



## UNIVERSITY OF EAST ANGLIA A Viglen & Platform Success Story

Despite the increase in power, UEA has been able to remain true to the university's mission of environmental sustainability. Although the Data Center is the university's largest consumer of electricity, Platform HPC is helping to reduce their carbon footprint and save money. This is in large part due to the ability to automatically power systems on and off dependent on need and usage. Prior to implementing Platform HPC, UEA was not properly utilising its power structure because the system was still consuming energy even if jobs weren't being run. UEA can now shut down power to nodes when they aren't in use, significantly reducing wasted energy and costs.

Also key, according to Viglen HPC Product Manager David Power, was Platform Computing's ability to support Windows environments and applications so use of the HPC resource could be extended beyond the traditional HPC scientific disciplines. Because users across all of the university's academic disciplines run hundreds of different applications specific to their own research, UEA also needed a solution that could be easily integrated with new software packages. To allow researchers to use both Windows and Linux operating systems simultaneously, UEA implemented Platform HPC which allows multiple operating systems to run on the same cluster at the same time, thus reaching users across the entire university.

Such administration benefits have been extremely helpful to Collins and his team, as well as the users throughout the university.



As the administration team and users continue to learn more about the solution, Collins is extremely positive about the options Platform can provide UEA. UEA currently plans to add more Platform licenses to the deployment and are interested in adding additional GPUs for even more processing power and to double the size of the system once again within 12 months. With the entire university community set to engage in high performance computing, the University of East Anglia will be poised to maintain its world leading research status for years to come.



“Platform HPC has rich functionality and the documentation is extremely helpful and we've received ongoing positive feedback from users.”

With Platform HPC, the master node is aware of resource demands of the jobs queued and what each node is doing. It will power down those nodes not being used, aside from keeping about 5-10 percent available at all times. When usage increases, the master node powers on what's needed within a couple minutes.

”

Chris Collins,  
Head of Research and Specialist Computing Support



## University of East Anglia

### A Viglen & Platform Success Story

IT's Personal

### It's Not Easy Being Green

Established in 1963 in Norwich, England, the University of East Anglia (UEA) is widely recognized as one of the world's premier research universities. The university's Climactic Research Unit (CRU) has been at the forefront of environmental research on climate change since being founded in 1972, and the university community prides itself on its ongoing effort to be an example of campus-wide good environmental practice and sustainability. In 2007, more than 20 scientists from UEA shared the Nobel Peace Prize with Al Gore for their environmental research. In addition, nearly 90 percent of the university's research was rated of “international excellence” in the latest Research Assessment Exercise, with over 50 percent of that research classified as “world leading.”



Great  
Minds  
Think



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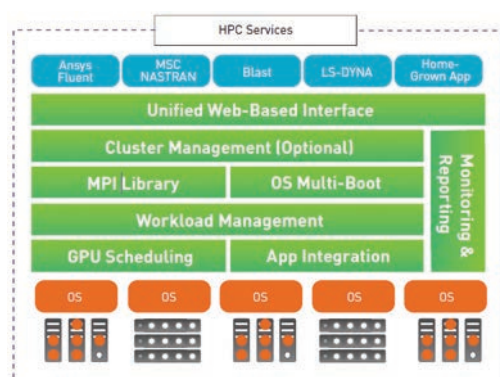
### The Challenges

- Create a “green” HPC resource that aligned with the university’s leading edge research in climatology and environmental studies
- Find a user-friendly solution, easily accessible to academics and students across the entire university
- Expand HPC usage beyond scientific disciplines to researchers in the arts and humanities
- Increase compute power in an efficient manner with the ability to automatically power systems on and off dependent on job schedules
- Support for research across multiple operating systems, including both Windows and Linux

With such a heavy focus on research, high performance computing (HPC) has been an integral part of the university for the past ten years, with the campus running its own dedicated general purpose HPC facility. The HPC resource has traditionally supported research within the scientific disciplines, such as the university’s climate and environmental research and chemistry, computer science and mathematics departments. But as the university’s research demands grew, so did their need for compute power. The system they had in place was no longer able to keep up with the science the researchers were doing. The university also wanted to extend usage of the HPC compute system beyond the scientific disciplines to support research needs within the rest of the university with the goal of encouraging use within disciplines not traditionally associated with HPC applications, such as the social sciences, arts and humanities. They also required a solution that was faster, easier to manage and that provided more power.

### The Solution

Platform HPC management software



Due to a campus-wide focus on sustainability, having a “green” HPC resource was a high priority not only for the climate researchers who regularly use the center to process their research but for the entire community. As such, UEA set out to find an HPC solution that could offer them the high performance they needed, but that could also meet their strict requirements for reducing the university’s carbon footprint and power consumption at lower cost.

**To create their Green HPC solution, UEA turned to Viglen and Platform HPC.**



### The Result

- Significant increase in compute power from 9 to 21.5 teraflops
- Grew cluster size from 900 to more than 2000 cores
- System hardware running 20-40 per cent faster than previous solution
- Cut power consumption rates and costs significantly
- Provides flexible, responsive support

### Extending HPC beyond the Sciences

With the dual needs of environmentally friendly, power efficient computing and the desire to embrace new users across the university in mind, UEA embarked on a project to upgrade their HPC resources. Working together with systems integrator Viglen, UEA more than doubled its HPC core capacity from 900 to more than 2000 cores to meet their needs. According to Chris Collins, Head of Research and Specialist Computing Support at UEA, the university needed a system that provided more intelligence and features than the Sun Grid Engine and Cluster Vision solutions they already had in place. Key to the decision process to implement Platform HPC management software was the ability to provide a complete solution that offered advanced cluster management and scheduling while also lowering the administration burden on the IT department so as to allow administrators more face time with users to assist them with problems when necessary.

Bordan Tkachuk, CEO of Viglen said **“Viglen take very seriously the greening of computing especially in the area of HPC where traditionally huge amounts of both computing power and power consumption go hand in hand. This installation at UAE is an exciting step in proving that using leading edge HPC technology can use less power without compromising the computing power.”** He added **“The increase in compute ability allows UEA to perform research across larger data sets and at a finer level of granularity than before. They really needed a faster, easier to manage system with more capability. This new system provides the research platform to address the requirements of the world leading research being conducted at UEA.”**

**“We’re migrating new users on to the system all the time,”** noted UEA’s Collins. **“We also use Platform MPI (included in Platform HPC) for migrations since transferring and linking applications can be a tedious process. Before we had to differentiate what nodes applications could run on. Now we can run on both Ethernet and Infiniband, make a request for an application and easily link it to Platform MPI.”**

The easy-to-use web interface in Platform HPC was another factor in UEA’s decision. **“That was a huge benefit compared to not having a web interface before. With the challenge of getting non-HPC users to use the system, we could allow them to use the web front end instead of using the command line interface,”** Collins noted. **“We don’t have to do as much work when releasing a new application or do as much new coding. Platform’s software was a clear leader from the beginning of the process.”**

### Powering Up to Power Down

UEA’s new HPC resource has provided the university a significant increase in computational power. The solution including Platform HPC has more than doubled UEA’s computer power, going from a capacity of 9 teraflops to 21.5 teraflops in just a few months. The new system has 2032 cores under management and 168 compute nodes. UEA also added a GPU node to the cluster for added processing power. Platform HPC has provided UEA with the following additional benefits:

- Enables UEA to improve utilisation of their resources by placing workloads intelligently based on the hardware required by specific tasks
- By considering the availability of software licenses in scheduling decisions, Platform HPC enables UEA to use software licenses more efficiently, maximize throughput and reduce administration
- Improved the performance of UEA’s build environment, and helped simplify the management of parallel jobs with Platform MPI, a component of Platform HPC

