Title: Virtualised load management algorithm to reduce CO2 emissions in the data centre industry

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Abstract: The environmental footprint of ICT continues to increase. Data centres are key contributors of greenhouse gas emissions that pollute the environment and cause global warming. All data centres are overwhelmed with numerous servers as the major components of processing. These servers and other equipment consume high amounts of power, thereby emitting CO2. In an average server environment, 30% of the servers are 'dead' and only consume energy, but such servers are not properly utilised, in which their utilisation ratios range from 5% to 10%. This paper proposes a new algorithm to manage and categorise the workload of different underutilised volume servers properly to increase their utilisation capacity. The proposed algorithm helps apply server consolidation methodology and increases the utilisation ratio of underutilised servers by up to 50%, thereby saving high amounts of power and reducing greenhouse gas emissions by up to 88%.