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## UPTIME INTELLIGENCE: Observations on the Information and KPI reporting process

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Tomas Rahkonen and I would be interested in doing an in-depth interview to discuss our survey responses and observations.

**Uptime Institute** is a data center technical organization. Uptime Institute has approximately 100 members worldwide, with many members having operations in Europe.

**Which member states?** – Uptime members have over 100 MW of operational data center capacity in Europe with operations across the EU. Uptime has Tier certified over 150 data centers across 19 EU member states.

The Energy Efficiency Directive (EED) reporting process has several shortcomings that would benefit from changes in the Delegated Regulation, modifications to the EU database on data centres, or issuance of guidance. Below is a discussion of the issues and recommendations for improvements.

### Data confidentiality must be ensured

The delegated regulation dictates that the data submitted on data centers will be held in confidence by the Commission (EED Article 12, paragraph 5, Delegated Regulation Article 5, paragraph 3). In an email dated February 2, 2025, the Commission reemphasized the database's confidentiality and cybersecurity, asserting that both were sound and well-managed. However, this ignores that the Netherlands has legislated the public release of the submitted data and posted all the 2024 reporting forms. Operators fear other countries will also require data publication when they pass national legislation.

Conversations with data center operators and a review of the data reporting sheets posted by the Netherlands indicate several deficiencies in the reporting process:

- Colocation operators have indicated that (at least two) hyperscale tenants have directed them to hold all reporting data as confidential where they are the sole tenant in a data center building.
- Microsoft and Google submitted incomplete or incorrectly filled out data sheets for the data centres they own and operate in the Netherlands.

- One colocation operator aggregated the data for their nine data centers into a single data report. While aggregated energy and renewable energy consumption and water consumption data are useful, the facility specific metrics are lost in the aggregation.

**Recommendation:** The Commission needs to work with the member states to ensure that the EED and Delegated Regulation confidentiality requirements are maintained, or a compromise needs to be reached with the member states and industry to anonymize any data that is published to the public domain.

- The most effective approach is for **all** member states to maintain the confidentiality of the submitted data. This will require Netherlands to modify their national law to eliminate or modify the requirement for publication to the RVO and that all remaining transpositions of the law do not require public posting of the data.
- Where a country requires the public posting of the data, the data could be posted with the applicant details removed. This enables publication of the operating data without revealing the owner and location of the data center. It would be appropriate to review this potential compromise with EUDCA and national data center associations to determine if there are any major concerns with this approach. It is likely that some operators would object to publication of facility level data even if anonymized.
- The Delegated Regulation and national regulations could allow for the public reporting of the key data center metrics by data center, preferably anonymized until the rating system is established. This would enable assessment of data center performance, which is the stated purpose of the labelling/rating system currently being reviewed under the Delegated Action.

## Methodologies are needed for reporting of the ICT and Data Traffic

### Indicators

Two challenges have emerged with the reporting of the ICT and Data Traffic indicators:

- There are no standard procedures for calculating and reporting the server work capacity and the storage product storage capacity. Several operators and colocation providers are reporting the SERT efficiency for server work capacity, which is not an active state performance. One colocation operator is requiring their tenants to report the storage capacity embedded in their servers for the storage product storage capacity. The Commission urgently needs to provide guidance on these topics.
- There are no standard procedures for calculating and reporting the data traffic metrics. Colocations operators do not manage network traffic and do not have a readily available route to gather the data. Individual operators are uncertain of the measurement boundaries and the proper point at which to connect the data. The Commission urgently needs to provide guidance on these topics.

**Recommendation:** The Commission needs to work with data center industry associations, technical groups, and/or individual operators to develop and issue a guidance document providing recommended methodologies for reporting the ICT and data traffic indicators.

- The Green Grid (TGG) plans to publish a methodology and associated CPU level Cserv values ( $Perf_{CPU}$ ) in March 2025. This provides a means for IT operators to calculate Cserv for standard CPU servers using x86, IBM POWER, and selected ARM processors.
- A simple capacity measurement calculation methodology for GPU based servers could be quickly developed using Tflops as the capacity metric.
- A simple capacity measurement calculation for storage product storage capacity could be quickly developed by: (1) providing a definition of the equipment types that are required to report storage capacity and (2) designating the sum of the raw storage capacity installed on a storage product as the value to be used to calculate Cstor for the data center.

A simple process could be proposed by early April 2025 to enable calculation and reporting of the Cserv and Cstor values. Uptime Institute intends to provide guidance on these calculations to its members by early April (assuming the TGG whitepaper is published).

## Consistent Cserv reporting needs to be ensured

The European data base on data centres is not properly structured to receive Cserv data.

The capacity metric for standard CPU servers and GPU based servers will not be compatible or comparable.  $C_{serv}$  values for the two server types should not be summed into a single value for a data center. In addition, while many IT operators will use the SERT based  $Perf_{CPU}$  metric for calculating server work capacity, some operators will be reporting using capacity data measured from the SPECcpu capacity benchmark (or other performance benchmarks).

The data submitted for a single data center and across data centers will not be comparable or indicative of server work capacity due to the mixing of incompatible metrics.

**Recommendation:** The Commission needs to modify the database on Cserv data collection to allow operators to identify and report the different metrics they are using for standard CPU servers and for GPU based servers. As colocation operators may have tenants reporting capacity under different metrics, the input process should allow for the input of multiple data points for both standard CPU and GPU based servers. Operators should be required to report their  $C_{serv}$  values for each server type with the same work capacity metric. As an example, an operator should not report the work capacity for their standard CPU based servers using two different work capacity metrics. Operators should be required to identify the 'capacity' metric they are using to enable the Commission to assess the value of the data.

## IT operators should report directly to the EU database

The EED and its Delegated Regulation require colocation operators to collect, aggregate, and report the ICT and data traffic indicators from their tenants. This requirement has proved to be unworkable

in practice.

- IT operators' confidentiality concerns (discussed previously) have caused some to refuse to provide the ICT capacity and data traffic metrics to their colocation provider stating that they have no legal obligation to share the data. Some IT operators have also refused to include contract clauses in existing or future contracts requiring them (as colocation tenants) to provide data required for the colocation operator to meet their legal obligations.
- Even where tenants agree to provide the ICT and data traffic indicators, the colocation operators have no means to quality check or verify the data. Because there are no standard methods designated for calculating these values, colocation operators have no means to designate a consistent reporting process that will enable them to provide meaningful data. Even if there were designated methods for standard CPU and GPU servers, the incompatibility of the two metrics will (typically) make any aggregated data meaningless.

**Recommendation:** The Commission needs to require IT operators to report their ICT capacity and data traffic indicators (by facility designator) directly to the EU database on data centres. Placing the requirement on the IT operators, who own and are responsible for the data, makes them legally responsible for the reporting and any consequences associated with non-reporting. It will also enable the Commission to assess what percentage of operations controlled by IT operators are housed in owned and collocated data centers providing a sense of the relative use of owned and collocated facilities.

The Commission should consider setting a minimum IT power demand reporting threshold of 200 or 250 kw (IT nameplate power). The actual power demand of IT equipment is typically 40% to 60% of the nameplate power – the actual installed power demand for these limits would range from 80 kw to 150 kw. These values bracket the Commission stated interest in capturing IT installations with a minimum of 100 kw of power demand.

## The measurement boundaries for some KPIs need to be clarified

For some KPIs, the measurement boundaries are not well defined. EUDCA has submitted a list of concerns to the Commission in 2024 but has not received a response to their inquiry. These are two examples of specific measurement boundary issues:

- Does the data center's total floor area include the roof area when cooling systems are installed there?
- How is heat reuse incorporated or not incorporated into the PUE calculation?

These concerns can be easily managed in a company's sustainability report when the reporting operator clearly defines the boundary and measurement points used for specific KPIs (such as PUE). However, a clear regulatory definition of these parameters becomes critical when reporting carries the risk of non-compliance and fines.

Many operators and regulators would prefer to make improvements to the EN50600 series of standards to provide better details regarding the measurement points and boundaries for the various metrics. However, completing updates through the CEN/CENELEC standards process will take several years, while it is important to put better definitions in place for the 2025 reporting year.

This suggests that the Commission should issue a guidance document to address these and other issues involving the designation of calculation methodologies and measurement and reporting boundaries for the data required to be reported under the EED.

It would be appropriate for a data center industry association such as EUDCA to take on the task of identifying specific measurement locations and boundaries, as well as providing one or more consensus methodologies to address KPI uncertainties where they exist. After consultation with and review by the Commission, a consensus guidance document could be published. These efforts would go a long way to improving the database's usefulness. Engaging data center operators in the guidance development process should improve the quality of the guidance by drawing on industry's experience in managing their operations and metrics processes.

### **About Uptime Institute**

Uptime Institute is the Global Digital Infrastructure Authority. With over 3,500 awards issued in over 118 countries around the globe, and over 1,100 currently active projects in 80+ countries, Uptime has helped tens of thousands of companies optimize critical IT assets while managing costs, resources, and efficiency. For over 30 years, the company has established industry-leading benchmarks for data center performance, resilience, sustainability, and efficiency, which provide customers assurance that their digital infrastructure can perform across a wide array of operating conditions at a level consistent with their individual business needs. Uptime's Tier Standard is the IT industry's most trusted and adopted global standard for the design, construction, and operation of data centers. Offerings include the organization's Tier Standard and Certifications, Management & Operations reviews and assessments including SCIRA-FSI financial sector risk assessment, the Sustainability Assessment, and a broad range of additional risk management, performance, availability, and related offerings. Uptime Education training programs have been successfully completed by over 90,000 data center professionals, such as the ATD (Accredited Tier Designer) and AOS (Accredited Operations Specialist). More recently, the Uptime Education curriculum has been expanded by the acquisition of CNet Training Ltd. in 2023.

Uptime Institute is headquartered in New York, NY, with main offices in London, Sao Paulo, Dubai, Riyadh, Singapore, and Taipei, Madrid and full-time Uptime professionals based in over 34 countries around the world. For more information, please visit [uptimeinstitute.com](https://uptimeinstitute.com).