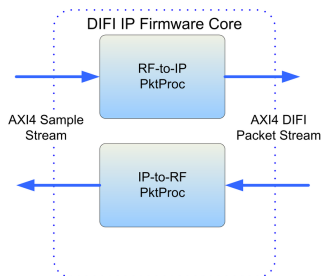# DIFI IP Firmware Core (IEEE-ISTO Std 4900-2021)

Firmware Core for DIFI Compliant Hardware

The DIFI* IP Firmware Core eases development of IEEE-ISTO Std 4900-2021 compliant hardware by providing a proven core for DIFI interfaces. Both RF-to-IP and IP-to-RF paths are included. The core is delivered as a single entity and supports a single DIFI compliant VITA*-49 (V49) stream in both the uplink and downlink directions. Multiple V49 streams are supported through multiple instantiations of the DIFI IP Core.

RF-to-IP Pkt Processor

- Encapsulates user sample data into DIFI compliant packets
- Creates Signal Data & Signal Data Context packets
- Creates Version Flow Context Packets
- Supports variable I/Q sample widths from 4 to 16 bits
- Test Packet Generation (16 bit mode)
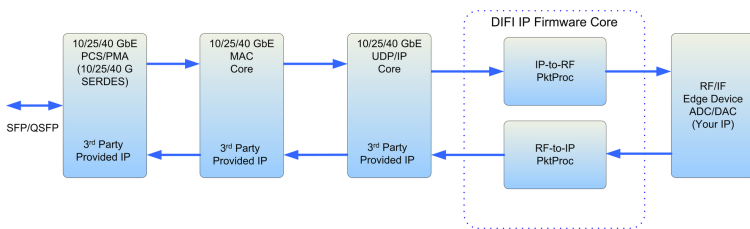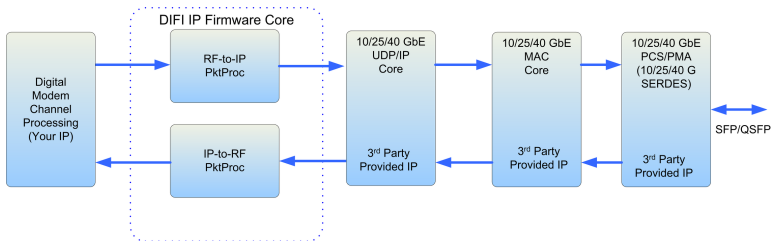- Packet Statistics

IP-to-RF Pkt Processor

- Receives and parses Signal Data & Signal Data Context packets
- De-packetizes sample data
- Receives and parses Version Flow Context packets
- Supports Variable I/Q sample widths from 4 to 16 bits
- Rejects packets not meeting the DIFI specification
- Test Packet Receiver (16 bit mode)
- Packet error detection and statistics

*DIFI: Digital IF Interoperability
*VITA: VMEbus International Trade Association

Typical Applications

DIFI IP Firmware Core

| Digital Modem Channel Processing (Your IP) | RF-to-IP PktProc | 10/25/40 GbE UDP/IP Core | 10/25/40 GbE MAC Core | 10/25/40 GbE PCS/PMA (10/25/40 G SERDES) |

SFP/QSFP

| IP-to-RF PktProc | 3rd Party Provided IP | 3rd Party Provided IP | 3rd Party Provided IP |

DIFI IP Firmware Core

| 10/25/40 GbE PCS/PMA (10/25/40 G SERDES) | 10/25/40 GbE MAC Core | 10/25/40 GbE UDP/IP Core | IP-to-RF PktProc | RF/IF Edge Device ADC/DAC (Your IP) |

SFP/QSFP

| 3rd Party Provided IP | 3rd Party Provided IP | 3rd Party Provided IP | RF-to-IP PktProc |