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Part 1: Guidelines for energy effectiveness evaluation

Technologies de l'information — Disponibilité des technologies de l'information — Modèles informatisés à efficacité énergétique —

Partie 1: Lignes directrices pour l'évaluation de l'effectivité énergétique

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Foreword

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The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 39, *Sustainability for and by Information Technology*.

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Introduction

The world is experiencing explosive growth of data from mobile client devices, cloud services, social networks, online television, the Internet of things, big data and from traditional enterprise computing. The growth of data has been accompanied by a growth in the energy usage and carbon footprint of IT along with increased costs. Much research has been performed regarding energy management for the last two decades, most focusing on the evaluating and improving energy efficiency of individual components or systems such as processors, memory, wireless networks base stations, laptops, supercomputers, data centres, handheld devices and so on. However, several disparate systems, or systems of systems, collectively use energy to accomplish a given task and satisfy service-level expectations. Consider, for example, someone who takes a photo with a smartphone and posts it to a social network for their friends to view. Taking and transmitting the photo consumes energy from the smartphone while the data transfer, processing and storage consumes energy too. Likewise, when friends view the photo, that activity will consume additional energy. To improve energy effectiveness, it is necessary to consider the end-to-end energy use of a task or service involving multiple systems.

The ISO/IEC 30132 series provides guidelines for the end-to-end evaluation of energy effectiveness of a reference computing model and suggestions for determining the energy effectiveness of a computing model. This document comprises guidelines for energy effectiveness evaluation, including a reference computing model that includes end-to-end data transfer, processing and storage.

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