

Microsoft unveils tool for green and efficient datacentres

New power capping knob aims to reduce peak power demand in datacentres without hampering speed and stability

Datacentre owners struggling to reduce power usage without slowing down processing times could soon be using a new tool developed by Microsoft that aims to boost energy efficiency while minimising performance trade-offs.

According to Microsoft, the cost of buying machines for sourcing, distributing and back-up is often higher than the cost of energy consumed over the life of a datacentre.

Typically datacentre bosses aim to reduce power use and therefore operating costs by limiting the number of key parts of power infrastructure they purchase.

However, this can cause performance issues and impact on the bottom line. So a team of researchers set out to find ways to make datacentres greener without impacting the performance of a datacentre.

The team was led by Aman Kansal of Microsoft Research, who presented his findings with colleagues Sriram Govindan and Sriram Sankar, at this week's [International Green Computing Conference](#) in San Jose, California.

Kansal and his team knew they could significantly reduce power if datacentre infrastructure such as power supplies, or diesel generators were optimised for actual peak power loads, rather than a peak power load based on server nameplate power ratings, which is rarely reached in practice.

Most modern servers come with power management tools to make power capping feasible, but they rely on dynamic voltage and frequency scaling (DVFS), which reduces power consumption by changing the frequency at which the processor operates and reducing the system's efficiency.

The team tested out a variety of power capping systems, using a mock-up system based on hosting 14GB of Wikipedia copy using a handful of web servers.

However, these tests [demonstrated that current DVFS tools are best suited to individual servers](#), rather than managing the entire server estate, especially for virtualised datacentres.

“It is more efficient to provision for the peak of the sum of server power consumptions, or equivalently, the estimated peak power usage of the entire datacentre,” the researchers said.

Furthermore, the performance changes introduced into the datacentre by DVFS tools could not respond quickly enough to potential spikes in demand and in some cases could introduce critical instability in to the system.

So they set about developing an admissions control tool to limit the number of requests made on servers.

"This implicitly reduces the power consumption since the processor has more idle cycles that it can spend in lower power sleep states," the researchers added.

Tests on the Wikipedia simulation showed that when used in conjunction with existing DVFS tools, this admission control system could cap power thresholds at pre-determined levels, enabling the team to make acceptable trade-offs between performance and power usage.

Despite the fact that the tool needs further fine tuning before being commercialised, it opens up the possibility of greener datacentres in the near future.

(Source: Business Green)

11/06/2012