



Nexiwave Voicemail to Text SaaS Platform

v. 12.8

For more information, contact: info@nexiwave.com

Current version: <http://nexiwave.com/static/api/Nexiwave.Voicemail.to.text.SaaS.api.pdf>

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1. Summary

Nexiwave provides a Web Service based Voicemail to text platform. The platform features:

- Fully automated service;
- Powered by in house built Speech Recognition and Keyword Spotting engine;
- High accuracy transcript;
- 99% phone number recognition;
- Automated key phrase analysis and highlighting;
- Fast turnaround;

2. General

2.1 Overview

Nexiwave Speech Recognition Platform API can be roughly separated into these areas:

- **Record Management:** how the audio can be moved into Nexiwave system
- **Obtain Results:** obtain speech-to-text results

For customer's offering Voicemail-to-email service, Nexiwave also offers a no-coding SMTP Mail Service solution. Simply point your application to Nexiwave's mail server for outgoing mail delivery, or configure your existing mail server to relay through Nexiwave's mail server. Nexiwave will transcribe any attached audio, insert transcript and then deliver to the designated address. For more information, please check: <http://nexiwave.com/index.php/site-map/140-template-based-voicemail-to-text-email-service> , or contact Nexiwave.

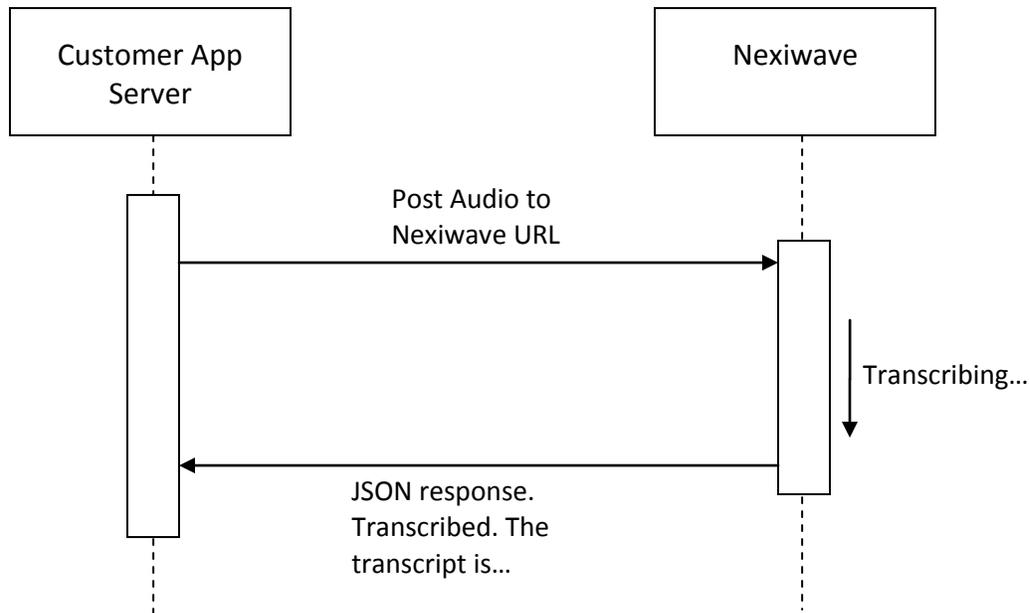
2.2 Audio Formats

Heavy audio compression may result in fidelity loss and may have strong impacts on transcript accuracy. For best accuracy results, Nexiwave recommends the following audio codecs:

- G711
- Un-compressed WAVE audio

3. Simple Synchronized API

Nexiwave Voicemail to text API is rather straightforward. A single step is involved:



Simply POST the voicemail audio to a Nexiwave Post URL, like below (assume your Nexiwave username is **user@myemail.com** and password is **XYZ**):

```
wget --max-redirect=100 --post-file /data/audio/test.wav --header='Content-Type: audio/vnd.wav' --user= user@myemail.com -password= XYZ -O - 'https://api.nexiwave.com/recording/?response=application/raw-transcript&transcriptFormat=html&auto-redirect=true'
```

The response of this URL will be in JSON format, with the machine transcription encoded as the "text" field. Sample Response:

```
{"recordingId":12345,"text":"Hi. My name is Carla I'm calling with Quicken Loans. If you can give us a call back, it'd be greatly appreciate it. Our number here is 1 (800) 984-2588.\n"}
```

3.1 Code Examples

3.1.1. More Command Line Example

```
curl -v --header "Content-Type:audio/vnd.wav" -X POST -u "user@myemail.com:XYZ" --data-binary '@/data/audio/test.wav'  
'https://api.nexiwave.com/recording/?response=application/raw-transcript&transcriptFormat=html&auto-redirect=true'
```

This would send the audio file to Nexiwave and print the raw transcript to stdout:

```
Hi. My name is Carla I'm calling with I.B.M.. If you can give me a call back, it'd be greatly appreciate it. Our number here is 1 (800) 555-1234.
```

3.1.2. PHP Example

Here is the PHP sample code:

```
<?php  
// Change these:  
$user = 'user@myemail.com';  
$passwd = 'XYZ';  
$file = '/data/audio/test.wav';  
  
// Build the transcription request URL  
$url = 'https://api.nexiwave.com/recording/?auto-redirect=true&response=application/json';  
// To receive transcript in plain text format, instead of html format, comment this line out (for SMS, for example)  
$url = $url + '&transcriptFormat=html';  
  
// Build the connection object:  
$ch = curl_init();  
curl_setopt($ch, CURLOPT_URL, $url);  
curl_setopt($ch, CURLOPT_USERPWD, $user+":"+passwd);  
curl_setopt($ch, CURLOPT_POST, 1);  
curl_setopt($ch, CURLOPT_RETURNTRANSFER, 1);  
curl_setopt($ch, CURLOPT_SSL_VERIFYPEER, 0);
```

```
curl_setopt($ch, CURLOPT_SSL_VERIFYHOST, 0);
curl_setopt($ch, CURLOPT_HEADER, 0);
curl_setopt($ch, CURLOPT_FOLLOWLOCATION, true);
// curl_setopt($ch, CURLOPT_MAXREDIRS, 100);
// curl_setopt($ch, CURLOPT_VERBOSE, 1);
// To explicitly configure to wait indefinitely for sync requests:
// curl_setopt($ch, CURLOPT_CONNECTTIMEOUT, 0);
// curl_setopt($ch, CURLOPT_TIMEOUT, 0);
// set_time_limit(0); // time execution of php script self

$post = array("data.mediaFileData"=>sprintf("@%s", $file),);
curl_setopt($ch, CURLOPT_POSTFIELDS, $post);

// Ready to send:
$result = curl_exec($ch);
$code = curl_getinfo($ch, CURLINFO_HTTP_CODE);
curl_close($ch);

if ($code == 200) {
    echo $result;
    $result = json_decode($result, true);
    $transcript = $result["text"];

    // Perform your magic here
    echo $transcript;
}
else {
    // Something is wrong. Timed out? Configure the timeout setting above.
    throw new exception($result);
}

?>
```

3.1.3. HTTP Status Codes

The following HTTP Status codes are used:

Status	W3C Description	Nexiwave Description
200	Success	Success.

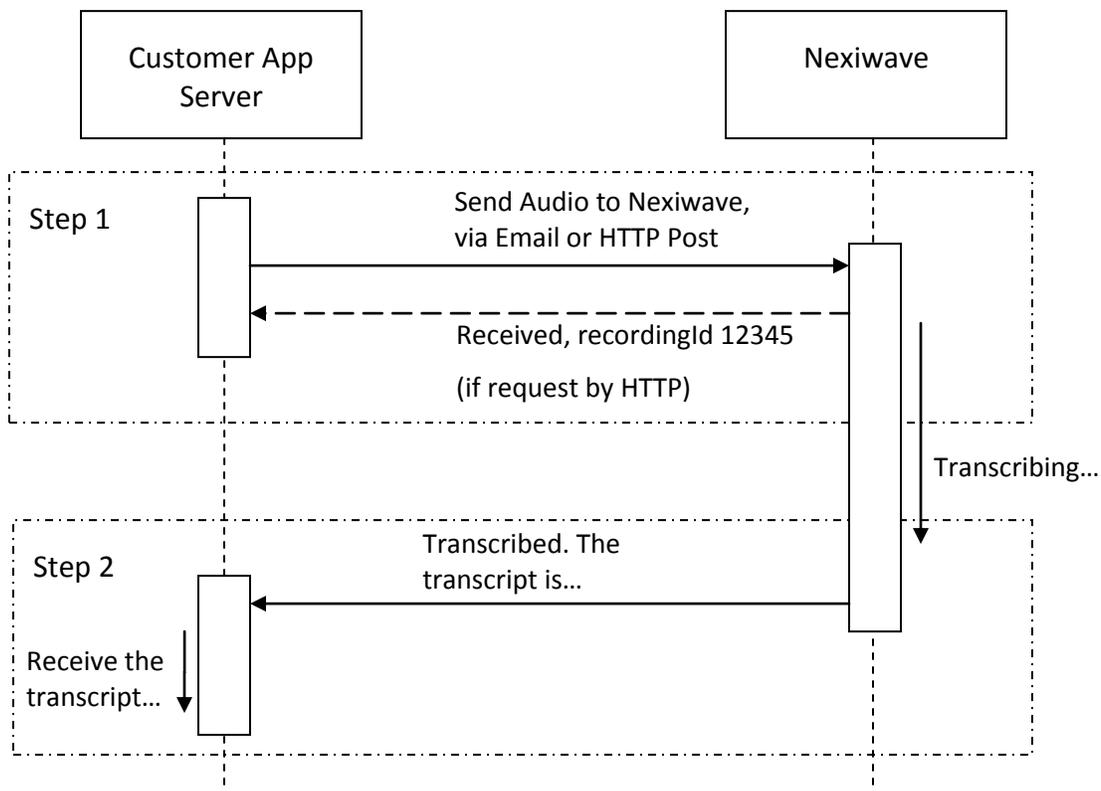
302	Moved Temporarily	Moved temporarily. Follow the provided redirect URL for transcription retrieval. Note: most HTTP library follows the redirect URL automatically.
400	Bad request	The uploaded audio file was empty.
401	Authentication Required	Authentication Required. Supply Nexiwave username/password
402	Payment required	Payment required.
415	Unsupported media type	Nexiwave was unable to extract audio from uploaded media file.
422	Unprocessable Entity	Nexiwave failed to transcribe the uploaded file.

4. Simple Callback API

Converting speech to text is a CPU and memory intensive task. Even with Nexiwave "Constant Response Time" feature (voicemail less than five minutes are always processed under three minutes), it may still take up to three minutes for transcription to finish. Instead of holding the connection open while the voicemail is being processed, Nexiwave can issue a callback to your server when the voicemail transcription processing is complete (success or failure). This is recommended for large volume enterprise integration.

4.1 Call Flow

Two simple steps are required:



4.1.1. Send Audio to Nexiwave

Audio can be posted to Nexiwave via simple HTTP post, with an additional parameter "**deliveryTarget**" to the request URL. The request will return as soon as the audio is received.

Example request URL:

```
wget --max-redirect=100 --post-file /data/audio/test.wav --header='Content-Type: audio/vnd.wav' --user= user@myemail.com -password= XYZ -O - 'https://api.nexiwave.com/recording/?response=application/json&transcriptFormat=html&externalKey=MYKEY123&deliveryTarget=https://mycompany.com/nexiwave123
```

The response will be like the synchronized call, but without the "text" field.

Sample response

```
{"recordingId":12345,"status":"SEND_ON_FINISH"}
```

4.1.1.1 Supported Callback Protocols

Protocol	Comments
HTTP/S	Deliver voicemail transcription to HTTP/S URL. Example: deliveryTarget=https://mycompany.com/nexiwave
SMS	Deliver voicemail transcription via SMS text message. Example: deliveryTarget=sms:12125551234 Note: only 10 or 11 North American phone numbers are supported.
MailTo	Deliver voicemail transcription to an Email address. Example: deliveryTarget=mailto:user@customer.com

4.1.2. Nexiwave Callback

As soon as the transcription is ready, Nexiwave will issue a callback to the **deliveryTarget** URL.

4.1.2.1 HTTP/S Callback

If the protocol of the deliveryTarget URL is "https" or "http", an HTTP post will be made to the callback URL, with the transcript encoded in the post body.

A sample Nexiwave HTTP Post Callback (some HTTP headers omitted for clarity):

```
POST /nexiwave123?recordingId=12345&externalKey=MYKEY123&status=FINISHED HTTP/1.1
Host: mycompany.com
Content-Length: 50
Content-Type: application/x-www-form-urlencoded

text=Hi%2C+my+name+is+Carla+calling+with+quick.%0A
```

The transcript and any other necessary parameters can be easily extracted from the callback.

Please note:

- Nexiwave expects the HTTP response code for the callback to be in the range of 200-299 (the typical success response range). If the response code is not in this range, Nexiwave will re-post the callback for up to five times, with increased interval. If no success HTTP response code received after re-posts, a warning email will be sent to your account email address.

4.1.2.2 SMS Callback

If the callback protocol is "sms", a SMS text message will be sent to the SMS number.

Sample SMS Text:

```
New Voicemail from (212) 555-1234 (00:30): Hi John, this is Nicole. Please call me back. Bye.
Powered by Nexiwave
```

4.1.2.3 Mailto Callback

If the callback protocol is "mailto", an email will be sent to the target email address. A default Nexiwave email template will be used.

Sample Email Message:

```
You have a voicemail from (212) 555-1234 Length: 00:21

Hi John, this is Nicole. Please call me back. Bye.

Powered by Nexiwave
```


5. Appendix A: Account Security

Nexiwave supports optional multiple layers of account safety protection. Please contact support@nexiwave.com for setup.

5.1 Strong Password

Nexiwave automatically generates strong random password for all accounts.

Your account is protected against: weak password and password guessing attacks.

5.2 IP Whitelisting

Nexiwave can restrict traffic to your account to a list of trusted IP.

Your account is protected against: password guessing attacks.

5.3 IP Blacklisting

Nexiwave automatically blocks IP addresses that attempted with too many failed login attempts.

Your account is protected against: password guessing attacks.

5.4 Two-way Strong SSL Authentication

Nexiwave supports the strongest point-to-point security protection for internet communication. Besides the default one-way SSL authentication, which is prone to exploits such as DNS hijacking, Nexiwave supports strong two-way 2048bit SSL authentication. In two-way SSL authentication, traffic to and from Nexiwave are protected not only with strong encryption, but also with server authentication. Your application can be certain that it is indeed communicating with Nexiwave. Nexiwave will also make sure that it is indeed communicating with your servers.

Your account is protected against: Man-In-The-Middle attacks, DNS Hijacking, etc.

6. Appendix B: Parameters References

6.1 Audio Submission Parameters

Table 1 Audio Submission Parameters

Parameter	Type	Description
externalKey	String	An external key from your system. Useful when you don't track the Nexiwave recordingId. Note: Nexiwave does NOT enforce the uniqueness of this parameter in your account.
deliveryTarget	String	A callback URL for Nexiwave to send back the transcript. Supported protocols: https, http, sms, mailto
transcriptFormat	String	Indicate the wanted transcript format. Possible values: html : Transcript in html format. Support keyword highlighting, phone number highlighting, etc. lines : Raw transcription text, one utterance per line. Default: the lines format (raw transcript format).
response	String	The response type: application/json : response will be json. application/raw-transcript : response will be the raw transcription. (valid only during Synchronized submission). Default: application/json
mediaTypeSuffix	String	Hint for the media type, such as mp3, wav, wmv, etc. This is a hint only. Useful only when Nexiwave is not able to extract audio.
auto-redirect	Boolean	Indicate the call to be synchronized call.
password	String	Required if not encoded as part of username.

statusNotifications	String	<p>A list of comma separated processing status (see Table 3). Note: status "FINISHED" is always included.</p> <p>For example: with this value START_PROCESSING,DECODING_IN_PROGRESS, Nexiwave will notify your callback URL when Nexiwave just reserved the recordingId for your request and will start processing (status "START_PROCESSING"). Nexiwave will also notify your callback URL with when the audio just scheduled for decoding (status "DECODING_IN_PROGRESS").</p>
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6.2 Response Parameters

These response parameters may exist both in Nexiwave synchronized response, as well as in the Callback request to your server:

Table 2 Response Parameters

Parameter	Type	Description
recordingId	Long	The recordingId.
status	String	The processing status of the recording. See section 4.3.
externalKey	String	External key as submitted with the audio.
text	String	The transcript. Only available if the recording has been processed.
audioTruncated	Boolean (only present if true)	Whether the audio was truncated due to account issues (insufficient balance, etc.). Only available if the recording has been processed.
lowQualityTranscript	Boolean (only present if true)	Whether the transcript was detected as low quality (e.g., low accuracy). Only available if the recording has been processed.
unsupportedLanguageDetected	Boolean (only present if true)	Whether the audio was detected as language that Nexiwave does not support.
detectedLanguage	String	The detected language code.
audioLenInMS	Long	The length of the audio in milliseconds. Only available if the recording has been processed.
extraInfo	String	Descriptive processing info.

7. Appendix C: Additional API Calls

7.1 Check the Status of a Recording

For very long audio files, it might be desired to actively check the status of a recording. The processing status of a recording can be obtained with this simple rest URL:

```
wget --user= user@myemail.com -password= XYZ -O -
'https://api.nexiwave.com/recording/<recordingId>/status'
```

A JSON response containing the status field will be returned:

```
{"status":"FINISHED","success":"true","responseTime":"1396228430611"}
```

The valid values for the status field are:

Table 3 Callback Status Variables

Value	Description
FINISHED	All processing has been finished for the recording, and the result has been delivered.
START_PROCESSING	Nexiwave received the request and started processing.
SEND_ON_FINISH	Transcript will be sent back on finish. (Initial response for callback case only.)
QUEUED_FOR_DECODING	The recording is in the decoding queue and waiting to be decoded.
DECODING_IN_PROGRESS	The recording is being decoded.
INVALID_AUDIO_SOURCE	The received audio was invalid. No audio can be extracted.
INSUFFICIENT_FUND	Processing rejected due to lack of payment.
RECORD_NOT_EXIST	The recording does not exist.
FAILED	The recording was received, but failed to be decoded.
UNKNOWN	Failed to determine the status of the recording.

For ease of use, the **recordingId** field can also be in the form of externalKey=**MY_KEY_123**.

Example 1: query by Nexiwave recordingId:

```
wget --user= user@myemail.com -password= XYZ -O -  
'https://api.nexiwave.com/recording/123456/status'
```

Example 2: query by your own key:

```
wget --user= user@myemail.com -password= XYZ -O -  
'https://api.nexiwave.com/recording/externalKey= MY_KEY_123/status'
```

(End of document)