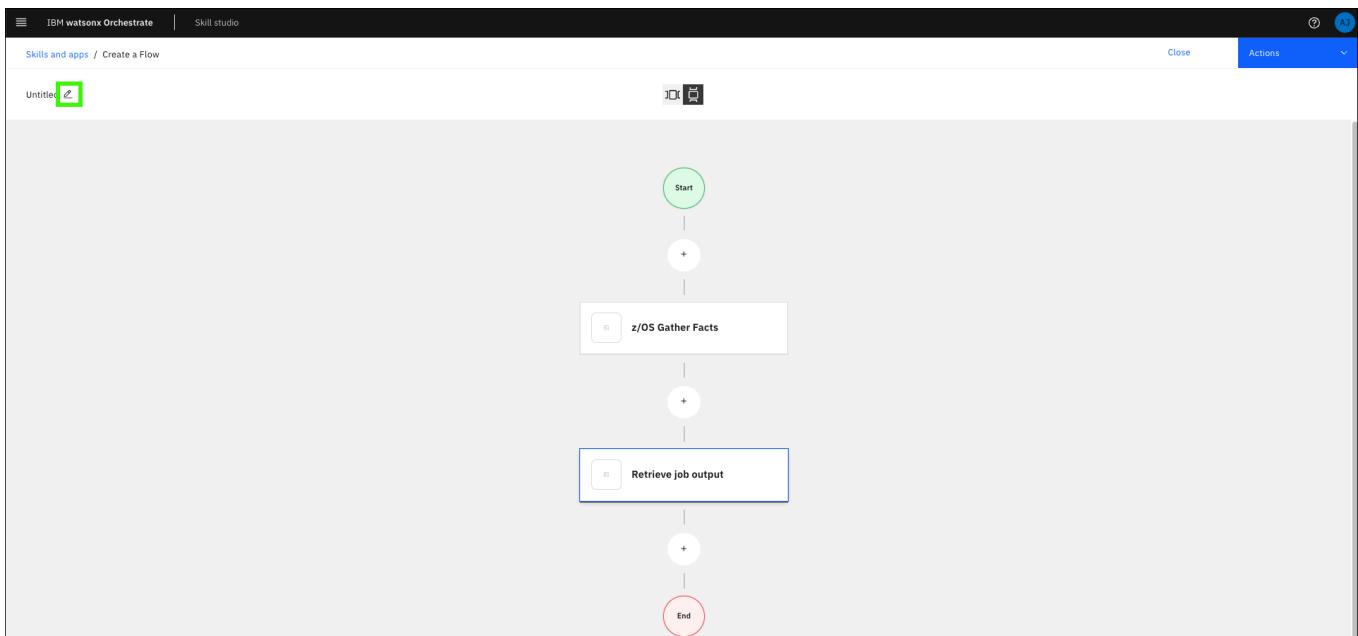
For this lab guide, this option is left disabled. Learn more about this option [here](#).



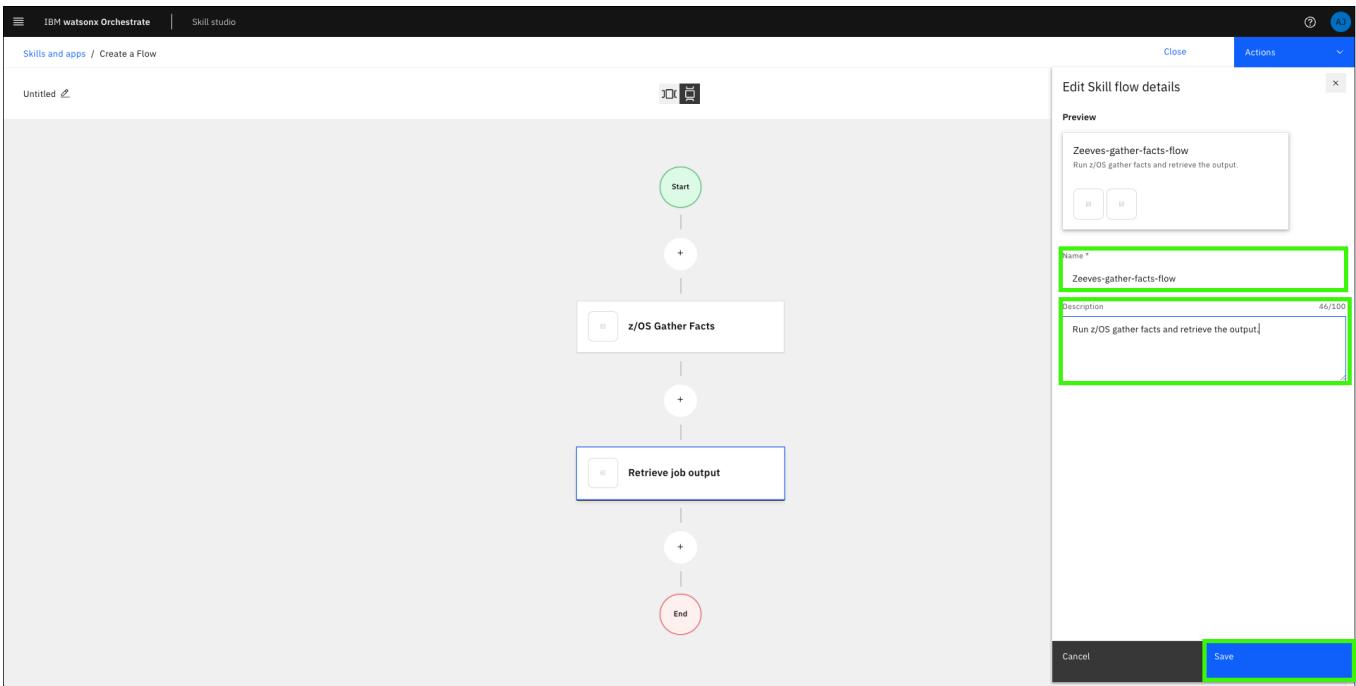
33. Click the **x** to close mapping window.



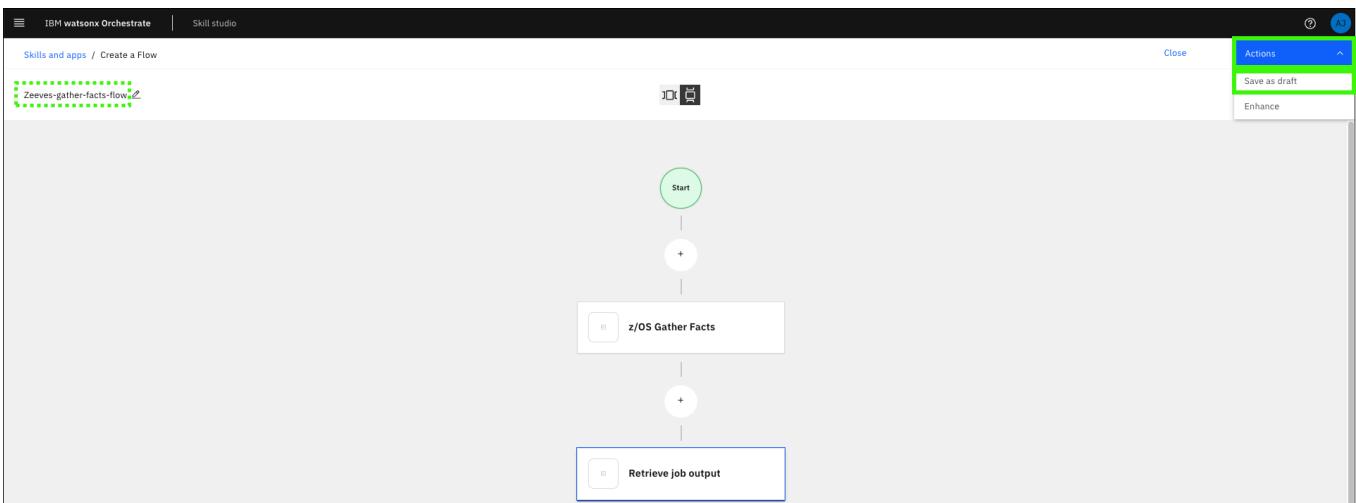
34. Click the pencil (✍).



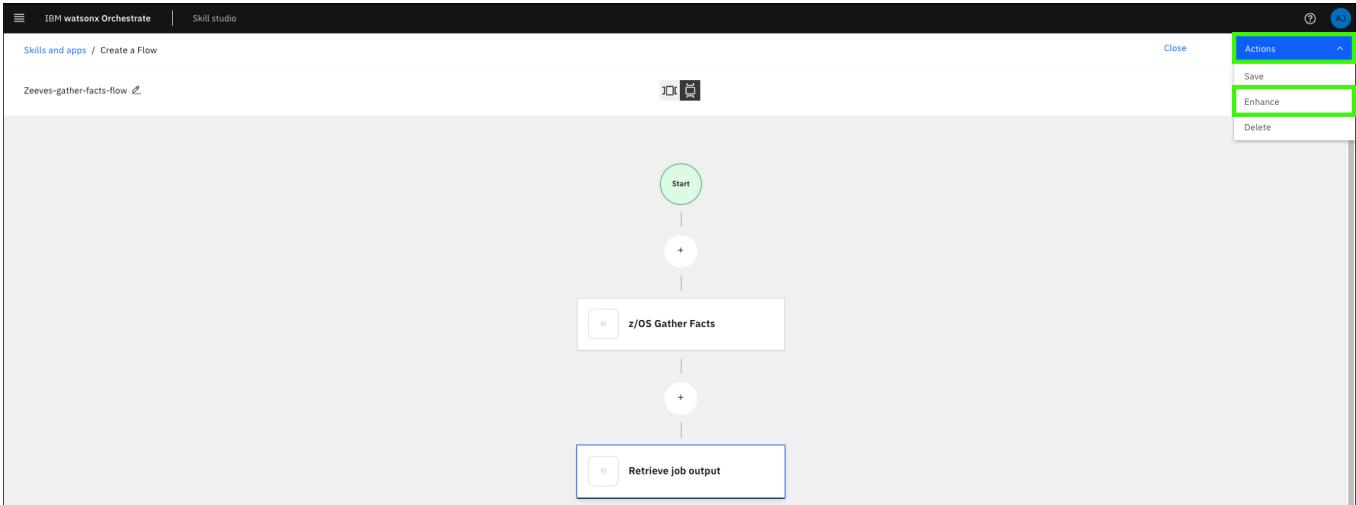
35. Enter a (a) **Name** and (b) **Description** for your skill flow and then (c) click **Save**.



36. Expand the **Actions** pull-down list and click **Save as draft**.



37. Expand the **Actions** pull-down list and click **Enhance**.



## Enhancing the skill flow

On the **Enhancing the skill** pages, you can: - modify the skill name, description, and version - add phrases (prompts) that will be recognized by the assistant to call the skill flow -

36. Click the **Phrases** tab.

37. Enter new **phrases** (prompts) for your skill flow and then click **Publish**.

Notice the default prompts are either not very intuitive (the skill flow name) or a bit verbose. Add a couple of other prompts that you anticipate users will enter.

Example prompts:

Show me z/OS facts

Gather and display z/OS facts

Enable the skill flow in your assistant

**38. Click AI assistant builder in the main menu.**

The screenshot shows the IBM Watsonx Orchestrate interface. The left sidebar has a dark theme with several sections: Chat, Skill sets, Skill catalog, BUILD (with AI assistant builder highlighted), Skill studio, ADMINISTER, and Access management. The main area is titled "Skill studio" and contains a message: "Welcome to the skill studio. This is where you can build and manage skill flows and connectors." Below this is a table listing four skill flows:

Step in the process	Status	Skill type	Author	Last edited
Ready to use	Published	Skill flow	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024
Ready to use	Published	Imported	andrew@jones-tx.com	November 19 2024

A green notification bar at the top right says "Published successful Published skill Zeeves-gather-facts-flow. 15:18:32". A blue button labeled "Configure prebuilt skills" is visible in the top right corner.

**39. Hover over the **Home** ( ) and click **Actions**.**

The screenshot shows the "AI assistant builder" section of the interface. The left sidebar has sections: Home (selected), Build, Generative AI, Actions (selected), Preview, Deploy, Publish, Environments, Improve, Analyze, and Help. The main area is titled "Actions" and displays a series of cards:

- Build actions**: Enhance and improve your assistant's actions.
- Customize your greeting**: Welcome your users in a unique way that aligns with your brand.
- Create a fallback plan**: Train your assistant to adapt to specific situations.
- Preview & debug**: Enable debug mode when you preview your assistant.
- Customize web chat**: Design how your assistant shows up in your live environment.
- Set up a channel**: Select the channels you want to deploy your assistant to.
- Set up live agent**: Integrate live agents to transfer your users to when you edit web chat.

Below these cards is a diagram showing a "Default behavior" node branching into "General purpose" and "Conversational search" nodes, which then lead to a "Search" node.

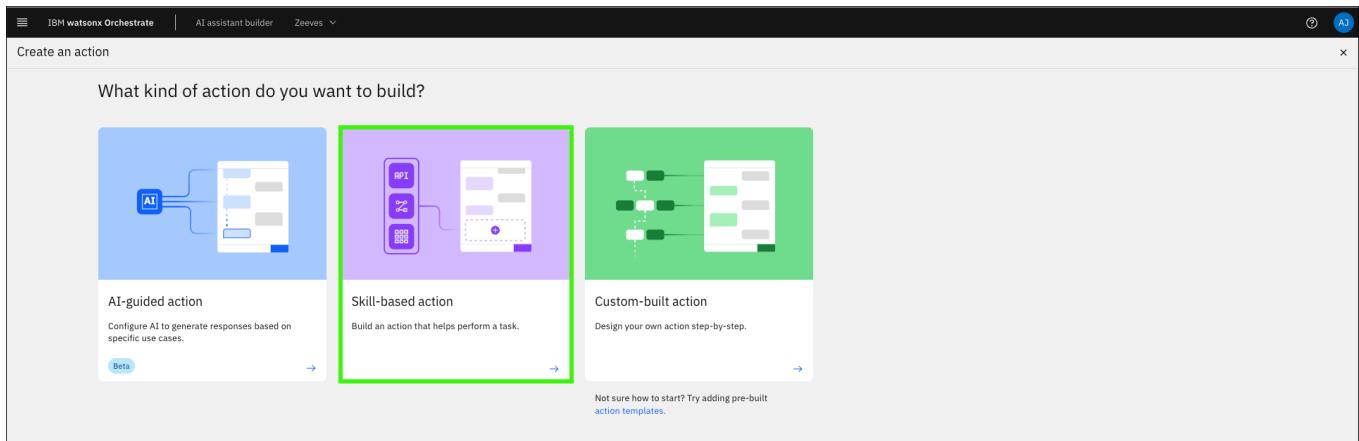
**40. Click **New action**.**

The screenshot shows the "Actions" list interface. The left sidebar has sections: Actions (selected), All items, Created by you (selected), Variables, Created by you, Set by assistant, Set by integration, and Saved responses. The main area lists actions under "Created by you /":

Name	Last edited	Examples count	Steps count	Status
z/OS Gather Facts	2 hours ago	2	0	Green circle

A green button labeled "New action + " is located in the bottom right corner of the list area.

**41. Click the **Skill-based action** tile.**



42. Click the skill flow you created earlier and then click **Next**.

**Note:** it may take a minute for the tiles to appear on the screen.

The screenshot shows the 'Build an action from a skill' screen. It lists several skill flows:

Skill Flow Name	Description	Last Updated
Zeeves-gather-facts-flow	Run z/OS gather facts and retrieve the output.	2024-11-19T21:18:31.793Z
Retrieve job output	z skills - Retrieve job output by job Id	2024-11-19T20:08:59.538Z
z/OS Ping	z skills - This playbook pings the z/OS host to test connectivity.	2024-11-19T15:58:20.567Z
z/OS Gather Facts	z skills - This sample playbook demonstrates the z/OS gather facts module, which pulls z/OS-specific information from the z/OS host.	2024-11-19T15:56:26.843Z
Summarize the Webex meeting transcript	in watsonx.ai	2024-11-04T10:49:16.502Z
Summarize the Box content	in watsonx.ai	2024-11-04T10:49:12.077Z
Summarize a Zendesk ticket	in watsonx.ai	2024-11-04T10:49:09.476Z
Summarize a ServiceNow incident	in watsonx.ai	2024-11-04T10:49:05.828Z
Summarize a Salesforce opportunity	in watsonx.ai	2024-11-04T10:49:01.769Z
Sharepoint document summary	in watsonx.ai	2024-11-04T10:48:55.707Z
Salesloft email summary		
Salesforce case summarization		
Salesforce case sentiment analyze		
Outlook email summary		
Github issue summarization		

Buttons for 'Cancel' and 'Next' are visible in the top right corner.

43. Enter an example prompt for the skill and click **Save**.

You can use one of the prompts you used earlier for the skill flow.

The screenshot shows the 'Add example phrases' dialog for the 'Zeeves-gather-facts-flow' skill. It includes fields for:

- Example:** I want to pay my credit card bill.
- Add example phrases:** Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.
- Enter phrases your customer might use to start this action:** Example: I want to pay my credit card bill.
- New action:** A modal window where the phrase 'Show me z/OS facts' is entered in the input field.

44. Enter any additional phrases (prompts) and then click the **save** (💾).

**Add example phrases:**

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action Total: 1

Enter a phrase

Show me z/OS facts

#### 45. Click Preview.

**Add example phrases:**

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action Total: 1

Enter a phrase

Show me z/OS facts

#### 46. Enter one of the prompts you specified into the assistant preview.

**Add example phrases:**

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action Total: 1

Enter a phrase

Show me z/OS facts

Preview

3:24 PM  
Greet customer [default]

Welcome, how can I assist you?

Show me z/OS facts

#### 47. Wait 10 seconds and then click **Apply**.

**Note:** it is important to wait for the first job to complete before submitting the second job in the flow.

#### 48. Review the results from the skill flow.

Use both scroll bars in the assistant preview to review all of the returned information.



## Sample output from the Z/OS gather facts flow.



### Content

```

Identity added: /runner/artifacts/16/ssh_key_data (/runner/artifacts/16/ssh_key_data)
[1;35m[WARNING]: Collection ibm.ibm_zos_core does not support Ansible version 2.14.2[0m

PLAY [Gather z/OS-specific facts.] *****
TASK [Gather all facts about z/OS host.] *****
TASK [Print gathered facts about the master catalog.] *****
[0;32mok: [zos_host][0m
[0;32m      "master catalog dsn: CATALOG.VS01.MASTER",0m [0;32m      "master catalog volser: OPEVS1"[0m
[0;32m ][0m [0;32m}{0m

TASK [Print only CPC and IODF info from gathered z/OS facts.] *****
[0;32mok: [zos_host] => {[0m
[0;32m      "msg": "[0m [0;32m      "manufacturer: IBM",[0m [0;32m      "model: A00",[0m [0;32m      "plant: C1",[0m
[0;32m      "iodf name: PROV.IODF00",[0m [0;32m      "iodf config: DEFAULT"[0m [0;32m ][0m [0;32m}{0m

TASK [Print out all gathered facts about the z/OS host.] *****
[0;32mok: [zos_host] => {[0m
[0;32m      "ansible_facts": {[0m [0;32m      "arch_level": "2",[0m [0;32m      "cpc_nd_manufacturer": "IBM",[0m
[0;32m      "cpc_nd_model": "A00",[0m [0;32m      "cpc_nd_plant": "C1",[0m
[0;32m      "cpc_nd_seqno": "20D90792EB76",[0m [0;32m      "cpc_nd_type": "008562",[0m [0;32m      "edt": "00",
[0m [0;32m      "hw_name": "",[0m [0;32m      "ieasym_card": "(00,K2)",[0m [0;32m      "io_config_id": "00",[0m
[0;32m      "iodate": "",[0m [0;32m      "iodesc": "",[0m [0;32m      "iodf_config": "DEFAULT",[0m
[0;32m      "iodf_name": "PROV.IODF00",[0m [0;32m      "iodf_unit_addr": "DE28",[0m [0;32m      "ioproc": "",[0m
[0;32m      "iotime": "",[0m [0;32m      "ipayloadxx": "K2",[0m [0;32m      "ipl_volume": "D25VS1",[0m
[0;32m      "load_param_device_num": "DE28",[0m [0;32m      "load_param_dsn": "SYS0.IPLPARM",[0m
[0;32m      "lpar_name": "",[0m [0;32m      "master_catalog_dsn": "CATALOG.VS01.MASTER",0m
[0;32m      "master_catalog_volser": "OPEVS1",0m [0;32m      "nucleus_id": "1",0m
[0;32m      "operator_prompt_flag": "M",0m [0;32m      "parmlib_dsn": "K2.PARMLIB",0m
[0;32m      "parmlib_volser": "USRVS1",0m [0;32m      "primary_jes": "JES2",0m
[0;32m      "product_mod_level": "00",0m [0;32m      "product_name": "z/OS",0m
[0;32m      "product_owner": "IBM CORP",0m [0;32m      "product_release": "05",0m
[0;32m      "product_version": "02",0m [0;32m      "smf_name": "VS01",0m [0;32m      "sys_name": "VS01",0m
[0;32m      "sysplex_name": "LOCAL",0m [0;32m      "tsoe_rel": "05",0m [0;32m      "tsoe_ver": "4",0m
[0;32m      "vm_name": "",0m [0;32m }0m [0;32m}{0m

PLAY RECAP *****
[0;32mzos_host[0m          : [0; 32mok=4
[0m changed=0  unreachable=0  failed=0  skipped=0  rescued=0  ig nored=0

```

The scenario shown above may or may not be relevant for your client's use case. It is intended to show how you to sequence skills together in a skill flow to create an action that your assistant triggers based on prompts using the pre-configured Ansible automation templates. You are encouraged to experiment with your own skill flows and prompts using other skills available within the AAP instance.

Next, learn about custom-built actions.

# Creating custom-built actions

To this point, you have learned how to:

- import skills into Watsonx Orchestrate
- add applications with those skills to your assistant
- create skill-based actions for your assistant
- combine skills in a skill flow

There is also the ability to create **custom-built** actions. Custom-built actions allow you to create new actions with different steps to take in conversations and form sequences of prompts that define the conversation experience. The steps can be defined with or without conditions, which help control the custom responses. Steps within the custom action can end with routing to conversational search, triggering another existing sub-action, and other actions. This is a powerful way of customizing the end-user's experience.

Learn more about creating custom-built actions [here](#).

# Importing pre-packaged z/OS skills

Provided with Version 2 of watsonx Assistant for Z is a set of pre-packaged skills which can be used to automate various tasks on z/OS, such as running different console commands and retrieving logs from batch jobs.

The list of pre-packaged skills available include:

- Authorized program list
- z/OS IPL Information
- Display zOS parmlib datasets
- Unix System services options
- Display zOS subsystems
- List spool files
- Retrieve dataset content
- Retrieve spool file content
- Retrieve z/OS Management Facility (OSMF) job status

IBM watsonx Orchestrate requires that any OSMF environment you connect to for skill execution has certificate authority (CA) signed certificates. In the case of the Ansible Automation Platform (AAP) & Wazi z/OS environment provisioned in IBM Technology Zone (ITZ), the z/OS system is not currently using CA signed certificates and therefore cannot execute the pre-packaged skills on your own z/OS system. For demo purposes, it is still recommended to import them so that the pre-packaged skills can be shown.

Work is in progress to modify the ITZ environments so that they are enabled for skill execution using these pre-packaged skills. In the meantime, the underlying automation for these pre-packaged skills can still be demonstrated using the Ansible skill 'z/OS Operator Command' which is available to import. This works because the pre-packaged skills are executing console commands directly using OSMF APIs which can also be run using the Ansible template skill 'z/OS Operator command'. For example, here are the console commands being used in some of the pre-packaged skills:

- Authorized Program list – `operator command -> d prog,lnklist`
- z/OS IPL Information - `operator command -> d iplinfo`
- Display zOS parmlib datasets - `operator command -> d parmlib`

You can import the pre-packaged skills into your sandbox environment by downloading the .zip file from [here](#) and following [these instructions](#).

You must extract the imbedded JSON file and modify the file for your environment by following [these instructions](#).

# Publishing and deploying your assistant

To this point, acting as an Assistant Builder, you have built out the assistant, configured conversational search, and added skills and automations. While doing so, you have been testing your assistant using the **preview** capability of AI Assistant Builder. The **preview** capability is a closed environment for experimenting with prompts.

Once your assistant is finalized, you can publish it to make it available to end-users. Each assistant you create comes with two **environments**: *draft* and *live*. You have been configuring your assistant in the draft environment. Each environment has its own set of IDs, URLs, and service credentials that can be referenced by external services.

The **Environments** page in the AI assistant builder has tabs for managing both the **Draft environment** and the **Live environment**:

This screenshot shows the 'Environments' page in the AI assistant builder. The 'Draft' tab is selected, indicated by a green dashed border. The 'Live' tab is also present. On the left, there's a sidebar with icons for environments, channels, and integrations. The main area has sections for 'Draft environment' (described as an internal preview for organization), 'Channels' (listing 'Web chat'), and 'Resolution Methods' (listing 'Draft content' with a last edit timestamp and 'Edit content' link). A 'Search' extension is also listed under 'Extensions'.

This screenshot shows the 'Environments' page in the AI assistant builder. The 'Live' tab is selected, indicated by a green dashed border. The 'Draft' tab is also present. The layout is similar to the Draft environment page, with sections for 'Live environment' (described as deployment to customers), 'Channels' (listing 'Web chat'), and 'Resolution Methods'. Under 'Content', it shows 'No published version'. An 'Add +' button is visible at the bottom right of the extensions section.

The **Draft environment** contains all your in-progress work in the Actions, Preview, and Publish pages. Use the **Draft environment** tab to build out your assistant and use for internal testing before deployment. Any integrations you use (i.e. channels) for the **Draft environment** are unique to that environment, and changes to draft integrations don't affect the **Live environment**.

## Publish the assistant

Each time that you publish, you're creating a new version of the assistant, for example V1. When you publish your content, you're creating a snapshot of the draft content, resulting in a version.



### Versions do not contain integration configurations or environment settings

Published versions contain all of the content from actions, including settings and variables. **However, versions do not contain integration configurations or environment settings.** Integration configurations and environment settings must be configured manually in each environment.

For managing quality-control and versioning, the Live environment is the version of the assistant you should be giving access to the end-user.

Follow these steps to publish the first version of your assistant using Assistant Builder:

1. Hover over the **Home** icon ( ) and click **Publish**.

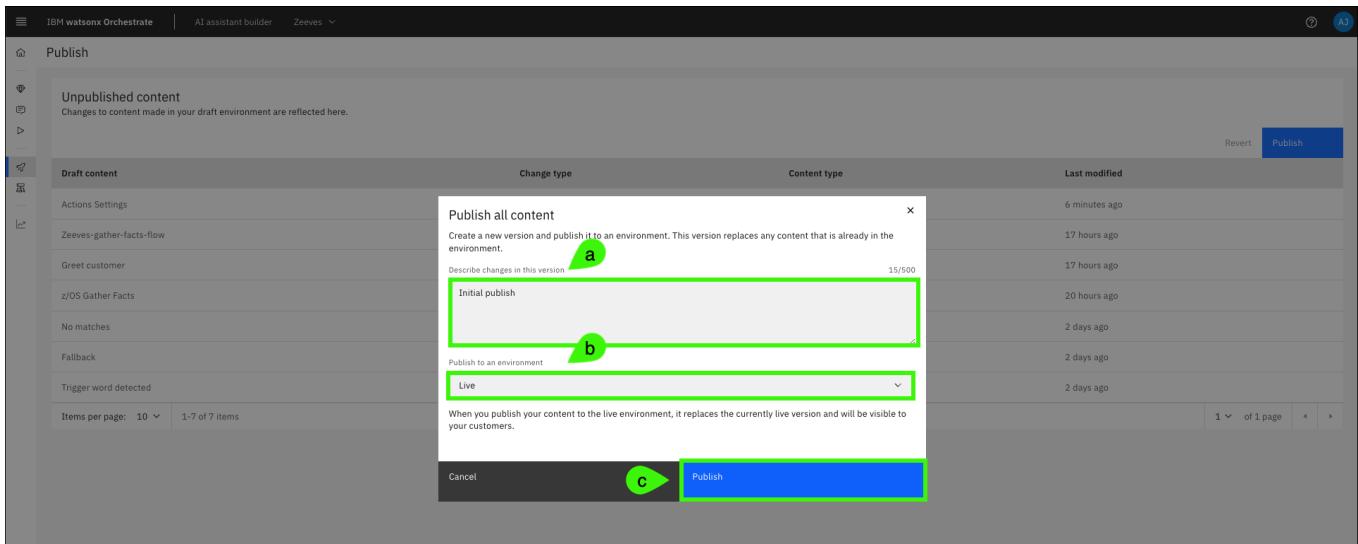
The screenshot shows the 'Publish' step in the AI assistant builder. The 'Publish' button is highlighted with a green box. The interface includes sections for 'Build', 'Actions', 'Preview', and 'Deploy'. A message bar at the top says 'New watsonx generative AI features! Learn more about intelligent information gathering.' Below the message, there are several configuration cards: 'Build actions', 'Customize your greeting', 'Create a fallback plan', 'Preview & debug', 'Customize web chat', 'Set up a channel', 'Set up live agent', and 'Public assist'. At the bottom, there's a diagram showing a 'Default behavior' node branching into 'General purpose' and 'Conversational search' nodes, which then lead to a 'Search' node.

2. Click **Publish**.

The screenshot shows the 'Publish' page with the 'Draft content' table. The table lists items with their change type, content type, and last modified date. The 'Actions Settings' item was updated 3 minutes ago. The 'Zeeves-gather-facts-flow' item was updated 17 hours ago. The 'Greet customer' item was updated 17 hours ago. The 'z/OS Gather Facts' item was updated 20 hours ago. The 'No matches' item was updated 2 days ago. The 'Fallback' item was updated 2 days ago. The 'Trigger word detected' item was updated 2 days ago. At the bottom of the table, there are pagination controls: 'Items per page: 10' and '1-7 of 7 items'.

Draft content	Change type	Content type	Last modified
Actions Settings	Updated	Settings	3 minutes ago
Zeeves-gather-facts-flow	Updated	Actions	17 hours ago
Greet customer	Updated	Actions	17 hours ago
z/OS Gather Facts	Updated	Actions	20 hours ago
No matches	Updated	Actions	2 days ago
Fallback	Updated	Actions	2 days ago
Trigger word detected	Updated	Actions	2 days ago

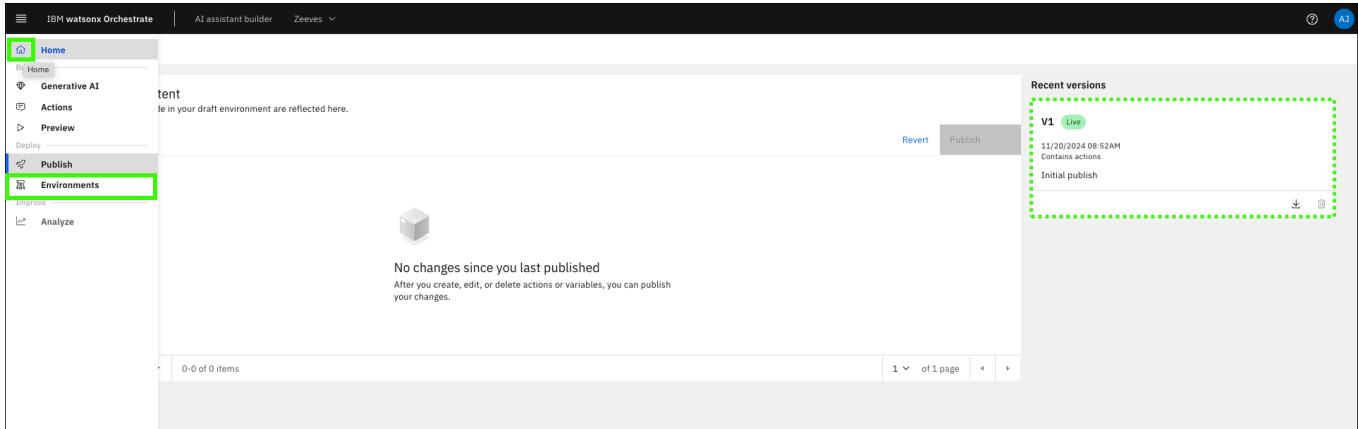
3. Enter a (a) description of the changes, set the (b) environment to **Live**, and then (c) click **Publish**.



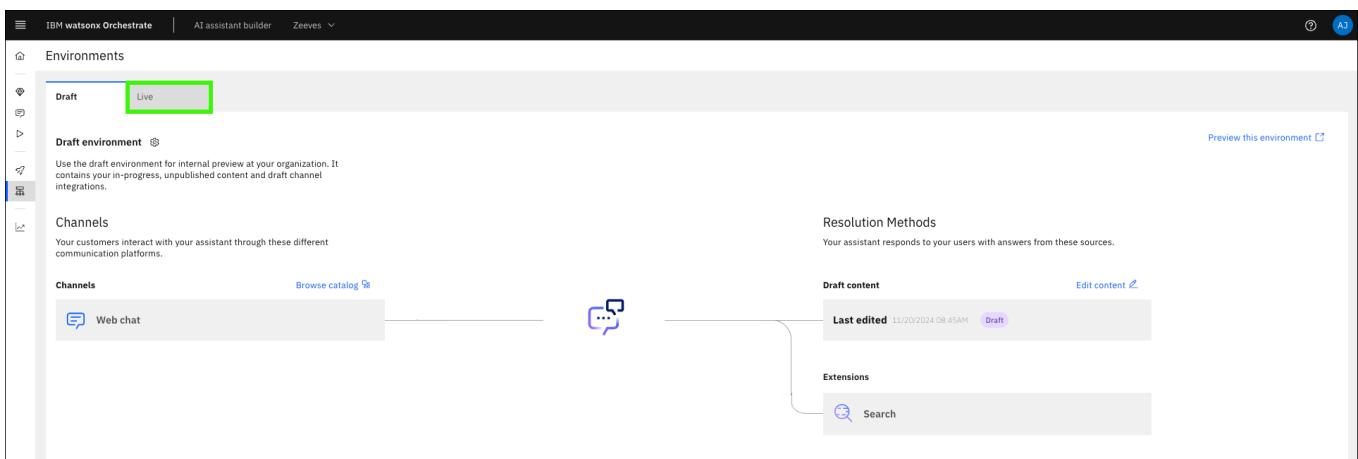
## Configure the **Live** environment

When the live environment is created, the environment settings from the draft environment are not carried over (for example the configuration of the OpenSearch instance used for conversational search).

### 4. Hover over the **Home** icon (🏡) and click **Environments**.



### 5. Click **Live**.



## 6. Click Web chat.

The screenshot shows the IBM Watsonx Orchestrate interface. At the top, there are tabs for 'IBM Watsonx Orchestrate', 'AI assistant builder', and 'Zeeves'. Below the tabs, the 'Environments' section is visible, with 'Live' selected over 'Draft'. Under 'Live environment', there is a description: 'Use the live environment for deployment to customers. It contains your published content and channel integrations where customers interact with your assistant.' The 'Channels' section lists 'Web chat' (which is highlighted with a green box), 'Email', 'SMS', and 'Facebook'. To the right, there are sections for 'Resolution Methods', 'Content' (version V1, 11/20/2024 08:52AM, Live), and 'Extensions' (Search). A central icon of two speech bubbles is positioned between the channels and the content section.

## 7. Customize the **Live** assistant as you see fit.

On the Style tab, you're able to set the Assistant name which will be displayed at the top of the chat window when end-users are interacting with the assistant. For pilots or demos, you may want to personalize this name for the client. Also in the Style tab, you have the ability set the themes and display settings of the chat windows, including the ability to enable the IBM Watermark and enable streaming (recommended).

On the Home screen tab, you enable and customize a default greeting message from the assistant when the user accesses the assistant chat. You're also able to set Conversation starters that will be displayed in the chat window. When selected by the end-user, the text of these conversation starters are sent as prompts, so it is important that your assistant is trained and tested to answer appropriately. It is highly recommended to remove these default conversation starters and to consider creating your own as long as they're able to be executed as actions and provide value to the end-user. At the bottom of the Home screen tab, you will also see the ability to add a Background style for the assistant chat window.

Explore all the other tabs.



### Customize your Live environment.

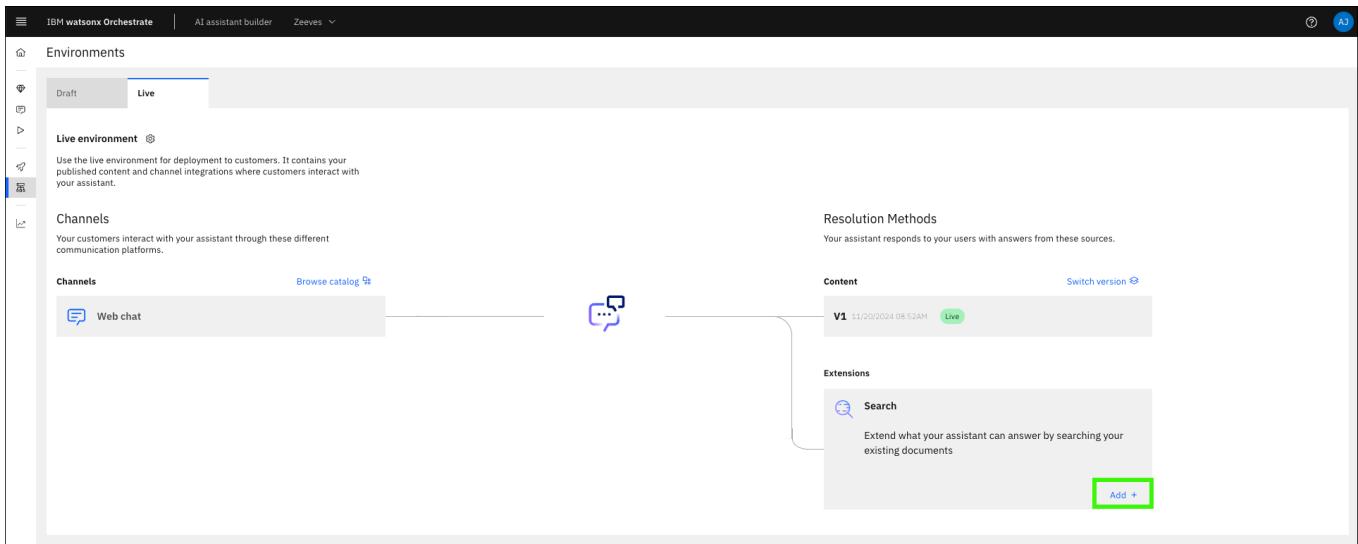
For this lab, toggle **Streaming** on and turn **Suggestions** off on the **Suggestions** tab. You may also want to change the theme to **Dark** to differentiate your Draft and Live environments.

The screenshot shows the 'Style' tab selected in the navigation bar. The 'Suggestions' tab is highlighted with a green border. On the right, a preview window displays a dark-themed chat interface with a blue owl logo and sample messages.

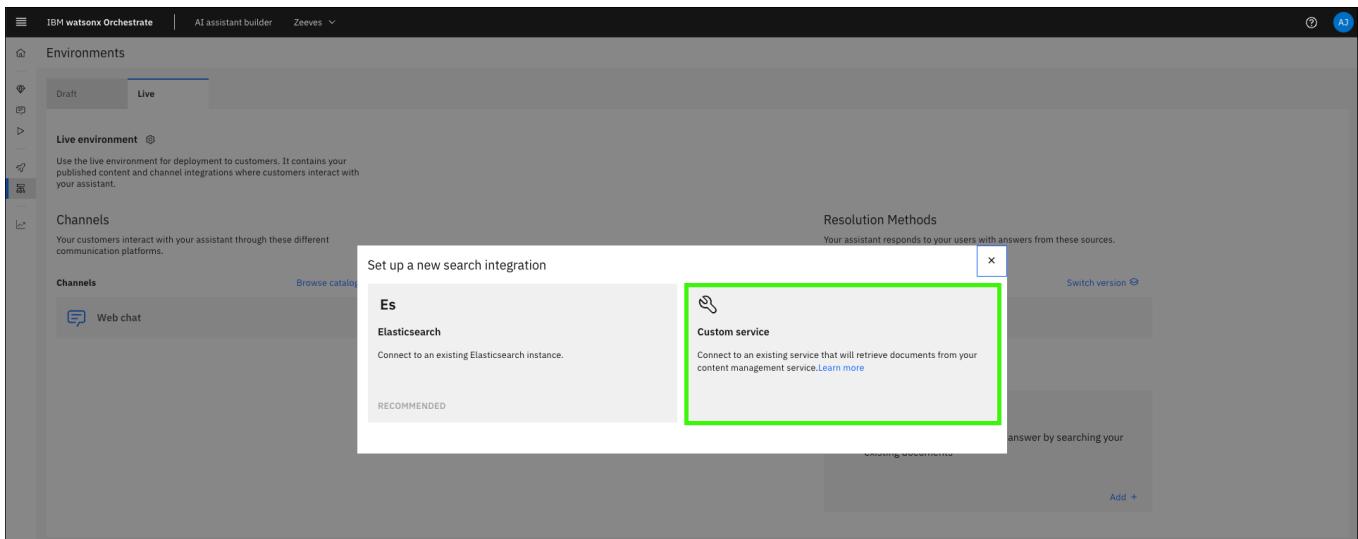
## 8. Click Save and exit.

The screenshot shows the 'Save and exit' button highlighted with a green border. The preview window on the right shows the same dark-themed chat interface with the blue owl logo and sample messages.

## 9. Click Add in the Search tile.



## 10. Click Custom service.



## 11. Enter the (a) URL for your bring-your-own-search (BYOS) engine, (b) select None for the authentication type, and (c) click Next.

**⚠️ Use the correct URL!**

Be sure to use the URL for your BYOS OpenSearch engine created earlier [here](#).

Custom service Live

Connect service Conversational search (optional)

By providing credentials  Through your client

URL  
https://wxa4z-opensearch-wrapper-wxa4z-byos.apps.673cb83f0fef21364200dcb7.ocp.techzi

Choose an authentication type  
None

**Next**

## 12. Verify conversational search is enabled and click **Save**.

Custom service Live

Connect service Conversational search (optional)

Enable conversational search (optional)

By enabling conversational search, your assistant can generate responses from supplied documents.

Conversational search will use a Watsonx generative AI model hosted in Dallas, TX US, to generate conversational responses. [Learn more](#)

On

By using this feature you agree to the [Pricing](#) and [Terms](#). This feature is not PCI validated. The use of this feature may impact your PCI compliance. X

**What's different?**

When your assistant receives a message, the default search behavior returns short excerpts of the best search results.

When conversational search is enabled, your assistant will instead generate a conversational response grounded in those search results.

**Default search behavior (conversational search off)**

Welcome, how can I assist you?  
Can I use my points on airfare?

I searched my knowledge base and found this information which might be useful

We offer credit cards offer great liability to our clients, protecting you from having to pay for unauthorized purchases. Can I use my points on airfare? Using points and miles to book your flights is a great option. Not only do you save money, but you can use your points to book...

IBM Watsonx Lendy! Demo Site

**Save**

## 13. Update the (a) - (f) **Custom service** settings, (g) click **Save**, and then (h) click **Close**.



Feel free to customize the settings.

This is your assistant. Feel free to customize the settings. The settings shown below reflect the changes made earlier in the lab guide to the draft version of the assistant. This includes the **Metadata** field to weigh ingested client documents higher.

The screenshot shows the 'Custom service' configuration page in the IBM Watsonx Assistant builder. Several UI elements are highlighted with green circles and letters:

- a:** A toggle switch labeled 'On' under 'Conversational search'.
- b:** A radio button labeled 'Single turn' under 'Conversational search'.
- c:** A radio button labeled 'Lowest' under 'Retrieval confidence threshold'.
- d:** A radio button labeled 'Verbose' under 'Generated response length'.
- e:** A radio button labeled 'Lowest' under 'Response confidence threshold'.
- f:** A code block showing a JSON object for 'Metadata'.
- g:** A 'Save' button in the top right corner.
- h:** A 'Close' button in the top right corner.

Learn more about publishing your assistant and creating live environments [here](#).

## Deploy the assistant

After configuring your assistant's settings and publishing, the final step is to deploy your assistant which can be done across various channels depending on the use case.

There are several options for deploying your assistant through channels and integrations to satisfy the use cases that you might address. Learn more about all the deployment options [here](#).

For this lab, you will deploy the assistant using the web chat integration. The web chat integration provides an assistant interface that can integrate with your website. There is a lot of flexibility with how you may want to integrate it. Learn more about the web chat integration [here](#).

#### 14. Click Web chat for the Live environment.

The screenshot shows the IBM Watsonx Orchestrate interface. At the top, there are tabs for 'IBM Watsonx Orchestrate', 'AI assistant builder', and 'Zeeves'. Below the tabs, there's a sidebar with icons for environments, AI, and other tools. The main area is titled 'Environments' and shows two tabs: 'Draft' and 'Live', with 'Live' being highlighted by a green box. Under 'Live', there's a section for 'Live environment' which describes it as a deployment to customers. Below that is a 'Channels' section with a 'Web chat' option, also highlighted by a green box. To the right, there's a 'Resolution Methods' section with a 'Content' tab showing 'V1' and a 'Switch version' button. Below that is an 'Extensions' section with a 'Search' button.

#### 15. Click the Embed tab.

The screenshot shows the 'Web chat' configuration page. At the top, there are tabs for 'Style', 'Launcher', 'Home screen', 'Live agent', 'Suggestions', 'Security', 'Embed' (which is highlighted by a green box), and 'Resources'. Below the tabs, there's a section for 'Customize your chat UI' with fields for 'Assistant's name as known by customers' (set to 'Zeeves 1.0'), 'Intended purpose' (radio buttons for 'Standard' and 'Carbon for AI'), 'Choose a theme' (radio buttons for 'Light' and 'Dark', with 'Dark' selected), 'Primary color' (#FFFFFF), 'Secondary color' (#3D3D3D), 'Chat header' (set to '#0354E9'), 'Accent color' (set to '#0354E9'), and 'Significant and interactive objects' (checkbox for 'On'). To the right, there's a preview window titled 'Zeeves 1.0' showing a dark-themed chat interface with a blue owl logo and sample messages like 'Hi! I'm a virtual assistant. How can I help you today?'. There are also buttons for 'Restart conversation' and 'Close'.

#### 16. Copy and record the integrationID, region, and serviceInstanceId values.

The screenshot shows the 'Web chat' configuration page with the 'Embed' tab selected. Below the tabs, there's a section for 'Embed on your website' with a note 'Ready to launch? It's as easy as copy and paste.' and a 'Learn more' link. A large green box highlights a code block containing the following variables:

```

<script>
  const instanceId = "8b4ad299-e6b9-434c-8c8c-2754d9272fe5"; // The ID of this integration.
  const region = "wco-us-south"; // The region your integration is hosted in.
  const serviceInstanceId = "7c1e3381-8df-47eb-bdf2-319f531087ba"; // The ID of your service instance.
  const timeout = 5000;

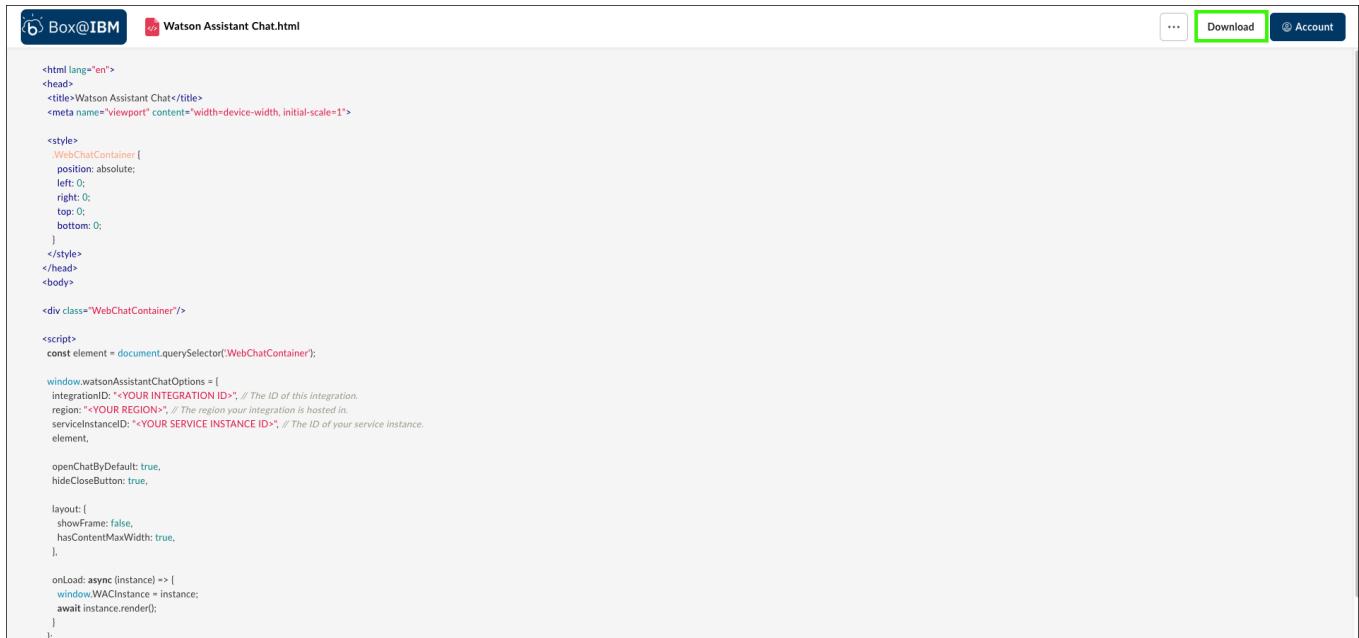
  setTimeout(function() {
    const t=document.createElement('script');
    t.src="https://web-chat.global.assistant.watson.appdomain.cloud/versions/" + (window.watsonAssistantChatOptions.version || 1);
    document.head.appendChild(t);
  }, timeout);
</script>

```

Below the code, there's a 'Show more' button.

17. Click the link below to download a sample web chat hyper text markup language ([HTML](#)) page.

### **Watson Assistant Chat.html**



```

<html lang="en">
<head>
<title>Watson Assistant Chat</title>
<meta name="viewport" content="width=device-width, initial-scale=1">

<style>
.WebChatContainer {
position: absolute;
left: 0;
right: 0;
top: 0;
bottom: 0;
}
</style>
</head>
<body>

<div class="WebChatContainer"></div>

<script>
const element = document.querySelector('WebChatContainer');

window.watsonAssistantChatOptions = {
integrationID: "<YOUR INTEGRATION ID>", // The ID of this integration.
region: "<YOUR REGION>", // The region your integration is hosted in.
serviceInstanceID: "<YOUR SERVICE INSTANCE ID>", // The ID of your service instance.
element,

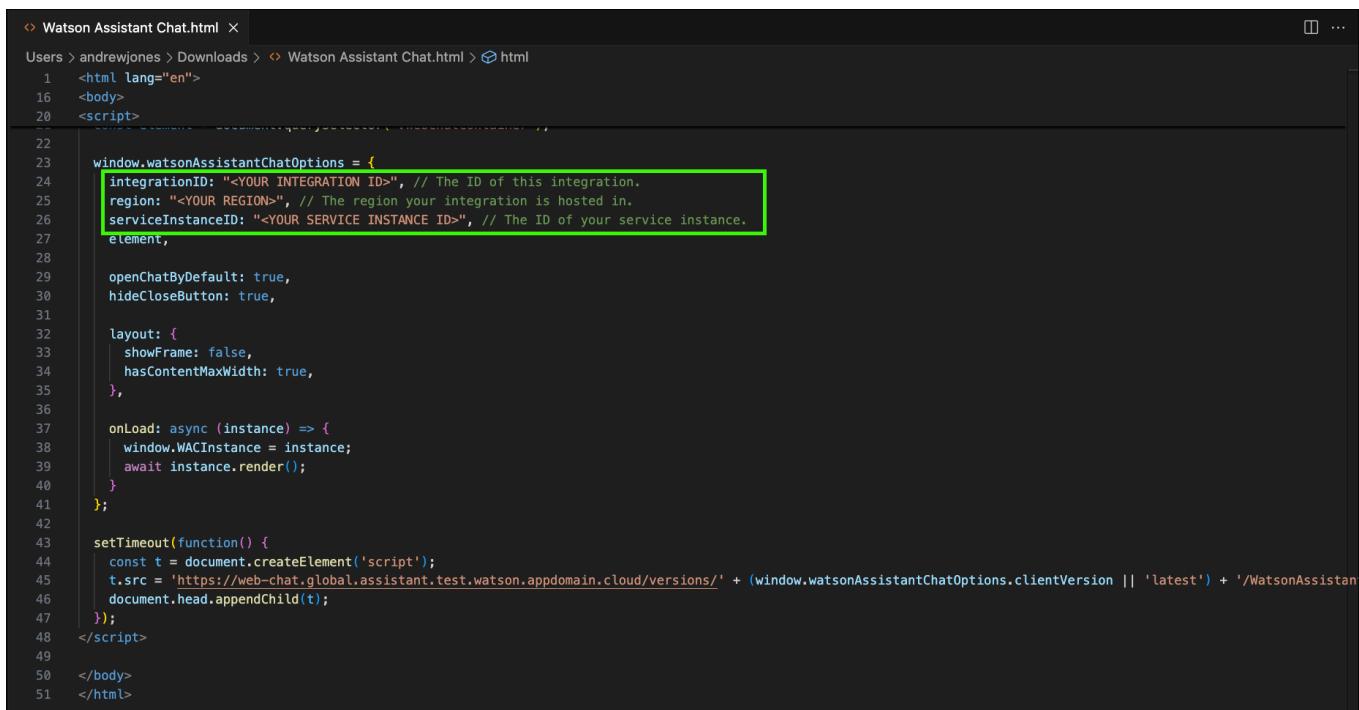
openChatByDefault: true,
hideCloseButton: true,

layout: {
showFrame: false,
hasContentMaxWidth: true,
},
onLoad: async (instance) => {
window.WACInstance = instance;
await instance.render();
}
};

setTimeout(function() {
const t = document.createElement('script');
t.src = 'https://web-chat.global.assistant.test.watson.appdomain.cloud/versions/' + (window.watsonAssistantChatOptions.clientVersion || 'latest') + '/WatsonAssistant';
document.head.appendChild(t);
}),
</script>
</body>
</html>

```

18. Edit the **Watson Assistant Chat.html** file and insert the values for your assistant you copied in step 16.



```

<html lang="en">
<head>
<title>Watson Assistant Chat.html</title>
<meta name="viewport" content="width=device-width, initial-scale=1">

<script>
window.watsonAssistantChatOptions = {
integrationID: "<YOUR INTEGRATION ID>", // The ID of this integration.
region: "<YOUR REGION>", // The region your integration is hosted in.
serviceInstanceID: "<YOUR SERVICE INSTANCE ID>", // The ID of your service instance.
element,

openChatByDefault: true,
hideCloseButton: true,

layout: {
showFrame: false,
hasContentMaxWidth: true,
},
onLoad: async (instance) => {
window.WACInstance = instance;
await instance.render();
}
};

setTimeout(function() {
const t = document.createElement('script');
t.src = 'https://web-chat.global.assistant.test.watson.appdomain.cloud/versions/' + (window.watsonAssistantChatOptions.clientVersion || 'latest') + '/WatsonAssistant';
document.head.appendChild(t);
}),
</script>
</head>
<body>

<div class="WebChatContainer"></div>

</body>
</html>

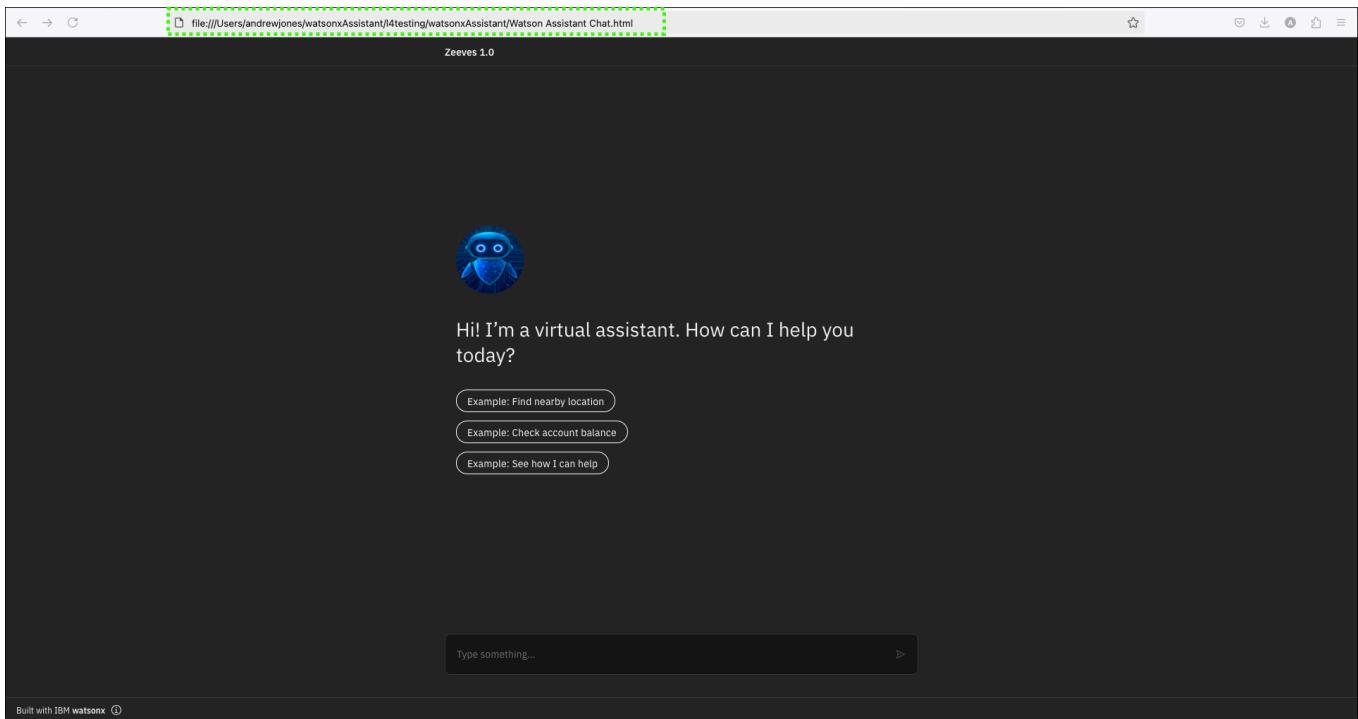
```

19. Save the changes to the **Watson Assistant Chat.html** file.

```

Users > andrewjones > Downloads > Watson Assistant Chat.html > html > body > script > layout
  1  <html lang="en">
  2  <head>
  6   <style>
  7     .WebChatContainer {
 11    top: 0;
 12    bottom: 0;
 13  }
 14  </style>
 15  </head>
 16  <body>
 17
 18  <div class="WebChatContainer">
 19
 20  <script>
 21    const element = document.querySelector('.WebChatContainer');
 22
 23    window.watsonAssistantChatOptions = {
 24      integrationID: "8b4ad299-e6b9-434c-8c8c-2754d9272fe5", // The ID of this integration.
 25      region: "wxo-us-south", // The region your integration is hosted in.
 26      serviceInstanceId: "c1e63381-8dcf-476b-bdf2-319f531087be", // The ID of your service instance.
 27      element,
 28
 29      openChatByDefault: true,
 30      hideCloseButton: true,
 31
 32      layout: {
 33        showFrame: false,
 34        hasContentMaxWidth: true,
 35      },
 36
 37      onLoad: async (instance) => {
 38        window.WACInstance = instance;
 39        await instance.render();
 40      }
  
```

## 20. Open the Watson Assistant Chat.html file in a web browser.



Your assistant is now live. Explore some of the earlier prompts to verify the assistant is accessing the ingested documents and your skills and skill flows are active.

Prompts to try:

What is z/OS continuous delivery?

Get z/OS facts

Show me z/OS facts

Gather and display z/OS facts

# Adding other integrations

Other integrations can be added to your assistant to allow you to publish your assistant to the channels where your end-users are likely to interact with the assistant.

To do so, channel integrations must be added. By default, a web chat integration is created, allowing an assistant to be embedded in a website. Other channel integrations are available in the Integrations catalog inside the AI assistant builder interface. Learn more about adding integrations [here](#).

Within the AI assistant builder, click on the Integrations page:

Scroll down to **Channels** to view the integration deployment options for your assistant.

Clicking on any of the available channels will provide guidance on how to configure the integration.

# Next steps

This IBM watsonx Assistant for Z for Technical Sales Level 4 demonstrated several of the IBM watsonx Assistant for Z capabilities. However, there is still more to learn about IBM watsonx Assistant for Z. Be sure to check out the [offering landing page](#) and the [product documentation](#).

Also, the focus of the IBM watsonx Assistant for Z for Technical Sales Level 4 Lab Guide was the *end-user* use of IBM watsonx Assistant for Z. To learn more about deploying, configuring, and customizing IBM watsonx Assistant for Z explore the other capabilities that are included in the [ITZ collection](#) [here](#). Included are guidance for running client pilots and the ability to manage an IBM watsonx Assistant for Z deployment. In the Velocity Pilot environment, you can explore all the capabilities of the offering like creating an assistant, importing documents, and adding automation skills.

## Earn the badge

Finally, remember to complete the IBM watsonx Assistant for Z for Technical Sales Level 4 learning plan to earn the IBM watsonx Assistant for Z Technical Sales Advanced badge.

**IBM technical sellers** must complete a Stand and Deliver exercise to validate their ability to demonstrate IBM watsonx Assistant for Z to potential clients. Refer to the evaluation checklist in the [Your Learning learning plan](#) for the Stand and Deliver.

**Business Partners** must pass the IBM watsonx Assistant for Z for Technical Sales Level 4 quiz that is located in the [IBM Training learning plan](#). The Business Partner quiz verifies use of the demonstration environments, rather than one's general knowledge of the offering.