

## In defence of data centres

### The positive role IT can play in the greening of business

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*The general public is becoming increasingly cynical about the environment claims of businesses and with much bad press around data centres, information technology (IT) is in the front line. But data centres are actually the easiest bit of IT to control and consolidating infrastructure into them can help reduce the overall energy usage of IT and, if used well, IT itself can help businesses reduce their overall carbon footprint*

#### BRIEFING NOTE:

This briefing has been written by Quocirca to address issues faced by businesses as pressure grows to demonstrate their environment credentials.

The report draws on Quocirca's knowledge of the technology and business issues faced by organisations in this area and provides advice on the approaches that can be taken to create secure and robust data centres that enable future growth with an environment edge.

During the preparation of this report, Quocirca has spoken to a number of end users, service providers and vendors and is grateful for their time and insights.

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- **The office is IT's wild frontier where power usage is out of control**  
PCs, printers, branch office servers, IP phones etc. are all deployed in hard to regulate and manage office spaces. But much of this infrastructure could be consolidated into data centres
- **The data centre is an easier environment to control and monitor**  
Much can be done to reduce power usage in data centres, but it may be justifiable to increase this by consolidating as much IT infrastructure from those hard to tame office spaces in to the data centres where it can be better managed
- **Where consolidation into the data centres is not possible, standardization and remote management can be used to minimise the impact of office based IT equipment**  
Thin client computing means less PCs deployed in offices and consolidating branch office servers into the data centres can actually reduce network traffic. But printers, phones and other peripherals needs to be near users, applying green standards and remote power management can reduce their energy usage
- **Relying more on data centres means data centres need to be even more reliable**  
IT resources being unavailable is less and less acceptable to any business and consolidating into data centres can lead to single points of failure. The risk of data centre outage can be mitigated if good management tools and procedures are in place
- **IT has plenty to give back in the overall greening of business**  
It is not just the hot air produced by data centres that can be harnessed. Collaborative applications can help reduce travel, business processes driven by IT can make supply chains more efficient and intelligent building management can save on other energy costs
- **However, any claims that IT is actually helping to reduce a business's carbon foot print need to be substantiated**  
It is not enough to make vague claims, they must back backed with measurable and auditable facts, such as real decreases in executive air travel, employee mileage claims and office heating bills

## The sceptic's view of business, IT and the environment



As one business after another claims it has achieved carbon neutrality, there is increasing scepticism among the general public as many of these claims are underpinned by investment in tenuous carbon off-set schemes.

The information technology (IT) industry stands nervously by, knowing that its products are responsible for a growing slice of energy consumption in many businesses. Keen to avoid flak, IT vendors are making a big effort to reduce the power consumption of their products.

This is a good thing, but can a more positive view of IT be established? Can IT actually make a positive contribution to a business's overall carbon neutrality or even be a carbon neutral activity in its own right? And let's not forget that greening IT is also about reducing cost, which is as good a reason as any for businesses to take action.

This report looks at some of the more positive views that can be taken of IT in general and data centres, in particular by businesses when considering their environment messages.

### The "office-IT factor"

Discussion around IT and the environment usually focuses around the power house of the whole operation – the data centre.

The data centre's greed for power is obvious. Just peering through a glass panel into one of these palaces of IT shows the bewildering range of devices required to deliver the core resources for a 21st century business's IT requirements.

Go through the door into the cool interior and you are reminded that it is not just the power to keep these devices running, but also the power required to stop them overheating – some estimates suggest that as much as two-thirds of the power consumed by data centres is used for cooling.

However, measure the energy a business uses to power its total IT usage and the data centre starts to look a little more modest in its requirements.

The ratio of overall power consumption by IT to that used just in data centres (let's call it the "office-IT factor") in any given business will vary greatly, but for many an audit of total IT power usage will likely show that the priority for

greening IT needs to start outside and not within the data centre.

Indeed, if you took all the devices deployed around the offices of the average business; PCs, telephones, network routers, printers, scanners, departmental servers etc and piled them in one room, the data centre itself would suddenly appear a paragon of structure and organisation relative to the unmanageable pile of junk you had now assembled.

Furthermore, compared to the stuff in the data centre, this junk – much of which is, of course, a key part of delivering IT to the businesses – is very inefficient in its use of power relative to the ordered world of the data centre. Each device needs to be constantly and individually cooled in an often over-heated office and during most of a 24 hour period it may be unused but still powered up.

That is not to say the data centre is off the hook, by no means. There is plenty to be done there.

### Greening IT starts in the data centre

It will often prove prudent to replace old hardware with new energy efficient models. But this must not be done for its own sake. The gains in energy efficiency need to be weighed against the energy used for manufacture of the new kit and disposal of the old. Obviously, in some cases the old kit may simply no longer be up to the job, but this is part of the standard refresh cycle.

But much can be done beyond kit replacement. Virtualisation software helps to maximise the use of servers and storage. Thermal mapping can show where data centre cooling should be focussed. Understanding the peaks and troughs of usage and making sure equipment is idling or in some cases turned off when not required. And, of course, making sure the very data centre itself is an energy efficient building.

***"The office is IT's wild frontier"***

Such things are achievable in the data centre because it is a structured environment, which – with commitment – is relatively easy to control, at least when compared to IT's wild frontier – the office.

## Consolidating into the data centre

The most obvious thing to do if a business wants to decrease the “office-IT factor” is to consolidate as much as possible into the ordered environment of the data centre. This is not as impractical as it might seem.

Departments might feel the need to own and control their own servers, but this does not stop them being located in the data centre. Many employees only use their PCs when sitting at their desks, often for mundane repetitive tasks such as logging calls or processing documents. These transactional workers can be as well served by thin client computing, where all they have on their desk is a video monitor, the real work being done on a shared server back in the data centre.

This is all well and good, consolidation works well for those in main offices on high speed networks close to the data centre, but what about those in remote offices on slower connections?

Even some of their requirements can be consolidated into the data centre and the process of doing so can actually help solve the network problem. For many applications, much of the network bandwidth consumed is delivering content (documents, images, etc.) from the server to the client. If both are in the data centre, much of this heavy lifting is no longer done over a remote connection.

Coupled with faster networks and network acceleration technology, this can provide a more than acceptable end user experience in remote offices with no need for local servers or PCs.

Of course, not everything can be consolidated into the data centre; telephones, monitors, printers and scanners need to be near to their users. But it is often the case that rigorous standards are not applied to acquisition of these devices and the IT department can be charged with doing this – selecting the most power efficient models.



In addition, wherever possible centralised management capabilities can be used to switch off equipment automatically at night or if it has not been used for an extensive period of time.

Other devices, that by definition are used in the field, such as mobile PCs, smart-phones etc. are harder to control but are responsible for a relatively small amount of power usage, but even with these, users should be reminded to use

energy efficient settings such as automatically switching of unused screens.

## Mitigating the risk of data centre outage

There is of course a caveat to consolidating into the data centre. The more a business is reliant on the resources housed in its data centres, the more reliable and secure the data centres need to be.

***“A thin client server failing can take out a whole call centre”***

A thin client server failing can take out a whole call centre, whilst one desktop PC failing would only have affected a single agent. A network router failing can put several branches out of action if the resources they rely on are largely in the data centre. A lapse of security in a branch office reliant on a remote server in a data centre might give a hacker access to more than just the local server. But these issues can all be mitigated with good data centre management.

Furthermore, it is easier to provide emergency power backup up to the data centre than it is to all the locations used by a given business and most will have one or more backup data centres to cope with extreme emergencies that may impact the primary one. Overall, uptime should be increased the more IT is consolidated into the data centre.

So is that the end of it, reduce the “office-IT factor” as much as possible and make the data centre as efficient as possible? IT is still a net consumer of power, the IT function has decreased its overall power usage and IT delivery has become more reliable to boot. But there are other things that can be taken into account when considering the environmental footprint of IT.

## IT has plenty to give back

First, all that hot air produced by the data centre can be captured and reused to heat office space or water. There will be more of it following consolidation into the data centre and less uncontrolled heat being produced and wasted in offices themselves and in summer this has less of a negative impact on air-conditioning.

IT’s ability to offset another activity that is a huge cost to the business and a major environmental problem is harder to audit – travel.

Travel is a thorny issue, at least when it comes to environmental claims for IT. There is no doubt that good use of collaborative tools, from good old email to full-blown video-conferencing,

means that IT can bring remote teams and individuals together without any of them going near a car or aeroplane and that this is a good thing for flexible recruitment and working.



But if any sort of offset is to be claimed it must be real. Is the home-based worker living even more remotely, just because they can, so that when they make the once a week trip to the office the distance travelled is greater than all the daily journeys they would have originally made? Are the agents of a virtual call centre using more energy to heat their home offices than they would collectively in a well managed physical call centre?

Of course, if a business can demonstrate it has cut transatlantic travel in half or that its employees are claiming 50% of the mileage they used to, then such collaboration may be having an effect – but any such claims need to be real and auditable.

There are other areas where the power consumed by IT can be offset because of the task it is being used for. For example, making supply chains more efficient through better utilisation of space in delivery trucks and cargo-planes and using optimising delivery routes. Or, the use of IT for efficient building management, carefully controlling temperature and so on. As with employee travel these are grey areas, but IT's contribution can be significant and with the right audits in place offset claims may be valid.



IT is likely to remain a net consumer of power in most businesses for the foreseeable future. Any

business could go IT carbon neutral tomorrow if it could rely on renewable power sources, but for many that is currently impractical.

But business can structure IT more efficiently to lessen its carbon foot print and data centres – rather than being an environment *bête noire* – have a major contribution to make to this. Couple this with the capability IT has to reduce a business's carbon footprint in other areas and IT in general (and data centres in particular) can make a positive contribution to a business's environment claims. In some cases it may even be possible to demonstrate that this contribution is helping a business in the move to real carbon neutrality.

#### About Symantec

Symantec is a global leader in infrastructure software, enabling businesses and consumers to have confidence in a connected world. The company helps customers protect their infrastructure, information, and interactions by delivering software and services that address risks to security, availability, compliance, and performance. Headquartered in Cupertino, Calif., Symantec has operations in 40 countries. More information is available at [www.symantec.com](http://www.symantec.com).

#### About Quocirca

Quocirca is a perceptual research and analysis company with a focus on the European market for information technology and communications (ITC). Quocirca reports are freely available to everyone and may be requested via [www.quocirca.com](http://www.quocirca.com).

***“Rather than being an environment *bête noire* – data centres have a major contribution to make”***