



Energy Efficient Cloud Computing
<i>project title</i>
University of Luxembourg
<i>host institution</i>

Project description:

The ECO-CLOUD project aims to provide an integrated solution to the autonomous energy-efficient management of communication networks and processes in a cloud computing environment. Current research on cloud computing has evolved from, and is dominated by, cluster and grid computing domains where communication aspects are secondary. However, cloud computing systems and cloud applications are fundamentally different from cluster and grid computing, and communications must be considered to unveil their full potential.

To address this gap, the ECO-CLOUD project will develop a framework of novel techniques and to deliver efficient solutions, in the form of prototype software, for optimisation of performance and energy-efficiency in (a) network hardware (switches, routers and links), (b) data center communication systems, and (c) communication protocols. Furthermore, ECO-CLOUD aims to develop new metrics for assessing the energy efficiency and performance of cloud computing communication systems. It will be proposed that these metrics be included in future standards and it is projected that it will impact the whole cloud computing industry, and guide the design of future data centers.

Another important outcome of the ECO-CLOUD project will be the release of a cloud computing simulation platform to offer fine-grained modelling of communication processes. This will be used for performance evaluation and for comparison of the techniques developed which will be further benchmarked in an operational cloud computing facility.

By aiming at energy efficiency and the performance of cloud computing communication systems, the ECO-CLOUD project will become a significant step towards bridging two major ICT research domains, namely a) communication systems and b) distributed and cloud computing.