CANdesc

Software Component for Diagnostics

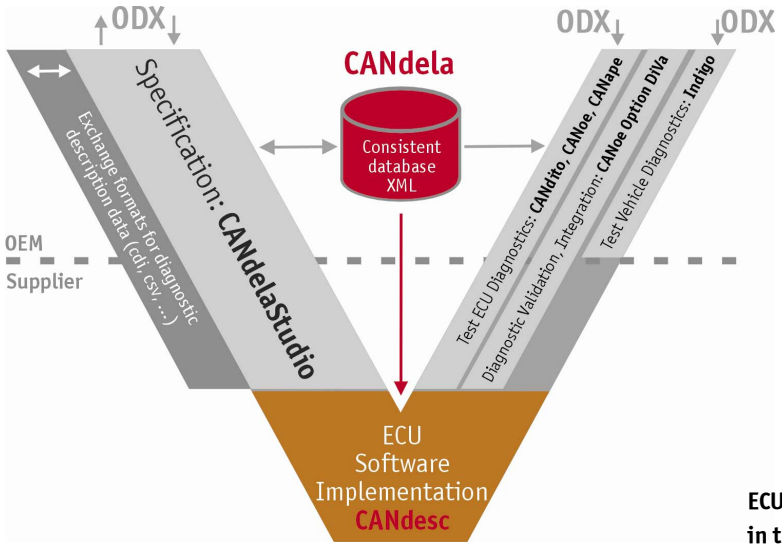
Vector's CANdesc (desc = diagnostic embedded software component) enables vehicle and electronic control unit (ECU) manufacturers to implement the diagnostic protocol uniformly across different OEMs and their vehicle lines. CANdesc supports diagnostic communication via CAN, MOST, FlexRay. Any other bus system will be also supported using an optional abstract transport layer interface.
CANdesc can be ordered seamlessly integrated in the CANbedded world and also for stand-alone usage in a supplier-specific environment. To guarantee efficiency for different OEMs and vehicles, CANdesc is fully generated code. The generation process is based on the project-specific CANdela data base.
To ease and speed up the usage, a diagnostic code template is generated which fully implements all interfaces. Using this template a basically working diagnostic implementation is immediately available.

Features and Advantages
Vehicle Manufacturers:
CANdesc offers assurance to the vehicle manufacturer that the diagnostic specification is implemented uniformly in all ECUs of a vehicle model.
Using CANdesc and CANdelaStudio, the comprehensive CANdela approach to diagnostics (see also product description for CANdela – CANdelaStudio), provides the greatest benefit.

The diagnostic functionalities and diagnostic data for an ECU are described in the specification phase using CANdelaStudio and stored in a consistent database (CANdela). This ECU diagnostic specification can directly be used to generate the CANdesc code. Changes in this specification during the vehicle development can therefore be cost-efficiently updated in the ECU by a simple re-generation. This guarantees that the specification and the implementation always fit together.
The vehicle and ECU manufacturer can use the CANdela data base also for parameterization of test systems. Thus a continuous process chain beginning with the specification, continuing with implementation and finishing with integration and functional testing can be offered.

ECU Manufacturers:
CANdesc covers the vehicle manufacturer diagnostic protocol and transported data completely. This assures that

- timing and content requirements of the diagnostic protocol are implemented correctly.
- simplification of a product line concept in the diagnostic area in spite of multiple ECU variants and vehicle manufacturers is possible
- development costs for implementation and testing effort are reduced
- Predictability of the correct and complete diagnostic implementation is significantly increased.



ECU diagnostic software component (CANdesc) in the V-Model diagnostic development process

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Example of Code Size

Microprocessor: Motorola HC12, MC9S12DP256; Cosmic-Compiler 4.5 with an implementation of 10 diagnostic services and 30 sub functions with the data packets:
Code size: approx. 5.5 kB; tables and constants: approx. 700 bytes;
RAM : approx. 70 bytes plus bytes for the diagnostic buffer.
For average sized applications with approx. 120 sub functions the code size increases to approx. 9 kB.

Functions

All vehicle manufacturer specific diagnostic features are implemented and encapsulated in CANdesc. This gives the ECU application a clear signal interface. Reutilization of the ECU application is thereby supported.

CANdesc covers

- support of the total manufacturer-specific diagnostic protocol with all functional and timing constraints
- full implementation of communication related diagnostic services (e.g. $28 CommunicationControl)
- implementation of "data unit" handling ($2A, $2C) according to the OEM specification
- filtering of diagnostic requests according to service, session, service instance, format, session of service instance and security
- correct responses to diagnostic requests
- state management (depending on the CANdela database e.g. session and security handling)
- generation of a diagnostic data buffer and preservation of data consistency between application and diagnostic request (functional, physical and multiple simultaneous)

Application Areas

- ECUs for passenger cars and commercial vehicles
- CANdesc can be used on CAN, MOST, FlexRay and any other communication system
- Seamlessly embedded in the CANbedded world but can also be used as a stand-alone component.

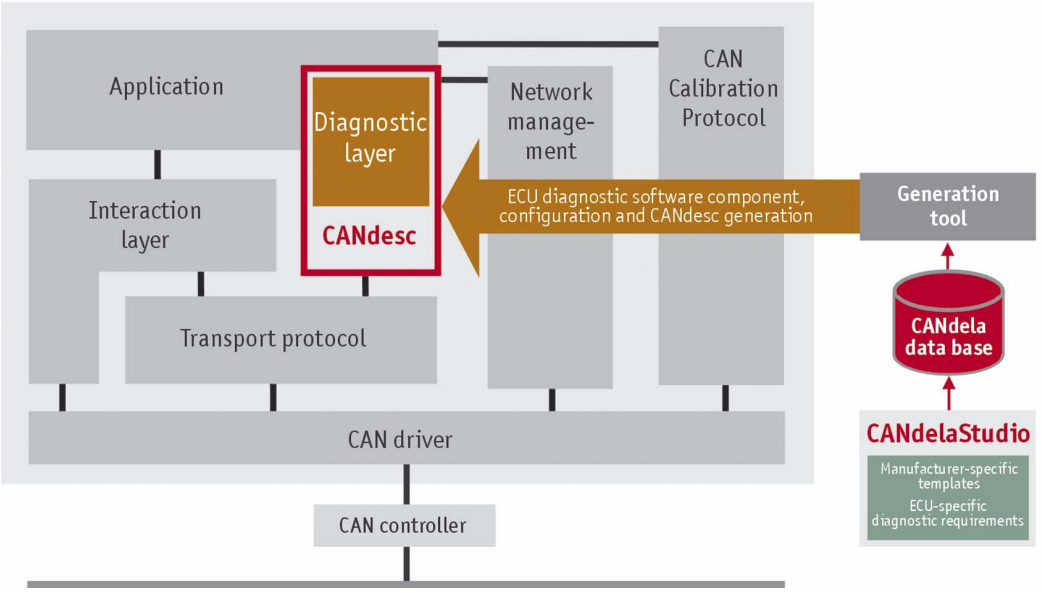
Product Components

- Executable Windows program (generation tool) with the CANdesc Option
- Documentation / User Manual

Supplemental Services

Vector offers the following types of project services:

- Adaptation of the application to CANdesc
- Implementation of fault memory concepts
- Process consultation services in the diagnostic area
- Testing of ECU diagnostic implementation



Generation of ECU diagnostic software component