

Use a High Performance Computer to Power your Business

Ask a non-IT savvy managing director to explain the term High Performance Computer (HPC) and with a hint of sarcasm they will probably tell you that it is, as the name suggests, a high performance computer.

Those in the know might even reference a more common, alternative name, a 'supercomputer'.

Ask for a few practical examples and they may well recall Deep Blue, IBM's powerful (and physically large) computer which, back in the 90's beat reigning world champion Garry Kasparov in a game of chess.

A HPC is of course a high performance computer – at least that bit is correct – built to process computational data and to help solve specific or a collection of problems.

However, on the whole, today's HPCs are no longer the headline grabbing, chess-playing physical behemoths of old.

Built using low-cost, commodity components (think PC's, servers, workstations or even games-consoles) linked together to create powerful machines, a single HPC can now fill little more than a small filing cabinet sized space.

New energy efficiency technologies such as sophisticated management software can turn off the computer when it is not being used. In addition, heat from the computer can be stripped away quickly using water cooling and other innovations. As a result, running costs are coming down all the time. Importantly, noise reduction technologies even allow businesses to house a HPC in the main office so they don't need to invest in additional space.

And, advances in storage technologies mean that the computational data that these HPCs are crunching can be easily stored and accessed at any time – without affecting existing IT equipment.

And, once the sole play-thing of super rich government defence departments, universities, colleges or other research establishments, HPCs are now moving mainstream.



Literally any, and every business in the UK with an engineering or research problem, can benefit from owning a HPC.

- **Manufacturing organisations** can use a HPC to drive data analysis in a range of areas: to more quickly identify opportunities to operate more efficiently, cut costs, increase staff and machine productivity, increase output and improve workplace health & safety
- **Financial organisations** can use the power and performance of a HPC in a variety of ways, from portfolio optimisation to detection of credit card fraud and more effective hedge fund trading
- **Media firms** can use a HPC to more quickly edit, archive and re-edit digital content – such as films, music or graphics. HPC enables media firms to archive vast quantities of digital content quickly, download that content from the archives – even though it could be Tera Bytes or even Peta Bytes of data – and enable editing of the file whilst downloading is still in process. This can save hours of staff overtime time for media firms used to dealing with bulky and slow video tape and film canisters
- **Retail outlets** can use a HPC to store, track and analyse customers' buying habits by demographic, or by income brackets, for example. It can also be used to store data relating to how customers like to be sold to and how they like be marketed to
- Other businesses with a HPC need might fall into the automotive or motorsport sectors, aerospace, defence or energy and utilities

In fact, the June 2009 Top500 Supercomputer List – a list of the World's 500 most powerful computers – confirms that 62.60 per cent (or 313 implementations) were actually in private or commercial industry, and just 17.80 per cent in research organisations; 16.00 per cent in academia and 1.40 per cent in Government.

The use of HPCs is also not just limited to medium and large businesses.

One small but growing UK business, Tecnica UK Ltd (which is an engineering design consultancy specialising in crankshaft, connecting rods and axle beam forging for the automotive industry) is

now using a HPC to reduce processing time of its complex 3D computer simulations – in use during the forge design process - by up to 80 per cent (40 hours down to 8 hours).

Mark Wren, simulation and design, Tecnica UK Ltd, says: “The power and performance of our HPC takes our simulation to another level – reducing processing time for simulations and enabling us to allocate performance to simulations which need it most.”

HPCs are moving on and moving mainstream – they are quicker to build, they cost less, take less space, are more efficient, and more easily managed – and through greater technological innovation, can deliver more benefits to businesses of all sizes and in any sector. Implemented and supported with the help of an established integrator that is HPC and IT savvy, businesses also won't need to skill up, take on new IT staff or any other additional resources to run a HPC effectively.

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