

ERCIM “Alain Bensoussan” Fellowship Scientific Report

Fellow: Dzmitry Kliazovich
Visited Location : University of Luxembourg, Luxembourg
Duration of Visit: 9 months

I - Scientific activity

Energy efficiency becomes increasingly important in the field of Information and Communication Technologies (ICT). It receives a glowing interest from major industries, funding agencies, and becomes an essential policy in future development and sustainability of EU society. Addressing cloud computing matches current trend towards Internet-based applications happening worldwide and shaping the future of ICT.

During the first 9 months of the ERCIM fellowship, Dzmitry Kliazovich worked mainly within a framework of FNR-CORE/Green-IT (C09/IS/05) project which targets energy-efficient optimization of cloud computing data centers focusing on all three IT-related components: computing fabric, storage systems, and communication network. The main responsibilities Dr. Kliazovich were devoted to energy-efficient optimization of data center communication systems and based on his background experience in communications, protocols, cross-layer design, and energy efficient systems.

During this time the applicant enjoyed working with Prof. Pascal Bouvry, Head of Computer Science and Communications (CSC) research unit, and Green-IT research group at the University of Luxembourg. Creativity and productiveness of such collaboration resulted in two conference papers and one journal article. Furthermore, a novel cloud computing simulator, GreenCloud, has been developed. Its ability to capture data center communication processes at the packet level and detailed implementation of TCP/IP communication protocols already created an interest from the research community.

From the career perspective, Dr. Kliazovich participated in two training seminars organized by the innovation community of Luxembourg: a seminar on “How to write a Competitive Proposal for FP7” presented by the leading in the field expert Dr. Sean Mc Carthy, Hyperion Ltd., and a workshop on “Writing ERC starting grant” organized with a help of Yellow Research. Furthermore, Dr. Kliazovich participated in COST804 action meeting organized in Passau, Germany in April 2010, where he presented recent achievement of the Green-IT project.

II- Publication(s) during your fellowship

Please insert the title(s), author(s) and abstract(s) of the published paper(s). You may also mention the paper(s) which were prepared during your fellowship period and are under reviewing.

- D. Kliazovich, P. Bouvry, Y. Audzevich, and S. U. Khan, “GreenCloud: A Packet-level Simulator of Energy-aware Cloud Computing Data Centers,” IEEE Global Communications Conference (GLOBECOM), Miami, FL, USA, December 2010.
- D. Kliazovich, P. Bouvry, and S. U. Khan, “Data Center Energy-efficient Network-aware Scheduling,” submitted for publication to the IEEE/ACM International Conference on Green Computing and Communications (GreenCom), Hangzhou, China, December 2010.
- D. Kliazovich, P. Bouvry, Samee U. Khan, “GreenCloud: A Packet-level Simulator of Energy-aware Cloud Computing Data Centers,” to appear in Journal of Supercomputing, special issue on Green Networks, 2010.

III -Attended Seminars, Workshops, and Conferences

Please identify the name(s), date(s) and place(s) of the events in which you participated during your fellowship period.

- “ARQ Proxy: Cross-Layer Error Recovery in Wireless Access Networks,” SnT seminar, University of Luxembourg, January 5th, 2010.
- “GreenCloud: A Packet-level Simulator of Energy-aware Cloud Computing Data Centers”, COST804 technical meeting, Passau, Germany, April 16th, 2010.
- “GreenCloud: A Packet-level Simulator of Energy-aware Cloud Computing Data Centers,” IEEE Global Communications Conference (GLOBECOM), Miami, FL, USA, December 2010.

IV – Research Exchange Programme (12 month scheme)

Please identify the name(s), date(s) and place(s) of your Research Exchanges during your fellowship period and detail them .