

EUROPEAN GREEN DIGITAL COALITION

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IBM® LinuxONE is an enterprise-grade Linux platform that delivers high levels of scalability, energy efficiency, and security for mission critical Linux workloads. The platform is designed to replace large numbers of conventional x86 servers by delivering equivalent computational workloads using significantly fewer processor cores, thereby reducing overall energy consumption and associated GHG emissions.

The IBM LinuxONE emperor 5 Max 136 delivers an equivalent computational workload to 126 x86 servers with 5,376 cores in the case study.

The purpose of this ex-post assessment was to quantify the reduced energy consumption and associated avoided GHG emissions from the use of IBM LinuxONE in comparison with conventional x86 servers. The assessment focused on a single implementation context: the replacement of 126 x86 servers with 5,376 cores in IBM’s Poughkeepsie, N.Y. office with a single 136-core LinuxONE emperor 5 Max 136 server. In the assessment, all 136 cores of the LinuxONE server are in use.

Organisational contribution: IBM® is the designer and manufacturer of the LinuxONE emperor 5 Max 136 server. This aligns with A-level classification as defined by ITU-T L.1480 (contribution of implementing the integrated solution or the innovation of the solution).

Quantified impacts:

5 years	-364 to -1,058 tCO2e	-625 tCO2e
Assessment period	Net carbon impact range	Net impact per delivery of the reference ICT workload to the same service level (SLA) over the study period

Other identified impacts: Reduction in energy use leads to **significant cost savings** of \$67,918 USD annually. Over the full length of the case study assessment period of 5 years, this results in total savings of \$339,590. Financial savings from the implementation of IBM LinuxONE solution are realised by the client and the client only. If all cost savings are invested by the client into similar business activity, it is estimated that this could result in an 10% reduction of the total net carbon impact due to the likely economic rebound effect from use of IBM LinuxONE.

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