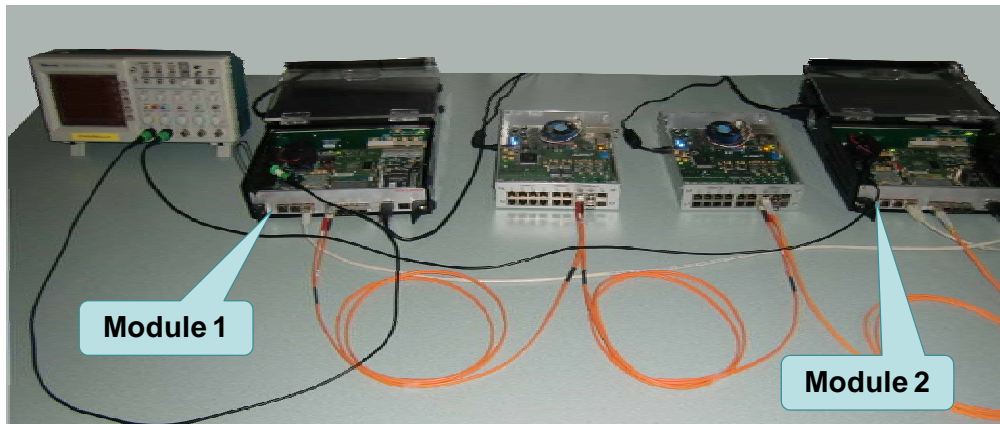


TTE Development System 1 Gbit/s for VxWorks 653



Distributed Integrated Modular Avionics

Time/space partitioning is the cornerstone of Integrated Modular Avionics (IMA). It supports integration of many functions of different criticality on one module to reduce number of control modules and simplify certification and upgrades. Distributed IMA is an extension of IMA architecture utilizing deterministic, high integrity communication bandwidth partitioning as described in RTCA DO-297.

TTEthernet and DIMA

Robustly partitioned communication with μ s-jitter and distributed fault-tolerant synchronization is ensured by TTEthernet services. The whole networked system becomes a distributed, fault-tolerant, hard real-time computer capable of handling multiple distributed functions of different criticality in one network. All distributed functions have all necessary computing and networking resources for deterministic operation. This means standard LAN applications, audio, video and critical controls based on VxWorks 653 can safely execute on one integrated system.

TTEthernet Demonstrator for Distributed IMA

The demonstrator package consists of two 1 Gbit/s TTEthernet switches, two TTEPMC cards, a design tools suite, the TTEthernet driver and API library, and the synchronization/communication libraries for ARINC 653. Redundant or multi-hop systems can be built.

KEY FEATURES/BENEFITS

- TTEthernet Demo application with VxWorks ARINC 653 APEX interface
- Synchronization support for Distributed IMA architecture
- Strictly deterministic system design
- Using highly precise fault-tolerant time base for synchronisation

An optional oscilloscope allows tracking and measurements of synchronization among partitions. Included in the package is a demo application showing deterministic communication among VxWorks 653 partitions.

Software components enabling Distributed IMA

The TTECOM Layer for VxWorks 653 enables access to a highly-deterministic TTEthernet communication system through the ARINC 653 APEX interface. This allows sending and receiving messages through the API specified by ARINC 653. The TTESync Library provides an optional synchronization component that allows tight synchronization of the periodic partition execution of the time-triggered communication patterns.

Features

Wind River VxWorks 653 - Hardware Support

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

Wind River Software - Environment Support

- Wind River VxWorks 653 v2.2 Workbench

Packaging Contents

TTEthernet Hardware Components

- ^{TTE}Development Switch 1 Gbit/s
- ^{TTE}PMC Card 1 Gbit/s
- All required cabling and power supplies

TTEthernet Tools

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

Embedded Software for VxWorks 653

- ^{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 to read and write messages, to obtain status information and to perform 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
- Distributed IMA demo application
- Demo application manual

(Optional) Training and Quick-Start

(Optional) Oscilloscope

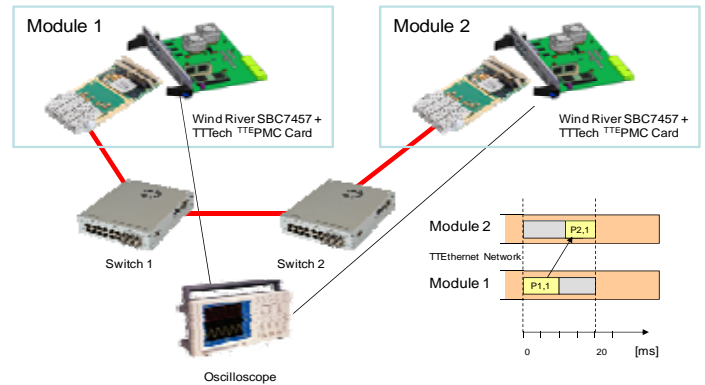


Figure 1: ^{TTE}Development System 1Gbit/s for VxWorks 653 - System Overview in a 2-hop switch configuration

Order Number

- HE01.03.2

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