2nd Ad-Hoc Working Group (AHWG) meeting for the development of the EU GPP criteria for DATA CENTRES

Tuesday 29th and Wednesday 30th May 2018, 14:00 – 16:30

Webinars provided by DG JRC

Draft minutes v1.0

Agenda

	Start of the AHWG – first day	**14:00**
1	**Introduction and background** Work programme, timeline and stakeholder engagement process.	**14:00 – 14:10**
2	**Scope and overview of the criteria** Presentation and discussion on scope modification and restructured criteria proposal	**14:10 – 14:30**
3	**Criteria Area 1: IT System Performance,** The key issues proposed to be addressed, second GPP proposals.	**14:30 – 16:00**
4	**Criteria Area 2: M&E System Performance,** The key issues proposed to be addressed, second GPP proposals.	**16:00 – 16:30**
	Close of Day 1 of the AHWG	**16:30**
	Start of the AHWG – second day	**14:00**
5	**Criteria Area 2: M&E System Performance *(continued from day 1)*** The key issues proposed to be addressed, second GPP proposals.	**14:00 – 15:00**
6	**Criteria Area 3: System Level Performance – presentation and discussion** The key issues proposed to be addressed, second GPP proposals.	**15:00 – 15:45**
7	**Procurement Practice Guidance for Data Centres** Outline of the proposal and call for involvement/case studies.	**15:45 – 16:30**
	Close of the AHWG	**16:30**

Participants List (registered and attending)

	Organisation	Attendance	
		Day 1	Day 2
1	U.S. Department of Energy		✓
2	Fraunhofer IZM	✓	✓
3	Carbon3IT Lt	✓	
4	DANSKERHVERV		
5	IRIT / Université Paul Sabatier	✓	✓
6	Operational Intelligence (project team)	✓	✓
7	Frauscher Consulting	✓	
8	techUK	✓	✓
9	ITU-T/ Huawei		
10	Intel		
11	Oeko-Institut	✓	✓
12	Green IT Amsterdam	✓	
13	Eurovent		
14	Viegand Maagøe ApS (project team)	✓	✓
15	Equinix	✓	✓
16	Eurovent Certita Certification		✓
17	EU Commission - DG GROW	✓	
18	Piraeus University of Applied Sciences	✓	✓
19	Smals	✓	✓
20	Gimelec		
21	Danfoss A/S		
22	Ebmpapst	✓	✓
23	Agency for Public Management and eGovernment (Difi)	✓	
24	University of Stuttgart	✓	✓
25	Minkels BV	✓	✓
26	Dell Inc.	✓	✓

	Organisation	Attendance	
		Day 1	Day 2
27	Viegand Maagøe ApS (project team)	✓	✓
28	Synelixis Solutions SA	✓	
29	EU Commission - DG CLIMA		✓
30	maki Consulting GmbH (joining on behalf of the EEB)	✓	✓
31	Hansheng Ltd (project team)	✓	✓
32	Hewlett-Packard UK	✓	✓
33	IBM	✓	✓
34	Bureau Brussels	✓	✓

The meeting was chaired by Miguel Gama-Caldas, JRC. The JRC project team were represented by Nicholas Dodd and Felice Alfieri. The minutes mostly document the discussions that followed the each presentation. Please see the slides for details of the presentations.

Webinar day one

Welcome
JRC welcomed the participants and introduced them to the meeting procedure. Participants were introduced to each other via a Tour-de-table (see participants list above).

1. Introduction and background
Work programme, timeline and stakeholder engagement process
JRC introduced the work programme, the timeline for the process and how to submit comments in BATIS. The deadline for comments on the revised Technical Report and Criteria proposals is strictly the 27th of June. Comments submitted after this date will not be taken into account.

2. Scope and overview of the criteria
JRC mentioned it was important to introduce changes in scope in response to the first round of comments from stakeholders. The first session covered:

1. *Definition of a data centre*
2. *Product group classification*
3. *Proposed scope of the criteria*

For more details see the slides.

A server manufacturer asked whether everything below 10kW is included and whether everything above is classified as a large data centre. Where should the line be drawn.
JRC clarified that all small locations would be included. They also emphasized it is important to include server rooms since many data centres in the public sector are small and are server rooms rather than data centres, and because of the large improvement potential that lies in server rooms.
A server manufacturer mentioned that 80% of the market is server rooms (EURECA's figure) so they agree with their inclusion.

A University representative agreed with the expansion of the scope. For example in their university they have four server rooms using a significant share of their energy consumption. Server rooms present significant energy efficiency opportunities. They mentioned that improvements are less expensive in server rooms than in data centres.
An NGO representative mentioned that they have evidence that the contribution of buildings is important. They were not clear why buildings haven't been included in the scope. They had submitted evidence from a Swedish LCA study.
JRC asked them to send this evidence to double check. JRC emphasised that the Preliminary Report shows buildings having a low contribution based on a review of different LCA studies. It is important the final decision on the scope is takes account of all the different studies.

Applicability and relevance of GPP criteria (specially to cloud services)
No comments from stakeholders

Overview of the criteria
No comments from stakeholders

Criteria Area 1: IT System Performance
The Commission presented the proposed IT system performance criteria one by one:

1. **Server energy efficiency**

A server manufacturer was actively involved in active efficiency metric development (in SERT). They said idle power is 0% utilisation which is not included in the SERT metric. It is also the case that in order to obtain better idle power you have to sacrifice some active efficiency. SERT measures from 12.5% utilisation and above. Requirements on idle power incentivizes the lower utilisation server segment which is less efficient. ENERGY STAR is targeting the top 25% of the market, so the thresholds are ambitious. It depends on whether GPP criteria are to be set at a premium level or at an entry level.
JRC replied that since this criterion is a comprehensive GPP (based on ES v3.0) which normally cover 10-20% of the market, the top 25% fits well. JRC understands there are ongoing discussions on the inclusion of idle power, but it is understood that a minimum level of performance will be included as a requirement under the proposed Ecodesign regulation.
An NGO representative said it is important to offer packages of criteria which do not counteract each other, so they use PUE + deployed power + server efficiency. For public procurement idle power is important due to low utilisation. An award points relative weighting of idle power and active efficiency would be interesting as a solution rather than utilisation. Archetypes could work for the deployment power, but they agreed that care should be taken with workload traces.

2. **IT equipment utilisation**

No comments were provided by stakeholders.

3. Material Efficiency

a. Optimisation of server lifetime/Refresh rate

A server manufacturer stated that the real energy savings rely on replacing several old servers by one new server. Does the formula allow for this or is it one for one?

Larisa Maya-Drysdale from the project team clarified the formula can take this into account.

An NGO representative highlighted that the proposal is based on the work of one stakeholder and that it did address provisioning. They also asked that other (non energy related) environmental impacts should be considered, otherwise the focus would be very narrow and decisions may be made on overestimates of the benefits.

JRC asked them whether weighting could be applied for different environmental impact categories, so that could be provided in the guidance.?

In reply they said that they could provide some guidance. Work by DG Environment on weighting could be referred to.

A data centre operator asked whether resilience and risk are considered in this metric since these are primary concerns of the data centre operators. If this is targeted at MSP then care should be taken not to overlook risk and resilience, otherwise it will conflict with contractual needs.

JRC responded that there is a similar challenge for all criteria, as risk and resilience will always take priority.

b. Design for disassembly and repair

A data centre operator questioned the emphasis on manufacturers' responsibility since they will have to answer for the products of other OEMs. They were also concerned that it would create a closed market for authorised repairs, whereas it should make repairs more accessible to a wider range of professionals. A data centre consultant considered that this isn't really common practice. A high level of warranty may be needed – fully accredited servicing.

A server manufacturer said horizontal standards are already being developed by CEN. Moreover, design for disassembly is already common practice for servers as they must support 24 hour operation and fast replacement of parts. Servers cannot be compared to consumer electronics (computers, monitors). Quality of repairs needs to be guaranteed.

A data centre operator stated that design for disassembly will come at a price. This is particularly true for smaller manufacturers and MSPs who don't have take-back systems. Also, this would mean OEMs would have to share this information.

JRC emphasised that this is an information criterion, thus it is intended that information will only be shared with the specific organisations that need it. JRC encouraged stakeholders to provide further written input.

c. Emissions of hazardous substances

A server manufacturer asked for clarification as to why halogen free circuit boards were being requested. Care should be taken with substitutes.

JRC clarified that there isn't a proposal to forbid the presence of specific flame retardants in PCBs but to encourage that the issue of emissions is dealt with at source via the award criterion.

d. End of life management

A server manufacturer asked why reference was made to pre/post 2012. They said there's really no difference between requirements before/after 2012. He will provide more detailed written comments. Manufacturers are already REACH and RoHS compliant.

An NGO representative said there are still exemptions from REACH and RoHS thus it wasn't safe to assume no hazardous substances would be included. They also said some components which are critical for performance, such as CPUs, shouldn't be reused but recycled for materials since they will negatively affect environmental (energy) performance. Thus a difference between components for reuse and those that are outdated and for recycling should be made in the criterion.

The Restricted Substance Control system as proposed is more systematic and easier to verify than REACH and RoHS.

4. **Temperature and Humidity Range**

A university representative said climate conditions are very important. In northern EU it is possible to apply several solutions for free cooling. In southern EU there are fewer solutions. Energy consumption by fans can be increased by applying some of the solutions suggested in the proposed GPP criterion, such as heat recovery. What about free cooling?
Another university representative emphasised that the huge benefits from heat recovery outweigh increased energy consumption from the fans.
A data centre consultant said the criteria for facilities with liquid cooling were taken from ASHRAE W1. It could be useful to refer users to the Green Grid free cooling maps.
JRC said many of these aspects, including free cooling, could be addressed in the separate guidance document since these relate to locational decisions.

Criteria Area 3: M&E System Performance
The Commission presented the proposed the M&E performance criteria one by one:

1. **Power Utilisation Effectiveness (PUE)**

A data centre operator expressed concerned about how to test the second (or later) phases of a live site They may have several halls of servers. Not every operator would therefore be able to provide the verification requested.
A university representative said that an alternative is that the PUE metric could be used in small server rooms with a high PUE so as to focus on improving the M&E systems.
JRC proposed to follow-up on the comment made about commissioning. The focus is to shift from using PUE as the only metric to looking more broadly at best practices for the cooling systems.

<u>Webinar day two</u>

Tour-de-table for second day
Participants at the second half of the meeting introduced themselves.

2. **Reuse of waste heat**

A data centre operator mentioned an example of a system to store and recirculate heat seasonally to and from geothermal wells. Would that fit in the proposed GPP criterion?
A server manufacturer proposed to delete the TS or modify it. They suggested to look more into the economics. Is this criterion feasible? Has JRC calculated costs in this regard? They also asked where the 30% threshold comes from? This is a new parameter and would be a high threshold for onsite heat reuse.
A university representative said that in some cases heat reuse would not result in a reduction of energy consumption. A trade-off may exist with energy consumption, a risk exists if you look at the reuse waste heat without looking at energy consumption. The metric should therefore be combined with a threshold for efficiency.
An NGO representative mentioned that reuse waste heat should only be considered when district heating infrastructure exists. There should be criteria specifying that heat is not wasted on low grade uses.
JRC clarified that:

- *cooling shall include heat storage in the equation. A note shall be made in the criterion. JRC will follow-up on this comment to ensure the criteria is able to take this into account.*
- *In regards to economics it was clarified that the assumption is that a district heating network would usually part finance connections/infrastructure. For example, in the case of*

Stockholm, the municipal heating company were able to finance part of the reuse waste heat connection by the revenue from selling the heat. JRC will check/find out more details on potential cost structured for connections.

- *the heat reuse equation disincentivizes waste heat. JRC asked stakeholders to look in detail at the equation to check whether they agree or to propose another threshold. JRC welcomes any further input on these thresholds.*

JRC asked that stakeholders define that they ment by low grade used of waste heat.

3. Cooling management – Operating conditions control, Cooling systems best practices

A data centre operator expressed a concern about using an expected level of compliance with CoC techniques. It may restrict or conflict with operational needs. PUE and CoC cooling management are not directly correlated and there may be some negative trade-off.

A university representative said that controlling-monitoring is one of the most critical issues in the Ecodesign approach. It will be included in the Ecodesign regulation. It should be addressed in GPP as it leads to energy savings. Control of all auxiliary services should be included as a criterion requiring the implementation of automation systems. They will send more details about the automation systems.

A data centre contractor proposed to refer to participation in the EU CoC as demonstrating compliance instead of drafting specific criteria. This would simplify the approach and show that there was confidence in the EU CoC programme.

A server manufacturer agreed with this comment.

JRC clarified that a minimum level of energy efficiency can be achieved and the level proposed is conservative. They agreed that it is valuable to have environmental monitoring of control systems in the criteria. JRC considered the option to refer to the EU CoC but emphasised that from a legal point of view a third party auditor may be needed as ultimately the implementation of the techniques should be possible to verify on site.

A data centre contractor said it is important that there is trust in EU CoC so there's no need for auditing.

A server manufacturer said that many years of discussion have taken place to find greater leverage of the EU CoC to a wider audience. Public authorities should recognize the relevance of the EU CoC and they hope that it can be accepted as compliance for verification purposes.

A data centre operator agreed. A lot of organisations are actively using the EU CoC best practices without necessarily being registered.

JRC emphasised that it would like to support the EU CoC by referring to it in the criteria. JRC emphasised the need to be open to different verification methods. JRC will look more in detail on this and will follow-up individually with stakeholders.

Criteria Area 3: Data centre performance – presentation and discussion

JRC presented the proposed data centre performance criteria one by one:

1. *Renewable Energy Factor*

A university representative said that this criterion is tricky and mentioned the example of solar PV for which applications have been dramatically reduced and it is difficult to implement financially. There are differences in different regions in the EU, and a range of renewable sources are now possible. However, this is an important criterion and it shouldn't be dropped. An alternative is to include/exemplify actions to achieve more supply from RE (e.g. supply from communities). The rules of the EU sometimes constrain the supply of RE.

An NGO representative said EU targets are already addressing the need for an increase of supply of RE, so he suggests to drop the threshold and to focus on improvements in the service itself. In those countries with <20% it will be more expensive, in those >20% probably less expensive because of the more mature market, so this needs to be taken into account.

JRC mentioned supply of RE from communities is included in the Renewable Energy Directive, so it should be included in the criterion somehow. It is difficult to write the criterion in a way that use of renewables is linked with certificates of origin. JRC welcomes further input from stakeholders.

2. *Use of refrigerants and their GWP*

A data centre operator expressed his concern with the calculation methodology. If there is a small DC operator, they will be using less refrigerants thus lower GWP. Larger DCs will have a higher GWP.

Procurement Practice guidance for Data Centres

JRC outlined the aims/objectives and a suggested stepwise structure for a guidance document to accompany the GPP criteria document. They will send the draft outline guidance document to stakeholders to get input to the same deadline as the revised criteria. JRC will then arrange a sub-group meetings with a smaller number of stakeholders to develop the document further and include examples/case studies. A formal call for interest in being in the sub-group will be made.

A consultant said they are currently creating a guideline on how to improve the efficiency of data centres in public offices. They are considering specifically recommending consolidation together with consideration of the option of the cloud/outsourcing.

A university representative said that guidance with precise steps for improving the efficiency of Data Centres would help. Staff in municipalities have very limited time so they need a very clear document with clear steps to follow.

A data centre operator said that the ISO 20000-series could be useful. The process described in the standards may be useful for the procurement guidance (e.g. how to manage the IT service in the future). Keep it simple to support its adaptation by consultants.

An NGO representative said that the guidance should make it possible to help public institutions from the first steps in the process. 'Right sizing' should be addressed before budgets are assigned so as to avoid a cited situation in a German city where there were problems filling a new data centre.

A server manufacturer asked JRC how the guidance would be disseminated to procurers.

JRC agreed the document should be short and simple with case studies such as the application of the ISO 20000, etc. They asked who indicatively would be interested to participate in the sub-group meeting? Several people expressed their interest.

Jan Viegand from the project team emphasised that Member States have responsibilities to implement GPP and in the case of Denmark, the Danish EPA have provided guidance, mainly to help the public sector to implement GPP and other environmental criteria (see http://csr-indkob.dk, in Danish).

Concluding remarks and next steps

JRC thanked everyone for their participation and encouraged stakeholders to provide input both to the Technical Report and for the Procurement Guidance. JRC will circulate the draft outline of the procurement guidance in approximately a week followed by draft minutes from the meeting.