

OVERVIEW

The **Genie-APB Verification IP** is a comprehensive verification solution for pre-silicon functional verification of AMBA APB based designs. It provides a fast and easy solution to verify the AMBA APB functionality in any FPGA, SoC or ASIC design.

The **Genie-APB VIP** supports Bus Functional Models (BFM) for **APB Master**, and **APB Slave**. It includes an APB Monitor and Checker to observe and verify all transactions across the bus. The compliance suite consists of Directed Tests and Random Tests to provide complete design coverage to the specification and allows designers to focus their efforts on the unique aspects of their design.

The **Genie-APB VIP** is fully compliant with the AMBA3 APB V1.0 specification. It includes verification techniques such as Callbacks, Monitors and Checkers to quickly and extensively test all features of the APB.

Each Genie-APB VIP provides:

- APB Master Active/Passive Agents
- APB Slave Agents
- APB Sequencer and sequence library
- APB Configuration block
- APB Error Injector
- APB Interface Inspector
 - APB Monitor
 - APB Scoreboard
 - APB Coverage Collector
 - Performance analyzer
 - APB Callbacks
 - APB Protocol Checker
 - SystemVerilog Assertions
 - Report Generator

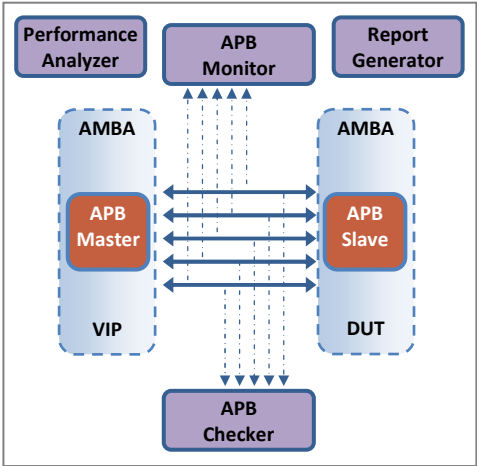


Fig. 1: AMBA APB System Block Diagram

FEATURES

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| ❖ Compliant with the AMBA 3 APB V 1.0 Protocol | ❖ Supports master and multiple slaves topologies |
| ❖ Generates all AMBA 3 APB Protocol transfer types and responses | ❖ Supports Bus Master idle cycle insertion |
| ❖ Supports configurable APB Protocol data and address widths | ❖ Supports Configurable Master PREADY time out |
| ❖ Support all misaligned transfers | ❖ Support for Master Address polling, configurable poll time-out |
| ❖ Fixed and random transfer delay insertion | ❖ Assertions and checks for protocol violations |
| ❖ Slave error detection and configurable error messages | ❖ Configurable transfer size for read and write transactions |
| ❖ Ability to inject errors during data transfer | ❖ Input and Output FIFO mode |
| ❖ Call backs and call back variables to provide control over test case execution | ❖ Supports Slave error insertion for specified addresses |
| ❖ User-configurable commands and responses | ❖ Monitors and reports for bus traffic |
| ❖ Each VIP instance contains an agent containing monitor, sequencer and driver | ❖ UVM UVC available for both Master and Slave BFM's |

PRODUCT DETAILS

APB Master

APB master initiates transfers on the bus. User controllable knobs provide the ability to configure key features within the master model.

APB Slave

APB slave responds to the transaction initiated by the master. The APB slave includes fully configurable wait states and a slave error response. It has the ability to store data in internal memory and supply data on the demand.

APB Monitor

APB monitor tracks and observes all traffic on the bus. It generates LOG files that are user configurable to customize information reported. It has the capability to program file names for logging information. It also supports Performance Analysis and Functional Coverage.

APB Checker

APB checker provides bus-level automated protocol checking capability. It performs real-time reporting of violation of protocol rules.

BENEFITS

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|---|---|
| ❖ Faster Test bench development by using these configurable models | ❖ Corner case test scenario generation due to programmable BFM commands and Knobs |
| ❖ Reduce verification cycle by using readily available comprehensive directed and random test suite | ❖ Easily integrates with Verilog, SystemVerilog, OVM and UVM test environments |
| ❖ Faster debug due to customized reports and log files | ❖ Executable in every major simulation environment |
| ❖ Supports back to back environment | |

SUPPORTED SIMULATORS

ALDEC CADENCE MENTOR SYNOPSYS

APB COMPLIANCE SUITE	APB SOLUTIONS
<p>Developed by PerfectVIPs to thoroughly verify AMBA APB designs, the test suite is a comprehensive verification test suite.</p> <ul style="list-style-type: none"> Verifies all AMBA APB functionalities Includes Basic, Advanced and Random Test suite Comes with regression scripts 	<p>Developed by PerfectVIPs to address all AMBA APB based architectures, the following AMBA APB solutions are available.</p> <p>Verification IP:</p> <ul style="list-style-type: none"> AMBA APB Master VIP AMBA APB Slave VIP <p>Compliance Suites:</p> <ul style="list-style-type: none"> Master Compliance Test Suite Slave Compliance Test Suite