WICED Studio

WICED™ – Wi-Fi Onboarding

Doc. No.: 002-20920 Rev. **

Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709
www.cypress.com

Contents

About This Document

The Wi-Fi Onboarding application is a reliable, secure, and easy-to-use onboarding tool meant to provision standalone WICED Wi-Fi devices. There are two components, an app running on the WICED device, and a peer application running on an iOS device.

Acronyms and Abbreviations

In most cases, acronyms and abbreviations are defined on first use.

For a comprehensive list of acronyms and other terms used in Cypress documents, go to www.cypress.com/glossary.

IoT Resources and Technical Support

Cypress provides a wealth of data at www.cypress.com/internet-things-iot to help you select the right IoT device for your design, and quickly and effectively integrate the device into your design. Cypress provides customer access to a wide range of information, including technical documentation, schematic diagrams, product bill of materials, PCB layout information, and software updates. Customers can acquire technical documentation and software from the Cypress Support Community website (community.cypress.com/).

WICED App Functionality

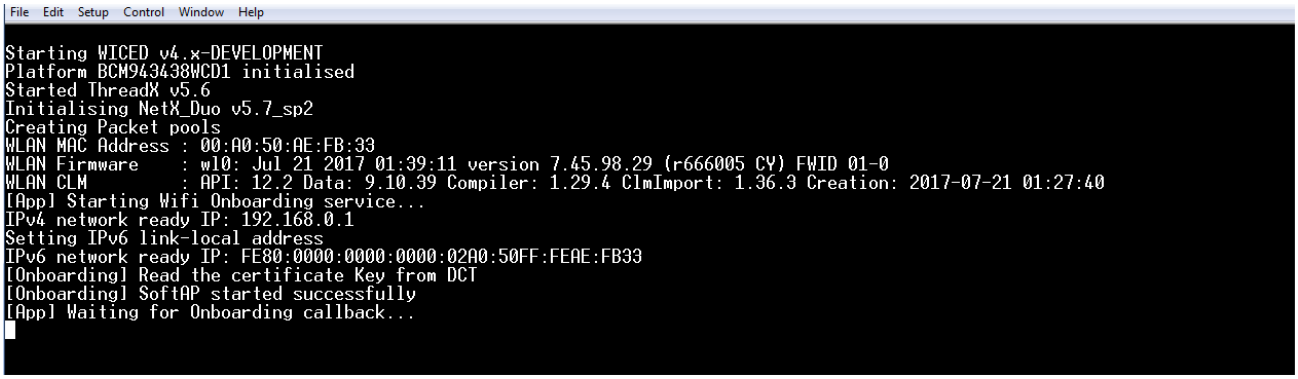
- Reads Wi-Fi network configuration from DCT and attempts to connect to the network
- Upon failure to join the network, WICED device starts up in softAP mode (with vendor IE) and launches the HTTPS server
- When the iOS app connects over HTTPS (secure connection) and sends a RESTful command, the network credential values are received. The WICED device will attempt to connect to the network and will respond with the result over another HTTP RESTful command.

iOS App Functionality

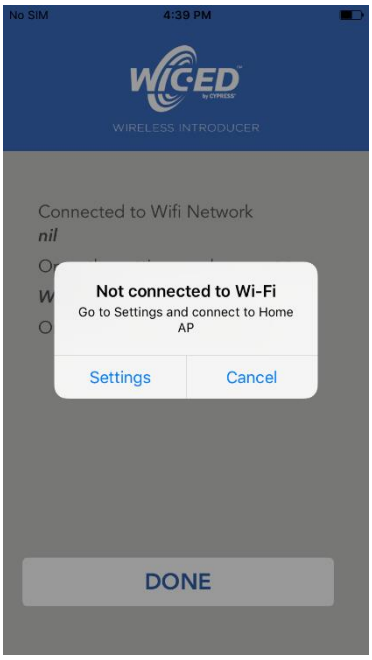
- Scans for a WICED device based on vendor IE
- Connects to the WICED device and allows user to enter network credentials for the currently connected network
- Encrypts network credentials and transmit using HTTP RESTful command
- Indicates the success or failure state of the WICED device network connection and allows for re-entering credentials upon connection failure

1 Step-by-Step Usage Guide

1. Use an OS X system to install the iOS Demo App (`WicedWiFiOnboarding`) onto an iOS device. The files are located at *<WICED_SDK>/apps/demo/wifi_onboarding/peerapps/iOS*.
2. Compile and download the wifi_onboarding app onto a WICED device using the target *demo.wifi_onboarding-<platform> download run*.
3. Open a terminal to view the output. Since Wi-Fi network credentials were not edited in *wifi_config_dct*, the connection will fail and the WICED device will start in softAP mode and launch the HTTPS server. You should see an output similar to the following figure.

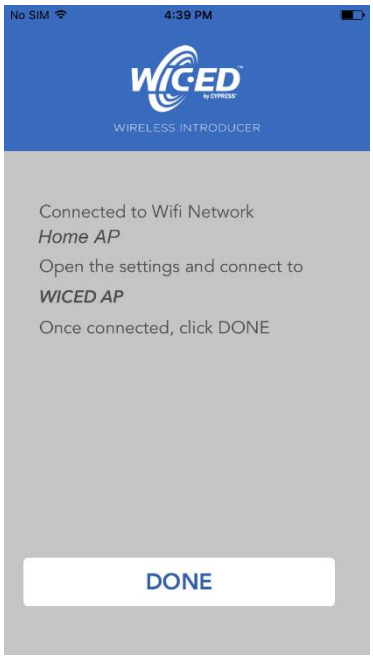


4. On the iOS device, connect to the Wi-Fi AP that you would like the WICED device to connect to. Open the Wi-Fi Onboarding application and you should be greeted with the following splash screen.

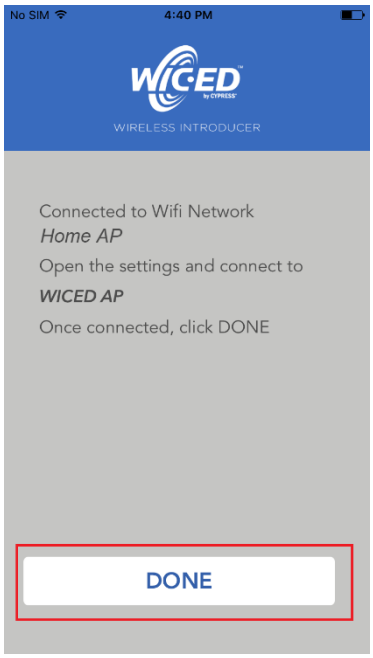


5. If you are connected to the Wi-Fi AP at home, you should see the following screen. The WICED Onboarding application shall store the SSID access point of the Home access point (for the next onboarding step).

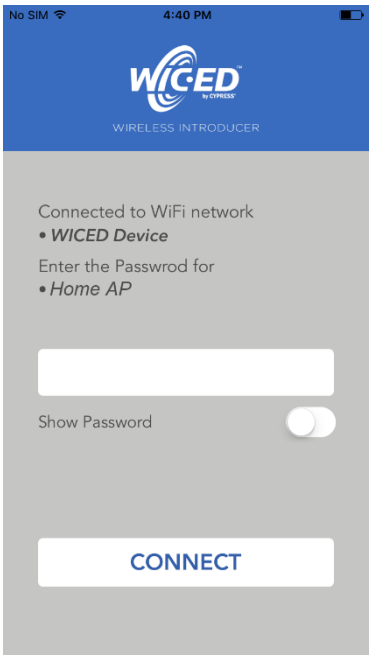
Note: The application uses iOS APIs to fetch the currently connected AP. From iOS12, the APIs used to access WiFi interface have been disabled for Apple developers, by default. To access these APIs, you must enroll in the Apple Developer program (ADP). To use these WiFi APIs in XCode, go to **Project Settings → Select your App Target**. Go to the **Capabilities** tab and enable the **Access WiFi Information** switch.

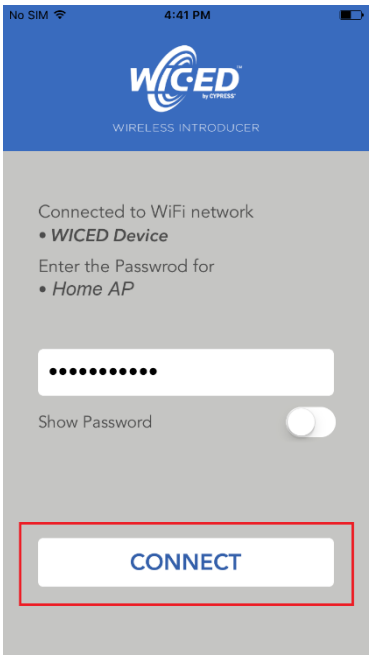


6. Open iOS Settings, disconnect from the Home AP and scan for WICED AP. WICED AP is the SSID of the WICED device to be onboarded. After connecting to the WICED AP, bring the Onboarding app to the foreground and click **DONE**.

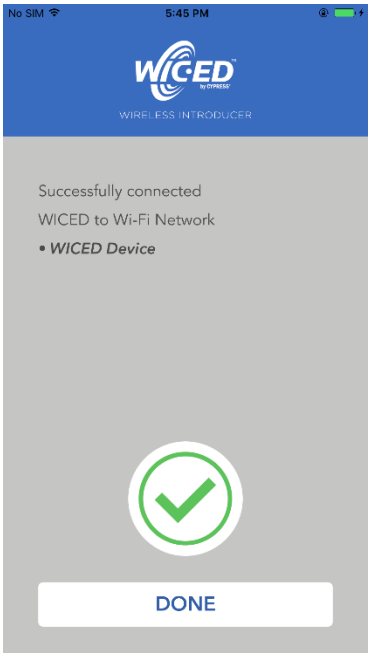


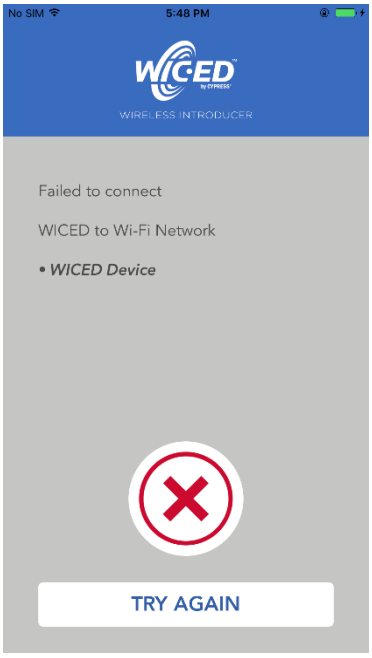
Enter the Wi-Fi AP passphrase of the Home AP and press **CONNECT**.





7. The Wi-Fi network credentials will be sent to the WICED device over HTTPS connection and the connection result will be pushed back to the iOS device. If the connection fails, press **TRY AGAIN** to re-enter the passphrase.





8. Upon successful connection, the network credentials will be saved to the DCT.

```
Starting WICED v4.x-DEVELOPMENT
Platform BCM943438WCD1 initialised
Started ThreadX v5.6
Initialising NetX_Duo v5.7_sp2
Creating Packet pools
WLAN MAC Address : 00:A0:50:AE:FB:33
WLAN Firmware    : w10: Jul 21 2017 01:39:11 version 7.45.98.29 (r666005 CY) FWID 01-0
WLAN CLM         : API: 12.2 Data: 9.10.39 Compiler: 1.29.4 ClmImport: 1.36.3 Creation: 2017-07-21 01:27:40
[App] Normal Application start
Joining : Home AP
Successfully joined : Home AP
Obtaining IPv4 address via DHCP
DHCP CLIENT hostname WICED IP
IPv4 network ready IP: 192.168.1.119
Setting IPv6 link-local address
IPv6 network ready IP: FE80:0000:0000:0000:02A0:50FF:FEAE:FB33
[App] Started STA successfully with saved configuration
```

```
[Onboarding] Extracted SSID name: Home AP (len:6)
[Onboarding] Extracted SSID passphrase: myhomeap123 (len:11)
[Onboarding] SSID credentials received...Initiating STA mode
[Onboarding]  Trying to fetch SSID details(attempt# 0)
Joining : Home AP
[Onboarding] Onboardee state: 3
Successfully joined : Home AP
Obtaining IPv4 address via DHCP
DHCP CLIENT hostname WICED IP
[Onboarding] Onboardee state: 3
IPv4 network ready IP: 192.168.1.119
Setting IPv6 link-local address
IPv6 network ready IP: FE80:0000:0000:0000:02A0:50FF:FEAE:FB33
[Onboarding] Started STA successfully
```

9. When rebooting the WICED device, since the DCT has the configured network credentials, the HTTPS server will not be started and WICED will boot up in STA mode.

Note: The WICED Onboarding application may be modified to reset the network credentials through user button press. The device will reboot in configurable mode with softAP running and launch the HTTPS server.

Document Revision History

Document Title: WICED™ – Wi-Fi Onboarding

Document Number: 002-20920

Revision	ECN	Issue Date	Description of Change
**	5862846	08/24/2017	Initial release

Worldwide Sales and Design Support

Cypress maintains a worldwide network of offices, solution centers, manufacturer's representatives, and distributors. To find the office closest to you, visit us at Cypress Locations.

Products

ARM® Cortex® Microcontrollers	cypress.com/arm
Automotive	cypress.com/automotive
Clocks & Buffers	cypress.com/clocks
Interface	cypress.com/interface
Internet of Things	cypress.com/iot
Memory	cypress.com/memory
Microcontrollers	cypress.com/mcu
PSoC	cypress.com/psoc
Power Management ICs	cypress.com/pmic
Touch Sensing	cypress.com/touch
USB Controllers	cypress.com/usb
Wireless Connectivity	cypress.com/wireless

PSoC® Solutions

PSoC 1 | PSoC 3 | PSoC 4 | PSoC 5LP | PSoC 6

Cypress Developer Community

Forums | WICED IOT Forums | Projects | Videos | Blogs | Training | Components

Technical Support

cypress.com/support

Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709