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User Centric Approaches to Sustainable Compute Operation

With the consequences of global warming becoming abundantly clear, physics research needs to do its part in becoming more sustainable, including its computing aspects. Many measures in this field expend great effort to keep the impact on users minimal. However, even greater savings can be gained when compromising on these expectations.

In any such approach affecting the user experience, the effects of suboptimal configurations must be minimized by proactive and rapid incorporation of user feedback. The intermediate size of our VISPA computing cluster offers the ideal playground to probe such measures in a highly interactive manner.

We present our approaches and insights thereon. Most important is the communication aspect, here we have several ways to inform the user about their environmental impact. But we also take active measures, such as shifting workloads in time, based on user guidance. Additionally, we simulate policy changes using a digital twin to estimate their effects on user experience.

Significance

Sustainability efforts in computing for physics research are mostly kept transparent to the user. However, even greater savings can be had when cooperating with users and compromising on their expectations. This requires dialog with the user side to keep approaches and solutions agreeable. This contribution discusses our experiences with this, including some relevant implementations, but also intends to stimulate discussion on this general topic.

References

Experiment context, if any

Auger, CMS, Einstein-Telescope

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