
Ismael Solis Moreno, University of Leeds, UK
Jie Xu, University of Leeds, UK

ABSTRACT

Due to all the pollutants generated during its production and the steady increases in its rates, energy consumption is causing serious environmental and economic problems. In this context, the growing use and adoption of ICTs is being highlighted not only as one of the principal problem sources but also as one of the principal areas that could help in the problem’s reduction. Cloud computing is an emerging model for distributed utility computing and is being considered as an attractive opportunity for saving energy through central management of computational resources. To be successful, the design of energy-efficient mechanisms must start playing a major role. This paper argues the importance of energy-efficient mechanisms within cloud data centers and remarks on the significance of the “energy-performance” relationship in boosting the adoption of these mechanisms in real scenarios. It provides an analysis of the current approaches and the outline of key opportunities that need to be addressed to improve the “energy-performance” relationship in this promising model.

Keywords: Cloud Computing, Cloud Computing Challenges, Energy-Aware, Energy-Efficiency, Energy-Performance, Green Computing

INTRODUCTION

Many people today are devoted to a widespread adoption of Information and Communications Technologies (ICTs). However, due to the priorities of both providers and consumers, this has been focused principally on aspects such as processing speed, bandwidth, transfer rate, storage and memory capacity just to mention only a few, the environmental impact of their use has been relegated until recent years, when changing climate patterns and pollution problems have become high priority in the world’s nations’ agendas.

The increasing accumulation of greenhouse gases is changing the world’s climate, creating serious problems such as droughts, floods and higher temperatures. In order to stop the accumulation of these gases in the atmosphere, it is necessary to stop the global growth of emissions, in which the generation of electricity plays a major role not only because of the carbon dioxide which results from the coal
ICT’S ENVIRONMENTAL IMPACT

It is probably not a perceptible problem for most users, but ICTs affect the environment in different ways. According to Murugesan (2008), each of the stages of a computer’s life, from its production, use and disposal produces environmental problems. Among these problems, the excessive electrical power consumption by hardware such as servers, networks, monitors and cooling systems appears to be the most critical since it results in increased greenhouse gas emissions. However, the pollution produced during the manufacturing of computing equipment and all the e-waste generated during its disposal should be taken in consideration in order to mitigate where possible the environ-
Towards High Maturity in SaaS Applications Based on Virtualization: Methods and Case Study
www.igi-global.com/article/towards-high-maturity-saas-applications/58909?camid=4v1a

A Survey of Development Methods for Semantic Web Service Systems
www.igi-global.com/article/survey-development-methods-semantic-web/2525?camid=4v1a