



Viglen's High Performance Computing Cluster Really Flies at the University of Bedfordshire

IT's Personal

With over a thousand students from all over the world, the Department of Computing and Information Systems (CIS) is a core department at the University of Bedfordshire, offering vocationally relevant programmes, aiming to give students a head start in their chosen career. Now, thanks to Viglen, the students are set to benefit even further with the arrival of a new Viglen High Performance Computing (HPC) cluster, which takes the university into the elite ranks of universities capable of offering this level of computing power.

Background

Established in 1993, the University of Bedfordshire is an innovative and vibrant institution, with an emphasis on a modern curriculum that relates theory to practice. The university boasts 13,800 students and 850 staff and aims to provide accessible, flexible and career-related education.

The university has a clear commitment to its teaching and learning strategy - the Government's watchdog, the Quality Assurance Agency (QAA) has awarded the university six 'excellent' teaching scores in a row. It was named best new university for the quality of its teaching by The Sunday Times in 2004 for the second year running. In 2005, the Government chose Luton as a Centre for Excellence for Teaching and Learning and awarded the university £3.3million in recognition of its outstanding work in helping and supporting student learning. Due to its focus on career-related education, the university is also among the top universities in the country for graduate employment - continuing to climb all the national newspapers' league tables.

Facilities that are Envid Nationwide

The University of Bedfordshire's CIS Department delivers a wide range of undergraduate and postgraduate courses, ranging from Artificial Intelligence and Robotics, Internet Computing and Games Development, to Software Engineering and Computer Networking.

The Department's facilities, including its computing laboratories, are the envy of older universities in the UK. CIS's first class teaching facilities include over 300 state of the art workstations upgraded every three years, five servers with a dedicated network and Linux and robotics labs.

The overall ratio of computers to students is nearly twice that recommended by the British Computer Society. The Department is also active in commercial work with regional, national and international industry and government and offers first class career prospects for students.

Cutting Edge Technology for a Cutting Edge Environment

Viglen's HPC cluster will be used in special purpose laboratories, which are used for both high performance computing and parallel computing.

Scientific problems can take up vast amounts of memory, and applications can run continuously for two or three days. During this time other applications such as Email may perform below par as a result. However, a HPC cluster enables these applications to be farmed out to different parts of the cluster, enabling improved performance.

Geraint Williams, Technical Support Manager, says: **"Parallel computing skills are now very attractive to employers - the skills are on the increase in industry, especially the bio-technology sector."**

These techniques are now common in areas ranging from cancer research right through to multimedia entertainment. That our students learn and train on high quality computers is of paramount importance to us and we knew that we needed this new application as a test-bed to send students out into the world of work. This facility will allow students first hand experience of parallel and distributed programming."



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The HPC cluster will be able to carry out large number-crunching tasks quickly, so data can be analysed and the patterns and trends within it can be identified very early on.



Geraint explains: “Parallel processing involves using many processors working together on one problem, hence coming to a faster solution. For example, clustered processors are used in weather forecasting and Internet search engines. A standard computer could take hours, or even days, to search millions of websites, but a cluster of computers can retrieve such data in seconds - Google has in excess of 15,000 computers clustered together.”

Why Viglen?

The university has enjoyed an ongoing relationship with Viglen - Viglen already supplies PCs and servers to the university - and the department knew that it would deliver in terms of the HPC cluster. Viglen liaised with the university to see exactly what was needed and a formal tender was then compiled, which Viglen won.

Geraint continues: “I have worked with Viglen for a long time and know it always comes out top in terms of value of money. I have just purchased 91 PCs this year and in terms of experience, reliability and service, Viglen is always way ahead. I was confident that Viglen would meet our specific requirements.”

The project consisted of Viglen providing a fully integrated solution - 34 servers in an entire configuration, plus rack and wiring. The whole project took about six months, with Viglen working with the department every step of the way to ensure it was providing exactly what the department needed. Viglen then supplied the full solution in July - in time for the new academic year.

“The department wanted to give students the flexibility to do experiments with three different types of computer - computers with different processors. And now, thanks to Viglen, the students are learning new skills in parallel processing - meaning we are confident that our students really are one step ahead in terms of leading edge technology,” *Geraint adds.*

HPC: Vital for Research Purposes

As well as a first-rate teaching tool, the HPC will be used for university research purposes. The highly qualified staff are also active in computer science research within a wide range of organisations in the UK and worldwide, and have several

externally-funded research and commercial projects - especially in applicable areas such as medical visualisation and drug testing.

Geraint explains: “The HPC will initially be used to carry out research by staff relating to 3G mobile ‘phone technology. We are looking at effective network planning, which is used to provide an efficient network of mobile phone base stations for the third generation mobile phones.”

Other Departments to Benefit from Investment

Cluster computing can link with computer animation and films, and the university knew this high performance cluster could also be used in the university’s new £5.5 million art department.

Geraint explains: “Cluster computing is used on the latest computer-generated animations - featuring in the making of blockbuster films such as Toy Story and Finding Nemo. The number of processors allows multiple frames of the film to be generated in parallel, speeding up the process of creating films. And, Media Arts students at the University of Bedfordshire will also now get to benefit from the HPC.”

Commenting on Viglen’s continued partnership with the University of Bedfordshire and its key role in adding vital work related skills, *Viglen’s Chief Executive, Bordan Tkachuk observes:*

“Viglen shares the same forward looking approach as the University of Bedfordshire. In tailoring our technology to deliver in HPC clusters, Viglen is responding to new ways of working with innovative and flexible solutions. Once again, Viglen has demonstrated its ability to work hand-in-hand with in-house IT specialists at our leading universities, to provide robust research technology. Our relationship with the University of Bedfordshire is a clear reflection of our understanding of the rapidly evolving market for High Performance Computing in Higher Education and cutting-edge research.”



Looking to the Future The Department is now looking to install another cluster and Geraint is looking positively to the future: “I am delighted that Viglen has recognised the importance of High Performance Computing. We already had a couple of clusters - the first I built myself and the second was second hand. But, now I have seen how powerful this Viglen one is, I am looking at

installing another one. And, thanks to Viglen, I am now continuing my education - I am using the configuration to do a postgraduate degree, using the cluster to carry out my own research into parallel computing.”