

Explicit Flow Measurements IETF Hackathon

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What got done

- Understand if Spinbit technique is supported on Internet
 - Implementation of Quic Spin Bit inside an open source browser, i.e. Chromium
- Tests versus OTT Web Servers: they don't support Spinbit
- Tests versus an Open Litespeed Web Server: successful!
We got the spinbit running and delay measurements.

SPINDUMP

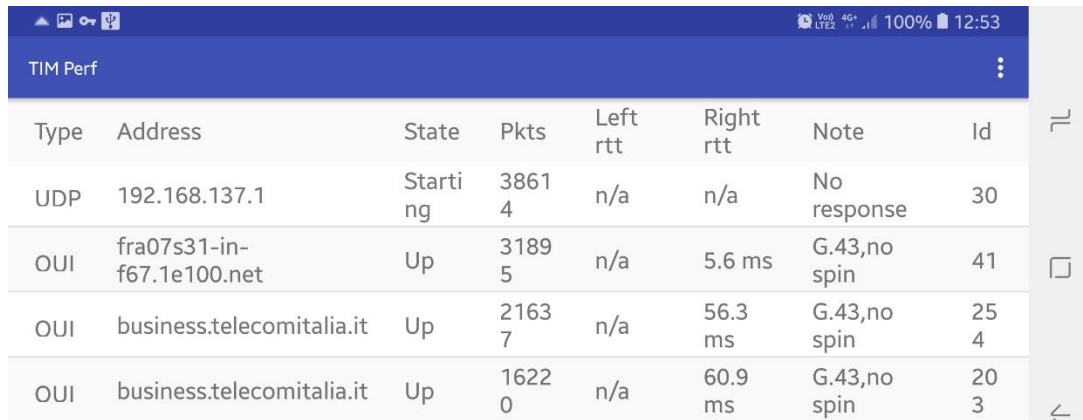
3 connections 194 packets 78.8K bytes (showing latest RTTs, not showing UDP, showing addresses)

TYPE	ADDRESSES	Nome	SESSION	Dimensioni	Tipo	STATE	PAKS	LEFT RTT	RIGHT RTT	NOTE
QUIC	31.133.130.245 <-> 18.198.129.171	ChromePublic 103.0.5047.apk	1 agosto 2022, 16:17	196 MB	Docun	Up	67	547 us	37,7 ms	RFC,spinning
QUIC	31.133.130.245 <-> 18.198.129.171		null-086afda5e826e9f5 (53209:443)	ocun		Up	36	1,2 ms	33,6 ms	RFC,spinning
TCP	31.133.130.245 <-> 18.198.129.171		null-087ace026c084fcc (50225:443)	ocun		Up	13	63 us	61,0 ms	

What got done

- New Delay Measurement Technique
 - We implemented a new experimental technique which require only client support.
 - It relies on internal protocol RTT evaluation and uses the same square wave mechanism of SpinBit.
 - Some preliminary tests have been done with good results.
 - Differently from other delay techniques, this does not require server reflections or interactions.

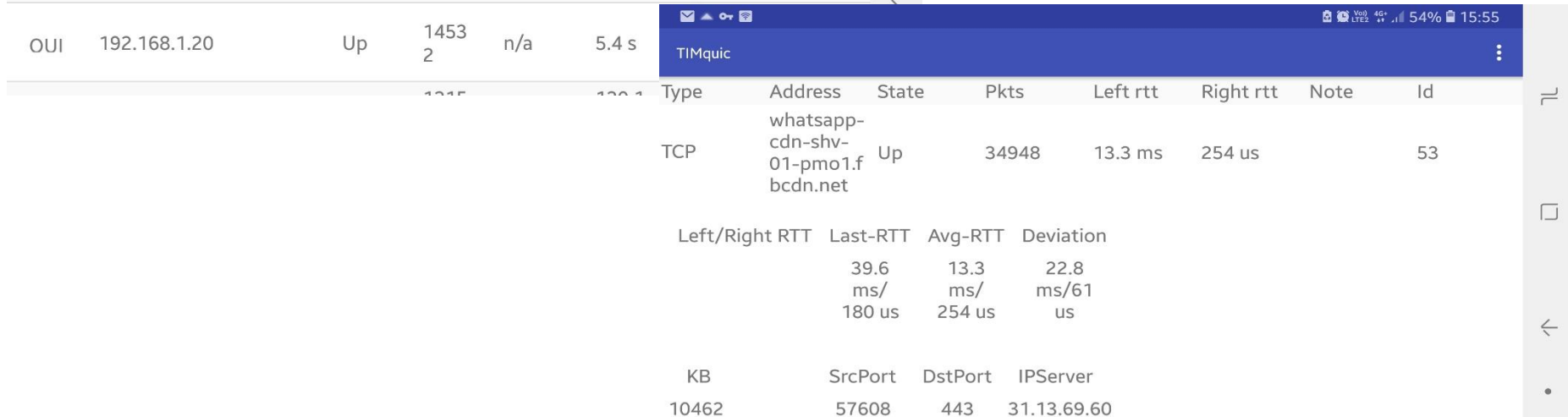
User device explicit monitoring App



The screenshot shows the TIM Perf app interface. At the top, there's a status bar with icons for signal, Wi-Fi, battery, and time (12:53). Below it is a blue header bar labeled 'TIM Perf'. The main content is a table with columns: Type, Address, State, Pkts, Left rtt, Right rtt, Note, and Id. The table contains five rows of data. On the right side of the table, there are three vertical icons: a list icon, a square icon, and a back arrow icon.

Type	Address	State	Pkts	Left rtt	Right rtt	Note	Id
UDP	192.168.137.1	Starting	38614	n/a	n/a	No response	30
OUI	fra07s31-in-f67.1e100.net	Up	31895	n/a	5.6 ms	G.43,no spin	41
OUI	business.telecomitalia.it	Up	21637	n/a	56.3 ms	G.43,no spin	254
OUI	business.telecomitalia.it	Up	16220	n/a	60.9 ms	G.43,no spin	203

Demo Screenshots



The screenshot shows the TIMquic app interface. At the top, there's a status bar with icons for signal, Wi-Fi, battery, and time (15:55). Below it is a blue header bar labeled 'TIMquic'. The main content is a table with columns: Type, Address, State, Pkts, Left rtt, Right rtt, Note, and Id. The table contains one row of data. Below the table, there are two summary sections. The first section shows 'Left/Right RTT', 'Last-RTT', 'Avg-RTT', and 'Deviation' with their respective values. The second section shows 'KB', 'SrcPort', 'DstPort', and 'IPServer' with their respective values. On the right side of the table, there are three vertical icons: a list icon, a square icon, and a back arrow icon.

Type	Address	State	Pkts	Left rtt	Right rtt	Note	Id
TCP	whatsapp-cdn-shv-01-pmo1.fbcdn.net	Up	34948	13.3 ms	254 us		53

Left/Right RTT

Last-RTT

Avg-RTT

Deviation

39.6 ms/180 us

13.3 ms/254 us

22.8 ms/61 us

KB

SrcPort

DstPort

IPServer

10462

57608

443

31.13.69.60

IETF References

- Drafts on this work:
 - Explicit Flow Measurements
<https://datatracker.ietf.org/doc/draft-ietf-ippm-explicit-flow-measurements/>
 - User Devices Explicit Monitoring
<https://datatracker.ietf.org/doc/draft-cnbf-ippm-user-devices-explicit-monitoring>

Wrap Up

Team members:

Massimo Nilo (Telecom Italia - TIM)

Fabio Bulgarella (Telecom Italia - TIM)

Mauro Cociglio (individual)