

# Verifying App Accessibility on iOS

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# About Accessibility Verification on iOS

By now, you've made your app accessible. But how can you be sure? You can test the accessibility by interacting with your app using the same screen-reading technology as the visually impaired. In this way, you replicate the accessible experience. You may even think of accessibility enhancements when you experience accessibility for yourself. You've already done the work, now see for yourself what the experience is like.

Continue reading to learn how to verify that your accessibility enhancements work as intended.

## At a Glance

You can test for accessibility on a physical device and in iOS Simulator.

## Learn How to Use VoiceOver

iOS ships with a screen-reading technology called *VoiceOver*. VoiceOver changes the way taps and swipes are interpreted by the system in order to augment usability for those who cannot see. Because VoiceOver lets you control your device in ways you're not used to, learning how to use it may seem daunting. But all it takes is the right gestures and a few usability tips.

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**Relevant Chapter:** [“Test Accessibility on Your Device with VoiceOver”](#) (page 6)

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## Learn How to Use Accessibility Inspector

A handy tool called Accessibility Inspector can help you debug a flawed accessibility implementation. Accessibility Inspector runs on your Mac inside iOS Simulator. After you enable the inspector, you can see the available information VoiceOver leverages.

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**Relevant Chapter:** [“Debug Accessibility in iOS Simulator with the Accessibility Inspector”](#) (page 13)

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## Prerequisites

This article assumes that you’ve already attempted to make your app accessible, as explained in the following documents:

- *Accessibility Programming Guide for iOS* —Describes how custom views can enhance accessibility.
- “Accessibility from the View Controller’s Perspective” in *View Controller Programming Guide for iOS* —Describes the view controller’s role of making an app accessible.

## See Also

Apple provides the following material that you may find helpful when implementing accessibility:

- *Formulaic* —Download the sample code project to see an accessible implementation in action.
- *WWDC 2012: Accessibility for iOS* —Watch to learn best practices for working with VoiceOver and how to integrate accessibility into your app.
- [iPhone User Guide](#) and [iPad User Guide](#)—Skim through the VoiceOver section for supplementary detail presented in a task-driven format.

# Test Accessibility on Your Device with VoiceOver

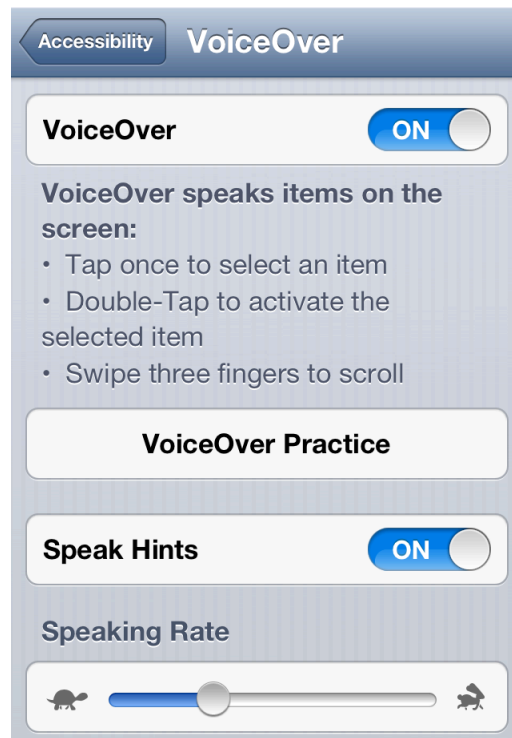
It's a good idea to test your app using VoiceOver, because you can experience the app in the same way that VoiceOver users will experience it. Using VoiceOver to run your app can expose problem areas—for example, confusing labels, unhelpful hints, and unreachable elements—that make your app less accessible.

**VoiceOver** is a sophisticated technology that provides many powerful features to users with disabilities. Although you don't need to become an expert VoiceOver user to test your app with it, you do need to know a handful of basic gestures. This chapter describes how to activate VoiceOver and use it to run your app.

## First Steps

Go to Settings > General > Accessibility > VoiceOver and tap the switch control to turn VoiceOver on, as shown in Figure 1-1. If you provide hints for any accessible elements in your app, check to make sure the Speak Hints switch is on (it is on by default). Before leaving VoiceOver settings, make sure the Speaking Rate slider is adjusted to an appropriate value.

Figure 1-1 Enable VoiceOver in Settings



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**Note:** Alternatively, you can turn on VoiceOver using the triple-click Home button setting, as described in [“Quickly Toggle VoiceOver by Triple-Clicking the Home Button”](#) (page 10).

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After you’ve turned VoiceOver on, you’ll notice that many familiar gestures have different effects. For example, a single tap causes VoiceOver to speak the selected item and a double tap activates the selected item. When an element is selected, VoiceOver draws a black rounded rectangle around it, which is called the *VoiceOver cursor*. VoiceOver users are confident navigating the interface because the VoiceOver cursor prevents them from triggering something unintentionally.

A complete list of VoiceOver gestures are detailed in Table 1-1.

**Table 1-1** VoiceOver gestures are different from standard gestures

VoiceOver gesture	Action
<b>Drag over the screen</b>	Select and speak each item as you touch it.
<b>One-finger tap</b>	Speak the selected item.
<b>One-finger swipe right or left</b>	Select the next or previous item. The order of elements is determined by their screen coordinates in a left-to-right, top-to-bottom fashion. To override this order, group accessible elements together with the <code>shouldGroupAccessibilityChildren</code> property.
<b>One-finger swipe up or down</b>	This gesture performs different actions depending on the context: <ul style="list-style-type: none"><li>• On an adjustable element, such as a slider, increment or decrement the value. Adjustable elements implement the <code>UIAccessibilityTraitAdjustable</code> trait.</li><li>• In a text view, move the insertion point backwards or forwards.</li></ul>
<b>One-finger double tap</b>	This gesture performs one of the following: <ul style="list-style-type: none"><li>• Activate the selected item.</li><li>• Toggle the selected switch.</li><li>• Unlock the lock screen when the Unlock switch is selected.</li></ul>
<b>Split-tap</b> —Touch and hold an element, then tap anywhere on the screen with another finger.	Combine the selection and activation gesture into one. Once familiar, this gesture is quick to input, especially when typing.
<b>One-finger double press</b> —With one finger, perform a double tap. During the second tap, continue to hold your finger against the screen.	Drag an item.
<b>Two-finger tap</b>	Pause reading. Two-finger tap again to resume reading.



VoiceOver gesture	Action
<b>Two-finger double tap</b> —Also called a Magic Tap.	Start and stop the current action. For example, a Magic Tap starts or pauses the stopwatch in the Clock app, and answers or hangs up a call in the Phone app. Not all views implement the Magic Tap; you must opt in to achieve this functionality. See “Responding to Special VoiceOver Gestures” in <i>View Controller Programming Guide for iOS</i> for more information.
<b>Two-finger scrub</b> —A Z-shaped gesture, also called an Escape.	Go back hierarchically. For example, an Escape traverses up, or pops, the navigation stack in a navigation controller. Not all views implement the Escape; you must opt in to achieve this functionality. See “Responding to Special VoiceOver Gestures” in <i>View Controller Programming Guide for iOS</i> for more information.
<b>Two-finger swipe up</b>	Read all accessible items from the top of the screen.
<b>Two-finger swipe down</b>	Read all accessible items from the current position.
<b>Two-finger pinch open</b>	Select text.
<b>Two-finger pinch close</b>	Deselect text.
<b>Three-finger swipe up or down</b>	Scroll a list or area of the screen.
<b>Three-finger swipe right or left</b>	Navigate to the next or previous page.
<b>Three-finger double tap</b> —If zoom is enabled, this becomes a three-finger triple tap.	Toggle speech. VoiceOver sound icons, or audio feedback, still play if the device is not muted.
<b>Three-finger triple tap</b> —If zoom is enabled, this becomes a three-finger quadruple tap.	Toggle Screen Curtain. See “ <a href="#">Emulate the VoiceOver Experience with the Screen Curtain</a> ” (page 12).
<b>Four-finger tap at top or bottom of screen</b>	Select the first or last accessible element on the screen.



**Tip:** A great place to practice VoiceOver gestures is in the VoiceOver Practice area found in Settings > General > Accessibility > VoiceOver. VoiceOver needs to be enabled for the VoiceOver Practice button to appear.

While testing your app, ensure that interactive controls and important pieces of information can be accessed by the VoiceOver cursor. UI decoration is irrelevant to the VoiceOver user, and need not be accessible.

**Important:** To avoid your interface from sounding robotic, make an effort to sculpt the prose of your accessibility descriptions. For guidelines on crafting accessibility labels and hints, see “Supply Accurate and Helpful Attribute Information” in *Accessibility Programming Guide for iOS*.

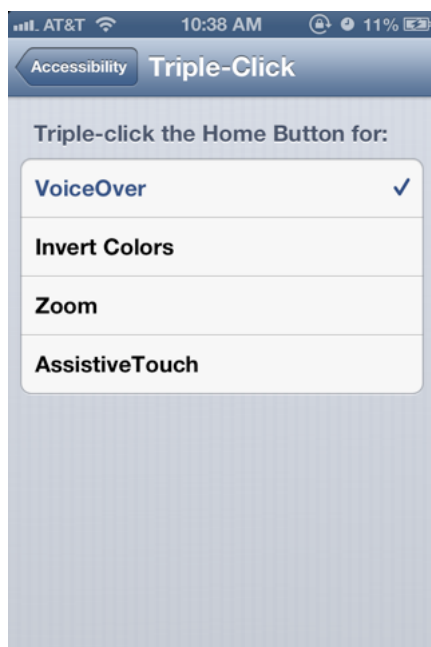
## VoiceOver Tips and Tricks

This section contains special VoiceOver shortcuts and gestures that can help you operate and master VoiceOver. With these tips, you can quickly change VoiceOver settings, jump to a certain element when many are presented onscreen, and use iOS from the perception of someone with a visual impairment.

### Quickly Toggle VoiceOver by Triple-Clicking the Home Button

You can toggle VoiceOver on and off quickly by setting it to the triple-click setting in Settings > General > Accessibility > Triple-Click, as shown in Figure 1-2. Then, by triple-clicking the Home button, you can toggle VoiceOver on or off. This is much quicker than navigating back to the Settings app every time you want to enable or disable VoiceOver, speeding up accessibility testing significantly while making it easy to disable VoiceOver when you’re not sure which gesture to use.

**Figure 1-2** Set the triple-click Home button setting to VoiceOver



## Fine-Tune Speech Granularity with the VoiceOver Rotor

You can break down the speech of VoiceOver to a per-word and even per-character basis by using the VoiceOver rotor, as shown in Figure 1-3. Rotate two fingers in a clockwise or counter-clockwise motion, as if turning a dial, to cycle through rotor options. After an option is selected, swipe up or down with one finger to progress to the previous or next value as indicated by the rotor option.

**Figure 1-3** Use the VoiceOver rotor to speak text word by word



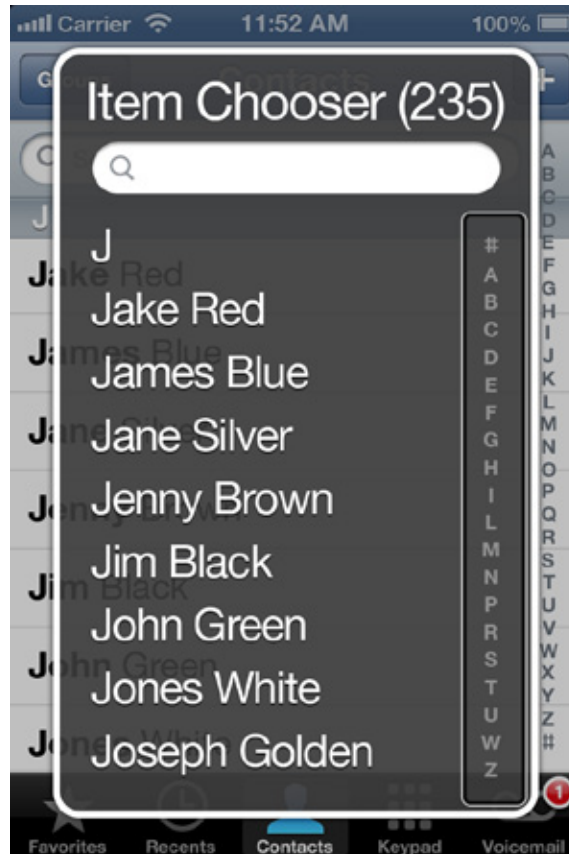
You can also add options to the rotor in Settings > General > Accessibility > VoiceOver > Rotor. For example, you can add the Speech Rate option to dynamically adjust the speaking rate from anywhere in iOS by swiping up or down. Rotor options are contextually sensitive and may not appear in all environments.

## Scroll Faster with the Item Chooser

The Item Chooser can help you quickly select the element you're looking for, particularly when there are a great number of elements in a view. With two fingers, triple-tap the screen to bring up the Item Chooser, as shown in Figure 1-4. Then, select the indexed list on the right and flick up or down to progress to the previous or next letter, respectively. This approach is useful for jumping to a particular point in a table view that doesn't

have an indexed list. The Item Chooser is also useful for searching items onscreen when there is no search field present, and for sorting an unordered list alphabetically. Dismiss the Item Chooser by performing the Escape command—a two-finger Z-shaped gesture.

Figure 1-4 The Item Chooser



## Emulate the VoiceOver Experience with the Screen Curtain

To simulate the experience a visually impaired user might have with your app, you can run it with the VoiceOver *screen curtain* in place. When you activate the screen curtain, VoiceOver turns off the device display so that no one can read. Testing with the display turned off obliges you to rely on the information VoiceOver speaks and removes the temptation to use your app as a sighted user would. To turn off the display while you use VoiceOver, triple-tap the screen with three fingers. To turn the display back on, perform the same gesture again.

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**Note:** If zoom is enabled, the screen curtain gesture becomes a three-finger quadruple tap.

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# Debug Accessibility in iOS Simulator with the Accessibility Inspector

The Accessibility Inspector displays accessibility information about each accessible element in an app. You can use the Accessibility Inspector to simulate VoiceOver interaction with the accessible elements in your app to examine the information they provide.

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**Note:** The Accessibility Inspector is helpful for testing the accessibility of your app during development, but it is no substitute for testing your app with VoiceOver on a physical device. For one thing, the Accessibility Inspector does not speak accessibility information, so you can't hear how your element descriptions will sound. Even though the Accessibility Inspector is ideal for quickly verifying that elements supply appropriate accessibility information, you should test your app on a device, with VoiceOver turned on, to make sure that it behaves as users expect. See [“Test Accessibility on Your Device with VoiceOver”](#) (page 6) for some tips on how to do this.

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The Accessibility Inspector runs in iOS Simulator and lets you see at a glance the accessibility label, value, hint (if applicable), traits, and frame coordinates for each element onscreen. You are also presented with a list of recently dispatched accessibility notifications.

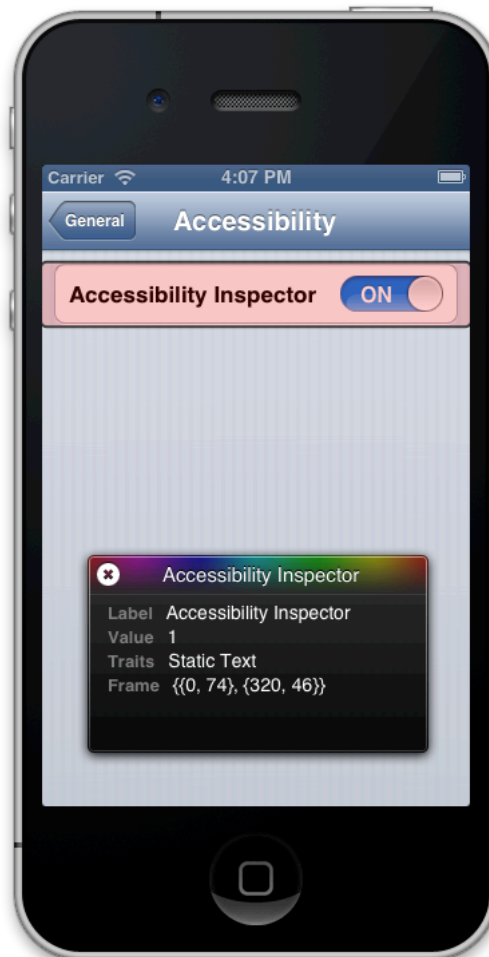
## To start Accessibility Inspector

1. Run your app in iOS Simulator (for more information on how to do this, see *iOS Simulator User Guide*).
2. In the simulated device environment, press the Home button to reveal the Home screen.
3. Open Settings and go to General > Accessibility.
4. Slide the Accessibility Inspector switch control to On. The Accessibility Inspector remains active until you turn it off, even if you quit and restart iOS Simulator.

When you run your app in iOS Simulator, a single-click simulates a single-tap, and scrolling with the mouse or keyboard simulates flicking or dragging with the finger. But when the Accessibility Inspector is active, a single-click focuses the inspector on an element; it does not simulate a tap on the element. To simulate a tap

on an element while the Accessibility Inspector is active, double-click the element. When the Accessibility Inspector focuses on an element, it draws a shaded box around it (similar to the VoiceOver cursor), as shown in Figure 2-1.

**Figure 2-1** The Accessibility Inspector draws a shaded rectangle around the selected element



To scroll, you must first deactivate the Accessibility Inspector. Then scroll as needed by dragging the mouse, and reactivate the inspector when you've reached the location you want in your app. To deactivate or reactivate the Accessibility Inspector, click the close control in the upper-left corner of the panel (the close control looks like a circle with an "X" in it). Clicking this control does not turn off the Accessibility Inspector; to turn it off, go to General > Accessibility > Accessibility Inspector and change the setting to Off.

When the Accessibility Inspector is not active, it appears as it does in Figure 2-2 and does not affect the way you interact with any simulated app features in iOS Simulator.

**Figure 2-2** The inactive appearance of the Accessibility Inspector



# Document Revision History

This table describes the changes to *Verifying App Accessibility on iOS*.

Date	Notes
2013-04-23	New document that describes how to ensure that an iOS app can be used by VoiceOver users.





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