



cPacket Networks

*Challenges and
Solutions for Financial
Trading Networks*

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Challenges for Financial Trading Networks



Market Data Traffic Increasing



Finding Sequence Errors in Real-Time



Low-Resolution Monitoring Hides Problems



Compliance with MiFID II Regulations

1

Market Data is Increasing

Spike detection for market data feeds

Challenges

- Markets = Event Driven
- Spikes = Lost Data
- Spikes Are Invisible

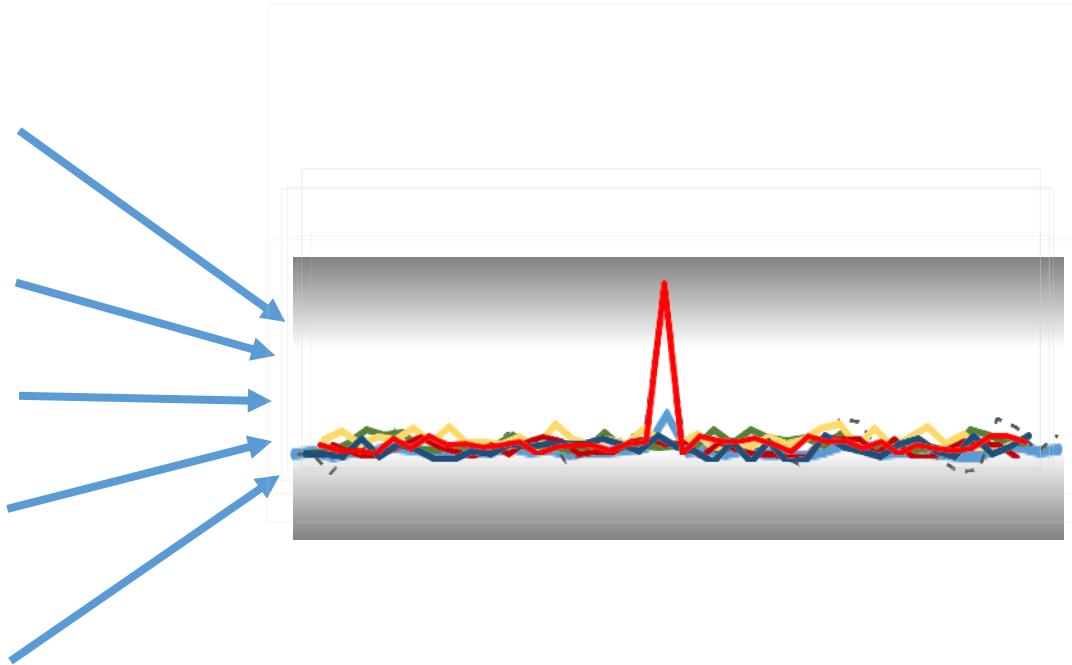
Solution - cBurst

Predictive high-resolution monitoring that identifies problems before end-users are impacted

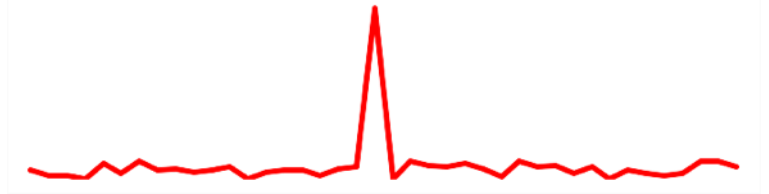


cBurst Finds Problems Before Users Impacted

Market
Data
Feeds



Proactive alerts identify problems in **real-time**



233.200.79.128:62128
(CTS 1/Network A)

Allowing you to identify the **specific** problem feed

2

Market Feed Gap Detection

Sequence anomaly detection in real time

Challenges

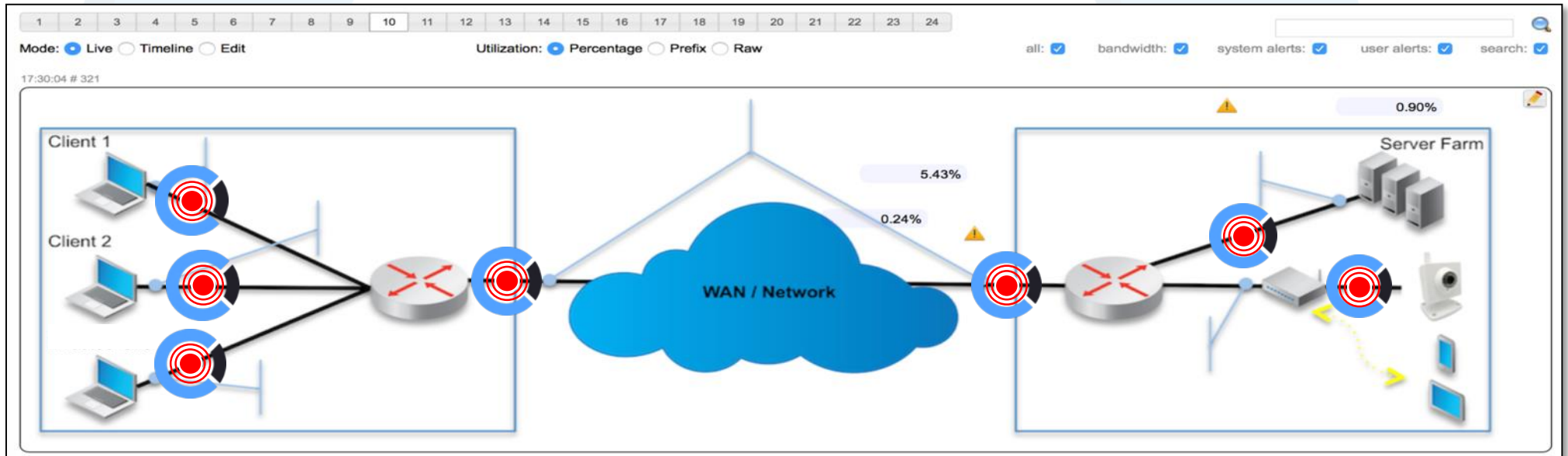
- Traffic Bursts = Gaps
- NPBs = Gaps or Ghosts
- Full Coverage = \$\$\$\$\$

Solution: cPacket MFGD

Real-time detection of sequence anomalies (gaps) performed in hardware at up to 40Gbps line rate



Identify Gaps in Market Data Feeds



Deploy at critical points in infrastructure
Enable and set alarms

Identify Gaps in Market Data Feeds

The image displays the Wireshark Network Analyzer interface. On the left, a packet list shows various protocols including TCP, BOOTP, NMPI, SMB, STP, and POP. A callout box highlights a gap in sequence numbers: "..., 47, 48, 50". In the center, a packet details pane shows the structure of a selected packet, including Ethernet II, Internet Protocol, and Transmission Control Protocol fields. Another callout box highlights a gap in sequence numbers: "..., 224, 225, 227". On the right, a packet bytes pane shows the raw data of the selected packet. A third callout box highlights a gap in sequence numbers: "..., 1010, 1011, 1049". The interface also shows a timeline view on the left with three time points: 2015-09-13 10:04:14.2, 2015-09-13 12:55:18.3, and 2015-09-13 16:22:55.0. A search bar on the right shows a search for "0.90%".

Gap occurred, bring up history
Access packet capture for forensics or “proof”

3

High Resolution Analytics

Identify problems your other tools can't see

Challenge

- Low Resolution (>1 Sec) monitoring hides your network problems

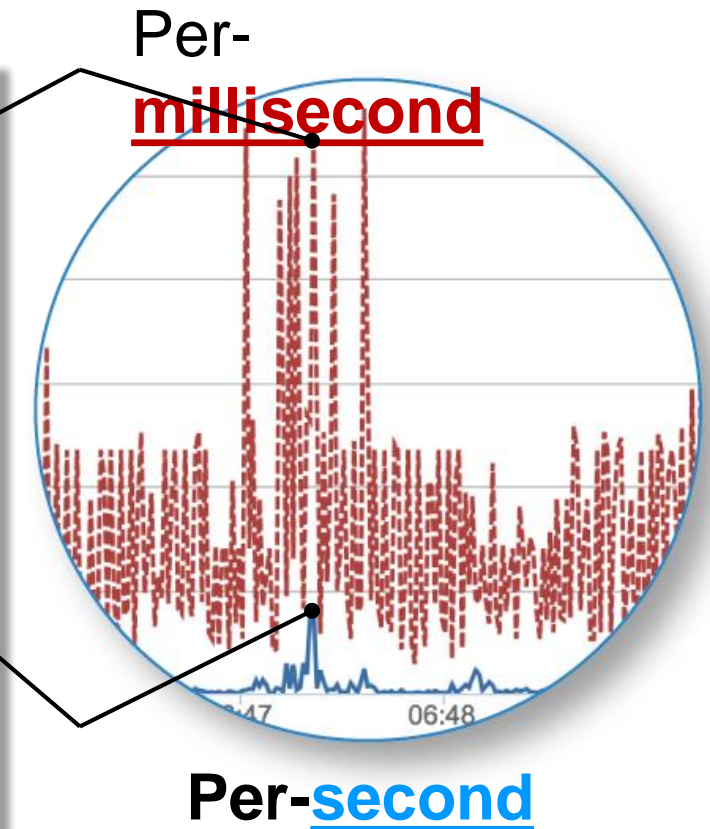
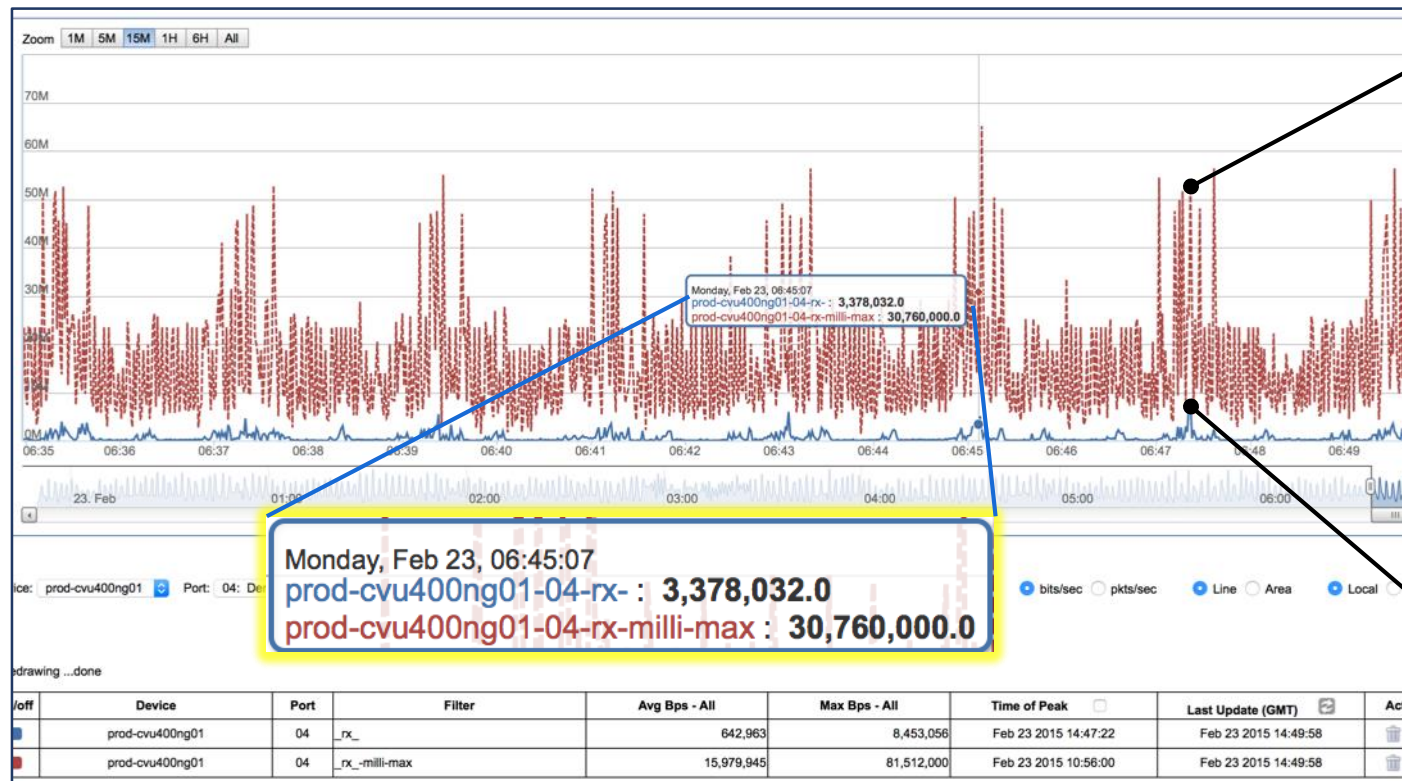
Solution:

Millisecond Resolution
Identifies problems that
your other monitoring
tools can't detect



High Resolution Analytics

Definition Matters



1000X difference in magnitude between millisecond and second

4

Timestamping for MiFID II

The Industry's Most Accurate Time Stamp

Challenges

- MiFID II Compliance
- Contamination From Queuing & Buffering
- Necessary for Diagnostics

Solution:

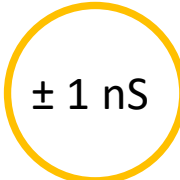
cPacket Nanosecond
Time Stamp is most
accurate in the industry



cPacket's Time Significantly Exceeds MiFID II (RTS-25) Minimum Requirements

Compliance

MiFiD II RTS-25 Requirements

Type of Trading Activity	Divergence from UTC	Granularity Required Under MiFID II	cPacket Timestamp Accuracy
Activity using high frequency algorithmic trading technique	100 uS	1 uS or better	 using PPS or external PTP to PPS converter
Activity on voice trading systems	1 sec	1 sec or better	
Activity on request for quote systems where the response requires human intervention and algorithmic trading	1 sec	1 sec or better	
Activity of concluding negotiated transactions	1 sec	1 sec or better	
Any other trading activity	1 msec	1 msec or better	

Not STAC Benchmarks

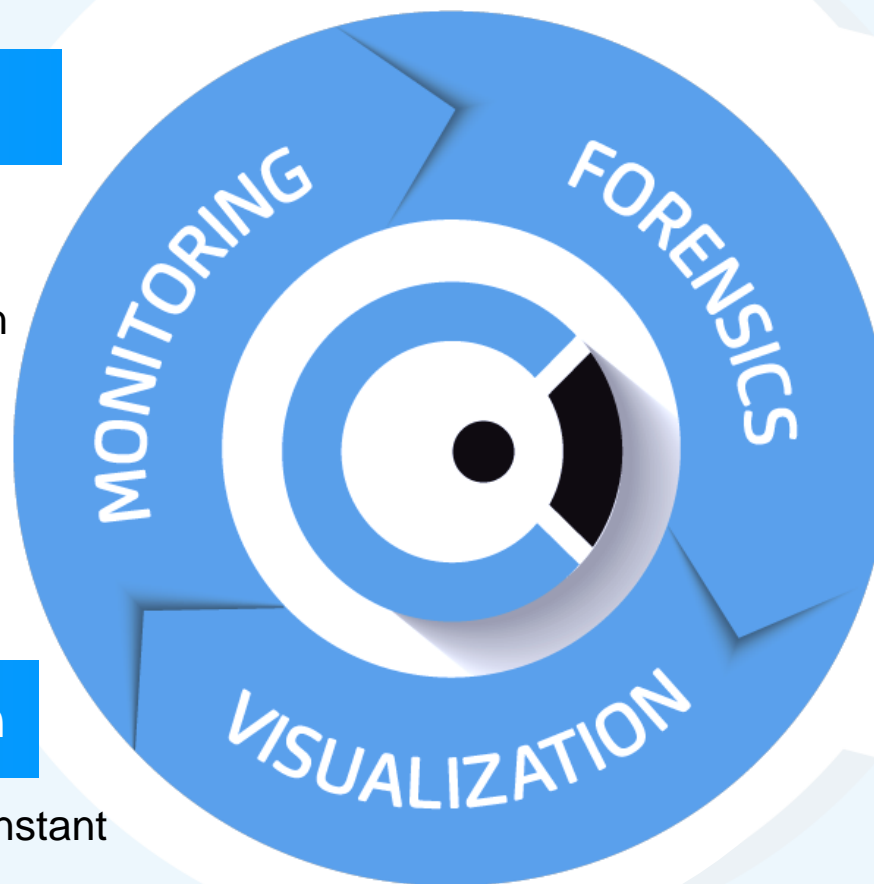
cPacket Integrated Monitoring Fabric

cVu Real-Time Monitoring

- Real-time Analytics for Operational Intelligence
- Complete Packet Inspection
- Innovative Next-Generation Architecture

Dashboard Visualization

- Powerful "map" view gives instant overview -> packet details
- Simple Management & Configuration
- Customize predictive alerts



cStor Intelligent Forensics

- Intelligent Forensic Storage
- Troubleshooting Intermittent Problems After-the-Fact
- Incident and Security Analysis and Response

Sample Customer List





Thank You

Please email questions to:
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