Luca Niccolini

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CURRENT

Riverbed Technology, San Francisco - Member of Technical Staff (QoS) since Mar. 2012

- Implemented QoS support for Path-Selection feature on the WAN optimizazion appliance, with particular focus on performance in 10 Gbps networks.
- Designed and implemented a mechanism to add QoS support for protocols not recognized by the third-party DPI engine
- Conducted alpha/beta releases evaluation at customer site and remotely

EDUCATION

Ph.D., Computer Engineering Jan. 2009 - Mar. 2012
University of Pisa, Italy.
Thesis: *On the Energy Efficiency of Networked Systems.*

Master of Science, Computer Engineering – Networking and Multimedia 2006 - 2008
Bachelor of Science, Computer Engineering 2003 - 2006
University of Pisa, Italy. Graduated summa cum laude.
Master Thesis: *Energy efficient scheduling of VoIP traffic in IEEE 802.16 wireless networks.*

EXPERIENCE

University of California at Berkeley – Visiting Scholar July 2011 - Mar. 2012

- Modeled energy-performance tradeoffs in packet processing applications to study power saving algorithms design space.
- Evaluated the model through experiments in a 10 Gbps network with routers and middleboxes running the *RouteBricks* software stack. [http://routebricks.org]

Intel Research Berkeley – Research Intern Sept. 2010 - Mar. 2011

- Studied energy inefficiencies in enterprise network equipment and designed an algorithm to dynamically choose the optimal number of active cores and their clock speed in a high-speed router.
- Implemented the algorithm in a 10 Gbps Click-based software router. Modified the Linux kernel, the Intel *ixgbe* driver and Click to support low-power primitives.
- Improved energy efficiency up to 50% compared to previous implementation, without sacrificing performance.

Intel Research Berkeley – Research Intern Sept. 2009 - Dec. 2009

- Designed, deployed and maintained a distributed packet monitoring service for PlanetLab Europe. The service allows PlanetLab Europe users to deploy custom network monitoring modules and guarantees traffic isolation between different applications.
- Developed an optimized version of the *CoMo* open source software for network monitoring. [`http://como.sourceforge.net`]

University of Pisa – Ph.D. student

- Studied the feasibility of asymmetric multiprocessor servers and their benefits in terms of energy. Implemented performance evaluation of a customized version of the open source Lighttpd Web server on an Intel hardware prototype with a mix of Xeon and Atom processors.

University of Pisa – Master student

- Developed a base station traffic scheduling algorithm to coalesce per-terminal uplink and downlink communication. Improved by 30% the sleep time of WiMAX mobile terminals, under strict QoS constraints, during active VoIP sessions. Joint work with Nokia Siemens Networks.

PUBLICATIONS

Building a power-proportional software router
L. Niccolini, G. Iannaccone, S. Ratnasamy, J. Chandrashekar, L. Rizzo.
In USENIX Annual Technical Conference 2012.

An Energy case for Hybrid Datacenters
B-G. Chun, G. Iannaccone, G. Iannaccone, R. Katz, G. Lee, L. Niccolini.
In ACM Operating Systems Review, January 2010.

A passive network monitoring service for PlanetLab Europe
L. Niccolini, G. Iannaccone, G. Iannaccone, A. Lo Duca.
In the 4th Workshop on Real Overlays and Distributed Systems, ROADS 2009.

SKILLS

Proficient in C/C++ and Python.
Experience with Javascript, CSS, HTML5, Bash, Matlab, Java, Hadoop MapReduce, SQL.
Looking with interest at the Go Programming Language, in my spare time.

AWARDS AND CERTIFICATIONS

Graduated Research Fellowship, University of Pisa, 2009 - 2011.
Cisco Networking Academy Program - CCNA certification, 2006.

REFERENCES

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University of Pisa - Italy
`rizzo@iet.unipi.it`