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ICT

Action IC0703
Data Traffic Monitoring and Analysis (TMA)

Participating countries: AT, BE, BG, CH, CY, DE, DK, ES, FI, FR, GR, HR, HU, IE, IL, IT, NL, NO, PL, PT, RS, SE, UK
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www.tma-portal.eu

Modern packet networks are highly complex and ever-evolving objects. Understanding, developing and managing such environment is difficult and expensive in practice. The recent advances in the field of Traffic Monitoring and Analysis (TMA) show that evolved TMA-based techniques can play a useful role in the operation of real networks. TMA is the basis for prevention and response in network security. It offers a key means to understand user behaviours, applications and protocol dynamics, thus contributing to the enhancement of existing infrastructure as well as to the design of future technologies. TMA research is now flourishing, spurred by availability of experimental infrastructures and monitoring tools, and this TMA Action will contribute to build-up a "TMA research community" in Europe.

Action activities are organized into a number of Special Interest Groups (SIGs) focused on the most actual research topics within the TMA field.

SIG on Traffic Classification (TC)

This group studies novel techniques to classify modern Internet traffic at application level. The research work addresses a number of related methodological issues, including the problem of quantitative assessment and independent validation of proposed algorithms, building and sharing of benchmark datasets, use of common tools.

SIG on Anomaly Detection (AD)

This group studies algorithms and approaches to automatically identify anomalies in network traffic so as to reveal hidden problems in the network infrastructure as well as deliberate attacks or intrusions. Besides the theoretical aspects, particular attention is given to issues related to the practical adoption of such techniques in a production environment.

SIG on Bandwidth Estimation (BE)

One of the most popular research topics in TMA study deals with the problem of inferring the amount of available capacity along a network path from external end-to-end measurements, active and/or passive. The problem becomes even harder when considering wireless links, due to the intrinsic variability of the wireless channel.

SIG on Quality of Experience (QoE)

The most recent SIG in the TMA Action focuses on the problem of assessing quantitatively the level of quality experienced by the network users. Compared to previous QoS studies, the study of QoE involves additional challenges as it must cope with subjective and application-dependent aspects.

Figure 1: TMA logo.

Objectives:

- Increase the quality and impact of European research in the field of Traffic Monitoring and Analysis (TMA).

- Build a strong European network which can give raise to future EU funded projects in the field.

- Promote sharing of operational know-how, ideas, and lessons-learned between industry and researchers.

- Re-align curiosity-driven research with concrete problems of interest for real-world application.

- Promote the usage of common tools, data formats and analysis modules by the researchers. Solicit experimental validation works.

- Boost testing and experimental adoption by the industry of tools developed by research groups.

- Build and maintain the TMA-portal

Main Achievements (2nd year):

- Extended the TMA community: 250 subscribers to mailing list **tma@cost-tma.eu** from more than 55 research groups in 24 countries.

- Organization of 2nd TMA Workshop in Zurich, 7 April 2010: co-located with PAM'10, 35 submissions, 14 papers accepted, 70 participants, proceedings in LNCS series.

- Organization of a PhD Winter School on "IP Traffic Characterization and Anomaly Detection", jointly with Euro-NF: 44 trainees, 5 trainers, full one-week program.

- Organization of one Special Issue for the International Journal of Network Management on Traffic Monitoring and Network Measurements: from Theory to Practice

- 16 Short-Term Scientific Missions granted to Early Stage Researchers

- Launched a new Interest Group on Quality of Experience