RESEARCH ARTICLE

Energy optimization methodology for e-infrastructure providers

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Summary

The environmental protection is a dominant concern for all types of industries, organizations, and governments. In this regard, the reduction of the energy consumption is substantial in bringing down the CO2 gas emission, which is considered as an important factor causing global warming. The e-infrastructure service providers, such as National Research and Education Networks or National Grid Initiatives have crucial role in the context of energy awareness because the energy consumption of the networking, data, and computational infrastructures keeps increasing exponentially over the time. In addition to this, scientific gateways and cloud services are becoming more significant to tackle scientific and societal challenges. Therefore, there is a need to provide robust and reliable services taking into account energy consumption aspect of e-infrastructures. The aim of the article is to introduce an energy optimization methodology for the beneficiaries of the e-infrastructures to explore, optimize, and report the energy consumption and CO2 emission of data, computing, and networking facilities. The suggested methodology has been implemented within the Armenian e-infrastructure aiming at the reduction of the energy consumption and thereby the CO2 emission.

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