

Napatech Link™ Capture Software

for Intel® Programmable Acceleration Card with Intel Arria® 10 GX FPGA

WHEN STANDARD NICS FAIL TO PERFORM

An increasing number of enterprises are exploring the option of building their own network monitoring and cybersecurity solutions. These are based on off-the-shelf servers with standard network interface cards (NICs) and come at a fraction of the cost of custom hardware.

As many monitoring and cybersecurity applications deliver functions that are CPU-bound and computationally intense, however, their performance is directly related to the number of packets the application must process. For such deployments, a standard NIC will typically prove insufficient, causing reduced application performance and potentially a critical loss of packets.

LINK™ CAPTURE SOFTWARE

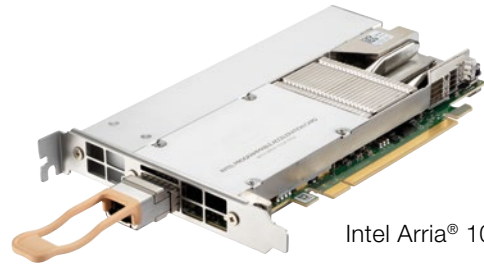
In helping enterprises overcome this challenge, Napatech has made its Link™ Capture Software available for the Intel® Programmable Acceleration Card with Intel Arria® 10 GX FPGA. With this technology, it is now possible to build high-performance, lossless solutions based on standard servers.

Napatech Link™ Capture Software is designed to support a wide range of applications including popular open source tools, such as Suricata and Snort for cybersecurity, Wireshark for network performance monitoring and TRex for traffic generation.

With Napatech Link™ Capture Software on the Intel® Programmable Acceleration Card, we guarantee maximum throughput with zero packet-loss performance and extreme precision, all of which are essential for reliable network performance, test and security analysis.

TURNING CAPTURE INTO VALUE

The solution has been benchmarked across a wide range of third-party, commercial and open source networking and cybersecurity applications, delivering more than triple the performance over servers with standard NIC configurations. This means a third of the required server resources to run the same application. By using fewer servers to achieve target performance, operational costs of rack space, power, cooling and management are significantly reduced.



Intel Arria® 10 GX

THE ADVANTAGES OF BUILDING YOUR OWN

In addition to the obvious cost benefits, the advantage of building your own solution is that it can provide exactly the level of visibility and insight that you need, as well as include precisely the features you require for your network – nothing more, nothing less.

POWERFUL PROCESSING PLATFORM

The Intel® Programmable Acceleration Card is a PCIe Network Interface Card based on the Intel Arria® 10 GX FPGA. This provides a powerful platform for high-speed, real-time data processing with deterministic and low-latency performance. Designed for integration in standard servers, it supports line-rates up to 40 Gbps.

When combined with Napatech Link™ Capture Software on a standard server, a powerful, reconfigurable computing platform can be provided to support a broad range of applications, such as Intrusion Detection and Prevention Systems (IDS/IPS), Advanced Threat Detection (ATD), Network Recording, Network and Security Forensics, Network Performance Monitoring (NPM), Lawful Interception, Quality of Experience (QoE) Assurance, Advanced Network Testing and Ethernet Traffic Generation.

KEY FEATURES

- Full throughput up to 40 Gbps bi-directional
- Supports both 10 Gbps and 40 Gbps line-rates
- Zero packet loss under all conditions
- Deterministic performance
- Precise timestamping of all packets
- PCAP and DPDK API support

FEATURES

Network Port Support

Link speeds

- 1x 40 Gbps
- 4x 10 Gbps

Pluggable modules

- QSFP+ 40GBASE-LR4
- QSFP+ 40GBASE-SR4
- QSFP+ 40GBASE-CR4
- QSFP+ 40GBASE-BiDi
- QSFP+ breakout to 4x 10GBASE-SR
- QSFP+ breakout to 4x 10GBASE-CR

Performance

Line rate Rx 40 Gbps for packet size 64 – 10,000 bytes, zero packet loss

Line rate Tx 40 Gbps for packet size 64 – 10,000 bytes

Rx burst buffer capacity: 600 ms at 40 Gbps

Host Buffers and Queues

Rx queues: 64

Tx queues: 128

Rx buffer size: 1 MB – 1 TB

Tx buffer size: 4 MB

Rx Packet Processing

HW time stamping with 1 ns resolution

Multi-port packet merge sequenced in time stamp order

L2, L3 and L4 protocol classification

- L2: Ether II, IEEE 802.3 LLC, IEEE 802.3/802.2 SNAP
- L2: PPPoE Discovery, PPPoE Session, Raw Novell
- L2: ISL, 3x VLAN, 7x MPLS
- L3: IPv4, IPv6
- L4: TCP, UDP, ICMP, SCTP

Tunneling support: GTP, IP-in-IP, GRE, NVGRE, VxLAN, Pseudowire

Filter match conditions

- Network port, protocol, length check and error condition filters
- Configurable flow definitions, based on 2, 3, 4 or 5-tuple
- Up to 36,000 IPv4 or up to 7,500 IPv6 2-tuple flows

Filter actions

- Drop
- Forward to port
- Forward to specific host Rx queue
- Load distribute over host Rx queues
- Select packet descriptor type
- Optional flow ID in packet descriptor
- Slice

Hash keys

- Custom 2 x 128 bits and 2 x 32 bits with separate bit masks
- Symmetric hash keys
- Protocol field from inner or outer headers

CPU load distribution: Hash key and filter-based

Packet descriptors

- PCAP and Napatech descriptor formats
- Time stamp and network port ID
- Header offsets
- Hash key
- Color/tag
- Correlation key
- Protocol and error information

IP fragment handling

- First level IP fragmentation
- Filter actions on inner header fields applied to all fragments

Correlation key (packet finger print)

Slicing at dynamic offset or fixed offset from start or end of packet

Tx Packet Processing

Replay as captured with nanoseconds precision

Per port traffic shaping

Port to any port forwarding

Advanced Statistics

Extended RMON1 per port

Packets and bytes per filter/color

Packets and bytes per stream/queue

Time Precision

OS time synchronization

Time stamp formats: Unix 10 ns, Unix 1 ns, PCAP 1 us, PCAP 1 ns

Monitoring sensors

FPGA temperature level with alarm and software shutdown

Supported OS

Linux kernel 3.10 through 4.7

Supported API's

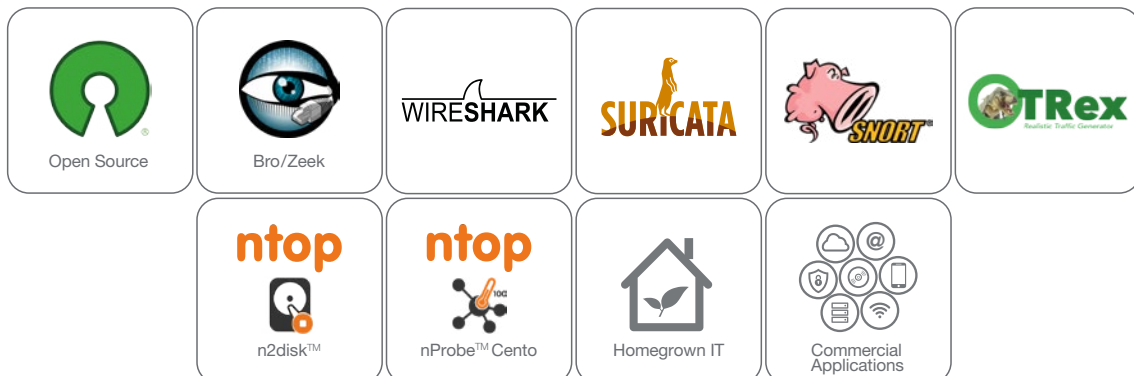
PCAP v. 1.8.1

DPDK v. 18.08

NTAPI (Napatech API)

Supported Hardware

Intel Programmable Accelerator Card A10 GX



COMPANY PROFILE

Napatech helps companies to reimagine their business by bringing hyperscale computing benefits to IT organizations of every size. We enhance open and standard virtualized servers to boost innovation and release valuable computing resources that improve services and increase revenue. Our reconfigurable computing platform™ is based on a broad set of FPGA software for leading IT compute, network and security applications that are supported on a wide array of FPGA hardware designs. Additional information is available at www.napatech.com