DCA Drives Forward with its 2012 Agenda

Simon Campbell-Whyte, DCA Executive Director reflects on the recent DCA board meeting

The 25th of January saw the 2nd DCA Board of Governors meeting which took place at Haymarket, London. The purpose of the session was to review DCA progress to date and agree the broad agenda for the first half of 2012.

One of the key issues the industry faces is the need to self-govern the application of its own standards and measures. I'm pleased to say broad agreement was reached by all that the plan will bring clarity to DC resilience levels together with operational professionalism, environmental responsibility and effective security. Backing the Program, Andrew Jay, DCA Vice President commented "This initiative represents real progress for the Industry both for new developments and existing data centre facilities". Professor Dennis Kehoe DCA, Vice Chairman added "this is a major factor that unifies every single Data Centre Alliance member, which goes to show that an affordable and truly independent auditing and certification programme is overdue". Adriaan Oosthoek, DCA Vice President and Telecity MD also backed the proposal saying "Telecity have always taken a responsible approach to openness and transparency, having adopted the EU Code of Conduct for all data centres within the group I always felt there was scope to go much further to ensure the customer was empowered to make informed choices".

Steven Norris, DCA President summed up "This process is further evidence of an evolving Industry mobilising itself towards effective self governance". Further agreement was reached on the basis of a plan, which will be reviewed and ratified by the DCA Technical Council and Accreditation Board.

Stephen Dennis of Advantage Resourcing reflects on the DCA Executive debate on skilling and resourcing data centres, 25th January 2012 La' Meridien, Piccadilly

The DCA invited industry leaders to participate in a working lunch held at the fashionable La' Meridien, Piccadilly Hotel. The objective was to debate the issue of finding employable staff for data centre vacancies and the challenges the industry faces, especially as the majority of the first generation of data centre managers, engineers and technical leaders will be approaching retirement within the next decade or so.

The event provided some key outputs that will be followed up in due course. The session was kindly sponsored by DCA Partner, Advantage Resourcing who's director Stephen Dennis commented "Advantage Technical Resourcing were pleased to be able to assist the DCA with the event hosting on this key topic of DC staffing, which has a broad impact across the DCA members business' including ours. Through the solutions division we provide DC Operational services and through the Advantage Technical Resourcing broader responsibilities source and provide such diminishing staffing resources Globally. We are therefore able to act as a barometer re"supply and demand" of such skills and are duly concerned regarding the situation going forward, especially in the light of predicted DC growth and associated increasing demand." The session was chaired by DCA president and Chairman of Virtus Datacentres Steven Norris who co-ordinated the discussion attended by 6Degress, Telehouse, TelecityGroup, Savvis, PTS Consulting and CBRE. PTS Director John McComish said "As a global provider of Data Centre consultancy PTS has over many years encountered a shortage of personnel with the relevant credentials to work in this Mission Critical environment. We recognise the need to encourage and fully support an accredited and sustainable educational framework in this area." Whilst Telecity MD Adriaan Oosthoek added "It is encouraging to see a common understanding regarding the skills gap facing the data centre industry, as well as a real appetite around the table to find solutions for address it. It is clear there will not be a simple answer, we will need to implement different measures and practices to resolve the issue. Only through the on-going development of IT skills will we be able to continue to deliver the level of service our customers expect and it is clear that private sector involvement is absolutely necessary in this process. TelecityGroup fully backs this approach." Andrew Fray of Telehouse continued "The Skilling and Resourcing Data Centres discussion was extremely interesting.

In short, there is a gap in the market which needs to be filled with skilled, trained and talented data centre staff. This is a global gap, not just a UK one. The first step needs to be training needs analysis, followed by engagement.

> "The biggest cause of data centre outages is human error so the training of our people should be the industry's top priority."
>
> **Andrew Jay, DCA VP and Head of Data Centres EMEA, CB Richard Ellis**

Telehouse looks forward to both." Roger Castle Finance VP at Savvis concluded "A most enjoyable and open debating session addressing the key issue of how we capture the opportunity of the UK harbouring Data Centres as one of the key growth industries of the next decade, through ensuring that we are able to feed our businesses with a suitably qualified stream of quality talent."

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Adrian Hyner, General Sales and Marketing Manager at 3M Electronics, reflects on the cooling survey and how 3M is discovering the impact of the data centre

Many thanks to all who took part in the 3M cooling survey, the lucky winner of the 3M Camcorder projector has been contacted. I would also like to thank those that took part in the immersive liquid cooling webinar, those that haven't may wish to view the recording which can be found on the DCA website. As power density ratios continue to increase so the thermal and consequently the energy demands on the cooling system of choice also increase, at the same time as vendors seek cooling solutions that offer environmental sustainability 3M are seeing a renewed and vigorous interest in liquid

cooled systems. In the near term encapsulated cooling solutions such as that offered by Iceotope shall drive the market but 3M are developing phase change cooling which we are working hard to ensure will be able to cope with expected power density needs for years into the future. Looking forward, 3M has launch a second survey and webinar this time focused on the sustainability aspects of data centre fire suppression, please do take part in the confidential survey at https://www.ida3m.com/ida_db/ida.dll?ar&sid=0851212073 or follow the link on www.datacentrealliance.org and the webinar which will be live on the DCA channel on April 3rd at 9am BST (10am CET).

How much low hanging fruit is there in improving energy efficiency? Simon Campbell-Whyte, Executive Director of the DCA looks at the results of the recent DCA 3M cooling and DCA webinar surveys

According to the energy procurement firm, UK Power Efficiency, we will see the business energy price rise by 81% by 2021 which will add a further £8.4BN to the annual fuel bill for UK commerce. Frightening stuff, alarmist some may say, but looking back we we've already seen 70% increases since 2004, so it cannot be easily ignored. What is certain is that businesses should be preparing for the worst case scenario and doing all they can to minimise expenditure on energy for reasons just as important as cost and business sustainability.

Much has been written about the data centre regarding this issue in these pages – but just how much scope is there to reduce energy consumption in the data centre? A few key headlines from recent

surveys carried out by the DCA may help point to the answer –
- 66% say cooling alone accounts for between 30% and 50% of the total data centre power consumption.
- 29% say their PUE is between 2.0 and 3.0
- 14% say their PUE is between 1.5 and 2.0
- Whilst alarmingly 29% say they don't know their PUE

This evidence indicates that there is a great deal of quite simple measures that can be done to make a dramatic difference and the data centre should be the first place to look. But the key message is don't wait for the cost to start hurting, by then it may be too late.

Steve Hone, DCA Operations Director, looks at "tooling up" the DCA to get to work

At the early stages of the DCA it wasn't too much trouble to hold a steering meeting or a workshop, we could always find a kindly offer of a venue to accommodate fifteen or twenty people. Even then we knew it wasn't a model that would work over the long term, because the data centre is so multi-faceted, individuals would have to endure long periods of time where the subject matter was not relevant to them. Today the DCA is too large with a widening spread of projects to be able to function without an online method of collaboration. I am pleased to announce we will launching the DCA's Secure Collaboration Platform called "DATA CENTRAL" on Monday 2nd April.

The key to any successful industry association is effective and efficient communication, therefore over the past 9 months the team has been working hard to develop, evaluate and integrate a backend platform which will not only act as an management tool but more importantly also provide members with a secure private environment they can trust and freely use to communicate and collaborate with each other.

We were aware of the "information overload" problem so it was key to build in the ability to integrate with networks outside the DCA such as Facebook and LinkedIn etc but also that it can provide some future proofing features such as an Iphone app capability. However the key objective is to provide the essentials initially but gain the feedback from the membership for future functionality as it grows.

The business related social networking features designed into this platform are designed to encourage connectivity, communication and collaboration between the DCA and its members. Members will be able to register and sign up as members, create business and personal profiles, source and upload information, build connections with other members and or groups, post to blogs, contribute to forums, access file libraries, register for events, webinars and Seminars, provide a central focal point for industry and DCA news + lots more. The platform is intuitive to use and navigate around, and is designed to encourage members to take part and get involved simply and easily at a time and a place that suits them.

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# Data Centre Engineering: hot topic or just blowing hot and cold!

By Dr. Jon Summers, University of Leeds

Engineering has many iconic disciplines, for example aerospace engineering – the sight of an aircraft in the sky is an everyday occurrence, but what is data centre engineering? In fact, currently over 30% of the world's population directly use data centres [ref], much greater than those who fly. These data centres are the fabric of our digital society, they store and process vast quantities of digital information. The ever expanding number of users and their digital demands are creating a growth in this sector that is now unparalleled. Data centres have always been able to meet the demands of their customers, however more recently the power requirements of new data centres (upwards of more than 50MW), usually located in urban areas, cannot not always be met by the utility power companies.

The reason why data centres consume so much energy is because they contain large data halls which have hundreds of 2m high racks aligned in rows that are each stacked full of servers and network devices, all of which store, process and propagate digital information, processes that generate heat. It is then necessary to blow cool air (typically at 1000+ litres per second per rack) through all of the IT hardware to remove this heat. The management of the air is traditionally done by computer room air conditioning (CRAC) units. Fans, air conditioning and air handling units all consume energy on top of the energy that is used by the IT hardware.
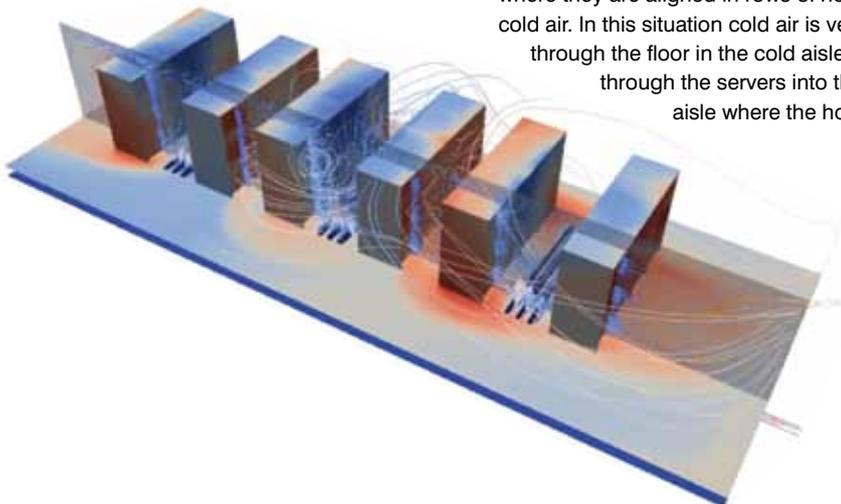
The continued energy demand of the digital sector requires smarter, optimal, novel and overall sustainable approaches to cooling.

Cooling strategies within data centres are at the heart of a new research strand for iETSI. This area of research combines both experimental testing and computational fluid dynamics (CFD) to inform improved cooling strategies, whether it is simply reducing the mixing of hot and cold air within the data hall or analysing row/rack arrangements that enable proximity cooling, which is where the cooling technology is located closer to the heat sources.

The Leeds University High Performance Computing facility uses a novel proximity cooling technology provided by Airedale International that relies on liquid loop heat exchangers that are housed in the rear door of the server racks. The photograph opposite pictures fan assisted rear door heat exchangers, which are currently being assessed for their energy cost savings. The water passing through the back doors is cooled by rooftop chillers (see picture to the right) that can use free cooling in Leeds for a large proportion of the year.

Inefficiencies in energy use in data centres can stem from the mixing of the cold air intended for the servers with their hot exhaust air. CFD analysis can be used to assess the level of hot and cold air mixing as well as situations where hot air is transported in front of the inlet of the servers. The CFD result in the picture below demonstrates the most common arrangements of racks, which is where they are aligned in rows of hot and cold air. In this situation cold air is vented through the floor in the cold aisle, passes through the servers into the hot aisle where the hot air rises

to the ceiling and is carried back to the CRAC unit. There are many modifications to this layout, one that is currently being applied is called aisle containment, where either the hot or the cold aisle is completely enclosed.

Commercial data centres and those that are used in the financial sector have contractual obligations to deliver a continuous service. This is achieved by creating both a significant level of redundancy and resiliency.

It is unbelievable the lengths to which data centre providers go to in order to achieve the required levels of redundancy and resilience, maintaining both telecommunication and power connectivity. Uninterruptable power supplies (UPS) and backup generators are used, and they themselves are required to have a level of redundancy.

Data centre design and construction engineers have to consider the issues of being energy efficient, while at the same time maintaining a level of redundancy and resilience that is fit for purpose. The industry is growing pockets of best practice in the build and operation of data centres, but this is not as widespread as it could be. With the continued squeezes on energy utilisation in the industry, standards and regulations are now arising.

The research team in iETSI have joined forces with the data centre industry and helped to setup the not for profit organisation called the Data Centre Alliance (www.datacentrealliance.org) to galvanise the growing best practice and influence the emerging European and global standards.