

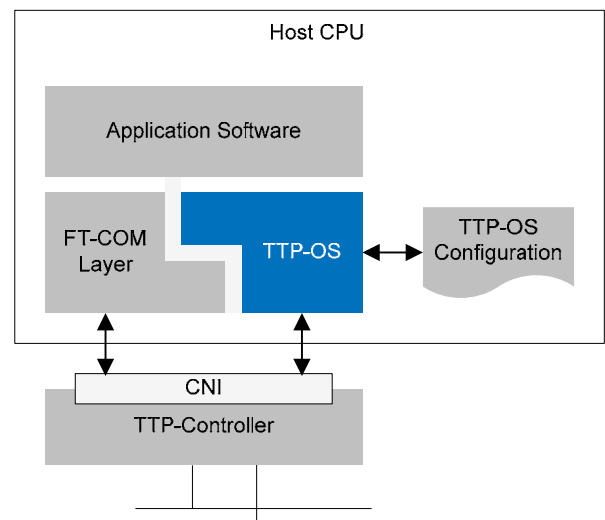
TTP^{OS}

Time-Triggered RTOS with TTP Support

TTP^{OS} is a RTCA DO-178B, Level A certified real-time operating system (RTOS) based on time-triggered technology. It is specifically designed for fault-tolerant real-time applications. TTP^{OS} has a very small footprint, offers fast services and task switching, and provides time-triggered pre-emptive task scheduling. In addition, TTP^{OS} supports fast error detection and fault tolerance.

KEY FEATURES/BENEFITS

- Time-triggered task scheduling
- Mature, ready-to-go COTS solution
- Full TTP support (startup, etc.)
- RTCA DO-178B Level A approved
- Full tool support
- Fault-tolerant and real-time
- Support for different CPUs



Static Time-Triggered Scheduling

TTP is a time-triggered communication protocol for fault-tolerant, distributed, hard real-time systems. Distributed embedded computing based on TTP enables design of applications independent of underlying communication architecture, physical layer, topology or embedded host hardware.

TTP^{OS} provides static time-triggered scheduling based on the global TTP time with minimal overhead. This forms the basis for synchronous application design that significantly reduces the test and integration effort; as well as overall life-cycle costs.

Tasks of the communication layer (TTP^{FT-COM}) are executed on the basis of the global time provided by the TTP communication controller. Other application tasks can use a local timer, which is provided by TTP^{OS} and synchronized with the global time.

TTP Communication Layer Support

The node configuration tool TTP^{Build} can generate C-code for and the configuration for, the operating system used by the node.

TTP^{OS} fully supports the fault-tolerant communication layer (TTP^{FT-COM}) that handles all TTP communication. The communication layer supports packing and unpacking, re-integration (history state handling), byte ordering (endianess), message agreement functions, and handling of replicated redundant message instances.

The application software runs on top of TTP^{OS} and TTP^{FT-COM} and uses the services of the two components.

Features

- Timetable-driven scheduling with support for multiple time bases (e.g., global fault-tolerant TTP time, local time)
- Start-up and re-integration to TTP communication system
- Pre-emptive scheduling strategy
- Deadline monitoring for tasks
- Extremely efficient CPU utilization
- Very small footprint
 - ROM-able kernel: ROM requirements for Freescale MPC555 PowerPC approximately 9 kB
 - RAM requirements independent of application size approximately 352 Bytes
- Interrupt service handlers for aperiodic tasks
- Support for austriamicrosystems AS8202NF TTP communication controller
- Certified according to RTCA DO-178B Level A

Supported Platforms

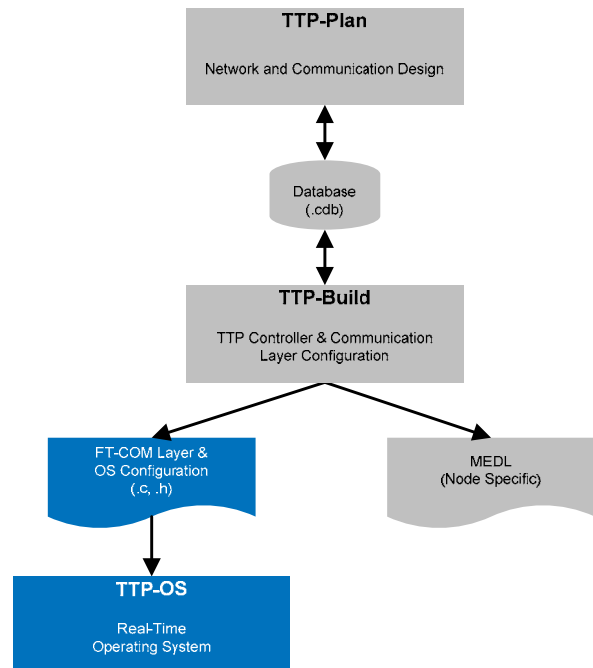
- Freescale MPC555, MPC5567, MPC5554 PowerPC for austriamicrosystems AS8202NF communication controller
- Other platforms such as Infineon C167, Infineon Tricore, NEC V850E are available upon request

Related Products

^{TTP}OS needs ^{TTP}Build for creating the schedule and OS configuration.

^{TTP}Hardware-COM Layer and ^{TTP}TD-COM Layer provide different communication layer implementations.

^{TTP}Matlink integrates task scheduling and operating system configuration within MATLAB/Simulink.



OS Configuration and TTP Tools

The node configuration tool ^{TTP}Build provides fully automatic configuration for ^{TTP}OS and optimized code generation for the fault-tolerant communication (^{TTP}FT-COM) layer. ^{TTP}Build schedules all the tasks and generates ANSI C code for the ^{TTP}OS configuration/task schedule.

Order Number

- S03.00.5: ^{TTP}OS
- S12.00.5: ^{TTP}FT-COM Layer

TTTech Contact Information

Europe, Austria - Headquarters
Tel.: +43 1 585 34 34-0
E-mail: products@tttech.com

North America, USA
Tel.: +1 760 603 9393
E-mail: products@tttech.com

Asia, Japan
Tel.: +81 45 470 1867
E-mail: products@tttech.com

www.tttech.com