TMA Conference 2017

Proceedings of the 1st Network Traffic Measurement and Analysis Conference

Dublin, Ireland, June 21-23, 2017

Contents

1 CHAIR'S WELCOME

As we witness the explosion of demand for bandwidth and exciting changes in the ways we do networking brought about by SDN, virtualization, cloud, IoT and ubiquitous broadband wireless, we are facing new challenges in measurement and analysis across the entire network stack, from the physical layer up to applications and services in the cloud. The Network Traffic Measurement and Analysis Conference, **TMA Conference**, focuses on improving the practice or application of measurements, across the entire network stack up to the application layer, with an emphasis on new areas of network communication such as Software-Defined Networks, Cloud services, Content Distribution Networks, Social Networks, mobile applications and data centers. TMA Conference 2017 also tackles traditional measurement topics, such as traffic classification, anomaly detection, network performance evaluation and traffic analysis.

TMA Conference is a unification of three successful workshops run in the past, including the IFIP/ACM Traffic Monitoring and Analysis Workshop (TMA), the IEEE Workshop on TRaffic Analysis and Characterization (TRAC), and the IEEE Workshop on Network Measurements (WNM).

TMA Conference 2017 accepted 19 technical papers out of 54, high-quality submissions. The paper review process included an evaluation phase by PC members, followed by an online discussion and a subsequent shepherding phase on selected papers. The resulting program features a variety of high-quality papers focusing on different aspects of network measurement and analysis, including network security and privacy, network performance, traffic classification, frameworks for traffic analysis, cloud measurement and new protocols.

TMA Conference 2017 hosted the first workshop on Mobile Network Measurement (MNM), and was co-located with the traditional TMA PhD school, started back in 2010 and recognized as the most important PhD school in network measurement and analysis topics today. The conference also featured two exciting talks from recognized researchers and practitioners in network measurements, including:

Network Measurements as a Hammer in Your Research Toolbox
Steve Uhlig (Queen Mary, University of London)

Crowdsourcing Network and Traffic Measurements to Illuminate the Mobile Ecosystem
Narseo Vallina-Rodriguez (IMDEA Networks)

TMA Conference 2017 delivered a best paper award, a best dataset award, and selected a new logo through the TMA logo contest, in all cases providing a monetary award besides the corresponding recognition. Top papers from the

main conference were invited for fast tracking at the IEEE Transactions on Network and Service Management journal.

TMA Conference 2017 has been a great success, and we hope that all attendees have enjoyed the excellent technical program and found a nice and constructive environment to discuss on new ideas and upcoming challenges to tackle within the scope of TMA.

Marco Mellia	**Emir Halepovic**	**David Malone**
Politecnico di Torino	AT&T Labs - Research	Hamilton Institute

TMA Conference 2017 program chairs.

2 TMA CONFERENCE 2017 ORGANIZATION

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4 TMA TECHNICAL PROGRAM

4.1 TMA Conference Program

Session 1: Privacy

The Cookie Recipe: Untangling the Use of Cookies in the Wild
Roberto Gonzalez, Lili Jiang, Mohamed Ahmed, Miriam Marciel, Ruben Cuevas, Hassan Metwalley, Saverio Niccolini

Push Away Your Privacy: Precise User Tracking Based on TLS Client Certificate Authentication
Matthias Wachs, Quirin Scheitle, Georg Carle

Benchmark and Comparison of Tracker-blockers: Should You Trust Them?
Leonardo Giannantoni, Stefano Traverso, Marco Mellia, Hassan Metwalley, Martino Trevisan

Session 2: Traffic Classification

How HTTP/2 is Changing Web Traffic and How to Detect it
Jawad Manzoor, Ramin Sadre, Idilio Drago

A View From the Edge: A Stub-AS Perspective of Traffic Localization and its Implications
Bahador Yeganeh, Reza Rejaie, Walter Willinger

Large-Scale Classification of IPv6-IPv4 Siblings with Variable Clock Skew
Quirin Scheitle, Oliver Gasser, Minoo Rouhi, Georg Carle

Session 3: Traffic Analysis Platforms and Frameworks

Disco: Fast, Good, and Cheap Outage Detection
Anant Shah, Romain Fontugne, Emile Aben, Cristel Pelsser, Randy Bush

HLOC: Hints-Based Geolocation Leveraging Multiple Measurement Frameworks
Quirin Scheitle, Oliver Gasser, Patrick Sattler, Georg Carle

Enabling Packet Fan-Out in the libpcap Library for Parallel Traffic Processing
Nicola Bonelli, Stefano Giordano, Gregorio Procissi

Session 4: Measurements at Different Layers

Does Anycast Hang up on You?
Lan Wei, John Heidemann

Middleboxes in the Internet: a HTTP Perspective
Shan Huang, Felix Cuadrado, Steve Uhlig

Towards a Renewed Alias Resolution with Space Search Reduction and IP Fingerprinting
Jean-François Grailet, Benoit Donnet

Session 5: Active and Passive Address Scanning

Do You See Me Now? Sparsity in Passive Observations of Address Liveness
Jelena Mirkovic, Genevieve Bartlett, John Heidemann, Hao Shi, Xiyue Deng

Profiling Internet Scanners: Spatiotemporal Structures and Measurement Ethics
Johan Mazel, Romain Fontugne, Kensuke Fukuda

Session 6: Analysis from the Cloud

Veiled in Clouds? Assessing the Prevalence of Cloud Computing in the Email Landscape
Martin Henze, Mary Peyton Sanford, Oliver Hohlfeld

A Measurement Study of Congestion in an InfiniBand Network
Fatma Alali, Fabrice Mizero, Malathi Veeraraghavan, John M. Dennis

Session 7: Security and New Protocols

Threats and Surprises behind IPv6 Extension Headers
Luuk Hendriks, Petr Velan, Ricardo de O. Schmidt, Pieter-Tjerk de Boer, Aiko Pras

Measurement Survey of Server-Side DNSSEC Adoption
Matthäus Wander

FilteredWeb: A Framework for the Automated Search-Based Discovery of Blocked URLs
Alexander Darer, Oliver Farnan, Joss Wright

4.2 MNM Workshop Program

MONROE-SOPHIA – A Software Radio Platform for Mobile Network Measurement
Paul Sutton, Ismael Gomez

Examining Cellular Access Systems on Trains: Measurements and Change Detection
Johan Garcia, Stefan Alfredsson, Anna Brunstrom

Data analytics for forecasting cell congestion on LTE networks
Pedro Torres, Paulo Marques, Hugo Marques, Rogério Dionísio, Tiago Alves, Luis Pereira, Jorge Ribeiro

SOMETIME: SOftware defined network-based Available Bandwidth MEasuremenT In MONROE
Giuseppe Aceto, Valerio Persico, Antonio Pescapè, Giorgio Ventre

Use of Mobile Network Analytics for Application Performance Design
Irene Alepuz, Jorge Cabrejas, José F. Monserrat, Alvaro G. Perez, Gonzalo Pajares, Roberto Gimenez

MIMIC: Using Passive Network Measurements to Estimate HTTP-based Adaptive Video QoE Metrics
Tarun Mangla, Emir Halepovic, Mostafa Ammar, Ellen Zegura

Concept and Implementation of Video QoE Measurements in a Mobile Broadband Testbed
Anika Schwind, Michael Seufert, Özgü Alay, Pedro Casas, Phuoc Tran-Gia, Florian Wamser

Path Transparency Measurements from the Mobile Edge with PATHspider
Iain R. Learmonth, Andra Lutu, Gorry Fairhurst, David Ros, Özgü Alay

Exploring DSCP modification pathologies in mobile edge network
Ana Custura, Andre Venne, Gorry Fairhurst

Hic Sunt NATs: Uncovering Address Translation with a Smart Traceroute
Raffaele Zullo, Antonio Pescapè, Korian Edeline, Benoit Donnet