**Power Saving Algorithm for 40Gb/s and 100 Gb/s Ethernet Devices**

**Inventors:** Sergio Herrería Alonso, Miguel Rodríguez Pérez, Manuel Fernández Veiga, Cándido A. López García.

**Description**

Current high speed Ethernet devices provide up to two power savings sleeping modes with different energy-delay trade offs. The network operator has to decide which mode to use based on the expected traffic conditions and delay tolerance.

The present invention provides an algorithm that is able to dynamically choose the most appropriate power saving state taking into account the actual traffic conditions. Moreover, it can also adjust the conditions to return to normal operations so that energy savings are maximized while keeping delay below a configurable target.

This technology permits to minimize energy expenditures in any high speed Ethernet network without compromising the quality of service of the data traffic. At the same time, the algorithm guarantees that the delay experienced by transmitted frames does not exceed a configurable limit. As the minimum configurable delay is in the order of a few microseconds, the algorithm can be deployed in all but the most delay stringent networks.

Finally, the operations done by the algorithm are simple enough to be carried out in real time by the network interface firmware.

**Innovative aspects and advantages**

Our algorithm is able to minimize energy expenditure in a 40Gb/s or 100Gb/s Ethernet network. At the same time, it keeps traffic delay controlled below a configurable maximum delay. As the configurable delay can be as low as a few microseconds, the mechanism is deployable in almost any network. Obtained power savings are in the order of 80% for low average loads while savings of 50% are attainable at medium loads with delays of 20µs.
Commercial applications and potential users

This technology can be interesting for any high speed Ethernet network operator. For instance, computing data centers and ISP transit providers can benefit from it.

Patent status

This technology has been protected by Spanish patent.

Type of collaboration

License agreement or collaboration in the development of the technology