techUK
FOR WHAT COMES NEXT

techUK and One Government Cloud Workstream

techUK feedback on proposed Cloud Sustainability KPIs

September 2021

Points of Principle

We welcome Government initiatives like STAR that track and report energy performance and broader sustainability trends within government digital services, whether outsourced or in-house. We support the view that the energy and carbon associated with the provision of contracted services should be as transparent and accountable as possible, and that the supply community should be able to demonstrate its sustainability credentials robustly.

However, we also strongly believe that government must apply these same standards to its own on-premise activity and that it must extend these requirements across the wider public sector. Recent analysis of on-premise public sector facilities[1] suggests that performance lags well behind that in the commercial sector, both in terms of compute and infrastructure efficiency.

As a result, energy and carbon productivity may be several orders of magnitude lower than in an outsourced solution. Operational costs will consequently be disproportionately high. Currently, public bodies are exempted from SECR, a policy measure that would identify inefficiencies of this type, so variable performance within the government's in-house estate is unreported.

We estimate very roughly that around 2TWh of power may be wasted in this way each year. As there seems to be such a large discrepancy between in-house performance and the standards being required from external service providers, we feel that alignment of requirements should be a priority.

Specific points in response to proposed KPIs

General points on Context and objectives

Context: Clarity regarding the policy context would be helpful: members were keen to understand who is driving it, who is developing it, who is implementing it, and who will have responsibility for policing, for updating, for reviewing. It would also be helpful to have an explanation of how the different government entities involved fit together.

Objectives: A clear statement of the policy intent would be welcome. If providers understand the purpose of the exercise they are better placed to support the initiative and deliver against its objectives. Is it to help government improve transparency so outsourced consumption can be accounted for, or is it to ensure that suppliers to government meet minimum KPIs? More specifically, if the intention is to use this exercise to understand what information can currently be obtained from data centre and cloud service providers and explore how that information can be extended in future to build a clearer picture of government consumption and supplier sustainability, then again, this should be set out clearly.

Scope: Clarification of the intended scope of the exercise would be welcome: Firstly it should be made clear that this is not a new standard but a set of recommendations as this would resolve residual confusion among providers. Secondly, the scope of each of the elements should be clear so that providers can understand whether they are reporting at company, facility or customer level.

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[1] Evidence from the Eureca project in 2018 analysed nearly 350 public sector data centres and reported average PUE around 5, low utilization and that 40% of servers were over 5 years old, consumed around 66% of power but only delivered 7% of compute. Comparisons with modern cloud environments using efficient computing hardware revealed a gap of over two orders of magnitude in terms of workload energy. See https://cordis.europa.eu/project/id/649972/results

KPIs for Colocation providers

- We suggest more consistency in reference standards for KPIs – these are given for PUE and REF but not for ERF, CUE or WUE although all are included in the ISO/IEC 30134 series of standardised KPIs. We therefore recommend that reference standards are cited for all these KPIs. This encourages consistency of reporting and sets a level playing field.
- We recommend clarity on the scope of the KPIs and that these be applied at the facility level, as this is how CUE, PUE, WUE, ERF and REF are calculated. Attempting to report at customer level is likely to be burdensome and impractical.
- For SME operators we recommend a simplified approach, for instance adopting relevant best practices from the EU Code of Conduct for Data Centres. These are aligned to the sustainability elements of EN5600 and therefore also the ISO/IEC series but can be downloaded free of charge. We would not suggest that SMEs should be required to sign up as Code Participants as we have long had very serious concerns about the functionality of the administrative process.
- We suggest removing the point about eWaste to landfill since this is already prevented by legislation (2013 WEEE regulation[2]), under which operators are obliged. Moreover, colocation providers host customer servers and are unlikely to own a material quantity of IT hardware.
- While we are not arguing for its exclusion from the list of KPIs, Energy Reuse Factor (ERF) is currently a fashionable ask especially among planning authorities but is generally out of the control of operators, irrespective of how willing they are to share their waste heat, because it depends on the availability of existing networks and off-takers. There is also an efficiency overhead that should be factored in, so weighting of this KPI should be avoided.

KPIs for cloud service providers

- The majority of concerns have been raised by SME providers who struggle to report elements outside their control. Many report difficulty in accessing the information required from their infrastructure and/or platform providers, and will not have insight into the quality or validity of that information. We suggest that this requirement is relaxed for SME providers.
- Customer level reporting may pose challenges for some providers and may produce results that are not meaningful. In the absence of suitable metrics, attributing energy to customer by share of turnover should be explored as this approach has the potential to provide an indicative figure.
- Collection of eWaste: As mentioned above, eWaste to landfill is prevented by legislation so we think a more productive focus would be for providers to be allowed to demonstrate that a robust and transparent compliance process is in place.
- The inclusion of a transaction level metric (Business Useful Transaction) is premature. While we understand why a means of evaluating computational efficiency in terms of output is desirable, it is not yet feasible and therefore it is unclear how this would be assessed in the real world on a practical level. For the moment we would prefer to stick to existing, peer-reviewed KPIs. This sector has an abundant range of standards and metrics and if one doesn't exist at a transactional level, there is a good reason. We suggest that this point is dropped from the current iteration.

[2] Discrepancies between official collection rates and what's placed on the market reflect market dynamics: export of used EEE for reuse, remanufacturing, holding "in-use" stock, and recycling outside of the system as many end-of-life electronics have a value at the end of the life. There is clear evidence that when metal prices increase, WEEE treated and recycled through the official producer responsibility regime goes down.

Useful references

Lost in Migration: Attributing Carbon to Cloud:

https://www.techuk.org/asset/EDB613B7-C74A-414B-A53B2964FE9A7558/#

EURECA Project Results

https://cordis.europa.eu/project/id/649972/results see also https://www.dceureca.eu/?p=4670

Data Centre Energy Routemap:

https://www.techuk.org/asset/502783FB-8F7B-44A3-B3931F2E2600A7A9/

GPP for Data Centres:

https://publications.jrc.ec.europa.eu/repository/handle/JRC118558#:~:text=The%20development%20of%20the%20Green,that%20contribute%20to%20European%20policy

Climate Neutral Data Centre Pact:

https://www.climateneutraldatacentre.net/

Data Centre Performance Metrics for Tiny Tots (2017):

https://www.techuk.org/asset/85C8F33F-5A22-45B6-B202D363A2399ED3/

Data Centre Standards Map:

https://www.techuk.org/asset/21785EFD-F437-4A23-A691AFB2E0694F62/

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