

# CC3100 & CC3200 Provisioning

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## What is Provisioning

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Wi-Fi provisioning is the process of connecting a new Wi-Fi device (station) to a Wi-Fi network (access point). The provisioning process involves loading the station with the network name (often referred to as SSID) and its security credentials. The Wi-Fi security standard distinguishes between personal security, mostly used in homes and businesses, and enterprise security, used in large offices and campuses. Provisioning a station for enterprise security usually involves installing certificates, which are used to verify the integrity of the station and the network by interaction with a security server managed by the IT department. Personal Wi-Fi security, on the other hand, needs to be handled by users at home, and it simply involves typing a pre-defined password. To provide robust security, the password can be as long as 64 characters.

## TI Recommendation on Provisioning

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**Jun 21st, 2016 Update: The new AP Provisioning Release is TI's recommended provisioning method for new designs. Check out the Provisioning Features link below for details.**

## SimpleLink™ Wi-Fi® Provisioning

- TI SimpleLink™ Wi-Fi® devices allow flexibility in the method used to provision Wi-Fi SSID and security information for embedded systems, so that the needs of a wide range of end product designs can be met. Popular provisioning methods that are widely used in embedded systems include
  - AP mode: Initially booting the system as an Access Point
  - WPS: Wi-Fi Protected Setup
- TI recommends the use of one or both methods, which are supported in CC3100 and CC3200.
- In addition, SimpleLink™ Wi-Fi® supports SmartConfig™, a provisioning scheme developed by TI, that allows embedded systems to be configured by a smartphone in a single step.

**Note:** SmartConfig™ cannot provision embedded systems in all circumstances.

Therefore, products should not go to production implementing only SmartConfig™. Access point mode or WPS should be implemented and be used as a backup in case SmartConfig fails to provision the system.

## Provisioning Details

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Further details describing these supported provisioning approaches and their respective tradeoffs can be found on

- **White Paper:** [Wi-Fi provisioning on IoT applications \(http://www.ti.com/lit/wp/swry011/swry011.pdf\)](http://www.ti.com/lit/wp/swry011/swry011.pdf)

This document presents the main Wi-Fi provisioning methods that are available in the market and provide guidelines for choosing the right provisioning method for your product.

- **Wiki Page:** [SimpleLink\(TM\) Wi-Fi\(R\) CC31xx & CC32xx Provisioning Features](#)

This page presents more details about the provisioning features supported by the SimpleLink™ Wi-Fi<sup>(R)</sup> CC31xx and CC32xx devices. It provides links to the samples code, the mobile app, and provides how-to steps to provision a device.

## Tradeoffs between Provisioning options

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Let's review the main Wi-Fi provisioning methods that are available in the market and provide guidelines for choosing the right provisioning method for your product.

Provisioning Method	Access Point Mode	SmartConfig™	WPS
What's needed	Web browser	Android or iOS phone app	Push button on router
Networks supported	Any Network	Networks connections with MIMO, 5GHz, SISO-40MHz, and proprietary modulation schemes, are not supported	WPS enabled routers only
How many Steps	Multiple Steps	1 step	1 step (push button)
Number of devices configured	Configure one device	Configure multiple devices	Configure one device
Home network connection	Phone must disconnect from home network	Phone stays connected to the home network	N/A
Secure	Can be secure	Can be secure	Not secured
Remote App	Not Required	Required Supported by Android 4.2+, and iOS 6+	N/A
Additional Notes	N/A	SSID in Chinese or Asian characters are not recognized	N/A

- Each provisioning method has its merits and limitations.
- Since no provisioning method is perfect, a good practical approach would be to support more than one option in any given product. This would ensure maximum provisioning robustness of the final product.

 **Note: Products with SmartConfig, should also have AP mode or WPS as provisioning fall backs**

## Provisioning Methods

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### Wi-Fi Protected Setup (WPS)

Wi-Fi Protected Setup (WPS) is the only industry standard available today for provisioning of headless devices. It was introduced by the Wi-Fi Alliance in 2006 as an easy and secure method to provision devices without knowing the network name and without typing long passwords. The standard defines two mandatory methods for WPS-enabled Access Points (APs): Personal Identification Number (PIN) method and PushButton-Connect (PBC) method

### Access Point (AP) Mode

- Access Point (AP) mode is the most common provisioning method today for headless devices. In AP mode the un-provisioned device wakes-up initially as an AP with an SSID defined by the equipment manufacturer. Before trying to connect to the home network for the first time, the un-provisioned device creates a network of its own, allowing a PC or a smart phone to connect to it directly to facilitate its initial configuration.

## SmartConfig™ Technology

SmartConfig technology is a TI proprietary provisioning method designed for headless devices introduced in 2012. It uses a mobile app to broadcast the network credentials from a smartphone, or a tablet, to an unprovisioned TI Wi-Fi device. When SmartConfig is triggered in the un-provisioned device, it enters a special scan mode, waiting to pick up the network information that is being broadcasted by the phone app. The phone needs to be connected to a Wi-Fi network to be able to transmit the SmartConfig signal over the air. Typically this is the same home network onto which the new device is going to be provisioned.

## Wireless Accessory Configuration (WAC)

The Wireless Accessory Configuration (WAC) feature is an Apple MFi licensed technology designed for MFi accessories that connect to iPod, iPhone and iPad. MFi accessories that support WAC can be easily configured by an iPod, iPhone and iPad, without requiring the user to type in the network name and password. Detailed information about the WAC feature is available to Apple MFi Development and Manufacturing licensees.

# Links

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