pFilter™ by Daqscribe

Custom FPGA-based packet filtering development services for Daqscribe recorders

What Is pFilter™

pFilter™ is a custom engineering service that develops specialized filtering processes as firmware images for Daqscribe recorders, supporting line-rate packet filtering to help reduce unnecessary data collection. Since Daqscribe recorders are renowned for their ability to perform full packet capture without packet loss, pFilter™ allows capture behavior to be precisely tailored when only specific segments of a data stream need to be recorded.

Who Is It For?

pFilter™ applies to nRec™ and nPlay™ software running on Daqscribe Ethernet recorder platforms and is offered as a tailored service. Many filtering requirements are unique and require custom implementation within the recorder's FPGA resources.

Use cases include:

- Channelizing wideband streams for Ultra-wideband SDR, RFSoC, and MIMO systems.
- Recording specific user/data channels for 5G radio access networks (RAN).
- Offloading filtering from the host CPU to FPGA-based network acceleration technology.

Key Features

- FPGA-accelerated filtering at line-rate (10/25/40/100+ Gbps).
- Implement custom static filtering logic tailored to customer requirements.
- Pre-capture filtering to reduce storage and processing load.
- Channelization support: separate and store logical channels from a composite ingress stream.
- Full compatibility with DDR HYPERION100, XDR TITAN100, and future Daqscribe recorder platforms.

Technical Summary

pFilter™ offers advanced inline filtering capabilities, utilizing FPGA-accelerated logic to enable the selective capture, channelization, and preprocessing of packet streams at line-rate performance. Supported filtering criteria include:

- **Port filtering:** Specific physical ports.
- **IP address filtering:** IPv4 source/destination addresses, ranges, and subnets.
- **Protocol filtering:** Layer 3/4 protocols (IPv4, TCP, UDP, ICMP).
- **Error packet filtering:** CRC, IP/TCP/UDP checksum errors.
- **Payload slicing:** Truncate frames to essential headers and the first N bytes.
- **Channel merging:** Merge multiple ports into one logical stream.
- **Load distribution:** Distribute port traffic across numerous streams.
- **Custom filtering expressions:** Match payload fields at dynamic offsets.

Benefits

pFilter™ helps reduce overhead and improve operational efficiency for Daqscribe Ethernet recorder products in environments ranging from research labs to field-deployed operations:

- Offload filtering tasks from the host software for improved performance.
- Reduce storage requirements by eliminating irrelevant traffic before it reaches the disk.
- Minimize storage and processing burdens with pre-capture filtering.
- Ensure selective capture tailored to mission objectives.

Get Started

Unleash powerful data in-line data filtering capabilities with pFilter™.

Email: support@daqscribe.com for more information.

Daqscribe

Never Miss Packets