Verification Continuum™

VC Verification IP AXI Performance Metrics Supported Through Verdi

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SYNOPSYS®

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Preface

About This Document

This document provides information about the performance metrics of AXI supported with Verdi.

Web Resources

- Documentation through SolvNet: https://solvnetplus.synopsys.com (Synopsys password required)
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Performance Metrics

The following is the list of AXI Performance Metrics and its description:

1 AXI Metrics Description

- `axi_trans_read_byte_count`: axi_trans_read_byte_count metric computes total byte count of the READ type transaction. This metric is computed for every READ type transaction individually.
- `axi_trans_read_latency`: axi_trans_read_latency metrics computes total time taken by all the read transactions to complete.
- `axi_trans_write_byte_count`: axi_trans_write_byte_count metric computes total byte count of the WRITE type transactions.
- `axi_trans_write_latency`: axi_trans_write_latency metric computes total time taken by all the write transactions to complete.
- `axi_ctrans_avg_read_latency`: axi_ctrans_avg_read_latency metric computes average latency of READ type transactions at a given port instance.
- `axi_ctrans_avg_write_latency`: axi_ctrans_avg_write_latency metric computes average latency of WRITE type transactions at a given port instance.
- `axi_ctrans_max_read_latency`: axi_ctrans_max_read_latency metric computes maximum latency from all READ type transactions at a given port instance.
- `axi_ctrans_max_write_latency`: axi_ctrans_max_write_latency metric computes maximum latency from all WRITE type transactions at a given port instance.
- `axi_ctrans_min_read_latency`: axi_ctrans_min_read_latency metric computes minimum latency from all READ type transactions at a given port instance.
- `axi_ctrans_min_write_latency`: axi_ctrans_min_write_latency metric computes minimum latency from all WRITE type transactions at a given port instance.
- `axi_ctrans_read_byte_count`: axi_ctrans_read_byte_count metric computes total byte count of READ type transactions at a given port instance. This metric displays total byte count of all READ type transaction at a given port instance and also byte count of each transaction at a given port instance.
- `axi_ctrans_read_outstanding_count`: axi_ctrans_read_outstanding_count metric computes total number of READ type request which did not complete [or outstanding] at any given point in time at a given port instance. Basically this metrics is used during interactive mode of debug to see how many transactions are outstanding.
- `axi_ctrans_read_request_count`: axi_ctrans_read_request_count metric computes total number of READ type requests received to a given port instance.

- `axi_ctrans_write_byte_count`: axi_ctrans_write_byte_count metric computes total byte count of all WRITE type transactions at a given port.
- `axi_ctrans_write_outstanding_count`: axi_ctrans_write_outstanding_count metric computes total number of WRITE type requests which did not complete [or outstanding] at any given point in time at a given port instance. Basically this metrics is used during interactive mode of debug to see how many transactions are outstanding.
- `axi_ctrans_write_request_count`: axi_ctrans_write_request_count metric computes total number of WRITE type requests received at a given port instance.
- `axi_cinst_read_bus_bandwidth`: axi_cinst_read_bus_bandwidth metric computes total bandwidth of READ type transactions across all port instances. Basically it is computed as bytes per second taking axi_cinst_read_byte_count as the total byte count.
- `axi_cinst_read_byte_count`: axi_cinst_read_byte_count metric computes total byte count of READ type transactions across all port instances. Basically it is sum of all axi_ctrans_read_byte_count metrics at each port instance.
- `axi_cinst_read_request_count`: axi_cinst_read_request_count metric computes total number of READ type requests received across all port instances. This metrics is computed as sum of all axi_ctrans_read_request_count metrics.
- `axi_cinst_read_request_percentage`: axi_cinst_read_request_percentage metric computes the percentage of READ transaction requests at a given instance from total READ transaction requests across all port instances. For ex: If the total READ transaction requests is X, and at each instance total READ transaction requests is Y1, Y2 and Y3 [in case of 3 masters configuration], then percentage of READ transaction request at a given port is calculated as - { (Y1 * 100) / X }. Similarly for Y2 and Y3. This metric can be represented in the form of PIE chart.
- `axi_cinst_write_bus_bandwidth`: axi_cinst_write_bus_bandwidth metric computes total bandwidth of WRITE type transactions across all port instances. Basically it computed as bytes per second taking axi_cinst_write_byte_count as the total byte count.
- `axi_cinst_write_byte_count`: axi_cinst_write_byte_count metric computes total byte count of WRITE type transactions across all port instances. Basically it is sum of all axi_ctrans_write_byte_count metrics at each port instance.
- `axi_cinst_write_request_count`: axi_cinst_write_request_count metric computes total number of WRITE type requests received across all port instances. This metrics is computed as sum of all axi_ctrans_write_request_count metrics.
- `axi_cinst_write_request_percentage`: axi_cinst_write_request_percentage metric computes the percentage of WRITE transaction requests at a given instance from total WRITE transaction requests across all port instances. For ex: If the total WRITE transaction requests is X, and at each instance total WRITE transaction requests is Y1, Y2 and Y3 [in case of 3 masters configuration], then percentage of WRITE transaction request at a given port is calculated as - { (Y1 * 100) / X }. Similarly for Y2 and Y3. This metric can be represented in the form of PIE chart.

The following four metrics are dependent on the master-slave transaction association feature of system monitor. For details on enabling this system monitor feature, refer the html doc:

```
$DESIGNWARE_HOME/vip/svt/amba_svt/latest/doc/axi_svt_uvm_class_reference/html/class_svt_axi_system_configuration.html#group_axi_master_slave_xact_correlation
```

- `axi_cinst_master_slave_read_latency`: Calculates the delay between the time at which a read transaction starts at master and the time at which the corresponding read transaction starts at slave

- `axi_cinst_master_slave_write_latency`: Calculates the delay between the time at which a write transaction starts at master and the time at which the corresponding write transaction starts at slave.
- `axi_cinst_slave_master_read_latency`: Calculates the delay between the time at which a read transaction ends at master and the time at which the corresponding read transaction ends at slave.
- `axi_cinst_slave_master_write_latency`: Calculates the delay between the time at which a write transaction ends at master and the time at which the corresponding write transaction ends at slave