

## Interlaken Verification IP

Product Name: **Vermilion BFM**

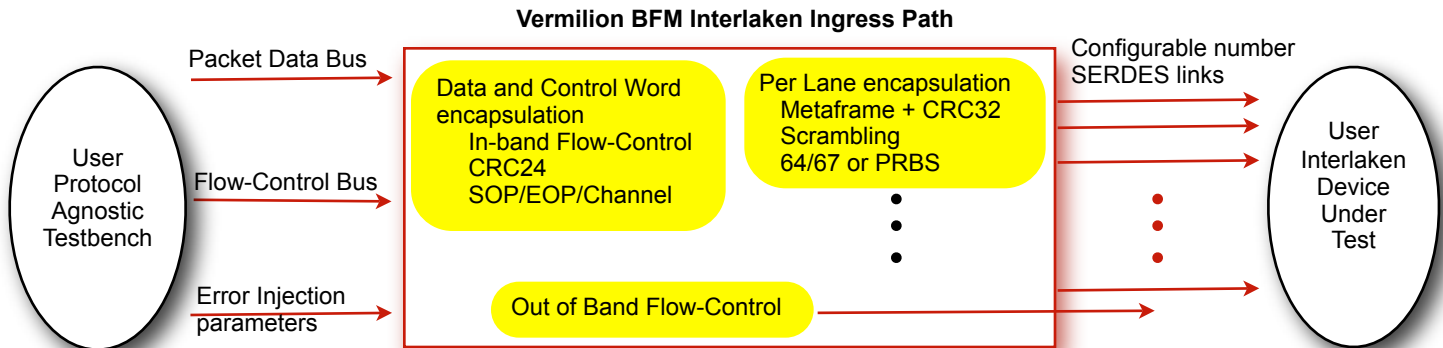
Protocol: Interlaken ([www.interlakenalliance.com](http://www.interlakenalliance.com))

Verification IP: Bus Functional Model (BFM)

Language: Verilog

Features:

- Highly configurable datastream generation
- Complete protocol checking



The Vermilion BFM bridges the gap between the user's testbench and an Interlaken Device Under Test (DUT).

### Vermilion BFM Ingress Interlaken Framing Layer Features:

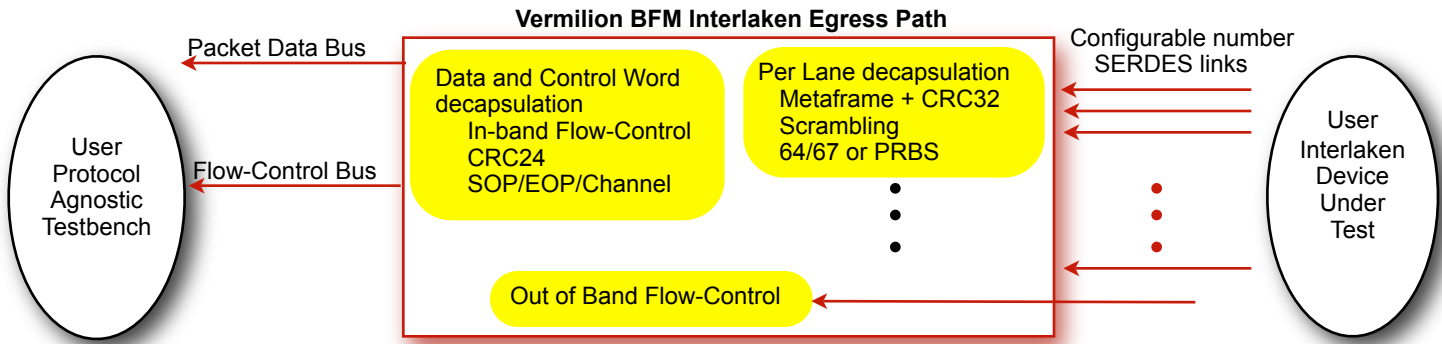
- 1 bit, 10 bit, 16 bit, 20 bit, or 67 bit interface to Device Under Test (DUT)
- 64B/67B encoding with programmable inversion bit algorithm
- Interlaken scrambler with scrambler state insertion into scrambler words
- Per lane CRC-32 insertion into diagnostic words
- Per-lane skew insertion to test lane alignment
- Metaframe encapsulation with Diagnostic, Synchronization and Scrambler words
- Insertion of programmable number of skip words
- Programmable 1 bit error insertion in metaframe control words
- Programmable CRC-32 error injection into Diagnostic word
- Programmable scrambler state error injection into Scrambler word
- Programmable synchronization word error injection
- Programmable bit error injection in metaframe payload
- Test pattern generation per Interlaken specification for PRBS7, PRBS23, PRBS31
- Variable test pattern generation per Interlaken specification
- Programmable bit error injection into test pattern
- Multiple modes of link turn-on to exercise sync and alignment state machines at startup

### Vermilion BFM Ingress Interlaken Protocol Layer Features:

- One data stream sprinkled across user selectable number of serial lanes
- Metaframe Payload Idle control word insertion with CRC-24
- Metaframe Payload Burst control word insertion with CRC-24
- Packet burst data encapsulated with data words
- Packet burst EOP, SOP, error, and channel status encapsulated in Burst Control Word
- Programmable CRC-24 error injection
- Bad control word error injection
- In-band or out-of-band flow-control transmission of user flow-control calendar status
- Out-of-band flow-control CRC-4 error injection

Vermilion BFM  
Customer Deployments





The Vermilion BFM bridges the gap between the user's testbench and an Interlaken Device Under Test (DUT).

#### Vermilion BFM Egress Interlaken Framing Layer Features:

- Gearbox provides 1 bit, 10 bit, 16 bit, 20 bit, or 67 bit interface to DUT
- 64B/67B decoding with Word Boundary Lock
- Framing bit error checking
- Inversion bit selection algorithm checking
- De-scramble words per Interlaken Spec with scrambler word state checking
- Metaframe payload words check for valid type
- Per lane CRC-32 checking in diagnostic words
- Per lane scrambler state checking in Scrambler words
- Per-lane excessive skew checking
- Metaframe checking of Diagnostic, Synchronization and Scrambler words
- Check for programmable number of skip words
- Test pattern alignment and checking per Interlaken specification for PRBS7, PRBS23, PRBS31
- Variable test pattern alignment and checking per Interlaken specification

#### Vermilion BFM Egress Interlaken Protocol Layer Features:

- Alignment performed for all lanes together
- CRC-24 checking of Idle and Burst control frames
- Data burst sequence checking and decapsulation
- Data burst channel, SOP, EOP, error, and size parameter extraction
- In-band or out-of-band flow-control transmission of user flow-control calendar status
- Out-of-band flow-control CRC-4 checking