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WHAT would you do if you realised that a well-paid member of staff was only working 18 percent of the time they were paid for?

That's probably close to what's happening right now in your data centre. To cope with peaks in demand, most servers have far more capacity than they need day to day. A utilisation level of 10 to 20 percent is not only normal, but accepted as reasonable in large parts of the IT industry.

But no longer. The buzzword of the moment is Grid computing, and its promise, among other things, is that it's possible to better use the hardware you have, and save wasting money on redundant server space.

So, what is Grid? It sometimes seems the hardest thing is to define it, because Grid means a different thing to everyone involved in it. By some, Grid is touted as the 'new internet', an alternative way of running business and our lives. A network of computers across the world will give companies and individuals access to all the processing power they could ever need, in the same way we access electricity today.

At a more prosaic level, Grid describes computers networked within an organisation, using virtualisation middleware to share the processing of each application across those machines.

Two well-known examples of Grid in use are the SETIOnline project, and the BBC's Climate Change modelling project. Thousands of volunteers have signed up to allow small pieces of applications to run on their machines – so that massive computation can take place on home computers that would otherwise be sitting idle.

Ian Osborne, project manager of Grid Computing Now, a knowledge transfer programme funded by the Department of Trade and Industry to promote the use of Grid by UK companies, defines Grid simply as "the harnessing of many different computers to make it seem as if it's one big computer". His project aims to encourage UK business to take advantage of the opportunities Grid brings. A £250 million research programme has thrust UK academia into the forefront of Grid research over the past five to six years, he says, and it's important that this advantage is picked up by the commercial sector too.

Different companies have their own takes on Grid. Edward Chance, regional director of Oracle Scotland, describes Oracle's view as "within the walls of an enterprise, the ability to use a number of computers connected together such that the overall power of the computers can be utilised in a more efficient manner". While Oracle does believe that Grid will eventually be as revolutionary, and interconnected as the Internet, there are many barriers – such as security – to be overcome. In the meantime, the company is concentrating on a 'cluster computing' model of grid, whereby in-house resources are better used.

Hugh Jenkins, enterprise marketing director at Dell, looks at the financials: "How can you sweat the asset harder, to improve the relatively low levels of utilisation that you can see in your infrastructure?"

Grid isn't just about reducing costs, though. Like the Internet, it opens up new business possibilities. If you can analyse information faster than your competitors, because you have 10 times the compute power they do, you have massive competitive advantage.

The financial sector has been one of the first to pick up on this, with many investment banks building massive in-house grids.

Colin Bannister, director of IT management strategy at Computer Associates has been working closely with many banking clients and says it has transformed the way they work.

In derivatives trading, for example, in-depth, and fast analysis of data will greatly improve returns. Banks that used to depend on analysis from weekend processing can now access fresh information every morning.

He points to retail as another area where Grid can transform business. Linking IT systems raises security issues, but within a supply chain, where companies already have existing trust-based relationships, linked IT systems can streamline the way the way they do business.

John Barr, senior application engineer within Intel's Software and Solutions Group, agrees. "One thing I really like is the way Grid gives you the capability to do things you weren't able to before. If you have the datacentre sitting there with utilisation at 10-20 percent, and you could harness that spare capacity to design things overnight, instead of taking a week, you can get design optimisation and you can get new products out more quickly."

Installing new software is faster too, Barr says. A client he has worked with told him that once they got budget approval to roll out a new application, it took an average of 83 days to go out and buy the hardware, get it installed and networked up, and install the application. Now they often find that new applications for new groups can be in place in an afternoon.

Inevitably, Grid isn't without its issues. Standardisation is a biggie – there are, as yet, few defined standards and so anyone installing Grid solutions now faces potential interoperability problems if, as predicted, the Grid becomes a true, interconnected grid network. Until recently, there were two standards bodies – the Global Grid Forum (GGF), which was often seen as having a more academic focus, and the Enterprise Grid Association (EGA), which has concentrated more on the industrial and commercial aspects. The two have announced plans to merge, and it is hoped that the merger will speed up the process of standards development.

This has to be taken into consideration whenever a company is considering a grid solution. In future, will your choice prove to be a poor one? The decision has to be made by every IT director, Barr says.

"If you want the perfect grid solution, then maybe you'd better wait until standardisation is settled. But if you want competitive advantage over the other players in your market, then maybe you'd better get involved earlier."

Licensing is another sticky area. Most licensing is sold on a per-user basis – and that model doesn't translate well to software used across many computers. The software industry is struggling to find a solution, and users have to negotiate with each supplier to find a way round the current rules.

Bannister says CA is attempting to take a lead in developing new licensing solutions. "We're [moving] towards value based pricing – understanding the value that our software brings to customers. Software and IT suppliers need to be more flexible, and find new methodologies," he says.

So how is the UK doing in comparison to the rest of the world? Our early lead in academia hasn't translated into uptake in the commercial sector, says Osborne.

"The UK was probably the first company off the blocks in the world. Compared to the US, I suspect we invested a disproportionately large sum of money [in the e-Science programme] and I think the UK's definitely gained an advantage because of that. Other countries are desperately trying to copy what we've done, including establishing a national Grid service.

"But I would say, on a score out of 10, I'd give the UK 3 or 4 for its attempts to adopt elements of Grid in business," Osborne said.

Chance believes UK businesses suffer from a lack of management interest in IT. Where managers of a company take an interest in IT and see it as a benefit rather than a cost, they are more inclined to see the advantages of technologies like Grid. In the UK, he says, only about 30 percent of companies can reply on that sort of executive input.

However, Dell is seeing a strong interest in Grid, says Jenkins. Over the past eighteen months ago Dell has run over 20 courses on Grid, reaching over 1,000 customers.

These courses have been a real hit, he says. "People come from everything from small companies to blue chip – and a lot of public service organisations, too. If that's any barometer of the interest out there, I think it's huge right now."

And what of the 'wider' Grid, the new Internet? The closest thing to that at the moment is utility or on-demand computing – where a company gives clients access to software and processing power based on its own premises. Oracle, for example, is offering just this to clients including Baxters, the Scottish food manufacturers. Baxters is deploying Oracle applications in its offices, through Oracle's data centre in Texas.

Likewise, salesforce.com has built a successful business offer on-demand access to its customer relationship management software. For its customers, having access to the software without having to worry about running it day to day is a clear benefit.

So should your company be looking at Grid today?

"Finance directors should be asking their IT director to explain how they're getting better utilisation of resources, and if the answer is that they have an industry average of 15-17 percent, then that's not good enough," says Osborne.

"Are you continually improving the return on assets? And systematically linking your IT to your business objectives? You can get value from IT systems in the same way you do manufacturing or your call centre - you should be thinking about it in that way," he says.