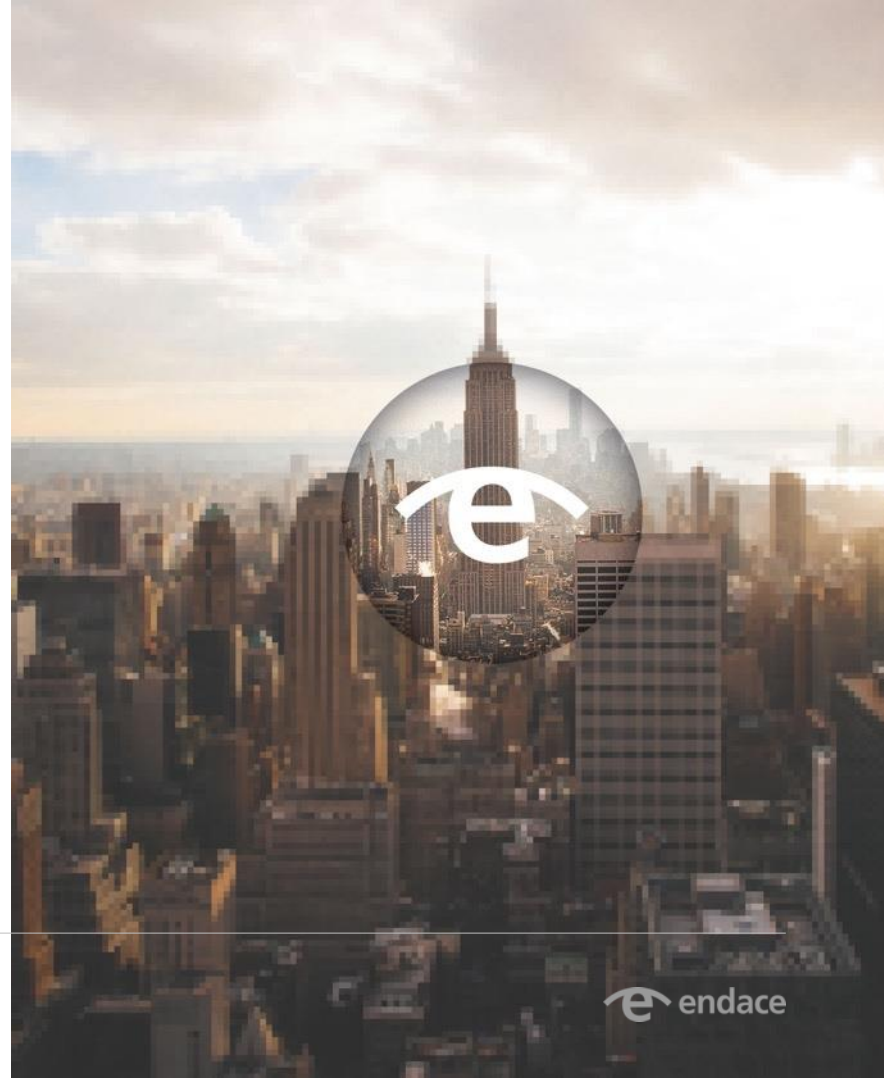




New trade data recording and playback options from Endace

Agenda

- **NEW** EndaceProbe 4100-TR
- A quick recap on **Provenance™**
- **NEW** DAG 10X4-S Card
- A **special offer** for STAC attendees



Introducing the EndaceProbe 4100-TR Network Recorder

Price/Performance optimized for Financial Traders

- Compact 1RU, ideal for Co-Lo deployments
- Up to 8x 10GbE or 2x 40GbE ports
- 15 Gbps sustained write-to-disk speed

100% Accurate recording

- Lossless capture with nanosecond-accurate time-stamping
- Designed for microburst resilience
- 7.6 Terabytes of SSD based storage

Advanced investigation APIs and tools

- Automate mining and archival using advanced APIs
- Quickly investigate uSec-length Microbursts using EndaceVision™

Provenance™

- Self-describing data ensures regulatory compliance – e.g. MiFID 2 timing



Why EndaceProbe?

Optimized for performance and reliability Proven on some of the world's fastest networks



Record Provenance-enriched trade data with nanosecond precision



Playback for real-time or historical investigation and tuning

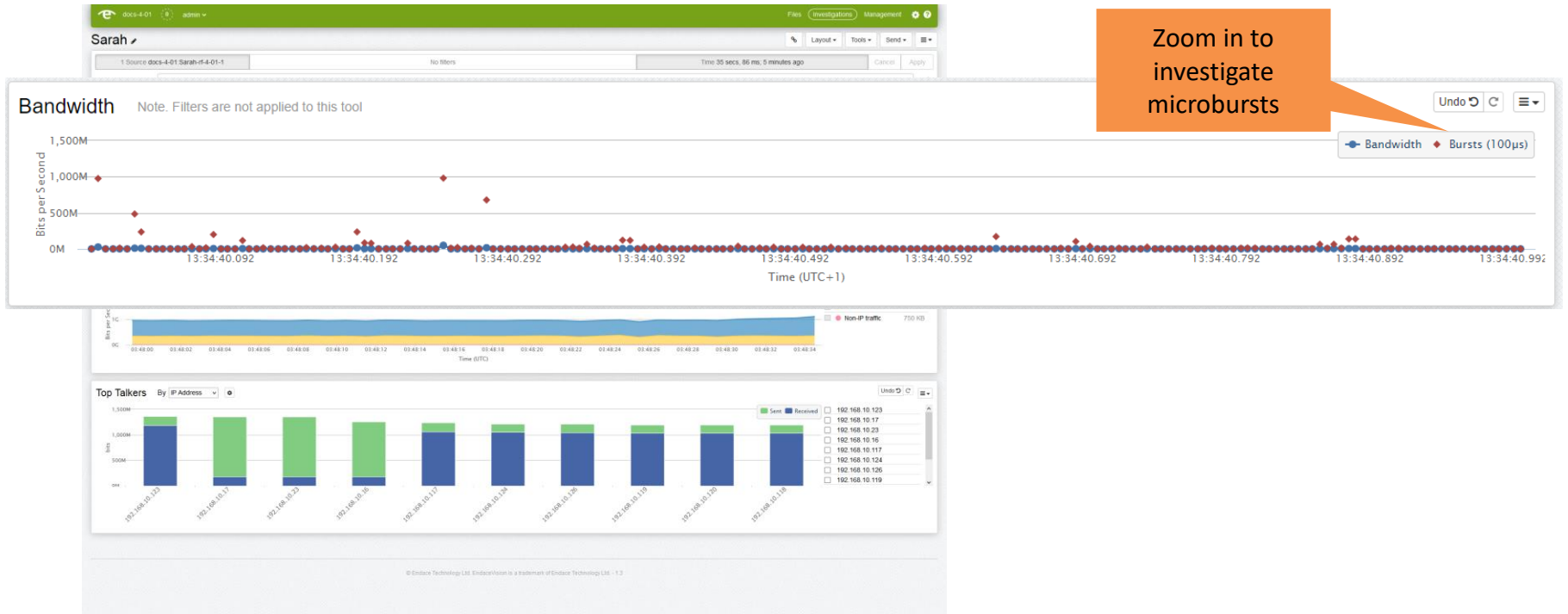


Integrate easily with your existing tools. Automate data-mining and archival



Investigate with EndaceVision™ and EndacePackets™ free on EndaceProbes

See Microsecond Events using EndaceVision with MicroVision



A Recap on Provenance

Captures context alongside recorded network history

Provenance records are automatically embedded in recorded traffic

- Easy to examine with standard packet tools e.g. Wireshark
- Extensible format – future proof for evolving business/regulatory needs

Aids regulatory compliance (e.g. MIFID 2) through rich contextual data

- Full timing data: time source, synchronization method, clock accuracy (drift)
- And 150+ other data points: hostname, location, link name, link type and many more

Supported on DAG cards and EndaceProbe Network Recorders

A Quick Example - Timing

The screenshot displays a Wireshark capture of a Precision Time Protocol (PTP) message. The left pane shows the packet's structure with the following details:

- > PTP Domain Number: 0
- > PTP Steps Removed: 1
- > PTP Offset From Master: 0.011442476 seconds
- > PTP Mean Path Delay: 1494 nanoseconds
- > PTP Parent Clock Identity: Symmetri_ff:fe:01:c1:7a (00:a0:69:ff:fe:01:c1:7a)
- > PTP Parent Port Number: 1
- > PTP Grandmaster Identity: Symmetri_ff:fe:01:c1:7a (00:a0:69:ff:fe:01:c1:7a)
- ▼ PTP Grandmaster Clock Quality: 0x062142ba, Clock Class: 6, Clock Accuracy: The time is accurate to within 200 ns
 - 0000 0110 = Clock Class: 6
 - 0010 0001 = Clock Accuracy: The time is accurate to within 200 ns
 - 0100 0010 1011 1010 = Offset Scaled Log Variance: 17082
- Tag Type: ptp_gm_clock_quality (406)
- Tag Length: 4
- > PTP Current UTC Offset: 36.000000000 seconds
- > PTP Time Properties: 0x0000003c, Current UTC Offset Valid, PTP Timescale, Time Traceable, Frequency
- > PTP Time Source: GPS (32)
- > PTP Clock Identity: EndaceT_e_ff:fe:01:70:a8 (00:0e:a7:ff:fe:01:70:a8)
- > PTP Port Number: 1
- > PTP Port State: UNCALIBRATED (8)
- > PTP Delay Mechanism: E2E (1)

The right pane shows the raw hex data of the packet, with an orange callout box pointing to it containing the text: "Detailed timing data visible in Wireshark".

Introducing the DAG 10X4-S

New 1/10/40GbE-capable, Quad-Port card

- 4 Capture ports individually configurable for 1GbE/10GbE
- Combine 4 ports for 40GbE capture

100% accurate, line-rate capture

- Regardless of load or packet size

Powerful, on-board pre-processing

- Filtering, de-duplication, steering

Accurate capture replay to within +/- 50 nSec

Linux and BSD drivers



Why DAG?



Dedicated timing port

- No need to lose a capture port for time-signal input

Ultra reliable

- Fan-less cooling – no moving parts
- MTBF: >340,000 hours (38.8 years!)

Nanosecond-level time-stamp accuracy

- 4ns time-stamp resolution
- <100ns sync between cards – in same or different server

Provenance™ support

- Full context alongside captured packets

Sharp pricing

- Market-leading price point for this level of functionality, accuracy and reliability
- US\$6000 list price (just US\$1500/port for 10GbE !)

Special Offer for STAC attendees

“Two-for-One” deal

- Buy one DAG10X4-S for US\$6,000 and get another one free.
- That’s **eight** 10GbE ports for just **\$750 per port!**
- Look out for the email after STAC



Questions?

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