



Helios F1 is an FPGA-based **R**egular **eX**pression **P**rocessor (RXP), designed to be used as a CPU offload accelerator. The RXP runs on an Amazon FPGA Image (AFI) in an AWS EC2 F1 instance. Helios F1 delivers throughput acceleration for deep packet inspection, pattern matching and string matching applications. Titan IC has optimized the throughput performance of Helios F1 for the Amazon cloud fabric by taking full advantage of the new in-cloud FPGA technology and dedicated network bandwidth. This novel cloud infrastructure enables automatic elastic scaling of data analytics acceleration to hundreds of Petabytes of data.

The Helios f1.2xLarge instance is comprised of a 40G Helios IP core image which is easily configured using the AWS management console. When compared with CPU based AWS machine instances, Helios f1.2xLarge offers superior performance with significantly less vCPUs. The Helios F1 Application Programming Interface (API) enables easy and direct integration of offload acceleration into security applications.

### KEY FEATURES.....

- ❖ RegEx solution with 40G bandwidth
- ❖ Scalable beyond Petabit offload acceleration
- ❖ Supports up to 1 million RegEx rules using external DDR4
- ❖ Supports POSIX/PCRE compatible regular expressions
- ❖ Comprehensive SDK:
  - RXP Compiler
  - Application Programming Interface (API) for plugin development
  - Sample apps
  - Utilities
- ❖ Run-time partial ruleset update

## KEY BENEFITS.....

- ❖ Run as a virtual machine from AWS marketplace
- ❖ Pay as you go rental using AWS Marketplace service model
- ❖ Helios F1 40G image is provisioned automatically onto the Xilinx VU9P at server startup
- ❖ Run Helios F1 instances in an auto scaling group to automatically increase or decrease the number of instances running based on demand

## APPLICATIONS.....

- ❖ Cloud based Network and Web security
- ❖ Corporate network traffic analysis and filtering
- ❖ Security Analytics Acceleration (SAA)
- ❖ Security log analytics offload to accelerate Security Information and Event Management (SIEM) tools.
- ❖ Security forensics acceleration
- ❖ File metadata extraction for machine learning
- ❖ Rule-based analytics of massive datasets (>Petabytes) to filter and extract relevant data
- ❖ Data Loss Prevention (DLP)
- ❖ Cloud-based DDoS detection and prevention
- ❖ Cloud-based virtualized security applications for Intrusion Detection System (IDS), Intrusion Prevention System (IPS) and Next Generation Firewall (NGFW)
- ❖ Advanced auditing and policing of user/application security policies
- ❖ Financial data mining - parsing of streamed financial feeds

## RESOURCES.....

Helios F1 instance resources are outlined in the table below:

Amazon FPGA Instance	Helios f1.2xLarge
Bandwidth to instance	10G
Helios RXP bandwidth	40G
Rules Capacity (up to)	1 million
Total vCPUs	8
Memory (GiB)	122
SSD Storage (GB)	470

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