

An Accident Waiting To Happen?

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Just like any other workplace, data centres are subject to health and safety regulations – however the unique and often industrial conditions found in data centres increases the risk to employees and, argues Alex Rabbetts, increases the risk of liability for operators too.

Consider this... the industry standard height of a cabinet is generally 42U, that's 2.2m and an HP DL380, fully configured, weighs in at 27.22 kg. How many of us give more than a moment's thought to the fact we ask staff to lift over 27kg above their head without protection?

Heavy Lifting

Of course, some of us might, but many do not. And, in day to day operations, the issue is exacerbated. While a 42U cabinet is technically capable of accepting twenty-one DL380 servers, heat and power constraints generally restrict the number that can be installed to around ten. However, even with ten servers, we are looking at the top server being installed at a height of around 1.2m. This may not sound much, but if you were to drop 27.22kg of solid steel on your foot from that height you'd know about it! How many data centre operators insist on installation staff wearing toe tectors (steel toe capped shoes or boots)? Not that many! Now don't take this the wrong way, I do not have an issue with the HP DL380's, or indeed any HP servers. The Sun V440 weighs 37kg fully configured and installing one, even at the 8U position, you run the risk of serious personal damage. My issue is health and safety and acknowledging that it applies to all servers, switches, and routers - and all data centres.

It isn't just operators who aren't considering the health and safety issue - it runs through the industry's whole supply chain. How do we expect these servers to be lifted into place if it isn't by hand? There are manufacturers of specialist server lifts, but have you ever tried to find one? It isn't easy! Many years ago there was talk of a lift that would allow the operator to select the U position for the server they wanted to install and the lift would automatically raise it to the correct height for it to be simply slid onto its rails. What happened to it? Has anyone seen one? More importantly, how many data centre operators have one?

Even if such a lift were readily available on the market and data centre operators were buying them up at a rate of knots, I doubt the designers of data centres will have factored in how we get such a server lift down an aisle, turn it, operate it and still have room to move around. The truth is that most designers, like the rest of the industry, are obsessed with the idea of getting more and more density of computing power into the available space. Health and safety is just not on their radar.

Noise

In addition to the health and safety aspects of weight and lifting, data centre operators need to consider noise levels as well. New noise level regulations came into force at the end of 2005 in the UK and these consider the levels of exposure to noise averaged over a day or week. The lower level is now 80dB and the higher level 85dB, with a peak level of 135dB and 137dB respectively. Noise levels now need to be tackled at the design stage with the selection of quieter CRAC units to minimise noise emissions. However, many data centres with older CRAC units will routinely exceed these compliancy levels - particularly where there are legacy servers and switches which themselves have high noise emissions. What can we do about this? Issue all operators with ear defenders!

Signs of the Times

These are some of the more obvious and physical considerations that we should be thinking about in a data centre, but there are others, for example signage. Many data centres are designed at a stage when the cabinet installation hasn't been fully thought through. Sure, we have a 2D cabinet layout drawing and all the services are designed around this. But what about emergency signage? How many of us have stood in the middle of a cabinet row and not been able to see an emergency exit sign? And there's labelling to consider too. Of course, most PDUs are clearly marked with the circuits they serve, but what about at the cabinet end? How many power strips in cabinets are clearly marked with which PDU they come from? In the event of an electrical emergency, how many of us would be able to go directly to the appropriate PDU and isolate the supply? Of course, that is what an EPO (Emergency Power Off) switch is for. But it isn't always necessary (or desirable!) to power down the whole data centre for the sake of an earth leakage or minor electrical problem. Personal safety must be paramount, but there are occasions when a full power down simply isn't necessary, so for operational as well as health and safety reasons, labelling should be clear, easily understood and enable anyone to isolate a specific supply.

Lone Workers

Many will argue that operators do not spend all of their working day in the actual data centre space and so some of these health and safety issues do not apply. This may well be true (although very often people do spend all day in the data centre), but infrequent presence in itself presents a challenge as operators need to consider lone working. In the event of an emergency, whether it may be medical or caused by any of the other issues talked about here, very often operators (and particularly third party engineers) are working on their own. How do we deal with this? In most data centres it isn't possible to see every inch of floor space, so how would we know? CCTV certainly helps, but it isn't the answer to everything. What happens if there is a blind spot? Or worse, nobody is looking at it! How many data centres benefit from a 'lone man down' system being installed? Again, not many!

These are just some of the many health and safety issues that need to be factored in, both at the design stage and in the operation of a data centre. The data centre industry is growing in its importance. With more and more companies becoming reliant on data centres and more hosting centres being built, health and safety will become an integral part

of the way we work. However, today it is an absolute statement of fact that health and safety is overwhelmingly under catered for and under addressed. Am I suggesting that every operator should turn up to work tomorrow dressed in toe `tectors, ear plugs, a hard hat and protective gloves? Not necessarily. However, I do suggest that unless we, as an industry take health and safety seriously today, the regulators will be taking it seriously on our behalf, tomorrow.

You can meet Alex Rabbetts at the Data Centres Europe 2007 Conference, London, 22-23 March. [Click here](#) for more information on the event.

This article was contributed by: Alex Rabbetts, Managing Director, Migration Solutions

Email address:

Telephone number:

Website address: <http://www.migrationsolutions.com>

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