

Hewlett Packard Enterprise

Polish-Japanese Academy of Computer Technology together with HPE raises the research work onto the highest level.



IT Challenges

- Making possible research work requiring ample computing power
- Creation of IT environment capable of supporting highly diversified architectures
- Acquiring the possibility of administering technically expanded IT infrastructure for the purpose of learning how to effectively manage most technologically advanced IT environment

Business challenges

- Enhancing college offer by granting access to one of the most modern IT laboratories in this part of Europe
- Optimization of hardware usage costs

Solutions

- Four servers HPE Blade BL460c installed in case HPE BladeSystem with Virtual Connect Flex-10/10D modules
- Server Mooshot m1500 together with sixteen server cartridges HPE ProLiant m300
- Two servers DL380 Gen9 with state-of-the-art Intel and NVIDIA graphics accelerators
- Two matrices HPE 3PAR StoreServ 8200

Thanks to the Blade BL460c, DL380, ProLiant m300 servers and HPE the 3PAR StoreServ 8200 matrices, the opening of one of the most modern computer laboratories in Poland became possible.



Enormous dynamic of IT development is a commonly known fact, nonetheless its pace still amazes. The technology boom is driven by third level colleges and by research and development institutes, where we come across the most powerful hardware, capable of performing most complex of calculations at a fastest pace possible. Polish-Japanese Academy of Computer Technology (PJAATK) is a place to run IT projects, which require the market's top hardware. ESKOM company – multiannual partner of Hewlett Packard Enterprise, while facing these expectations, has proposed the installation of servers and matrices of the highest class.

THE COLLEGE PROFILE

Polish-Japanese Academy of Computer Technology (formerly known as Polish Japanese College of Computer Technology) runs since 1994. During the years of its

operation, it has become an undisputed leader amongst the Polish technical colleges. The research activity is the priority of the IT department, which is vividly expressed by the awarded category A for high level of the conducted scientific research, as well as research and development activity. Thanks to effective use of financial funds acquired for research activity, the departments of the Academy and its Research and Development Centre in Bytom run innovative, highly specialized and valuable projects with the object of inter alia developing and applying modern information technologies in medicine, defense industry, in the spheres related to public security, in criminology and forensic medicine, as well as in media and the entertainment industry (e.g. at computer games production) etc.

In order to continue IT research projects at such high level, the Academy has filed an application for co-financing of purchases of

Case study

Polish-Japanese
Academy of Computer
Technology

Industry

Higher education (IT)

specialist equipment to the European Regional Development Fund under the Regional Operational Programme of the Mazowieckie Voivodeship as part of the project “Heterogeneous Computing Cloud as a Multimodal Research Laboratory (HCC-MRL)”.

“Polish-Japanese Academy of Computer Technology is a college especially focused on practical application of informatics and of the related tools. We run research work at a very high level and cooperate with the private sector. We were looking for solutions, which will enhance our research and scientific potential”

Radosław Nielek, Ph.D Eng. PJACT

- this way, Radosław Nielek, Ph.D. Eng., a representative of the didactic staff of the IT Department of the PJACT, and chief coordinator of the implementation project of new hardware at the college, describes the College’s need, the outcome of which was the application of the HPE hardware. “The hardware, which we have purchased from HPE, is assumed to serve us in two ways. On the one hand, we are talking about the needs of powerful IT laboratory for our students and PH.D. students carrying out research work, a lab that requires vast computing power, ample disk space, and state-of-the-art computing accelerators. On the other hand, at level two, the lab itself, constitutes for us an object of research on efficiency of

management of a large number of applications and of research projects realized all at one time on a single group of hardware.” – says Nielek, Ph.D. Eng, and adds on – “We needed hardware capable of forming heterogeneous computing cloud, i.e. one, which combines several distinct architectures in a single solution”.

RESEARCH WORK AT THE HIGHEST LEVEL REQUIRE THE BEST HARDWARE AVAILABLE

The requirements of the Polish-Japanese Academy of Computer Technology are proportional to the up-to-date achievements and high ambitions of its staff and students, alike. Then again, co-financing from the European Union funds requires from the beneficiaries a best-price purchase. ESKOM – the multiannual partner of Hewlett Packard Enterprise and provider of its solutions – fulfils these terms. During the course of perennial co-operation with HPE, ESKOM team has proved its competences through acquiring a number of specialisations while working on devised by HPE solutions. In order to create one of the most advanced IT labs in Poland, provision of top class hardware was a must.

Hence, the Polish-Japanese Academy of Computer Technology has opted for the acquisition of HPE ProLiant BL460c Gen9 Blade type servers in BL c7000 case, servers

Case study

Polish-Japanese
Academy of Computer
Technology

Industry

Higher education (IT)



HPE ProLiant DL380 Gen9 with NVIDIA Grid K2 card and Intel Xeon Phi, server Moonshot 1500 with sixteen cartridges based on processors Intel Atom c2750 and two matrices 3PAR 8200, and all of it has been placed in Blade case with Virtual Connects-10/10D. Every one of these solutions represents what's best in computing hardware. In effect of combining these, the Academy has got a powerful laboratory, which makes possible research, characterised by unprecedented degree of advancement.

MULTI-LAYER NETWORK INFRASTRUCTURE WITH MOONSHOT TECHNOLOGY

The Moonshot servers were devised by Hewlett Packard Enterprise as an answer to the sky-high surging demand for increasingly more efficient scalability and operating efficiency of network with preservation of greatest possible control over the IT infrastructure at the same time. The cartridge servers HPE ProLiant m300 together with the Moonshot 1500 case came together to form an excellently functioning infrastructure, which enables creating a pile of applications capable of offsetting the burden of Internet services provision or data base management, with the use of special groups of cased servers. The HPE Moonshot technology makes use of the advantages brought by

energy-saving processors and mass memory, thus creating an ideal solution for managed hosting.

“We provide devices that are interesting, both, in terms of functionality, and didactics.”

Sebastian Niklewicz, the ESKOM company CEO

“Moonshot technology was chosen as the best solution for making desktops physical while at the same time ensuring best optimization of memory and processor use.”

Paweł Piątkowski, Key Account Manager at ESKOM company

The application of the Moonshot 1500 case ensures power supply, cooling as well as excellent server management. Each cartridge is serviced individually, thanks to which the saving of energy has been reduced substantially, and the administration itself has become much more transparent than is the case in standard solutions. All parameters lead on to a new level of energy and financial efficiency – in comparison with the traditional servers, the cartridges in the Moonshot case consume up to 89% per cent of energy less, while at the same time take up some 80% less space, add to that maintenance costs are less even by 77%. The computing power of a single cartridge of server HPE ProLiant m300 is based on 8-core Intel Atom C2750 2.4 GHz processor. The cartridge memory is 240 GB of SSD disk space. The Academy decided to

“Thanks to very good quality and efficiency of matrices, we can test more solutions and are capable of realizing more ideas, than ever before. The scale of our tests is incomparably greater.”

- Radosław Nielek, Ph.D. Eng., Polish-Japanese Academy of Computer Technology

purchase sixteen cartridges of that class, which, when combined, gives us enormous flexibility in using resources at maximal optimization of operation, given highly diversified IT architectures. On the other hand the Moonshot 1500 case has got slots for as many as 45 cartridges, where installation of additional modules requires a very small amount of time, and so the Academy at any given time can increase the computing capacity of the lab through the application of the new HPE ProLiant cartridges.

MAXIMAL EFFICIENCY WITH HPE BLADESYSTEM SERVERS

The Polish-Japanese Academy of Computer Technology has also opted to acquire Blade BL460c servers provided with Intel Xeon E5-2695v3 processors. The selection of this hardware was justified by the need of conducting research projects based on processing vast amounts of data, which is a burden to hardware. Servers of Blade type provide excellent optimization of used memory. “Our research projects require the hardware to make numerous calculations in as short time as possible. The HPE devices are very good at fulfilling our needs – something, which using a standard type computer was computed weeks long, at our lab is obtained in a matter of hours” stresses Radosław Nielek, Ph.D. Eng. “The Blade type

devices have been applied in creating cloud for processing most complex data. State-of-the-art processors have been availed of, as well as fastest RAM memory available, for the purpose of providing the Academy with solutions of top quality” – says Paweł Piątkowski from ESKOM. An enormous advantage of HPE BladeSystem servers is in flexible adaptation of mass memory to a given burden, which has great effect on optimization. This in turn leads on to a substantial reduction in the total cost of hardware. This is possible thanks to convergent platform for managing the server – HPE OneView. The specification of the BL460c ensures increased effectiveness of use of over 20% with respect to the former generations of the Blade servers. Excellent technical parameters in combination with unprecedented care for effective use of resources provides us with hardware, which is adapted to the requirements of advanced PRACT lab research. The servers have been provided with HPE OneView software to support device management function, data processing function, as well as administration of installed applications and controllers.

Whereas the HPE Integrated Lights-out (iLO) software enables the management of server exploitation cycle and the operation of group configurations, and it also provides some detailed information on the device capacity use. Along with the servers there has also been purchased BladeSystem case with Virtual Connect Flex-10/10D modules. These

Case study

Polish-Japanese
Academy of Computer
Technology

Industry

Higher education (IT)



modules ensure connection with 10GB transmission speed. They also operate data transmission within the system and eliminate the compulsion of applying Ethernet connectors and various type of cables. Thanks to advanced technology and simplicity of use, replacement, adding or removal of individual servers takes just a couple of minutes. The Virtual Connect Flex-10/10D solution enhances and substantially facilitates the administering of the servers and optimizes the lab operation as much as possible.

THE BEST GRAPHICS ACCELERATION THANKS TO HPE DL380 GEN 9 SERVERS

“As part of the lab project, we have decided to buy two servers DL380” – tells us Radosław Nielek, Ph.D. Eng. – “The first of these has been provided with NVIDIA Grid K2 cards – these are cards destined for visualising graphically advanced desktops. That’s the-state-of-the-art technology available on the market. In turn, the processor is the Intel Xeon E5-2695 v3. The machine is equipped with 512 GB RAM, two disks SSD 480 GB and four disks 1.2 TB 10K. The second server DL380 has got similar parameters, but it possesses two Intel Xeon PHI 5110p cards”. Paweł Piątkowski of EXOM confirms – “We have provided servers DL380 with some of the fastest Intel and NVIDIA graphics cards available. Thanks to this, we know that the

Academy has obtained wonderful hardware, which will meet its requirements over the following years.”

The servers HPE DL380 are state-of-the-art and most versatile servers, which prove their worth in just any branch. They are characterised by ease of operation, some enormous capabilities of upgrading, as well as high efficacy. Provided together with the hardware, HPE OneView software automizes operation of servers, mass memory and network modules. The HPE Extended Ambient Operating Support Technology optimizes cooling and reduces its costs.

MAXIMIZATION OF THE QUALITY OF ADMINISTRATION THANKS TO THE HPE 3PAR STORESERV 8200 MATRICES

“To operate the server environment we have provided two HPE 3PAR Storeserv 8200 matrices – mentions Paweł Piątkowski, and Sebastian Niklewicz adds – “The Polish-Japanese Academy of Computer Technology as the first one in Poland has implemented 3PAR series 8000 machines. In this way, we have provided an entirely new product line, which has had its world premiere in September, and already November has seen the accomplishment of installation of these matrices at Polish client”. Thanks to the 3PAR 8200 matrices, the

Case study

Polish-Japanese
Academy of Computer
Technology

Industry

Higher education (IT)

PJACT has access to Flash memory capable of processing over a million of input/output operations per second. Then again, thanks to the Gen5 Thin Express ASIC technology, high efficiency preservation and mixed burden operation are enhanced, which is all the more valuable, when we consider the multiplicity and diversity of technologies, which are availed of in the research work of the Academy. "Due to some very good quality and efficiency of matrices, we are capable of testing more solutions and of realizing more ideas than ever before. The scale of our research work is greater by far" – compliments Radosław Nielek, Ph.D. Eng. Integrated technologies of data compression enable for limiting required memory space of up to 75%, thanks to which the available disk space is increased substantially. It's worth mentioning that also the physical dimensions of disks have been reduced by 67%. The 3PAR 8200 matrix has also been accompanied by Data Optimization Suite v2, which has got the Dynamic Optimization, Priority Optimization, an Adaptive Optimization functions, which i.a. enable for creating timetable for changes in given limits of capacity usage, ascertaining definitions of layers for individual applications, tracking efficiency and setting of priorities for individual applications and processes that are active at the laboratory.

THE HPE SOLUTIONS ARE AN ANSWER TO THE REQUIREMENTS OF SCIENTIFIC UNIT OF XXI CENTURY

The new Lab of the Polish-Japanese Academy of Computer Technology operates with success since the end of 2015, and there are more and more research projects being activated there. The real life outcome of work has fully accomplished the assumptions of the grant programme and provides an excellent answer to the demand from the workers and the students of the IT department at the PJACT. "The functioning of the lab is a constant interaction with the requirements of its users. We are activating all the time new services and mechanisms running on the HPE solutions. We are testing novel solutions, and the hardware fulfils in full, both, our requirements, and the terms of the Regional Operation Programme" – stresses Radosław Nielek, Ph.D. Eng. Some powerful subassemblies, which constitute basis for PJACT heterogeneous computing cloud let Ph.D. students realize their research work, which requires some immense computing power – "At the lab, we can test new recommendation algorithms, which require some complicated operations to be done with the matrices, and those provided by the HPE prove themselves in that case superbly.

Case study

Polish-Japanese
Academy of Computer
Technology

Industry

Higher education (IT)



Solution

The servers HPE Blade BL460C, HPE Moonshot with ProLiant m300, ProLiant DL380 Gen9 cartridges, and 3PAR StoreServ 8200 matrices have enabled to create a modern, effective, and technologically advanced laboratory, in which Ph.D. students realize their complex research projects, which until now were impossible to accomplish.

Hardware

- HPE Blade BL460c
- HPE BladeSystem c7000
- HPE Virtual Connect Flex-10/10D
- HPE Moonshot m1500
- HPE ProLiant m300
- HPE DL380 Gen9
- HPE 3PAR StoreServ 8200

Software

- HPE 3PAR Data Optimization Software Suite v2
- HPE OneView
- HPE Integrated Lights-Out (iLO)

Yet another project is the forming of plug-ins for optimizing virtual machines basing on oVirt technology. We also create algorithms for pricing money options and more than that. We also conduct research work on creating networks and data analyses, which are located on the Github. We have got also a vast number of projects from the Multimedia Cathedra, which relate to the so-called machinery translation. These are Deep Learning type solutions, through which we strive to instruct given tools to effectively translate from one language to another. This is just a small piece of all of the research projects, which in their diversity are interconnected by a high level of complexity

and a need for applying hardware characterised by top computing capacity – tells Radosław Nielek, Ph.D. Eng. The combination of servers HPE of class Blade BL460C, Moonshot, ProLiant DL380 and of 3PAR 8200 matrices has let on to the development of one of the most modern IT laboratories in this part of Europe. The fastest available processors, top quality memory, as well as dedicated graphics accelerators have become a priceless research tool of the Polish-Japanese Academy of Computer Technology, the position of which amongst the domestic technical colleges once again has been strengthened.

