

TTE Sync Library for VxWorks 653

The TTE Sync Library is a synchronization component that allows tight synchronization of VxWorks653 partitions to the fault-tolerant system-wide cycle time of the TTEthernet communication network (Figure 1). All partitions executed on different modules can be "pinned down" within the overall system cycle time (Figure 2), thus enabling the lowest latency and minimum jitter in message exchange among distributed functions.

KEY FEATURES/BENEFITS

- Brings deterministic high bandwidth, low latency, and minimal jitter communication up the application level
- Establishes a precise and fault-tolerant network-wide synchronization of modules
- Precision: Using the highly precise (sub-microsecond) fault-tolerant time base of TTEthernet for synchronizing modules / partitions allowing for a precision in the 10 μ s range for application synchronization
- Flexibility and growth-path: Existing software components can be re-used within partitions without changes; new applications can be built that make use of the robust global notion of time

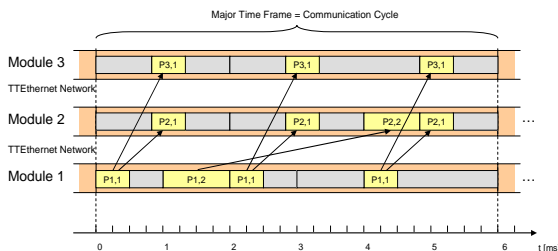


Figure 1: Low-latency and minimum jitter communication between partitions residing in distributed modules simplifies application design and system integration.

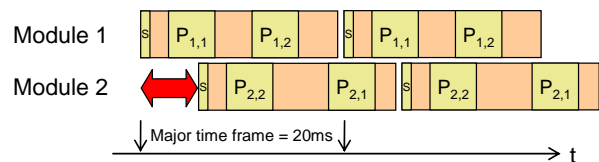


Figure 2: Unsynchronized Modules

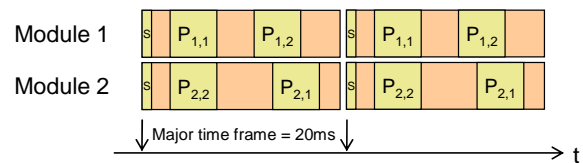


Figure 3: Synchronized Modules

The local clocks of the individual modules drift apart from each other due to the (slightly) different drift rates of their local clocks (Figure 2). Unsynchronized local clocks on different modules introduce changing temporal behaviour, cause inefficient resource use, complicate design of mission-, time-, and safety-critical functions, and complicate system verification and certification. The high determinism and robustness of a time-triggered TTEthernet communication system supports unambiguous definition of key system interfaces and functional interactions. It also enables deterministic hard real-time behaviour throughout the system, even if the Ethernet medium is overloaded by standard Ethernet LAN messages. The synchronization of partitions allows application designers to simplify software design and efficiently distribute applications in the network among different modules. System architects can simplify design decision such as federated vs. integrated, or centralized vs. distributed.

Features

TTEthernet Hardware Support

- TTE Development Switch 1 Gbit/s
- TTE PMC Card 1 Gbit/s

TTEthernet Tool Support

- TTE Build Basic 2.x
- TTE Build Network Configuration Plugin 2.x
- TTE Load 2.x
- TTE View 2.x

Wind River VxWorks 653 - Hardware Support

- Wind River WR SBC 7457 Power PC board
- Wind River WR SBC 8548
- Other board support packages will be provided upon request

Wind River Software Environment

- Wind River VxWorks 653 v2.2 Workbench

Packaging Contents

- TTE PCI Driver: The TTE-Driver is responsible for configuring the TTEthernet PCI device.
- TTE API Library: The TTE-API library provides an interface for communicating with the TTEthernet end system hardware. It provides functions for reading and writing messages, for obtaining status information, and for performing the configuration of the TTEthernet end system.
- TTE Sync Library: Provides the object and include files needed for synchronizing the local clocks with the TTEthernet cluster cycle time.
- User Manual

Order Number

- SE10.00.1

TTTech contact information

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

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

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

www.tttech.com