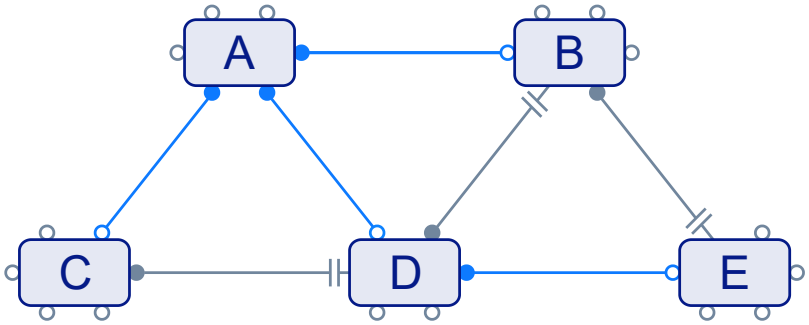
CycloneSTP

CycloneSTP is an implementation of STP (Spanning Tree Protocol) and RSTP (Rapid Spanning Tree Protocol) algorithms suitable for resource-constrained microcontrollers. STP and RSTP are network protocols that can be implemented on Ethernet bridges to ensure loop-free LAN topologies. Spanning Tree Protocol allows a network design with multiple physical paths and backup links for redundancy purpose. If a link fails, STP or RSTP automatically reconfigures the network to establish a new loop-free tree topology.



Main Features

- STP (Spanning Tree Protocol) implementation
- RSTP (Rapid Spanning Tree Protocol) implementation for faster convergence
- Prevents creation of loops
- Automatic reconfiguration of the tree in case of topology changes
- RSTP is designated to be backward compatible with STP
- Comprehensive user API to configure Spanning Tree Protocol parameters
- Supports BRIDGE-MIB (RFC 4188) to remotely manage and monitor STP operation
- Support RSTP-MIB (RFC 4318) to remotely manage RSTP-specific parameters
- Flexible memory footprint. Built-time configuration to embed only the necessary features
- Portable architecture (no processor dependencies)
- The library is distributed as a full ANSI C and highly maintainable source code

Supported Processors

- ARM Cortex-M3
- ARM Cortex-M33
- ARM Cortex-M4
- ARM Cortex-M7
- ARM Cortex-R4
- ARM Cortex-A5
- ARM Cortex-A8
- ARM Cortex-A9
- Legacy ARM7TDMI / ARM926EJ-S
- RISC-V
- MIPS M4K
- MIPS microAptiv
- Infineon TriCore AURIX
- PowerPC e200
- Coldfire V2
- RX600
- AVR32
- Xtensa LX6

Supported Compilers / Toolchains

- GNU GCC / Makefile
- AC6 System Workbench for STM32 (SW4STM32)
- HighTec Toolset for TriCore
- IAR Embedded Workbench
- Infineon DAVE
- Keil MDK-ARM
- Microchip Studio (Atmel Studio) & MPLAB X
- Microsoft Visual Studio
- NXP MCUXpresso
- Renesas e2Studio
- Segger Embedded Studio
- ST STM32CubeIDE & TrueSTUDIO
- Tasking VX-Compiler for TriCore
- TI Code Composer Studio (CSS)

Supported Operating Systems

- Amazon FreeRTOS
- ChibiOS/RT
- CMSIS-RTOS
- CMSIS-RTOS2
- CMX-RTX
- Keil RTXv4 and RTXv5
- Micrium µC/OS-II and µC/OS-III
- Microsoft Azure RTOS (ThreadX)
- Segger embOS
- TI-RTOS (SYS/BIOS)
- Zephyr RTOS
- Bare Metal programming (without RTOS)

Supported Ethernet Switches

CycloneSTP supports 100Base-TX and Gigabit Ethernet switches from IC+, Marvell and Microchip.

Manufacturer	Part Number	Ports	Speed
IC+	IP175C	5	100Base-TX
Marvell	88E6060	6	100Base-TX
Microchip	KSZ8463	3	100Base-TX
	KSZ8563	3	100Base-TX
	KSZ8565	5	100Base-TX
	KSZ8567	7	100Base-TX
	KSZ8863	3	100Base-TX
	KSZ8864	4	100Base-TX
	KSZ8873	3	100Base-TX
	KSZ8895	5	100Base-TX
	KSZ9477	7	1000Base-T
	KSZ9563	3	1000Base-T
	KSZ9893	3	1000Base-T
	KSZ9896	6	1000Base-T
	KSZ9897	7	1000Base-T
	LAN9353	3	100Base-TX
	LAN9354	3	100Base-TX
	LAN9355	3	100Base-TX
	LAN9303	3	100Base-TX

IEEE

- IEEE Std 802.1D-1998: IEEE Standard for Local Area Network MAC (Media Access Control) Bridges
- IEEE Std 802.1D-2004: IEEE Standard for Local and metropolitan area networks: Media Access Control (MAC) Bridges

RFC

- RFC 4188: Definitions of Managed Objects for Bridges
- RFC 4318: Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol