Voice.AI Gateway Integration with Azure Bot

Release 1.0

ac audiocodes

Table of Contents

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Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Table 1-1: Attributes Sent to Bot

Abbreviation	Description
STT	Speech-to-Text
TTS	Text-to-Speech

Related Documentation

Document Name
Voice.AI Gateway Product Description

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Document Revision Record

LTRT	Description
31601	Initial document release

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1 Introduction

AudioCodes Voice.AI Gateway enhances your chatbot functionality by supporting voice calls made from various voice engagement channels such as the PSTN, Enterprise Unified Communications, Contact Centers, and WebRTC. As such, the Voice.AI Gateway provides and uses various APIs for different purposes:

■ SIP, RTP and WebRTC APIs for communicating with various voice engagement channels

■ HTTP-based APIs to use third-party voice cognitive services for converting voice to text and text to voice

■ HTTP-based APIs to connect to third-party bot frameworks such as Azure, Google, and AWS
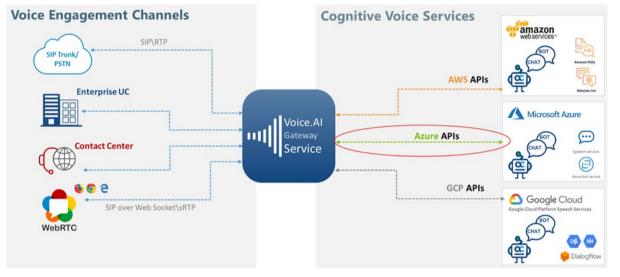
Figure 1-1: AudioCodes Voice.AI Gateway Integration for Chatbot Services

This document describes the API that is used to connect to the Microsoft Azure Bot Service framework. This includes basic connection initiation, authentication, basic dialog management (text-based dialog) as well as call control APIs to manage the telephony session.

The Voice.AI Gateway uses Azure's Direct Line API 3.0 to connect to the Azure bot framework. For more information on the API, go to https://docs.microsoft.com/en-us/azure/bot-service/rest-api/bot-framework-rest-direct-line-3-0-concepts.

The API already defines basic dialog management. This document describes enhanced metadata that is sent from the Voice.AI Gateway to the bot framework, for example, caller's number and name. This metadata can be used by the bot developer for enriching user experience by providing a more personalized reply to the user.

The API also allows the bot developer to control and manage the voice session using call-control commands, for example, to disconnect the dialog session or escalate (transfer) the dialog to a human call agent.

The messages between the Voice.AI Gateway and the bot framework are referred to as *activities* and are formatted as JSON objects.

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2   Sending Activities to Azure Bot

2.1   Initial Activity

By default, the following initial activity is sent by the Voice.AI Gateway to the bot upon the start of a conversation:

```
{
  "type": "event",
  "name": "channel",
  "value": "telephony"
}
```

You can override this activity by using the configuration parameter **initialActivityToBot**. If set to an empty object (i.e., {}), no initial activity is sent.

2.2   Conversation Message Activities

The Voice.AI Gateway sends textual messages to the bot for any speech recognition. These messages are sent in "message" type activities, for example:

```
{
  "type": "message",
  "text": "Hi there.",
  "channelData": {
    "confidence": 0.454342246055603,
    "recognitionOutput": { <raw STT result> }
  }
}
```

■   The "text" element contains the recognized speech.

■   The "channelData.confidence" element contains the confidence level of the recognition, as received from the speech-to-text engine.

■   The "channelData.recognitionOutput" element contains the raw data received from the speech-to-text engine. This data can be used to retrieve additional information such as alternative speech recognition results. The format of the raw data depends on the STT engine. An example of "channelData.recognitionOutput" contents as filled by the response from Azure speech services is shown below:

```
{
  "RecognitionStatus": "Success",
  "Offset": 34700000,
  "Duration": 9600000,
  "NBest": [
    {
      "Confidence": 0.454342246055603,
      "Lexical": "hi",
      "ITN": "Hi",
      "MaskedITN": "Hi",
      "Display": "Hi."
    }
  ]
}
```

For Azure speech services, the format of this JSON object is called the "detailed format" and is described in https://docs.microsoft.com/en-us/azure/cognitive-services/speech-service/rest-speech-to-text#response-parameters.

2.3 Metadata Sent by Voice.AI Gateway to Bot

In addition to the pre-defined attributes in the initial activity (discussed previously), the Voice.AI Gateway includes additional attributes which contain metadata of the conversation. The following table lists these attributes that the Voice.AI Gateway sends to the bot:

Table 2-1: Attributes Sent by Voice.AI Gateway to Bot

Attribute	Applicable	Key	Example	Description
Caller	All messages	`from.id`	```{ "from": { "id": "+972541234567" }, "text": "Hi.", "type": "message" }```	Phone number of caller. `channelData.caller` has same value as `from.id`.
Caller / CallerHost	initial activity	▪ `channelData.caller` ▪ `channelData.callerHost`	```{ "type": "event", "name": "channel", "value": "telephony", "channelData": { "caller": "+972541234567", "callerHost": "a.com", } }```	Phone number and hostname of caller.
Callee / CalleeHost	Initial activity	▪ `channelData.callee` ▪ `channelData.calleeHost`	```{ "type": "event", "name": "channel", "value": "telephony", "channelData": { "callee": "123", "calleeHost": "b.com" } }```	Phone number and hostname as dialed by caller.

Attribute	Applicable	Key	Example	Description
Caller Display Name	Initial activity	`channelData.callerDisplayName`	```{ "type": "event", "name": "channel", "value": "telephony", "channelData": { "callerDisplayName": "John Doe" } }```	Caller ID (display name) of caller. (Only if provided by telephony network.)

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3   Handling Activities from Azure Bot

Below is a basic example of an activity received from the bot:

```
{
  "type": "message",
  "text": "Hi there",
  "speak": "Hi there",
  "inputHint": "expectingInput"
}
```

For all types of activities:

■ If the `inputHint` attribute exists, set the "Speech Input" mode according to the value:

- `ignoringInput` – set to false

- `expectingInfo` – set to true

- `acceptingInput` – set to true

For more information, go to https://docs.microsoft.com/en-us/azure/bot-service/nodejs/bot-builder-nodejs-send-input-hints.

■ If the `channelData.speechBargeIn` Boolean attribute exits, set the "Barge-In" mode according to the value of the parameter.

When processing "message" type activities, the following actions are taken:

■ Plays the text of the message. The text is obtained from one of the following attributes (listed in order of preference – first match):

- `speak` attribute (SSML is currently not supported)

- `text` attribute

- Single attachment with the `content.text` attribute

If no matching attribute is found, the Voice.AI Gateway doesn't play anything.

■ If the `channelData.disableTtsCache` attribute exists, prevent caching of the TTS response.

3.1 Call Control Actions

To perform call control actions, the following activities should be sent by the bot:

Table 3-1: Azure Bot Call Control Activities

Action	Description	Activity Example

Disconnect	Disconnects call.
	For description of the `endOfConversation` event, click here.
	Reason fields are stored on the CDR.
		``
		{
		  "type": "endOfConversation"
		}
		      OR
		{
		  "type": "Event",
		  "name": "hangup"
		  "channelData": {
		    "hangupReason": "My reason"
		  }
		}
		``

Transfer	Transfers call to the defined transfer target.
	If transfer target is not specified, the configured default transfer target is used.
	Reason fields are stored on the CDR.
		``
		{
		  "type": "Event",
		  "name": "handover"
		  "channelData": {
		    "handoverReason": "My Reason",
		    "transferTarget": "tel:123456789"
		  }
		}
		``

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