



CycloneTCP is a dual IPv4/IPv6 stack dedicated to embedded applications. CycloneTCP conforms to RFC standards and offers seamless interoperability with existing TCP/IP systems. By supporting IPv6, CycloneTCP eases deployment of next-generation Internet. The stack is distributed as a full ANSI C and highly maintainable source code. CycloneTCP is available either as open source (GPLv2) or under a commercial license.

## Main Features

- Dual stack (IPv4 and/or IPv6)
- Built-in support for multiple network interfaces
- BSD style socket API
- Blocking/non-blocking socket operation and event-driven functions (select and poll)
- Efficient data transfer through zero copy
- Well-crafted TCP module with selective acknowledgement (SACK) and congestion control
- Raw socket interface
- Multicast support (IGMPv2 and MLDv1)
- IP fragmentation and reassembly support
- Flexible memory footprint. Built-time configuration to embed only the necessary features
- High throughput
- Off-load checksum calculation (when supported by hardware) to accelerate IP/TCP/UDP/ICMP checksum generation and verification ★
- Configurable memory model : Static memory pool or heap memory allocation
- Dialog-based configuration wizard ★
- Portable architecture (no processor dependencies)

- Straightforward port to any RTOS
- Debugging and trace functionality to ease development and integration
- Highly maintainable source code
- Supports industry-standard microcontrollers with built-in MAC as well as standalone Ethernet controllers
- DHCP and SLAAC for dynamic address assignment and auto-configuration
- Host name resolution (DNS client)

## Add-On Modules

- Standard Internet services (Echo, Discard, Chargen and Daytime)
- SMTP client for sending e-mails
- Web server with Server-Sides Includes and CGI scripting for dynamic contents
- FTP client and server
- SSL/TLS library for securing data transfer (CycloneSSL)
- DHCPv6 client and relay agent
- Icecast/SHOUTcast client for streaming audio over the Internet

## Supported Devices

Microcontrollers with 10/100 Ethernet MAC:

|                     |                                     |
|---------------------|-------------------------------------|
| Atmel®              | SAM3X<br>SAM4E<br>SAM7X<br>SAM9263  |
| NXP®                | LPC175x<br>LPC176x<br>LPC23xx       |
| STMicroelectronics® | STM32F107<br>STM32F2x7<br>STM32F4x7 |
| Texas Instruments®  | LM3S6000<br>LM3S9000                |

Standalone 10/100 Ethernet Controllers:

|            |            |
|------------|------------|
| Davicom®   | DM9000A/B  |
| Micrel®    | KSZ8851    |
| Microchip® | ENC624J600 |

Wi-Fi® modules (802.11b/g):

|            |              |
|------------|--------------|
| Microchip® | MRF24WB0MA/B |
|------------|--------------|

★ Available Q4 2013

## Reference Standards

### **Network Layer (IPv4)**

- RFC 791: Internet Protocol Specification
- RFC 815: IP Datagram Reassembly Algorithms
- RFC 826: Ethernet Address Resolution Protocol
- RFC 792: Internet Control Message Protocol Specification
- RFC 1112: Host Extensions for IP Multicasting
- RFC 2236: Internet Group Management Protocol, Version 2
- RFC 2113: IP Router Alert Option
- RFC 1122: Requirements for Internet Hosts - Communication Layers

### **Network Layer (IPv6)**

- RFC 2460: Internet Protocol, Version 6 (IPv6) Specification
- RFC 2464: Transmission of IPv6 Packets over Ethernet Networks
- RFC 4291: IP Version 6 Addressing Architecture
- RFC 4294: IPv6 Node Requirements
- RFC 4443: Internet Control Message Protocol Version 6 (ICMPv6) Specification
- RFC 4861: Neighbor Discovery for IP version 6 (IPv6)
- RFC 4862: IPv6 Stateless Address Autoconfiguration
- RFC 2710: Multicast Listener Discovery (MLD) for IPv6
- RFC 2711: IPv6 Router Alert Option
- RFC 3493: Basic Socket Interface Extensions for IPv6
- RFC 3484: Default Address Selection for Internet Protocol version 6 (IPv6)

### **Transport Layer**

- RFC 768: User Datagram Protocol
- RFC 793: Transmission Control Protocol
- RFC 2018: TCP Selective Acknowledgment Options
- RFC 5681: TCP Congestion Control
- RFC 6298: Computing TCP's Retransmission Timer

### **Application Layer**

- RFC 2131: Dynamic Host Configuration Protocol
- RFC 2132: DHCP Options and BOOTP Vendor Extensions
- RFC 3315: Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3646: DNS Configuration options for DHCPv6
- RFC 862: Echo Protocol
- RFC 863: Discard Protocol
- RFC 864: Character Generator Protocol
- RFC 1035: Domain Names – Implementation and Specification
- RFC 5321: Simple Mail Transfer Protocol
- RFC 4954: SMTP Service Extension for Authentication
- RFC 3207: SMTP Service Extension for Secure SMTP over Transport Layer Security
- RFC 1945: Hypertext Transfer Protocol - HTTP/1.0
- RFC 2616: Hypertext Transfer Protocol - HTTP/1.1
- RFC 959: File Transfer Protocol (FTP)