

## Speech Recognition comes to the iPad

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Once the realm of science fiction, the last decade has seen the application of speech recognition technology in a wide range of situations. This speech-to-text technology has not only assisted the ordinary person in sending emails and word processing activities, but has been a huge productivity enhancer for the documentation needs of novelists, physicians, attorneys and other professions. For the



individual with physical limitations or person with some types of dyslexias, this technology has truly been a communication life-saver, providing not only text creation functionality, but also computer command and control capabilities. While speech recognition technology has been seen in mobile computing devices, this has largely been limited to stand-alone applications that are not integrated into the application where they might be most needed: an email application, a word processing document and the text entry box on a web page.

### Enter now the “new iPad”.

The 3<sup>rd</sup> generation iPad has taken the long needed plunge by providing background speech recognition in a process Apple calls “keyboard dictation”. The capability is present almost anywhere the virtual keyboard is present and is initiated simply by touching the small microphone icon on the keyboard and speaking.



Tap to begin dictation.

Although Apple isn't saying much beyond the fact that the process involves speech being "sent to Apple", it appears that the technology is a cloud-based process much like that employed by a variety of applications made by Nuance Communications, Inc., including Dragon Dictation and Dragon search. The idea is that your speech is captured, compressed, and sent to Apple where it is processed, converted to text, and then sent back. And all in the time it takes for you to blink an eye. It is my very strong suspicion, in fact, that Apple is using Nuance or Dragon-based speech recognition. But more power to them for picking the best – Nuance is the clear leader in this technology.

How well does it work? In a word – amazingly! It is highly accurate, fast, and almost ubiquitous on the iPad. I have tried it in emails, notes, word processing documents, web page URL entry fields and it works perfectly in all of these contexts.

### **Using iPad Keyboard Dictation**

What do you need to know in order to make 3<sup>rd</sup> generation iPad speech recognition (keyboard dictation) work for you? Here are some suggestions:

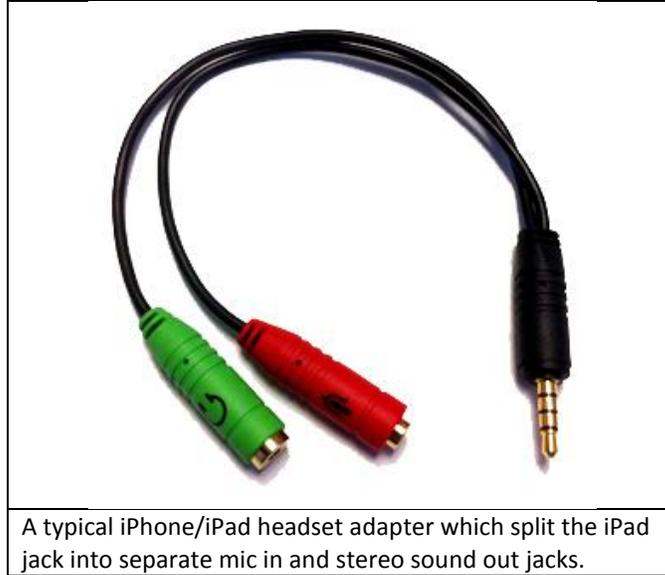
1. Activating it: If you aren't seeing the microphone icon on the keyboard, you may need to turn it on. Go to Settings > General > Keyboard > Dictation and turn it on.
2. Using it: Keyboard dictation is available almost everywhere the keyboard is available. In the rare place that it's not available, you'll see the keyboard but not the microphone icon. To use it, simply touch the microphone icon. You'll see a voice recognition icon show up (see below).



Simply talk (aiming your voice toward the microphone on the top of the iPad). When you're done with the dictation, touch the voice icon to end the capture. Within seconds your text will appear. Remember that it is necessary to say all punctuation, such as "period", "comma", "new line", "new paragraph", etc. See the table below for a compendium of common punctuation and commands which are recognized by the iPad's keyboard dictation.

	<b>Punctuation</b>	<b>Commands</b>
,	Comma	New line
.	Period	New paragraph (or Next Paragraph)
!	Exclamation point	Space bar
?	Question mark	Caps on
#	Pound sign	Caps off
:	Colon	All caps on
;	Semi-colon	All caps off
-	Dash (or hyphen)	No caps on
=	Equal sign	No caps off
/	Forward slash	No space
"	Open quote/begin quote	No space on
"	Close quote/end quote	No space off
(	Open parenthesis/left parenthesis	
)	Close parenthesis/right parenthesis	
\$	Dollar sign	
%	Percent sign	
:-)	Smiley face	
®	Registered sign	
©	Copyright sign	
™	Trademark sign	
*	Asterisk	

3. Keep in mind that your dictation time is not infinite. In my experience, dictation stops after just shy of 40 seconds of recording. So you need to do your dictation in 30 second or so chunks – no big deal. As soon as text has been
4. WiFi vs. 3G: We've tried it both way. The bottom line is that it works with both. If WiFi is available it will probably be utilized and will be quicker, but if you have a good 3G or LTE signal you should be fine as well.
5. Optimizing it: As accurate as it can be, keep in mind that speech recognition software doesn't understand content and the quality of the end-result is highly dependent upon a clean signal and clearly spoken words. Here are a few measures that will improve your accuracy:
  - Enunciate distinctly (don't mumble or slur your words)
  - Speak in phrases or complete sentences as much as possible (it helps to think ahead before you talk)
  - Minimize contaminating external noise (TV, Radio, screaming babies, etc.)
  - Speak closely to the microphone (the strength of a sound signal falls rapidly with distance)
  - Correct errors when they occur. Words of low certainty will have a dotted line underscore – if you hover over these words you will be given a choice of alternative selections from which to choose. As an alternative, manually change any errors. If the Apple speech recognition is truly based on the Nuance product, such changes are tracked and incorporated into your speech model, so similar errors will be less likely to occur in the future.
6. Special situations: If your situation or needs are extraordinary or if you truly need high levels of accuracy, you should consider the following:
  - A good quality headset microphone will provide improved accuracy and immunity from external noise compared with the on-board microphone. Such a microphone is best attached to the audio jack using a specialized "iPad headset adapter". See picture below.



Some microphones which we have specifically tested with the iPad 3 and which provide excellent results, include the following: the UmeVoice theBoom “O”, all of the Andrea NC 181 and 185 series microphones, Sennheiser ME3,

- If you already have a Bluetooth microphone, this will work with speech recognition on the iPad, but keep in mind that if the boom doesn’t extend most of the way to your mouth, the quality of the signal going into your iPad is not likely to be much different that using the on-board mic. A Bluetooth mic with an extended boom is a much better choice. Two Bluetooth microphones which I have tested and work well with speech recognition in the 3<sup>rd</sup> generation iPad are the UmeVoice theBoom “W” and the VXI Xpressway. Both are pictured below:



UmeVoice theBoom "W"	VXI Xpressway
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- USB Microphones: Apple says on their support web site that a microphone attached via the 30 pin dock connector will not drive speech recognition. We have tested this and have confirmed that when a USB microphone is plugged into the 30 pin dock connector (using the Apple camera connection kit), the iPad will no longer show a keyboard, let alone a keyboard with a dictation key. So unfortunately you will not be able to use a USB microphone with keyboard dictation on the new iPad.

If the iPad wasn't already the most revolutionary device to hit the market in the last decade, the addition of speech recognition has truly sealed its place in this category. The world is not just at your fingertips, but now at the tip of your tongue. Congratulations, Apple, on this great addition to the iPad.

For More information:

- Using a Microphone with the iPad (link to White Paper)
- [iPad User Manual from Apple](#)
- [Speech Recognition Solutions iPad Accessories Page](#)
- [Nuance Mobile Solutions site](#)