



RSV40100
Ethernet VIP
Product Brief
V1.3

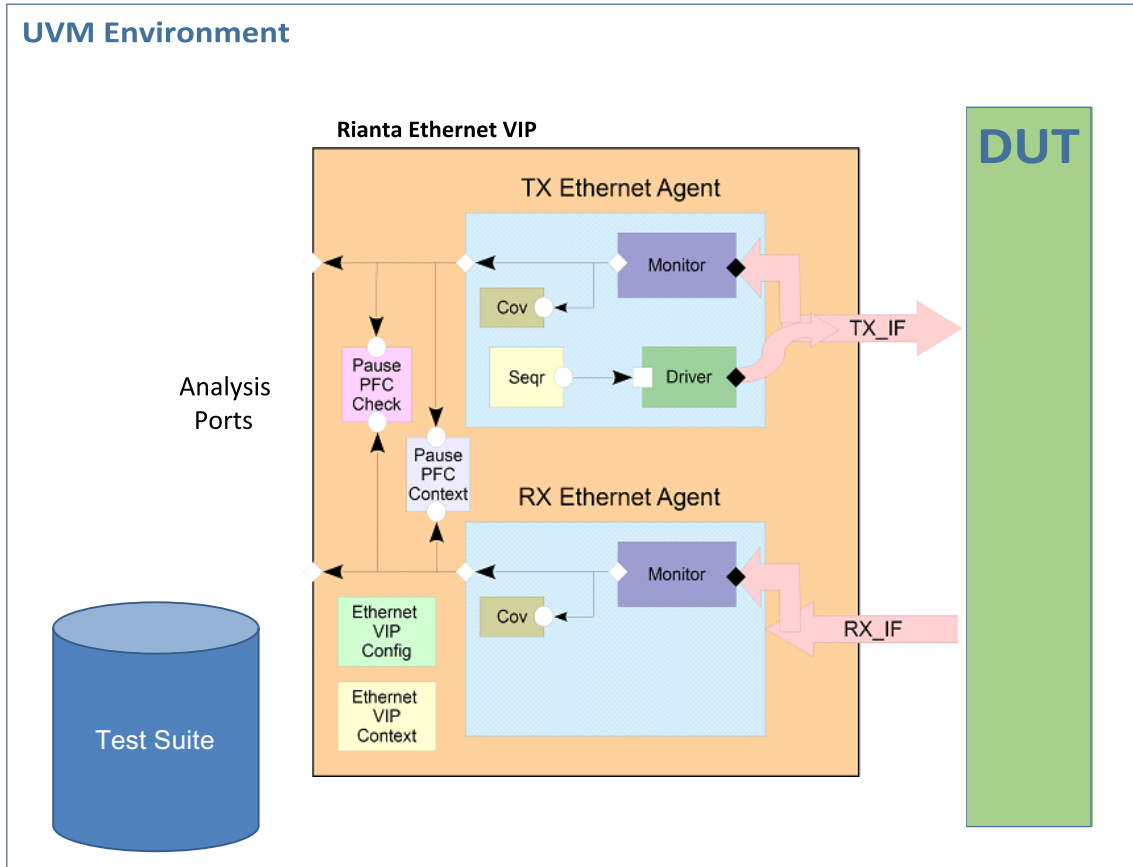
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Introduction

Rianta's Ethernet Verification IP is a native UVM verification VIP component, reference testbench and full test suite compliant with IEEE 802.3 specifications. Serial and parallel interfaces are provided enabling verification of Ethernet MAC and/or PHY layer designs from 400G down to 10/100/1000M. Full MAC & PCS functions are implemented in the VIP component.



Ethernet VIP Features

Line Rate	MAC/PCS IF	PHY PMA/PMD IF	FEC	Auto Negotiation
400G	CDGMII CDAUI-16	400GBASE-KR16/KP16	✓	✓
100G	CGMII CAUI-4 CAUI	100GBASE-SR10 ER4/LR4 CR10 CR4/KR4/KP4	✓	✓
40G	XLGMII XLAUI	40GBASE-SR4/LR4 KR4/CR4	✓	✓
10G	XGMII XFI XAUI RXAUI	10GBASE-KX4 KR	✓	✓
10/100/1000M	GMII SGMII RGMII TBI	1000BASE-KX	✓	✓

Pause Frame Support

- Pause Frame / PFC generation and handling

OAM packet support

- OAM packet generation and handling

Monitor Error Detection

- Protocol violations
- Data Corruption
- Local/remote fault detection
- Ethernet performance analysis – eg latency, packet/second, RFCs, etc.
- Ethernet compliance test suite provided
- Ethernet Regression test suite provided

Error Injection

- Callbacks for Protocol Error generation
- Callbacks for Data Corruption
- Reference user Callback implementation

Additional Features

- PCS diagnostic features
- Built in functional coverage collection for export to Vendor-specific coverage analysis tools.
- Transaction logs on a per-layer basis.
- User callbacks on various events for customizations

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Benefits of Using Rianta's VIP

- Industry standard UVM structure coupled with enhanced Rianta features
- Easy to set up and configure a testbench for validation of Ethernet designs.
- Simple testbench configuration of TX and RX Interfaces
- Included reference Scoreboards for Results Analysis
- Runs in every major simulation environment
- Higher layer (L2,L3,L4) functions
 - Enhanced Traffic Forwarding
 - IPv4/TCP/UDP checksum calculation/checking
 - TCP/UDP Large Send Offload, TCP Large Receive Offload
 - Receive Side Scaling
 - DMA functions
- Additional packet types
 - ARP
 - Wake-On-LAN
 - IEEE 802.1Qa - Stream Reservation Protocol (SRP)
 - IEEE 802.1Qav - Forwarding and Queuing for Time-Sensitive Streams (FQTSS)
 - IEEE 802.1BA - Audio Video Bridging (AVB) Systems
 - IEEE 802.1AS - Timing and Synchronization for Time-Sensitive Applications (gPTP)
 - IEEE 1588 v2
 - IEEE 1722A - E-AVB
- Additional header types
 - VXLAN
- Customer specific
- Compatible with other common and custom verification environments eg OVM, etc

Related Rianta VIP

- Additional VIP available for Rianta Register interrupt tree support.
- Additional VIP available for Rianta latency and performance optimized Ethernet IP
- JTAG (IEEE 1149.1) UVM VIP

Environment

A Reference Testbench Environment is provided to demonstrate how to connect, configure and use various components.

Documentation (HTML & PDF) includes QuickStart Guide, User Guide, Doxygen-generated Reference Manual and Release notes.