

# Eco4Cloud's PoV on Micro-Servers Energy Efficiency

## Energy Behavior of Micro-Servers

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*Micro-servers with low-power processors have gained widespread interest*

Micro-servers have garnered significant interest lately as the industry seeks energy efficiency. In fact micro-servers with low-power processors have gained widespread interest because they are a potentially disruptive tool in fighting ever-increasing datacenter energy consumption and large-scale IT and datacenter operators in particular are actively looking into all their options for increased energy and space efficiency.

*There is a lot to gain in terms of intelligent dynamic consolidation of workloads so as to increase the utilization of physical servers proportionality*

Yet the quoted power reductions are usually compared with x86 servers that are either many years old or not power optimized. At the same time, commodity x86 servers become more power efficient every year as processor technology and server design advance, yielding opportunities for substantial energy reduction. Intel's latest round of Xeon launches delivers impressive gains in efficiency.

Anyway when it comes to server efficiency the key parameter is the so called "energy proportionality", i.e. how much less energy a server absorbs with little/no workload compared to a fully-loaded scenario. Servers manufactured in and before 2008 typically used about 75-80% of their full power at 50% utilization, while the best of the latest systems consume only about 60-65% of their peak power at that level of utilization.

**This still leaves a lot to gain in terms of intelligent dynamic consolidation of workloads so as to increase the utilization of physical servers and enable the switch-off/hibernation of those freed-up, making them dynamically available as additional capacity for incremental workloads. Which is in fact the core functionality of Eco4Cloud, delivering 30-60% of energy reduction in virtualized data centers.**

### Eco4Cloud in the context of micro-servers

*VM consolidation is a compelling and valid solution in the context of micro-servers*

Eco4Cloud believes that VM consolidation is still a compelling and valid solution in the context of micro-servers, essentially for the following 3 main reasons:

1. like any other previous platform refresh, micro-servers adoption will be gradual and it will probably take some years to reach a significant fraction of DCs installed base
2. in any case, due to the renewal rate of servers in DCs, in the next several years most servers will still have a poorly proportional behavior in terms of power consumption
3. in a real-world working condition the use of Eco4Cloud combined with a larger presence of micro-servers allows to yield incremental and additive energy efficiency improvements