Case Study: EU Code of Conduct for Data Centres: Reducing the energy consumed by BT data centres (BT / Defra Pilot)

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Executive summary

Electricity consumed in data centres, including enterprise servers, ICT equipment, cooling equipment and power equipment, is expected to contribute substantially to the electricity consumed in the European Union (EU) commercial sector in the near future. The EU Code of Conduct (CoC) for data centres has been created to assist data centre operators in identifying and implementing measures to improve the energy efficiency of their data centres over time.

In order to ensure the best practices outlined in the CoC were clearly and consistently understood, and to validate that they could be practically implemented, BT, along with the support of the Market Transformation Programme (MTP), on behalf of Defra, piloted the CoC at two representative sites.

Following the pilot, BT identified areas within the CoC which could be clarified and provided recommendations for amendments to the final version. BT worked with MTP to integrate improvements to the final CoC launch version.

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1 The Issue

Electricity consumed in data centres, including enterprise servers, ICT equipment, cooling equipment and power equipment, is expected to contribute substantially to the electricity consumed in the European Union (EU) commercial sector[1] in the near future. Western European electricity consumption of 56 TWh can be estimated for the year 2007[2] (2% of total electricity consumption) and is projected to increase to 104 TWh per year by 2020.

Energy, and therefore cost efficiencies, are good news for operators, customers and all those concerned with energy security.

Energy efficiency can also be very good news for the environment, particularly if the generation of the electricity supplied has caused CO2 emissions.

- The EU Code of Conduct (CoC) for data centres has been created to assist data centre operators in identifying and implementing measures to improve the energy efficiency of their data centres over time.
- A broad group of expert from across the global industry including operators, vendors, consultants, academics, professionals and national bodies have contributed to and endorsed the best practices for the benefit of all.

2 The Approach

- BT has been involved in the CoC from the beginning as a contributor and reviewer and is keen to work towards a more environmentally and emissions friendly future for its own operations and the industry including by promoting the ways ICT can assist all sectors to reduce the emissions associated with their activities.
- As part of its commitment to running a sustainable and responsible business, BT has set itself the two bold goals of:
    - Reducing its UK carbon footprint by 80 per cent by 2016[3]
    - Globally reducing the carbon emissions intensity by 80 per cent by 2020[4]
- Contributing, piloting and signing up to the CoC is part of BT's strategy and commitment to energy efficiency and carbon reduction. The 21CN Data Centre transformation initiative within BT aims to reduce power consumption and increase

[1] The commercial sector is also referred to as the tertiary sector and it includes both private and public buildings hosting a data centre. In this case, energy consumption of data centres of companies in the industrial sector is included.
[2] This is based upon the Draft UK Market Transformation Programme European Enterprise Server installed base model, and assumes an upper bound ratio of 1:2 between electricity consumed by the server equipment within the data centre or server room, against that consumed by cooling equipment and through power losses. The lower bound ratio of 1:1 gives total electricity consumption close to 37 TWh. The upper and lower bound ratio is based on several different sources of measurements of electricity consumption in the data centre.
[3] Based on 1996/7 figure
[4] Based on 1996/7 figure

energy efficiency across the data centre estate, and to do so in line with the best practices from the CoC.

- To ensure the best practices outlined in the CoC were clearly and consistently understood, and in order to validate that they could be practically implemented, BT, along with the support of the Market Transformation Programme (MTP), on behalf of Defra, piloted the CoC.
- BT selected two sites for the pilot which are representative of its estate and also typical in the industry:
    1. A large dedicated data centre facility which is relatively new
    2. An older data centre collocated with an office building and network point of presence.
- Utilising the CoC, the Best Practice reference and the data collection form, BT assessed the suitability of the selected sites against the best practices.
- A number of BT personnel were involved in the pilot including, Head of Data Centre Operations, UK Data Centre M&E Lead, Data Centre Strategy Team, Data Centre Manager (for each site) and the M&E engineer (for each site). MTP participated in initial discussions to give direct insight into how the best practice was being interpreted and understood.

Kalpana Kanani, Project Manager for the pilot said *"BT's passion to continuously improve the data centre estate was clearly demonstrated as all areas of the organisation came together to make this pilot a success. The Code of Conduct stretched across Procurement, Security, Design and Operations".*

3 The Outcome

- Following the pilot, BT has identified areas within the CoC which can be clarified and has provided recommendations for amendments to the final version. BT worked with MTP to integrate improvements to the final CoC launch version.
- Both the sites that BT piloted were found to be compliant to the majority of the proposed best practices, an action plan will be put in place for further improvements.
- BT will plan to scale out the work to adopt the best practices across the rest of its estate in at least the UK and Europe with the aim of ensuring full compliancy to the CoC in the future.
- BT will continue its role as an advocate for the CoC for data centres and for its wide adoption within the industry.

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