UNIVERSITY OF CAMBRIDGE
Computer Laboratory

**Gianni Antichi**
Senior Research Associate

**DATE**: July 25th, 2017

**TO**: Mgr. Sylva Sadovská, Head of PhD Study Affairs,
BUT, FIT, Czech Republic

**FROM**: Dr. Gianni Antichi, Senior Research Associate,
Computer Laboratory, University of Cambridge, United Kingdom

**RE: Assessment of PhD Dissertation of Ing. Lukáš Kekely**

Ing. Lukáš Kekely (the Candidate) has submitted his doctoral dissertation entitled:

**"Software-Controlled Network Traffic Monitoring"**

conducted under the supervision of Ing. Jan Kořenek, PhD.

I have completed the assessment of competence as a PhD for the Candidate. Please find below the detailed assessment. Feel free to contact me if you should need further clarification or information.

Kind Regards,

Gianni Antichi

The Old Schools
Cambridge CB2 3PU

Tel: +44 (0) 1223 339396
Fax: +44 (0) 1223 764062
Email: name@cam.ac.uk
www.cam.ac.uk

UNIVERSITY OF
CAMBRIDGE
Computer Laboratory

**Summary of the thesis**

The doctoral thesis deals with the design of a novel hardware accelerated, software-controlled, solution for network traffic monitoring. The basic idea is to provide a generic, yet flexible, acceleration platform for a number of network security and monitoring use cases, which is deployable in high throughput networks, e.g., 100Gbps and beyond. The ideas described in this dissertation have been also implemented and tested using real-world settings, providing a valid reference point for future research on high speed network traffic monitoring.

**State-of-the-art dissertation**

*The topic of the Candidate's thesis is appropriate to the particular area of dissertation and it is up-to-date from the viewpoint of the present level of knowledge.*

The dissertation is composed by four chapters. The second one sums up the theory and current state-of-the-art in the field of network monitoring, software-defined networking and high-speed network traffic processing. The proposed analysis shows that the Candidate has taken in consideration, to the best of my knowledge, the fundamental and up-to-date research works in the field. The core research idea and the research process, described in Chapter 3, are based on the state-of-the-art information previously described and provide a nice step ahead for network monitoring research.
Taken into consideration the solutions currently available, the work proposed in this thesis is clearly an up-to-date work and is appropriate to the particular area of dissertation.

**Originality of the work**

*The work of the candidates' thesis is original and has a great impact contribution to computer science within the area of network monitoring and measurements.*

The work done by the Candidate is both innovative and of high quality. The main contribution resides in architecting and developing a new scalable architecture for hardware accelerated, software-controlled, network monitoring. The contributions made during the PhD course lies behind the understanding of the main limitations of current solutions and applying innovative techniques to enable FPGA acceleration for both network security and monitoring use cases. Thus, the thesis has a great impact contribution in the computer science area within the research topic.

**Publication level and personal research erudition**

*The core work of Candidates' thesis is published at an appropriate level and the list of Candidates' publications shows that the candidate is a person with an outstanding research erudition.*

The Candidate's research topics evolve around the area of computer science with a focus on hardware acceleration and networking. Most of the Candidate's papers were published at specialized conferences. The number of publications is appropriate for someone doing research in the field of computer science. The aforementioned research works have been disseminated in the research literature through fifteen technical papers, with the Candidate being the first author for nine of them. The thesis core work has been published in one of the top tier network-research oriented

UNIVERSITY OF
CAMBRIDGE
Computer Laboratory

conference, i.e., IEEE INFOCOM, and in one of the top tier journal, i.e., IEEE Transactions on Computers, with the Candidate being the first author for both of them. Thus the core work of the Candidates' thesis is published at an appropriate level and shows an outstanding research erudition.

**Overall recommendation**

Considering the scientific record of the Candidate, as well as the proposed PhD dissertation, I agree that the candidate has met the threshold for defending the Doctor of Philosophy (PhD) title and meets the requirements of the proceedings leading to a PhD conferment.

Dr. Gianni Antichi
Cambridge, UK, 25 July, 2017