



This document gives an overview of the Cypress video training series “WICED Wi-Fi 101: How to Create IoT Devices using the Cypress WICED Ecosystem”

INTRODUCTION/PREREQUISITES

Prerequisites include:

- Solid fundamentals in C-Programming (data types, operators, expressions, control flow, functions, program structure, pointers and arrays, data structures, multi-file module programming)
- Some experience with standard MCU concepts and peripherals (Serial communication, PWMs, ADCs, etc.)

ASSUMPTIONS

In other presentations, Cypress presents compelling data that:

- Cypress has the most robust Wi-Fi in terms of RF, Chips, Power, Stability, and Partner Integration
- You should use a partner and buy modules (i.e. you should NOT try to design using bare chips)
- You should use a Cloud partner (e.g. AWS, IBM, Ali, etc.)

Therefore, we are not going to address any of those topics in this series.

WHAT THIS CLASS INCLUDES

- A discussion of WICED
- A tour of the WICED Wi-Fi ecosystem (Chips, Modules, WICED Studio IDE, Software Development Kit (SDK), Forum, etc.)
- Using the WICED SDK to create an IoT device by connecting common MCU I/O peripherals to the Cloud
- An introduction to the TCP/IP Network Stack
- An introduction to Wi-Fi
- An introduction to common cloud application protocols: HTTP, MQTT, COAP, AMQP
- An introduction to JSON and REST
- An introduction to a cloud provider (e.g. Amazon AWS, IBM Bluemix, Microsoft Azure) and a taste of their programming model.

WHAT THIS CLASS DOES NOT INCLUDE

- A C-programming primer
- A detailed examination of Wi-Fi or RF Parameters
- Using WICED Chip-on-board
- Advanced network programming
- An introduction to Bluetooth or ZigBee



- A discussion of Linux-integrated WICED
- A discussion of how to pick the correct Wi-Fi Module
- A detailed examination of MCU peripherals
- A tutorial of the advanced uses of WICED (Streaming Audio, Bluetooth/Wi-Fi Combos, TCP/IP Bridging/Routing, Wi-Fi Station Introducers, BLE Introducers)

OVERVIEW OF THE CHAPTERS

#	Chapter	Description
1	Overview of the WICED IDE	A tour of the WICED IDE, including location of documentations, examples, etc.
2	Peripherals	How to create a new project and use chip peripherals such as GPIOs, interrupts, UART, I2C, etc. The basic process of building and programming a project is introduced. The platform directory is covered.
3	RTOS	How to use the Thread-X RTOS in a WICED chip. Tasks, semaphores, mutex, queues, and timers are covered. The debugger is also introduced.
4	Library	An introduction to WICED libraries that can be used for file systems, graphics OLEDs, audio, cryptography, and more. Detailed use is shown for the graphics OLED library and JSON parser libraries.
5	Wi-Fi	How to connect to and interact with Wi-Fi access points. The TCP/IP networking stack and other basics of WiFi networking are discussed.
6	TCP/IP Sockets-TLS	Establishing (secure) communication using TCP/IP Sockets, sending and receiving data.
7a	Cloud	An introduction to cloud Application Layer protocols (HTTP, MQTT, AMQP, COAP)
7b	HTTP	Using HTTP in WICED
7c	MQTT-AWS	Using MQTT in WICED with Amazon Web Services (AWS)
8	Project	IoT Weather Station

Details of the shield board used in the class can be found [here](#). It is not necessary to have the shield board to do this training.

A glossary of terms can be found [here](#).