

Simulation VIP for CAN

Overview

Cadence® Simulation VIP is the world’s most widely used VIP for digital simulation. Hundreds of customers have used Cadence VIP to verify thousands of designs, from IP blocks to full systems on chip (SoCs).

The Simulation VIP is ready-made for your environment, providing consistent results whether you are using Cadence Incisive®, Synopsys VCS®, or Mentor Questa® simulators. You have the freedom to build your testbench using any of these verification languages: SystemVerilog, e, Verilog, VHDL, or C/C++. Cadence Simulation VIP supports the Universal Verification Methodology (UVM) as well as legacy methodologies.

The unique flexible architecture of Cadence VIP makes this possible. It includes a multi-language testbench interface with full access to the source code to make it easy to integrate VIP with your testbench. Optimized cores for simulation and simulation-acceleration allow you to choose the verification approach that best meets your objectives.

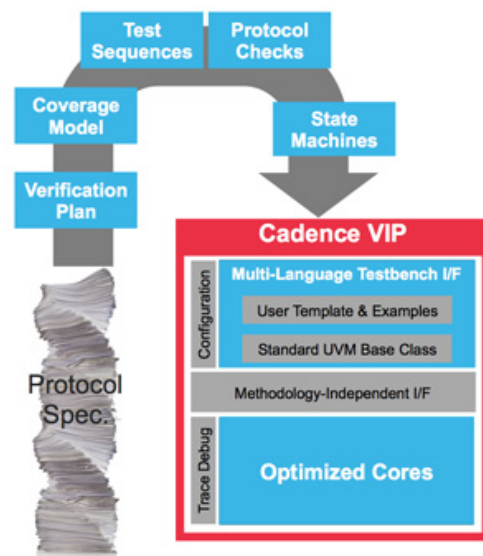
Specification Support

The CAN VIP supports the CAN protocol versions 2.0 and 1.0. The specification is developed by an organization known as CAN in Automation (CiA): <http://www.can-cia.org>

The CAN VIP also supports CAN with Flexible Data-Rate specification version 1.0

Supported Design-Under-Test Configurations

- | | | |
|--|---|-------------------------------------|
| <input checked="" type="checkbox"/> Master | <input checked="" type="checkbox"/> Slave | <input type="checkbox"/> Hub/Switch |
| <input checked="" type="checkbox"/> Full Stack | <input type="checkbox"/> Controller-only | <input type="checkbox"/> PHY-only |



Deliverables

People sometimes think of VIP as just a bus functional model (BFM) that responds to interface traffic. But SoC verification requires much more than just a BFM. Cadence Simulation VIP components deliver:

- State machine models incorporate the subtle features of state machine behavior, such as support for multi-tiered, power-saving modes
- Pre-programmed assertions that are built into the VIP to continuously watch simulation traffic to check for protocol violations.
- Test suites are provided for most Cadence VIP components.
- Pre-programmed coverage models used to capture interesting combinations of simulation results. By analyzing the results collected by the coverage model, engineers can tell if the simulations have exercised the various modes of operation of an interface.
- Verification plans for most protocols link the “raw” coverage model results back to the protocol specification.

Key Features

- Supports Flexible Data Rate
- Supports data, remote, error, and overload frames
- Supports generation of frames with errors in particular fields, such as CRC, delimiters, EOF
- Supports ISO 16485 conformance test regression suite
- Supports STANDARD and EXTENDED CAN format
- Supports multiple CAN agent instantiations
- Tracks error counters and fault states
- Supports generation of DATA frames in response to a REMOTE frame with a particular ID

Test Suite

This VIP includes a basic and CMS test suite capability that includes:

- Constrained-random compliance tests
- Tests targeting all protocol layers
- 3rd party simulator test execution
- e functional coverage model
- Verification plan integration with Cadence vManager metric-driven analysis systems



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