

**SUMMARY**

Seamless and native integration of Accolade hardware with all PF\_RING based applications such as Snort, Wireshark, Bro, Argus, Suricata and all ntop applications (e.g. nProbe)

**BENEFITS**

- Increased scalability, performance and throughput of all PF\_RING based applications
- Native integration with zero software modification

PF\_RING is an open-source network interface (socket) for Linux, developed by ntop (www.ntop.org). PF\_RING was originally developed in the early 2000s to improve packet capture in a Linux environment. It works very well at Gigabit Ethernet speeds, but as speeds increase to 10, 40 and ultimately 100G, host CPUs are unable to deliver performance and therefore require FPGA-based hardware assist. In these higher speed environments, PF\_RING continues to offer a unique value proposition by virtue of the many applications that have been written on top of it over the years: Wireshark, Suricata, Snort, Bro, Argus and the myriad ntop applications such as nProbe and n2disk.

PF\_RING has been enhanced to natively support all Accolade host CPU offload hardware and therefore any application that has been written on top of it will work without modification with all ANIC adapters or the ATLAS-1000 appliance platform.

**HOST CPU OFFLOAD**

Most applications that support a PF\_RING interface are related to security or network monitoring. For example, ntop, the developer of PF\_RING, offers products for traffic recording and replay, deep packet inspection, netflow, and traffic analysis. Other opensource software such as Snort or Suricata is more oriented towards security. Most security and network monitoring applications can be scaled tremendously with some assistance from underlying hardware. Accolade offers two distinct FPGA-based, hardware options as shown in the figures below. Both of these options provide the same host CPU offload features and functions such as

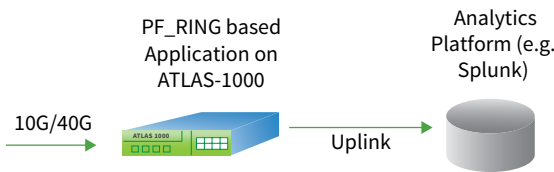


Fig 1: PF\_RING based Application on ATLAS-1000

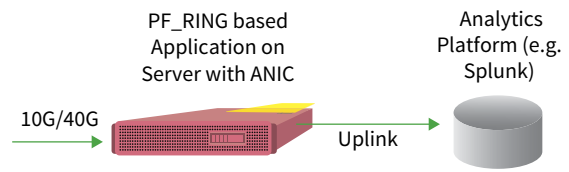


Fig 2: PF\_RING based Application with ANIC Adapter

platform that provides all the standard features and functions of an industry standard server with the added benefit of an onboard CPU offload engine in the form of an FPGA. As an alternative to the ATLAS-1000, Accolade offers a complete line of host CPU offload adapters/NICs that can be plugged into the PCIe slot of any industry standard server. The adapters are available in various configurations with 1G, 10G, 40G or 100G network interfaces.

# Native PF\_RING Integration with Accolade, FPGA-Based Hardware

## NATIVE INTEGRATION

Any application that requires hardware acceleration must be able to communicate directly with the underlying Accolade hardware—in order to take advantage of the valuable host CPU offload features and functions. Communication with Accolade hardware is accomplished via a lightweight, C language API (shown on the left side of the diagram) which is typically linked to the user application as a shared library. Via this API the application can control the Accolade hardware and perform various functions such as policy configuration, reading port status and retrieving flow table entries. Normally the application would have to be modified in order to make API calls, however in the case of PF\_RING based applications, no modification is required. Accolade has natively integrated the appropriate API calls into the PF\_RING network interface. Therefore all interaction with Accolade hardware is transparent to the application, which most importantly means the user does not have to make any modifications to the application at all. The only action required by the user is to load the Accolade specific, PF\_RING kernel module which comes with the standard PF\_RING distribution under the GNU GPLv2 license.

## FAST PATH COMMUNICATION

After the PF\_RING based application natively performs setup procedures at system startup, almost all the ensuing interaction between the application and Accolade hardware is performed in kernel bypass mode as fast path communication. As shown on the right side of the diagram above, Accolade hardware transfers network data (after performing CPU offload functions) directly into user memory. The application in turn fetches the pre-processed data from user memory and performs its myriad security and network monitoring functions.

## ACCOLADE TECHNOLOGY PROFILE

Accolade is the technology leader in FPGA-based Host CPU Offload and 100% Packet Capture PCIe Adapter/NIC's and Scalable 1U Platforms. Accolade's line of 1-100GE products enable 100% packet capture, flow classification, deduplication, packet filtering and more. Our customers are global leaders in network monitoring & cybersecurity applications as well as in the network test and measurement, telecom and video stream monitoring markets.

