HELIOS RXPF

REGULAR EXPRESSION PROCESSOR FOR FPGA

This RXP technology is designed for Xilinx FPGA Kintex® UltraScale™, Virtex® UltraScale™ and Virtex® UltraScale+ platforms. Targeting high throughput, low-latency applications that require Regular Expression (RegEx) pattern matching, Helios RXPF is a unique, fully scalable, hardware-accelerated solution for Security Analytics Acceleration (SAA) and content processing. The solution can be tuned for the desired combination of throughput, rule depth and complexity.

KEY FEATURES……………………………………………………………

- ❖ Scalable bandwidth from 5Gb/s to 100Gb/s
- ❖ Supports up to 1 million rules using external DDR3/4
- ❖ Supports POSIX/PCRE compatible regular expressions
- ❖ Comprehensive SDK including:
    - ▪ RXP Compiler
    - ▪ Application Programming Interface (API)
    - ▪ Reference applications
    - ▪ Utilities
- ❖ Interfaces: AXI or Native
- ❖ Run-time partial ruleset update
- ❖ Also available on the AWS F1 platform called Helios F1

KEY BENEFITS……………………………………………………………

- ❖ Complex and comprehensive pattern matching at line speed
- ❖ Parallel processing of up to 100Gb/s
- ❖ Significant CPU offload while achieving wire speed performance
- ❖ High throughput performance per Watt
- ❖ Supplied as an FPGA IP block, reducing engineering effort, costs and time-to-market
- ❖ Available in Xilinx Vivado IP Catalog

APPLICATIONS………………………………………………………

- ❖ Security Analytics Acceleration (SAA)
- ❖ Next Generation Firewall (NGFW)
- ❖ Intrusion Prevention System (IPS)
- ❖ Distributed Denial of Service (DDoS) Mitigation
- ❖ Data Loss Prevention (DLP)
- ❖ SmartNIC

- ❖ Network Monitoring
- ❖ Advanced auditing of user/application security policies
- ❖ Rule based content processing for spam, URLs and adware
- ❖ Financial data mining – parsing of streamed financial feeds
- ❖ Log File Analytics

BLOCK DIAGRAM………..……………………………………….
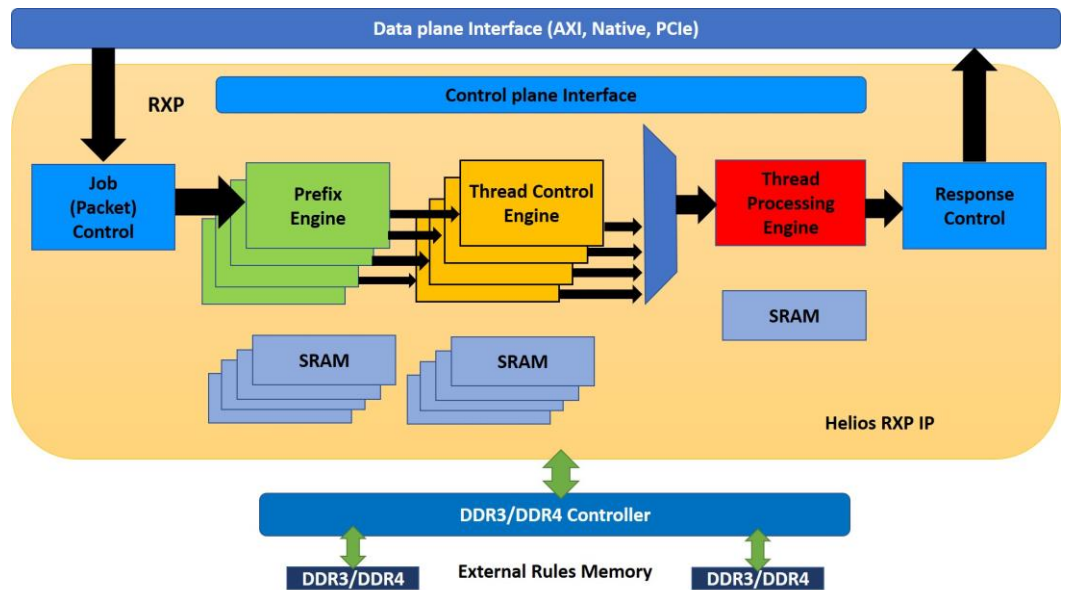
CAPABILITIES & RESOURCES……………………………………

The Helios RXPF is optimised for Xilinx FPGA, Kintex® UltraScale™, Virtex® UltraScale™ and Virtex® UltraScale+ platforms, and can be configured for bandwidths ranging from 5 to 100Gb/s. Resource requirements for running at a core clock rate of 160MHz are shown below:

	Helios RXPF Resource Requirements Xilinx KU115, Helios V5.6		Helios RXPF Resource Requirements Xilinx VU9P, Helios V5.6	
Bandwidth	20Gb/s	40Gb/s	50Gb/s	100Gb/s
Rules Capacity (up to)	1 million	1 million	1 million	1 million
# BRAMs	904	1655	586	1172
#URAM	N/A	N/A	297	594
# LUTs	113K	216K	216K	432K
# FFs	130K	241K	255K	510K