Volcano™ Target Package

The Volcano Target Package (VTP) embedded communication software offers maximum flexibility and ease-of-use for application programmers. VTP consists of a configuration tool and the software modules necessary to provide CAN and LIN communication for your application.

The embedded software is distributed in the form of pre-compiled and fully validated object libraries with associated documentation. A well-defined API guarantees easy integration into the ECU software. The usage of slim interfaces guarantees an easy integration into the ECU software. VTP can be configured through its native format or through commonly available formats like DBC or LDF; it also supports the commercial vehicle standard J1939.

VTP’s communication layer consists of device drivers, which manage message transmission and reception for both CAN and LIN, and an interaction layer, which provides a true signal-based API that enables simplification of application development.

Communication Layer

Device Drivers
The Device Drivers manage message transmission and reception for both CAN and LIN. They also provide all low-level, controller-specific primitives required by the Network Management module, such as initialization, bus-off, sleep, and wake-up handling. A consistent timing model is implemented through the whole Volcano tool chain that allows you to use the Volcano Network Architect (VNA) to design your network for efficient use of available bandwidth. The device drivers provide the predictable behavior that will guarantee end-to-end message latencies across the entire network.

Interaction Layer
The Interaction Layer’s true signal-based API eliminates the need to cope with CAN frames. Using VTP, the user only deal with application-specific signals, which greatly simplifies application development.

With VTP, messages are sent according to predefined schedule table(s) typically generated by the VNA tool. Multiple transfer types are supported (e.g., periodic, sporadic, or immediate messages). Notification to the application upon message/signal reception is provided in an OS-independent way through flags or callouts.

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The maximum execution time for every Volcano function call is either bounded, or controlled by the systems integrator (e.g., in case of received frames, the maximum number of frames processed with one call can be bounded by the tx/rx budget configuration parameter.)

The interaction layer also provides signals-based configuration parameters, such as controller set-up, signal mappings, frame parameters, and schedule tables. It can be located in a dedicated address area, and it can be changed post build.

The RAM pool stores signals in a compressed form. Unpacking is done when signal read/write function calls are executed, saving expensive RAM storage space.

Availability

VTP is available for a number of widely used Micro Controller Units (MCUs).

- Fujitsu 16LX, FR Series
- Hitachi H8S, SH7055, SH7058
- Infineon C16x, TC179x, TC176x, XC800, XC2000
- Renesas M16C, R32C/M32C
- Freescale HC08, HC12, MC683xx, MPC5xx, MAC71xx
- Freescale S12, S12X, MPC55xx, MPC 56xx
- Mitsubishi M32R, MC32C
- PowerPC
- National CR16
- NEC V85x, 78K0
- ST Microelectronics ST9, ST10
- Texas Instruments TMS470
- Toshiba TMP92/TMP94

Details of the compilers and compiler switches used for the different versions are available directly from Mentor Technical Marketing. Mentor also provides complete software solutions in close collaboration with most microcontroller vendors (e.g., new microcontroller derivatives.)

Mentor also provides a LIN-only product - the LIN Target Package (LTP). LTP provides a resource-efficient implementation for LIN nodes according to various versions of the LIN standard.

In-Vehicle Embedded Software

The Volcano In-Vehicle Embedded Software supplies very high quality code based on industry-standard development processes, such as SPICE. Unlike traditional products, which require the user to send signal-to-frame mapping changes back to the ECU supplier for implementation, Volcano in-vehicle software tools provide flexibility in reconfiguring the network without touching the application SW.

The Volcano In-Vehicle SW solution consists of five product offerings. VTP and its add-ons provide a complete SW platform for CAN- and LIN-based ECUs. The available components are:

- Volcano Target Package Communication Software (CAN & LIN)
- Diagnostics (ISO 14229, 14230 or J1939)
- Transport Layer (ISO 15765-2 or J1939)
- Network Management (OSEK, AUTOSAR NM Gateway, and OEM specific)
- SW Download Bootloader (ISO 14229)
- CAN Calibration Protocol

For additional information please visit us at www.mentor.com/vnd