Part XV: AI solutions

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AI solutions

You can use IBM® Cloud Pak for Data to implement a host of AI solutions for your enterprise. The types of solutions you can build depend on the services you install on the platform.

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- **Transcribing speech with Watson Speech to Text**
  The Watson Speech to Text service offers speech recognition capabilities for your applications. The service leverages machine learning to combine knowledge of grammar, language structure, and the composition of audio and voice signals to accurately transcribe the human voice from many languages.
- **Synthesizing speech with Watson Text to Speech**
  The Watson Text to Speech service offers speech synthesis capabilities for your applications to convert written text to natural-sounding speech.

Implementing voice agents with Voice Gateway

Use the Voice Gateway service to enable direct voice interactions over a telephone with a cognitive self-service agent or to transcribe a phone call between a caller and agent so that the conversation can be processed with analytics for real-time agent feedback. Voice Gateway orchestrates Watson services and integrates them with a public or private telephone network by using the Session Initiation Protocol (SIP).

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service.

With IBM Voice Gateway, you can set up both *self-service agents* and *agent assistants*.

- *Self-service agents* are similar to an Interactive Voice Response (IVR) system, which provides an automated way to communicate with callers by using audio over a telephone call. With Watson, self-

service agents communicate in a more conversational manner and can handle complex interactions that are difficult for traditional IVRs.

- *Agent assistants* provide a way to run real-time analytics on a phone call between a caller and a live human agent by converting the voice streams into text. These text utterances can then be processed with services outside of Voice Gateway, such as the Watson Natural Language Classifier service and the Watson Discovery service, to generate useful information that an agent can immediately use to help a caller. Note that integration with specific analytic services isn't covered in this documentation.

Getting started

To get started with the service, see Setting up Watson™ Assistant for Voice Interaction. For more information about Voice Gateway, see About IBM Voice Gateway.

Building an assistant with Watson Assistant

Use the Watson Assistant service to build your own branded assistant into any device, application, or channel. Your assistant can connect to the customer engagement resources you already use to deliver an engaging, unified problem-solving experience.

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service. To determine whether the service is installed, open the Services catalog and check whether the service is enabled.

The graphical tools that are provided with the product guide you through the steps of developing the training data that Watson Assistant needs to build a customized machine learning model for you. Use the dialog builder tool to write a script for your assistant to follow when it interacts with your customers. The script keys off the customer goals you identify and returns a useful response that is crafted by you. For more complex customer queries, the assistant can search external data sources and return any useful information that it finds as its response.

You can use the built-in preview link integration to test your assistant and the built-in web chat integration to deploy the finished assistant. From the Analytics page, you can track how your assistant is performing by seeing metrics and analyzing conversations that your assistant is having with your users.

Accessing a service instance

1. Navigate to your IBM Cloud Pak for Data instance and log in.
2. From the web client main navigation, select Services > My instances .
3. On the Provisioned instances tab, find your Watson Assistant instance, and then click to open it.
4. Click Launch tool.

Getting started

To get started with the service, see the following links:

- Getting started
- API reference v2
- API reference v1

Enhancing call center operations with Watson Assistant for Voice Interaction

Watson Assistant for Voice Interaction can enhance your call-center operations by orchestrating Watson services and integrating them with a telephone network to create an AI-powered Interactive Voice Response (IVR) system.

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service.

Watson Assistant for Voice Interaction is a solution that is made up of four services:

- Voice Gateway
- Watson Assistant
- Watson Speech to Text
- Watson Text to Speech

Finding answers with Watson Discovery

The Watson Discovery service offers an AI-powered search engine that you can use to extract answers from complex business documents.

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service. To determine whether the service is installed, open the Services catalog and check whether the service is enabled.

With Watson™ Discovery, you can visually train AI for deep understanding of your content, including tables and images, to help you find business value that is hidden in your enterprise. Use natural language or structured queries to find relevant answers and surface insights, and build AI-enhanced business processes anywhere by using powerful API interfaces.

Getting started

To get started with the service, see the following links:

- Getting started
- API reference

Understanding meaning with Watson Knowledge Studio

The Watson Knowledge Studio service creates a machine learning model that understands the linguistic nuances, meanings, and relationships specific to your industry.

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service. To determine whether the service is installed, open the Services catalog and check whether the service is enabled.

With Watson™ Knowledge Studio, you can create a machine learning model that understands the linguistic nuances, meanings, and relationships specific to your industry, or to create a rule-based model that finds entities in documents based on rules that you define.

Getting started

To get started with the service, see the following links:

- [Getting started](#)
- [AQL reference](#)

Transcribing speech with Watson Speech to Text

The Watson Speech to Text service offers speech recognition capabilities for your applications. The service leverages machine learning to combine knowledge of grammar, language structure, and the composition of audio and voice signals to accurately transcribe the human voice from many languages.

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service. To determine whether the service is installed, open the Services catalog and check whether the service is enabled.

The Watson Speech to Text service is ideal for clients who need to extract high-quality speech transcripts from audio in formats that support both compressed and uncompressed data. The service offers multiple APIs to accommodate different application needs, including a WebSocket interface and synchronous and asynchronous HTTP interfaces. It includes customization interfaces to expand the vocabulary of a language model, adapt a model for different acoustic characteristics, or restrict responses to phrases that are recognized by grammars. SDKs are available to simplify your use of the service's interfaces in various programming languages.

You can send the service live audio as a continuous stream of data or pass prerecorded audio files. The service always returns a complete transcript of the audio that you send. It continually updates and refines its transcription as it receives more speech. It can identify individual speakers, spot keywords and phrases, and return timestamps, confidence scores, acoustically similar words, and other information.

The service offers previous-generation broadband (16 kHz) and narrowband (8 kHz) models, and next-generation multimedia (16 kHz) and telephony (8 kHz) models. Next-generation models return results with greater throughput and higher accuracy than previous-generation models, but they offer limited language and feature support currently. Use a model whose minimum sampling rate and capabilities are appropriate for your audio.

Getting started

To get started with the service, see the following links:

- [Getting started](#)
- [Service features](#)
- [API reference](#)

Accessing a service instance

1. Navigate to your IBM Cloud Pak for Data instance and log in.
2. From the main navigation, select My instances.
3. On the Provisioned instances tab, find your Watson Speech to Text instance, and then hover over the last column to find and click the ellipses icon. Choose View details.
4. Click Open Watson Speech to Text.

Synthesizing speech with Watson Text to Speech

The Watson Text to Speech service offers speech synthesis capabilities for your applications to convert written text to natural-sounding speech. The service offers both HTTP and WebSocket interfaces that stream the results back to the client with minimal delay. With the WebSocket interface, the service can return word timing information to synchronize the input text and the resulting audio.

Service This service is not available by default. An administrator must install this service on the IBM® Cloud Pak for Data platform, and you must be given access to the service. To determine whether the service is installed, open the Services catalog and check whether the service is enabled.

The Watson Text to Speech service can synthesize text to audio in many formats and can produce speech in male and female voices for many languages and dialects. It offers enhanced neural voices that achieve a high degree of natural-sounding speech.

The service accepts plain text and text that is annotated with the XML-based Speech Synthesis Markup Language (SSML). It provides a customization interface that you can use to specify how the service pronounces unusual words that occur in your input. You can define pronunciations with the International Phonetic Alphabet (IPA) or IBM Symbolic Phonetic Representation (SPR). For some languages, the service also supports the Tune by Example feature, which lets you control exactly how specified text is spoken by the service. The feature lets you dictate the prosody (intonation, stress, tempo, cadence, rhythm, and pauses) of the synthesized text.

Getting started

To get started with the service, see the following links:

- Getting started
- Service features
- API reference

Accessing a service instance

1. Navigate to your IBM Cloud Pak for Data instance and log in.
2. From the main navigation, select My instances.
3. On the Provisioned instances tab, find your Watson Text to Speech instance, and then hover over the last column to find and click the ellipses icon. Choose View details.
4. Click Open Watson Text to Speech.