



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

Coming soon: MSTP (Multiple Spanning Tree Protocol) implementation

Supported Processors

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

Supported Compilers / Toolchains

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

Supported Operating Systems

- Amazon FreeRTOS
- ChibiOS/RT
- CMSIS-RTOS
- CMSIS-RTOS2 (RTX v5 and FreeRTOS)
- Keil RTX
- Micrium μ C/OS-II
- Micrium μ C/OS-III
- Segger embOS
- SYS/BIOS (TI-RTOS)
- Bare Metal programming (without RTOS)

Supported Ethernet Switches

CycloneSTP supports 10/100 and Gigabit Ethernet switches from IC+, Marvell and Microchip:

Manufacturer	Part Number	Number of Ports	Speed
IC+	IP175C	5	10/100
Marvell	88E6060	6	10/100
Microchip	KSZ8463	3	10/100
	KSZ8563	3	10/100
	KSZ8863	3	10/100
	KSZ8864	4	10/100
	KSZ8873	3	10/100
	KSZ8895	5	10/100
	KSZ9477	7	10/100/1000
	KSZ9563	3	10/100/1000
	KSZ9893	3	10/100/1000
	KSZ9897	7	10/100/1000
	LAN9303	3	10/100

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