



Wi-Fi network roaming with 802.11k, 802.11r, and 802.11v on iOS

Learn how iOS improves client roaming using Wi-Fi network standards.

iOS supports optimized client roaming on enterprise Wi-Fi networks. The 802.11 Working Group standards k, r, and v let clients roam more seamlessly from access point (AP) to AP within the same network.

802.11k

The 802.11k standard helps iOS to speed up its search for nearby APs that are available as roaming targets by creating an optimized list of channels. When the signal strength of the current AP weakens, your device will scan for target APs from this list.

802.11r

When your iOS device roams from one AP to another on the same network, 802.11r uses a feature called Fast Basic Service Set Transition (FT) to authenticate more quickly. FT works with both preshared key (PSK) and 802.1X authentication methods.

iOS 10 includes support for adaptive 802.11r on Cisco wireless networks. Adaptive 802.11r offers FT without the need to enable 802.11r on the configured Cisco wireless network.

802.11v

iOS supports the basic service set (BSS) transition-management functionality of 802.11v on certain devices. BSS transition management allows the network's control layer to influence client roaming behavior by providing it the load information of nearby access points. iOS takes this information into account when deciding among the possible roam targets.

When you combine 802.11k and 802.11v's ability to speed up the search for the best target AP with FT's faster AP association, apps can perform faster and you get a better Wi-Fi experience in iOS.

Learn more

Most Wi-Fi network hardware vendors support 802.11k, 802.11v, and 802.11r (FT). You need to enable and configure these features on your Wi-Fi router before your network can use them. Setup varies, so check your Wi-Fi router's manual for details.

The lists below show which iOS devices support 802.11k, 802.11r, and 802.11v. To use 802.11k and 802.11r, you need iOS 6 or later. To use 802.11v, you need iOS 7 or later. To use adaptive 802.11r, you need iOS 10 or later.

802.11k and r

- iPhone 4s and later
- iPad Pro
- iPad Air and later
- iPad mini and later
- iPad (3rd generation) and later
- iPod touch (5th generation) and later

Adaptive 802.11r

- iPhone 6s and later
- iPhone SE
- iPad Pro and later

802.11v

- iPhone 5c, iPhone 5s, and later
- iPad Pro
- iPad Air and later
- iPad mini 2 and later
- iPod touch (6th generation)

All iOS devices also support pairwise master key identifier caching (PMKID caching) with iOS 5.1 and later. You can use PMKID caching with some Cisco equipment to improve roaming between APs. Sticky key caching (SKC) is a form of PMKID caching. SKC is not equivalent to, nor compatible with, opportunistic key caching (OKC).

To support adaptive 802.11r, the Cisco network must be using controller code version 8.3 or later.

Find more information about [roaming with iOS 8 or later](#). Learn more about these standards from the IEEE website:

- [IEEE Standard: 802.11k](#)
- [IEEE Standard: 802.11r](#)
- [IEEE Standard: 802.11v](#)

Learn how to identify iOS device models:

- [iPhone](#)
- [iPad](#)
- [iPod touch](#)

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iPad



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iPod touch



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