

ON OPTIMAL POLICIES FOR ENERGY AWARE SERVERS

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As energy costs and energy used by server farms increase, so does the desire to implement energy aware policies. Although under some metrics, optimal policies for single as well as multiple server systems are known, a number of metrics remain without sufficient knowledge of corresponding optimal policies. We describe and analyze a model to determine an optimal policy for on/off single server systems under any metric based on expected response time, energy usage, and switching costs. We leverage this model in an application of random routing to show a range of non-trivial optimal routing probabilities and server configurations when energy concerns are a factor.