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Packet capture as the market moves to 100G (and beyond)

Global STAC Live

2 November 2021

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Agenda

- Corporate overview
- Capture2Disk at 100Gbps - Challenges
- Replay traffic at 100Gbps
- Napatech FPGA SmartNICs for Capture and Replay
- Other use cases

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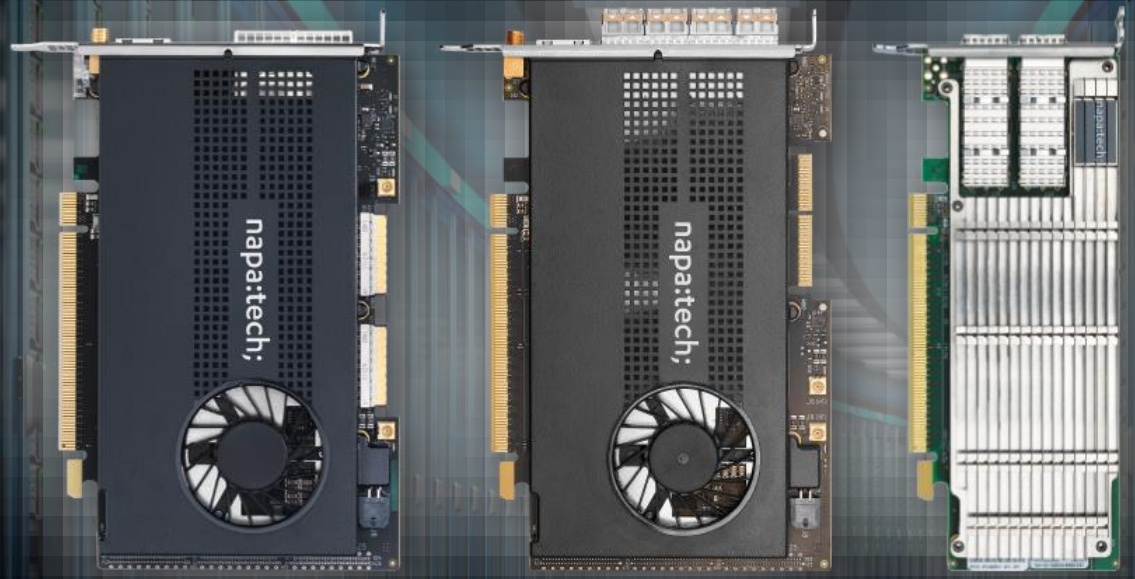
Napatech Builds SmartNICs



- We design high-performance programmable SmartNICs to accelerate applications and capture data at line rate
- Napatech Link™ software supports Capture, Inline, Virtualization
- US manufacturer with extremely high reliability

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Capture2Disk at 100Gbps

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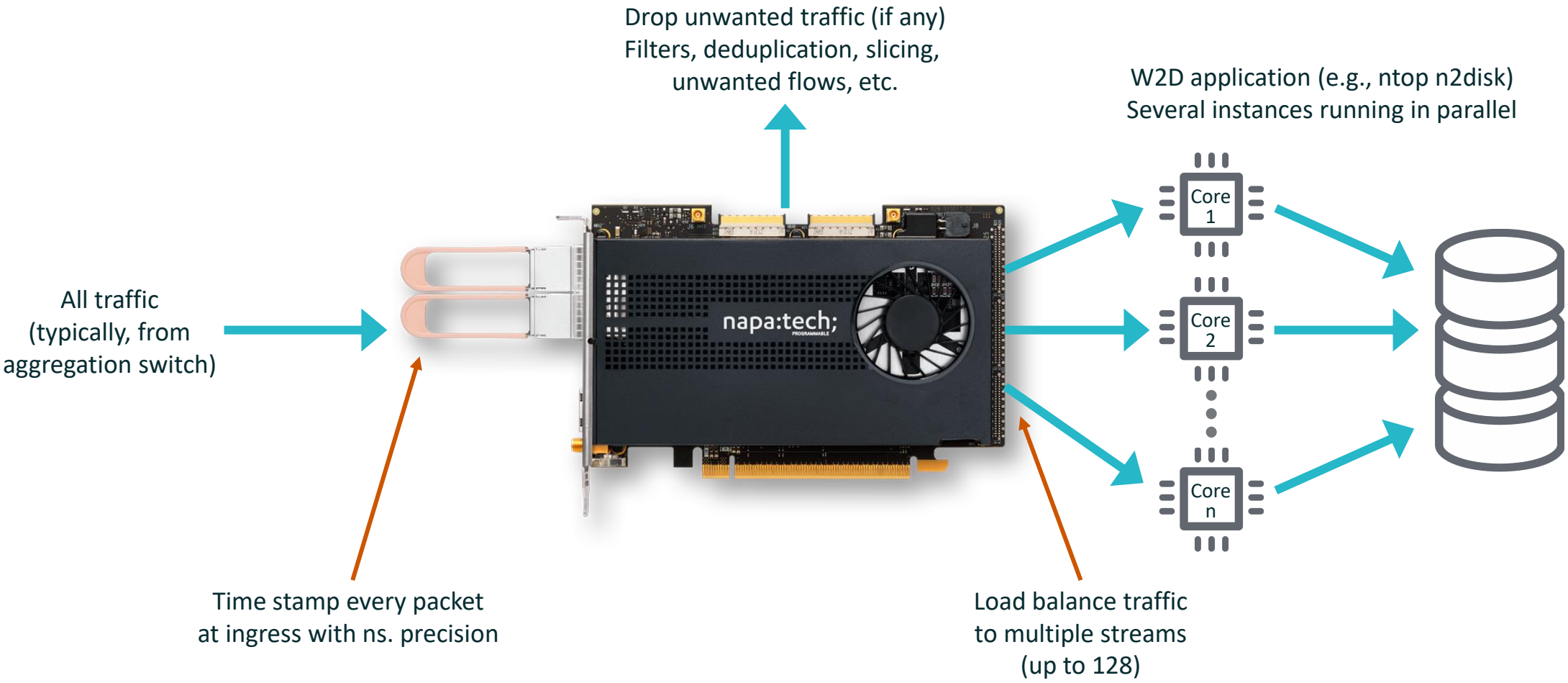
The Challenges of Capturing Traffic at 100 Gbps

- Capturing at 100 Gbps with zero packet loss is a different ballgame
- Need for specialized HW with ample buffers to ensure performance during bursts and application overload
- Features to distribute traffic to multiple streams and, if needed, to help reduce traffic (deduplication, slicing, filters…)
- Synchronization options (PPS, PTP) and nanosecond time stamping
- Able to process 200 Gbps in the FPGA
- FPGAs are deterministic; performance does not depend on volume of traffic or number of enabled features

Capture2Disk System



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Replay Traffic at 100 Gbps

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Replay Traffic at 100 Gbps

- Why settle with capture when you can also replay?
- Replay recorded traffic at full 100 Gbps according to timestamp in captured packets (accurate copy of recorded traffic)
- Or… modify replay speed at will
- Generate your own traffic with open-source tools: Ostinato, TRex…

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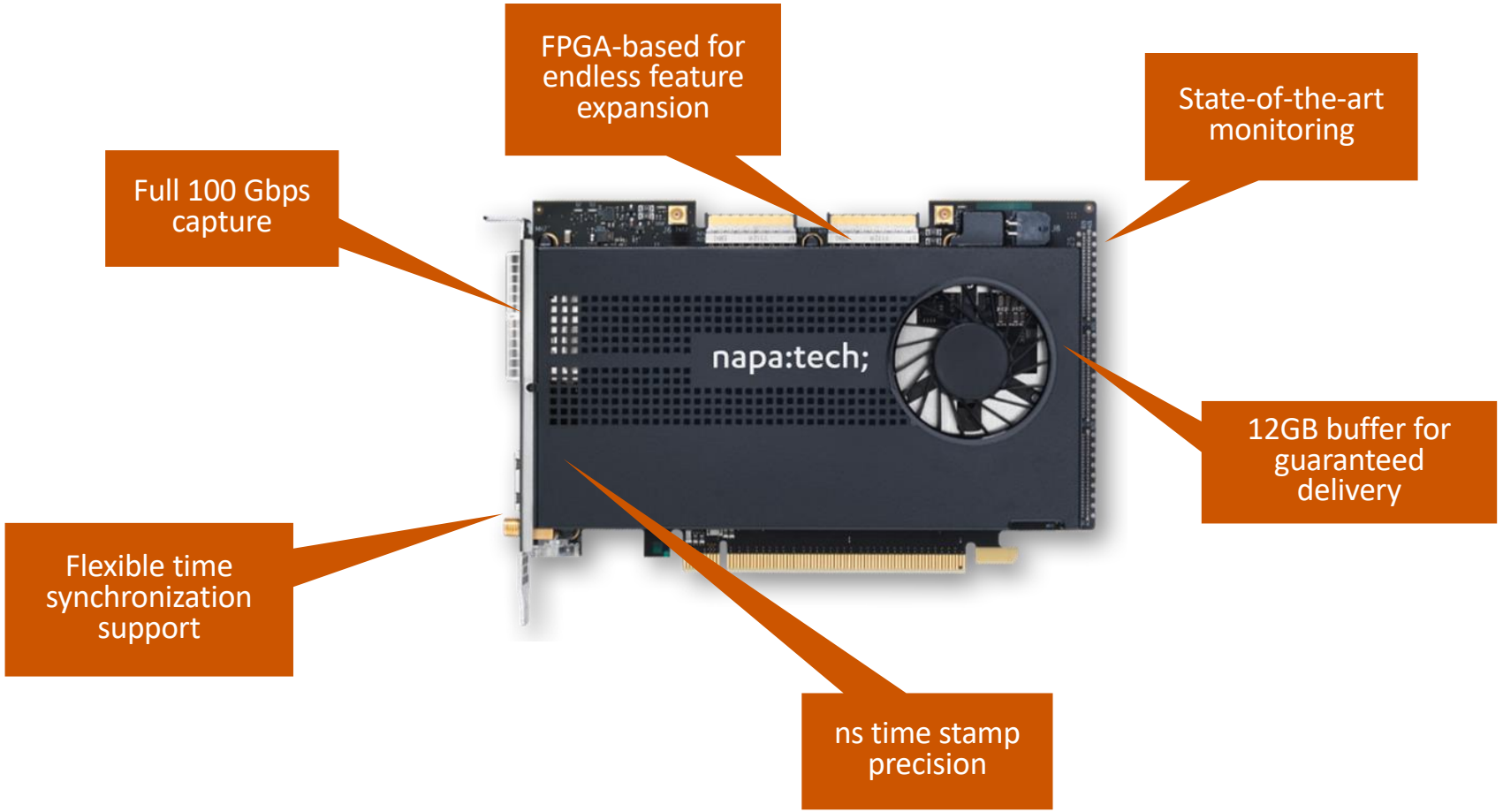
Napatech FPGA SmartNICs for Capture and Replay

Napatech SmartNICs for Standard COTS Servers

Ex. NT200A02:

- 2x1G/10G
- 8x10G
- 2x25G
- 4x25G
- 2x40G
- 2x100G



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Advance Features (some examples)

- Intelligent CPU load distribution (up to 128 streams)
- Flow Management for dynamic actions
- Deduplication – eliminate and count duplicates
- Slicing – cut unwanted part of frames
- Decapsulation – remove unnecessary headers
- Advanced configurable filtering
- Local Retransmit

… and many more

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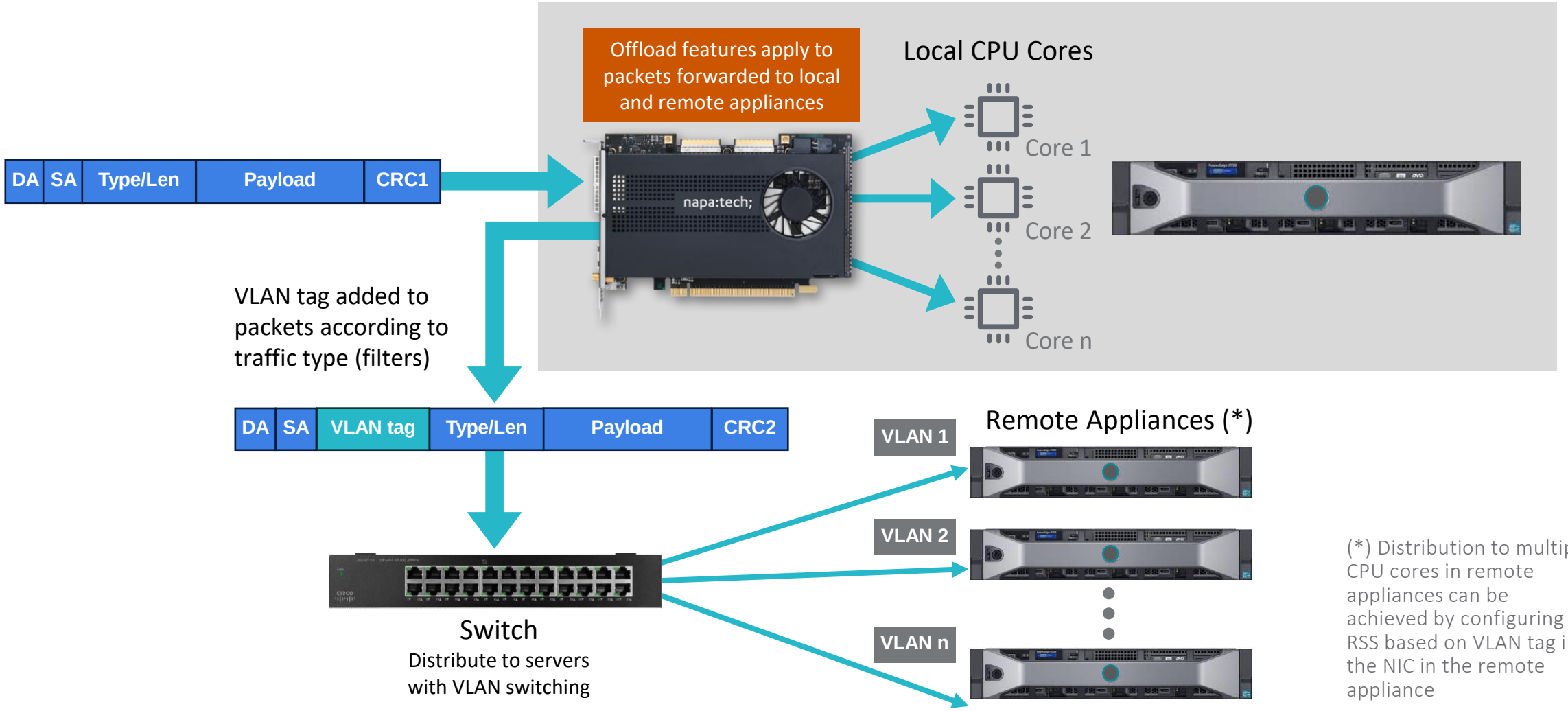
Other Use Cases

Packet Broker Functionality

- Features like local retransmit, VLAN distribution, advance filtering, etc. allow you to create powerful packet broker functionality directly on the card.

Packet Broker Example



(*) Distribution to multiple CPU cores in remote appliances can be achieved by configuring RSS based on VLAN tag in the NIC in the remote appliance

Cyber Security

- Create your own IDS/IPS using open-source apps (Suricata, Bro/Zeek, Snort…) running at 100 Gbps.
- Our Flow Management features allow actions to be taken before the traffic even reaches the CPUs, drastically reducing the number of packets that need to be inspected by the SW => achieve 100Gbps or higher throughputs

Other Interesting Use Cases

- Run more apps in the same appliance
  - The advanced CPU load distribution capabilities of the card to 128 buffers/queues also allows to carry out several simultaneous functions in the same appliance, like write to disk, real-time analytics (e.g., gap analysis), etc.

- Accurately measure link latencies
  - Precise measurements: Nanosecond precision Tx and Rx time stamping

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Thank You!