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**ENERGY EFFICIENT MODELING OF A NETWORK**

**Abstract:**

Most of the networks are generally less energy efficient and most of the time resources are underutilized. Even resources of busy networks are also underutilized and thus networks show energy inefficient management system. This paper focuses on how to obtain minimum resources for the current situation of the network to maintain connectivity, power saving and quality of service. Four different models are proposed in this perspective with different purposes and functions. These models determine the minimum resources under certain constrains. Two types of services namely, "minimum bandwidth" and "trivial file transfer" are considered. For "minimum bandwidth" service, minimum edge, minimum delay and minimum change models are proposed. Here data rate switch and enable/ disable of edges are placed in these models for power saving strategy. Another model, multi flow is proposed for "trivial file transfer" service. It is proposed for transferring files through multiple flows in multiple paths from source to destination. All models except multi flow model are mixed integer programming optimization problem.