VECTOR >

CANape Option Bypassing

Product Information

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1. Overview

1.1 Introduction

In bypassing, parts of the ECU software are executed on a hardware platform outside of the ECU with deterministic response times. This lets you modify functions quickly without having to run through the entire ECU code generation and flash process. In addition, it is easy to toggle functions for comparative measurements. Bypassing makes sense when new functions cannot be executed with the existing ECU hardware, e.g. if there is insufficient memory or CPU performance.

In contrast to bypassing, with fullpassing the complete ECU software is executed on the hardware platform. This allows you to test your software with real bus systems early in the development phase.

1.2 Overview of Advantages

> You create the functions (DLL) easily with the help of MATLAB/Simulink or C/C++ code
> Multiple bypass computations can be performed in parallel and be activated or deactivated
> Deterministic time behavior in computing the bypass functions
> VN8900 network interface with integrated real-time computer serves as an execution platform for the bypass function
> The VN8900 can be configured as a standalone bypass system in CANape; then it does not require any connection to CANape at runtime
> Seamless configuration of the bypass function in CANape for VN8900
> CANape offers visualization of the bypass function and the ECU software with access to measurement data and parameters
> Simulation/validation of ECU software with real bus systems and high-resolution time triggering (fullpassing)

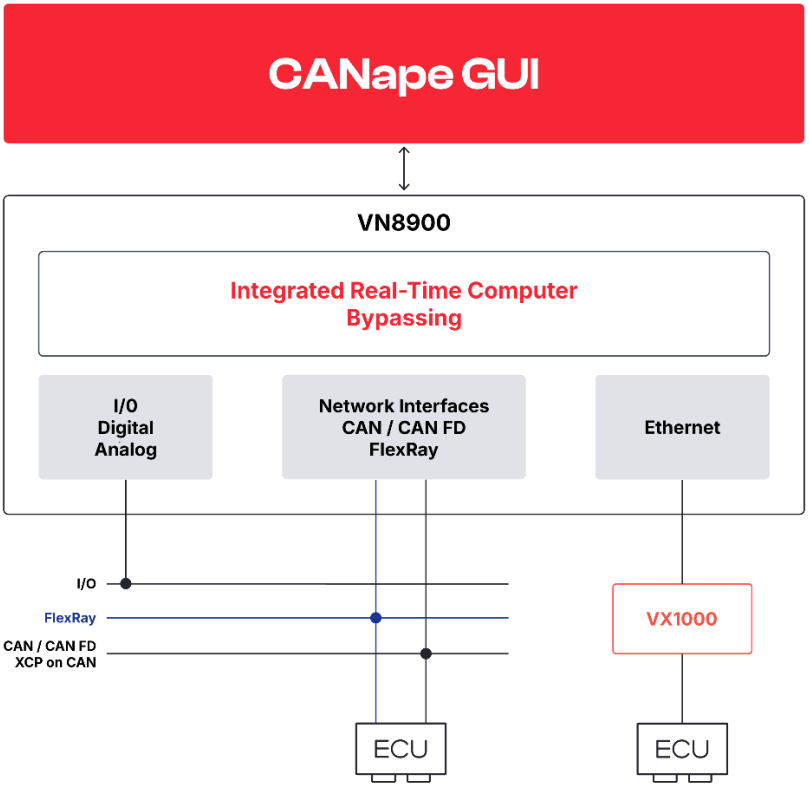

FIGURE 1: Increased real-time capability for bypassing with the Vector Tool Platform

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1.3 Application Areas

A complete bypassing solution is available to you by interlinking CANape, VN8900 and the VX1000 measurement and calibration hardware. The VN8900 network interface serves as the computational platform here, and the VX1000 System assures a high-performance measurement and calibration connection to the ECU. In CANape, the overall solution is configured, and the signals and parameters are visualized.

1.4 Further Information

Various documents related to CANape are available on the Internet. With the demo version, you get sample configurations for various application areas and a detailed online Help function in which all CANape functions are described. A bypassing demo is also available. The only limitation is that the bypass must be computed on the PC on which CANape is running. The demo version does not support VN8900 hardware. In addition, you will benefit from valuable know-how in the form of technical articles and application notes.

For more information, go to the Vector Download-Center.

2. Functions

In the Simulink model you define your function and place CANape I/O function blocks at the model's inputs and outputs. After code generation, compiling and linking, a DLL is available in CANape for integration.

In CANape, the function's inputs and outputs are linked to the real signals from the ECU. The bypass function is automatically transferred from CANape to the VN8900 by a configuration change that is easy to execute. This transfer loads all relevant data and configurations into the VN8900. At function runtime on the VN8900, you acquire the necessary input data from the ECU via the VX1000 hardware, XCP on Ethernet, XCP on CAN, XCP on CAN FD, CAN, CAN FD, FlexRay or I/O. In turn, the function results are sent via the same path to the ECU. Using CANape, you can then measure and calibrate the bypass function on the VN8900 and the code in the ECU.

In CANape it is also possible to run several bypass functions in parallel on the VN8900. For instance, it is possible to compute two functions (DLLs) which are connected to two ECUs via two VX1000 systems. It is also possible to configure the bypass function for the VN8900 and then execute it as a standalone variant on the VN8900. Just one ECU is supported in standalone mode.

3. Training

As part of our training program, we offer various workshops and training events in our classrooms. It is also possible to design customized training courses whose contents can be combined or extended to meet your expectations – and of course they can be held at your business site if you wish.

For additional information on individual training events and schedules on the Internet, go to the Vector Academy.

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