



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

## Add-On Modules

- Auto-IP for dynamic configuration of IPv4 address
- DHCP client
- SLAAC for dynamic IPv6 address assignment and auto-configuration
- DHCPv6 client and relay agent
- Host name resolution (DNS, mDNS and NetBIOS Name Service)
- mDNS and NetBIOS responder
- DNS service discovery (DNS-SD)
- SMTP client for sending e-mails
- FTP client and server
- HTTP server with Server-Sides Includes and CGI scripting for dynamic contents
- HTTPS server
- SNTP client (Network time)
- Standard Internet services (Echo, Discard, Chargen and Daytime)
- PPP (Point-to-Point) protocol
- Icecast/SHOUTcast client for streaming audio over the Internet

## Supported Cortus<sup>®</sup> Cores

Processor IP cores with 10/100 Ethernet MAC:

APS23	Ultra Low Power, Excellent Code Density
APS25	High performance, Excellent Code Density
APS1	Cost Effective Microcontroller
APS3R	Low Energy Core
APS5	High Performance Core
FPS6	Embedded Control, with Floating Point Unit

## Related products

- CycloneSSL (SSL/TLS library)
- CycloneCrypto (cryptographic toolkit)

## Reference Standards

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

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

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

- RFC 2460: Internet Protocol, Version 6 (IPv6) Specification
- RFC 2464: Transmission of IPv6 Packets over Ethernet Networks
- RFC 2710: Multicast Listener Discovery (MLD) for IPv6
- RFC 3484: Default Address Selection for Internet Protocol version 6 (IPv6)
- RFC 3493: Basic Socket Interface Extensions for IPv6
- 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

### **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 959: File Transfer Protocol (FTP)
- RFC 1035: Domain Names – Implementation and Specification
- RFC 1945: Hypertext Transfer Protocol - HTTP/1.0
- RFC 2131: Dynamic Host Configuration Protocol
- RFC 2132: DHCP Options and BOOTP Vendor Extensions
- RFC 2616: Hypertext Transfer Protocol - HTTP/1.1
- RFC 2617: HTTP Authentication: Basic and Digest Access Authentication
- RFC 2818: HTTP Over TLS
- RFC 3207: SMTP Service Extension for Secure SMTP over Transport Layer Security
- RFC 3315: Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3646: DNS Configuration options for DHCPv6
- RFC 4954: SMTP Service Extension for Authentication
- RFC 5321: Simple Mail Transfer Protocol
- RFC 6762: Multicast DNS



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