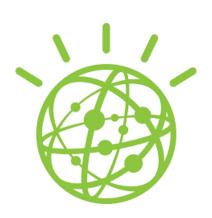# IBM Watson

Watson Services Guide
for Developers

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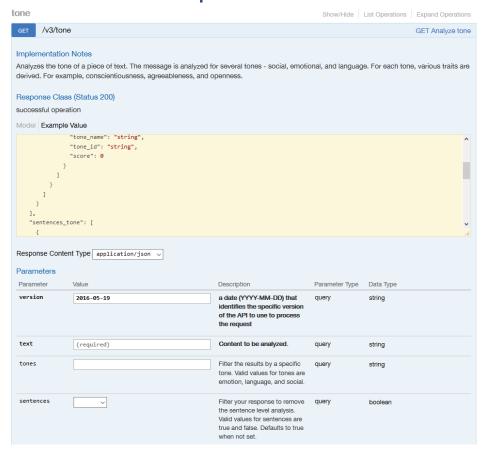# Watson Services – General Info

The basics

- All APIs are REST based w/public endpoints
  - For authentication services use either
    - An api key that is a param to each request
    or
    - Basic authentication with an HTTPS endpoint
      - Username/password in request header

- Each service instance is created in IBM Cloud/Watson Studio and has it's own credentials
  - Credentials are available in the IBM Cloud console/Watson Studio
  - For IBM Cloud apps bound to a service instance
    - Credentials available as JSON in the VCAP_SERVICES env var

- Each service has a deployed demo app that can be run and then cloned from GitHub

Watson API Explorer

- A collection of Swagger documentation for the Watson APIs
  - Test APIs calls for various services as   long as you have the credentials

See
https://watson-api-explorer.mybluemix.net/

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SDKs and starter kits

- **SDKs** are wrappers around the REST API and are available for various programming languages/platforms
  - Node, Java, Python, iOS and Unity SDKs available

- **Starter Kits** are complete code examples that allow you to create service instances and running applications with just a click

Watson Assistant With Discovery - Serverless

Demo   Git Repo

This application shows the capabilities of Watson Assistant and Discovery services to work together...

Lite   Web App   Git Starter   ⌄

They are both available here
https://www.ibm.com/watson/developercloud/developer-tools.html

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IBM Code Patterns

Roadmaps for solving complex programming challenges.

Patterns give you a 360-degree view of the underlying code, including overviews, architecture diagrams, process flows, repo pointers, and additional reading.
.
Examples of Watson related code patterns

- Integrate Watson AI into Salesforce apps
- Create and deploy a scoring model to predict heartrate failure
- Deploy a Core ML model with Watson Visual Recognition

All Watson related code patterns available here
https://developer.ibm.com/code/technologies/artificial-intelligence/

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Service Summaries

Watson API Summary

Build cognitive apps that help enhance, scale, and accelerate human expertise.

Watson Assistant (formerly Conversation)

Add a natural language interface to your application to automate interactions w

Lite   IBM

Discovery

Add a cognitive search and content analytics engine to applications.

Lite   IBM

Knowledge Catalog

Discover, catalog, and securely share enterprise data.

Lite   IBM

Knowledge Studio

Build custom models to teach Watson the language of your domain.

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Language Translator

Translate text from one language to another for specific domains.

Lite   IBM

Machine Learning

IBM Watson Machine Learning - make smarter decisions, solve tough problem

Lite   IBM

Natural Language Classifier

Natural Language Classifier performs natural language classification on

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Natural Language Understanding

Analyze text to extract meta-data from content such as concepts, entities,

Lite   IBM

Personality Insights

The Watson Personality Insights derives insights from transactional and social

Lite   IBM

Speech to Text

Low-latency, streaming transcription

Lite   IBM

Text to Speech

Synthesizes natural-sounding speech from text.

Lite   IBM

Tone Analyzer

Tone Analyzer uses linguistic analysis to detect three types of tones from

Lite   IBM

Visual Recognition

Find meaning in visual content! Analyze images for scenes, objects, faces, and

Lite   IBM

Watson Studio

Embed AI and machine learning into your business. Create custom models using

Lite   IBM

IBM Watson

AI Assistant: Watson Assistant (formerly Watson Conversation)

Build an AI assistant for a variety of channels, including mobile devices, messaging platforms, and even robots.

Features:
- Quickly build, test and deploy a bot or virtual agent
- Mobile devices, messaging platforms like Slack or even on a physical robot.
- A visual dialog builder to use without any coding experience required.
- Languages: Brazilian Portuguese, English, French, Italian, Spanish, German, Traditional Chinese, Simplified Chinese, Dutch, Czech, Korean and Arabic.

- **Input:** Input phrases for a specific workspace
- **Output:** Workspace defined response based on current state

https://www.ibm.com/watson/services/conversation-4/

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Vision: Visual Recognition

Quickly and accurately tag, classify and train visual content using machine learning.

Features:
- understands the contents of images
- find human faces, approximate age and gender, and find text in images.
- Can use existing models of create your own

- **Input:** JPEG or PNG images to train model or to classify
- **Output:** a set of labels and likelihood scores
- **Dataset:** large number of classified pictures

https://www.ibm.com/watson/services/visual-recognition/

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Discovery: Natural Language Understanding

Natural language processing for advanced text analysis.

Features:

- Extract meta-data from content such as concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles
- Develop custom annotation models using Knowledge Studio
- Identify industry/domain specific entities and relations
- Languages: Arabic, Chinese, Dutch, English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish, or Swedish
- **Input:** Text or URL to be analyzed
- **Output:** Categories, concepts, emotion, entities, keywords, metadata, relations, semantic roles, and sentiment.

https://www.ibm.com/watson/services/natural-language-understanding/

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Discovery: Discovery

Rapidly build a cognitive search and content analytics engine.

Features:
- Convert, normalize and enrich unstructured data
- Use a simplified query language to explore that data
- Train by mapping natural language queries to specific documents
- Tap into pre-enriched datasets like the Discovery News collection - 300,000 new articles and blogs added daily, sourced from more than 100,000 sources.

- **Input:** Cognitive Query
- **Output:** Query results

https://www.ibm.com/watson/services/discovery/

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Speech: Speech to Text

Convert human voice into written word

Features:
- Use to transcribe calls to identify what is being discussed, when to escalate calls, and to understand content from multiple speakers.
- Create voice-controlled applications
- Customizable model to improve accuracy such as product names, sensitive subjects, or names of individuals.

- **Input:** streamed or recorded audio
- **Output:** text transcriptions of the recognized words
- **Dataset:** intelligible English, Spanish, French, Arabic, Chinese, Japanese, or Portuguese speech

https://www.ibm.com/watson/services/speech-to-text/

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Speech: Text to Speech

Enable computers to speak like humans

Features:
- converts written text into natural sounding audio in a variety of languages and voices.
- Customize and control the pronunciation of specific words
- Develop interactive toys for children, automate call center interactions, and communicate directions hands-free.

- **Input:** Text to be converted to audio
- **Output:** synthesized audio based on the input text
- **Dataset:** English, Spanish, French, Italian, Portuguese, German or Japanese text

https://www.ibm.com/watson/services/text-to-speech/

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Language: Language Translator

Translate content into multiple languages

Features:
- Translates from one language to another or identifies the language of the input text
- Offers multiple customizable domain-specific models
- Language support:

  https://console.bluemix.net/docs/services/language-translator/translation-models.html

- **Input:** Text to be translated or identified
- **Output:** Translated text or language code

https://www.ibm.com/watson/developercloud/language-translator.html

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Language: Natural Language Classifier

Interpret and classify natural language with confidence.

Features:
- Understands the intent behind text and returns a classification and confidence score
- Answer questions in contact centers, chatbots etc
- Categorize written content

- Languages: English, Arabic, Brazilian Portuguese, French, German, Japanese,Korean, Italian, and Spanish.

- **Input:** Trained with data mapping phrases to intents. After training phrases are input
- **Output:** Intent of input phrase and confidence

https://www.ibm.com/watson/services/natural-language-classifier/

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Empathy: Personality Insights

Understand personality characteristics, needs, and values in written text

Features:
- extracts personality characteristics and consumption preferences based on how a person writes
- match individuals to other individuals, opportunities, and products
- Characteristics include the Big 5 Personality Traits, Values, and Needs.
- Needs at least 1200 words of input text

- **Input:** text from an individual
- **Output:** tree of social characteristics in JSON and visualizations using HTML and SVG

https://www.ibm.com/watson/services/personality-insights/

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Empathy: Tone Analyzer

Understand tone and style in written text

Features:

- Uses linguistic analysis to detect three types of tones in written text: emotions, social tendencies, and writing style.
- Used to understand emotional context of conversations and communications.
- Use this insight to respond in an appropriate manner.
- Languages: English, French
- **Input:** Text to be analyzed in JSON
- **Output:** Analysis of input text in JSON

https://www.ibm.com/watson/services/tone-analyzer/

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Quick Reference

IBM Watson

- Watson Services in Watson Studio
  - https://dataplatform.ibm.com/data/services?target=watson&context=analytics

- Watson Services in IBM Cloud Catalog
  - https://console.bluemix.net/catalog/?category=watson

- Watson API Explorer
  - https://watson-api-explorer.mybluemix.net/

- Watson SDKs and Starter Kits
  - https://www.ibm.com/watson/developer-resources/

- IBM Code Patterns – Watson related
  - https://developer.ibm.com/code/technologies/artificial-intelligence/

- Watson Services (Docs, API docs, demo apps and tutorials)
  - https://www.ibm.com/watson/products-services/

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