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Energy Aware Consolidation for Cloud Computing

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USENIX HotPower'08: Workshop on Power Aware Computing and Systems at OSDI | December 2008

Published by USENIX

[Publication](#)

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Consolidation of applications in cloud computing environments presents a significant opportunity for energy optimization. As a first step toward enabling energy efficient consolidation, we study the inter-relationships between energy consumption, resource utilization, and performance of consolidated workloads. The study reveals the energy performance trade-offs for consolidation and shows that optimal operating points exist. We model the consolidation problem as a modified bin packing problem and illustrate it with an example. Finally, we outline the challenges in finding effective solutions to the consolidation problem.

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