The European Programme for Energy Efficiency in Data Centres: The Code of Conduct

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Solutions of the past

- There is simply not sufficent for the future
  - The world energy system is « at a crossroads ».
  - Current global trends in energy supply and consumption are PATENTLY UNSUSTAINABLE ,environmentally socialy and economically.
  - They can and must be altered ;and ..there's still time to change the road we 're on.
  - It is not exaggeration to claim that the FUTURE OF HUMAN PROSPERITY depends on how successfully we tackle the two central energy chalenge facing us today:
    - Securing the supply of reliable and affordable energy
    - Effecting a rapid transformation to a low –carbon ,efficient and environmentally system of energy supply
  - What is needed is nothing short of an:

« ENERGY REVOLUTION »

and

Digital word is part of it…..

SOURCE: World ernergy outlook

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Some digital world effect our society

- E-Mail per day : 287 Billions!!!!
- Human created 161 Exabyte of Data in 2007,approximately 3 million times the information in all the books ever written projected to be 1200 in 2012
- In 2005 the IT network user consumed 3MB bandwith per month .In 2008 this became 3Mb per day now is per hour
- More and more Data centre monsters anounce new Data centre plans based on location of cheapest and most secure electicity
- $ 12 Trillion will be spent on energy in the next 20 years equaling the spending of the last 100 years
- And…. The Internet will produce 20% of the world Greenhouse gas emission in 10 years

IT WAS TIME FOR EUROPEAN COMMISSION TO DO SOMETHING FOR THIS DATA CENTRE INDUSTRY

This is the reason of the implimentation of the European Code of Conduct for Data centre

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What is the Code of Conduct?

- Code of Conduct is a **voluntary commitment** of individual companies, which own or operate data centers (including colo), with the aim of reducing energy consumption (against a BaU scenario) and improving energy efficiency through the adoption of best practices in a defined timescale.

- Energy efficiency targets are complemented by **general commitments** of monitor power and energy consumption, adopt management practices, switching off components not needed, and reducing energy consumption where possible

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Aims

- To **raise awareness** among managers, owners, investors, with targeted information and material on the opportunity to improve efficiency.
- To provide an **open process and forum** for discussion representing European stakeholder requirements.
- To create and provide an **enabling tool for industry** to implement cost-effective energy saving opportunities
- To develop a set of **easily understood metrics** to measure the current efficiencies and improvement.
- To produce a **common set of principles** in harmonisation with other international initiatives.
- To **support procurement**, by providing criteria for equipment (based on the Energy Star Programme specifications, when available, and other Codes of Conducts), and best practice recommendation for complex systems.

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Scope

- The Code of Conduct covers:
  - "Data centres" of all sizes – server rooms to dedicated buildings
  - Both existing and new
  - IT power and Facility power
  - Equipment procurement and system design

- The Code of Conduct is for:
  - **Participants**: Data centre owners and operators
  - **Endorsers**: Vendors, consultants, industry associations

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Four Basic Scenarios

- Day to day operations (energy management)
- Normal replacement cycle/adding new servers
- Retrofit/ dedicated energy efficiency programme
- Designing new data centres

Rules of Participation (1)

- For existing data centres partnership application start with an initial energy measurement, and energy audit to identify the major energy saving opportunities.

- An **Action Plan** must be prepared and submitted, once the Action Plan is accepted the **Participant status** in granted.

- Participant must implemented the Action Plan according to the agreed time table. Energy consumption must be monitored regularly, as described in the monitoring section. *It is expected to see over time progresses in the energy efficiency indicator related to the data centre*.

Rules of Participation(2)

- The revised retrofit and new build best practices will apply from 2011 onwards for new participants.
- A new construction data centre must be efficient according to the best practices from the start (design phase) and not wait to be retrofitted in the 36 months period. Energy monitoring shall start ASAP

- Clear identification of the type of operator & its responsabilities:
  - Operator
  - Colo Provider
  - Colo Customer
  - Managed Service Provider in Colo
  - Managed Service Provider

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Rules of Participation(3)

- The Commission will approve the plan submitted within 90/120 days, or explain its reasons for not approving and grant Participant status to the organisation.
- The Participant carries out its Action Plan, and reports at the completion of the actions to the Commission.
- The Commission will review the Participant 's report, and check whether it corresponds to the Action Plan.
- Mandatory regular (annual) reporting of monthly energy

Rules of Participation(4)

- All Participants have the obligation to continuously monitor energy consumption and adopt energy management in order to look for continuous improvement in energy efficiency.

- One of the key objectives of the Code of Conduct is that each Participant benchmark their efficiency overtime, using the Code of Conduct metric (or more sophisticated metrics of available) so to have evidence of continuous improvements in efficiency.

Best Practices

Category	Description
Entire Data Centre	Expected to be applied to all existing IT, Mechanical and Electrical equipment within the data centre
New Software	Expected during any new software install or upgrade
New IT Equipment	Expected for new or replacement IT equipment
Build or retrofit 2010 onwards	Expected for any data centre built or undergoing a significant refit of the M&E equipment from 2010 onwards

Best Practice Intent:

- Neither a prescriptive nor exhaustive list of specific technologies
- Focussed on goals and processes
- Structured to allow the addition of new technologies

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Best Practices

- Establish common vocabulary and terminology
- Provide operators with an understanding of the available technology options
- Their relative merits
- The processes they should establish
- The communication that is necessary
- The relationship between technology areas
- Most people are non-expert in some area(s) of the data centre
- Best Practices are guidance to operators on how they might improve energy efficiency
- Practices are scored 1-5 (min-max) based upon their likely energy use benefit
- Practices are ordered by score
- Practice scores are not intended to be summed for an ‘overall score’

Benefits for participants

- Participants will receive public **recognition** for their efforts, through the **Code of Conduct promotion campaign**, aimed at raising public awareness of energy issues.
- Participants may use the **Code of Conduct logo** publicising their energy saving actions and the contribution they are making to the environment.
- Participants that score a low energy for the data centre, will be allowed to indicate that are Code of Conduct Low Energy Champion and will be eligible for the annual **Data Centre Awards** (starts in 2011) next will be in Nice May 23rd,2012.
- The **list of Participants**, including a description of their specific contribution to energy saving will be published widely (brochure, Internet, etc.)..
- The Participant Data Centres may be included in promotional activities, such as Awards and the **Catalogue**.
- Participants will be invited to a Code of Conduct **Stakeholder Forum** to review progresses and further develop the Code of Conduct. The **Code of Conduct Stakeholder Forum** will meet regularly and at least once per year.

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Participants

Participants

- A1 Telekom Austria AG - data centre in Vienna
- Bracknell Forest Borough Council
- British Telecommunications plc data center in Cardiff (Ty Cynnal)
- Bull SAS
- Business & Decision - Corporate level
- Bytesnet BV - Data Centre in Groningen
- EvoSwitch Netherlands B.V. - Data Centre in Haarlem (Amsterdam)
- FUJITSU Services - 2 data centres in London, one DC in Slough, one DC in Warwick and one DC in Manchester
- Hewlett-Packard - Data Centre Doxfrod Park
- IBM Deutschland Business Services GmbH, data centre located in Frankfurt
- IBM United Kingdom Limited : Data Centre in London
- INTEL - Data Centre Leixlip
- LAMDA Hellix S.A. - Data Centre Koropi Attica
- Memset Ltd. Corporate level - 2 Data Centres in Reading
- Microsoft Corporation - Data Centre in Dublin
- Onyx Group Limited - Data center in Edinburgh
- Petroleum Geo-Services (PGS) - Data Centre in Weybridge
- Reed Specialist Recruitment - Corporate level
- TCN Telehousing - Data Centre in Groningen
- TelecityGroup (corporate level) with datacentres: Paris 1 and 2; Stockholm 1 and 2; Frankfurt 1 and 2; Amsterdam 1, 2, 3 and 4; Milan 1, 2; London 1,2,3,4,5,6,7 and 10, Manchester 1 and Dublin1
- The UK Grid Network Ltd -data center located in Mancehster
- Thomson Reuters
- TISSAT S.A. - Data Centre Tissat, Valencia
- UK Meteorological Office - Data Centre in Exeter
- VCD Infra Solutions - Data Centre in Groningen
- Vodafone Group Service GmbH - Data Centre Rehhecke, Ratingen

Participants

- 141 Data Centres already approved;
  - 25% in UK
  - 13% in France
  - 8% in Germany
- 45 Data Centres in the approval process;
- 5 large companies declared intention to sign up
  - 2 in France
  - 2 in UK
  - 1 Holland

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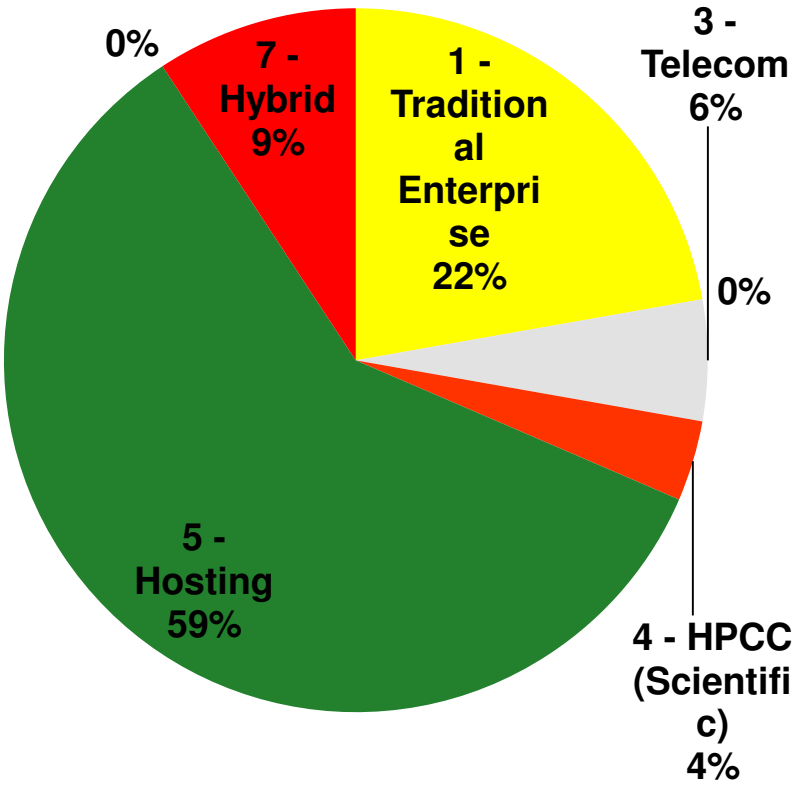
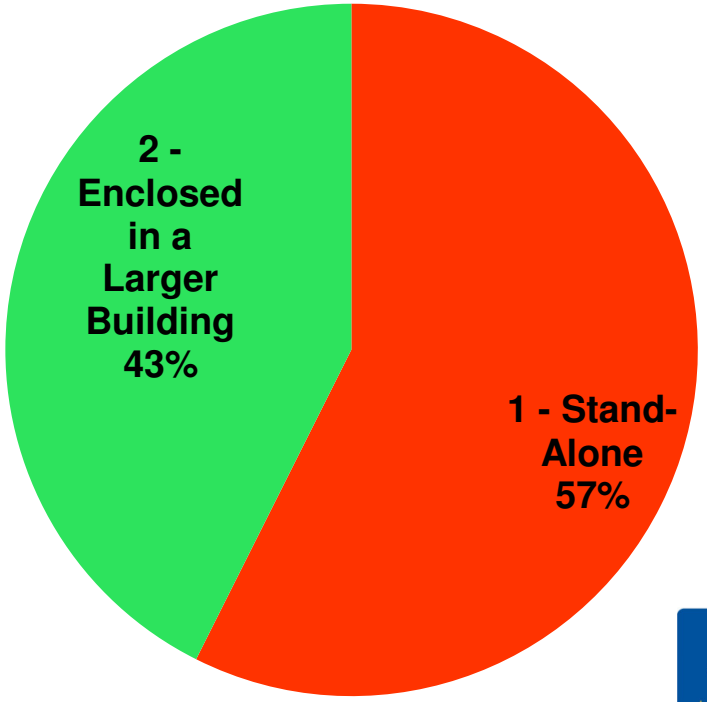
Data Analysis Overview

Total dataset	**52**	
Total annual electricity consumption	**922 241 447**	**kWh**
	922	**GWh**
Average DC floor area	**2 688**	**m^2**
Average Rated IT load	**38 224**	**kW**
Average annual electricity consumption	**20 494 254**	**kWh**
	20.5	**GWh**
Average DCiE	**56%**	
Average high temp setpoint	**20.6**	**degC**
Average low temp setpoint	**23.7**	**degC**
Average high humidity setpoint	**34.8**	**%**
Average low humidity setpoint	**63.0**	**%**

Type of data centre



Data centre building



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Endorsers (over 100!)

1E
3Com Corporation
3PAR Inc.
A.C.I.E.
Active Power Solutions Ltd.
ADA Networks Ltd
ADJUGO SA/NV
Aegide
AIT Partnership Group Ltd.
AMSTEIN +WALTHERT LAUSANNE
APC By Schneider Electric
APL France
AST (Advanced Shielding Technologies)
Atrium Data
BCS HQ
Belden
Bull
Business & Decision
ByrneDixon Associates
Camco International Limited
Cap Ingelec
Capitoline LLP
Carbon3IT Ltd.
CBI Plc
C.e.s.i.t. comité des exploitants des salles informatiques
Chloride Spa
Connectix Ltd.
Corning Cable Systems GmbH & Co. KG
CNet Training
Colofinder (Anytime Office Limited)
Comms Room Services Ltd.
Critical Building
CS Technology Ltd
Datacentre UK Limited
Dataracks
Daxten GmbH and Ltd
DECLIC Telecom TOUR AREVA
Deerns
Dell Corporation Limited
Dimension 85 Ltd
e-Business & Resilience Centre
EC2 Partners Limited
eCool Solutions
Eaton Corporation
Electron Technical Services T/A Optimum Data Centres
EMC Corporation
Enefgy
Evolved IT Services Ltd
Externus Ltd.
FIBREOPTIC INDUSTRY ASSOCIATION
FUJITSU Services
Future-Tech SCI Ltd
Gimélec
Greenvision
Haskoning Nederland B.V.
Hewlett Packard Company
Hewlett-Packard - Critical Facilities Services
Hitec Power Protection bv
IBM Data Center Services (EMEA)
Ingenium nv
INS Sudlows Ltd
ITE Projects Ltd
ITM Communications Ltd
JLBdata
Keysource Ltd
LAMDA Hellix S.A.
Memset Ltd. Corporate level
MANSYSTEMS NEDERLAND BV
Microsoft Corporation
NDSL Ltd., makers of Cellwatch.
NETPLEX Ltd.
Nexans Cabling Solutions
nlyte Software
Norland Managed Services
Nubis Solutions Ltd.
On365 Limited
Prism Power Ltd
Powertech Ltd
PTS Consulting Group plc
REM Enterprise
Rittal GmbH & Co. KG
Romonet Limited
Shoden Data Systems
Siemens NV/SA
Sir Robert McAlpine Integrated Solutions
SNIA Europe (Storage Networking Industry Association Europe Ltd.)
Société d'Etudes et des Management de Project (SEMP)
Societe Schneider Electric
Spook limited
Stratégies S.A.
STULZ GmbH
TA Migration Solutions Ltd.
TelecityGroup
Thames Renewables
The Green Grid Administration
UK Department for Environment Food and Rural Affairs (Defra)
Uniflair S.p.A.
Upsite Technologies Europe bv
Waterman Building Services
Weatherite Building Services Ltd
Workspace Technology Ltd

Role of Endorsers

- Promote the Code of Conduct
- Help Participants to implement the Best Practices
- Promote technologies and solutions to help Participants to implement the Code of Conducts
- 174 endorsers
  - **27% UK**
  - **18% France**
  - **12% Benelux**

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Thank You for Your Attention

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http://re.jrc.ec.europa.eu/energyefficiency/html/standby_initiative_data_centers.htm

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