Press release

New Supercomputer at the German Climate Computing Center is now operational - Bull supercomputer enables for the first time more accurate local climate forecasts for Germany

Hamburg, 13th July 2015 - Bull, the Atos brand for its technology products and software, today announced that it has completed the first installation phase of the new supercomputer "Mistral" at the German Climate Computing Center (DKRZ), based on Intel® Xeon® E5-2680 v3 processors. By 2016, when the supercomputer will operate at full capacity, it will provide 50 petabytes of storage - enough to store more than 10 million feature films - and perform three quadrillion calculations per second, making it one of the most powerful and at the same time energy efficient supercomputers worldwide used only for climate simulations.

Climate forecasts are calculated using three dimensional grids. The smaller each grid cell is the more detailed the simulations. Until now, Germany was represented in climate simulations using in the best case a grid resolution of ten kilometres or more. This is still too coarse to represent small topographical structures and their influences on weather and climate. Up to now small-scale processes like the formation of clouds could only be parameterized in climate models. The new Bull supercomputer enables experiments with a model of Germany using a 100-meter grid and hence the explicit simulation of clouds.

In the final phase that will be delivered in 2016, "Mistral" will have a 20-fold increase in computing power compared to the former system, enabling further improvements including ensemble simulations. Here, the same model run is repeated several times with different starting conditions but with the same boundary conditions, such as a prescribed change in the chemical composition of the atmosphere. By the statistical evaluation of the different climate developments simulated, the uncertainties in climate projections can be better estimated and reduced, for example, for rainfall trends. The increased computing power therefore enables statistically more robust and meaningful results.

"Among the biggest challenges in current climate research are also the complexity and dynamics of the climate as well as the enormous amount of data that has to be calculated and processed in order to incorporate the various interactions between the atmosphere, land surface, sea ice and the oceans," says Professor Thomas Ludwig, CEO of DKRZ. "With the new system we are able to include even more processes into the calculations, which had to be neglected before."

Energy Efficiency

With a seven-figure sum, the electricity bill is a more than significant item in the annual budget of DKRZ. In a highly efficient way the Bull supercomputer transforms the necessary electric power into computing power. Thanks to warm-water cooling the installation has a so-called Power Usage Effectiveness (PUE) value of 1.2, which means that more than 80 percent of the electrical consumption is used for actual computing and less than 20 percent has to be used for the infrastructure such as cooling.

In its final phase from April 2016 the system will include more than 60,000 Intel processor cores based on bullx B700 DLC blades, distributed to 60 racks.

"The energy consumption in data centres is one of the major cost factors in the digital transformation of the economy," says Winfried Holz, CEO of Atos Germany. "It is our objective to optimize the total costs of computing processing especially with supercomputer installations."

Bull will be showing its latest Extreme Computing solutions and bullx supercomputers based on Intel® Xeon® processors at ISC High Performance 2015 from Monday 13th to Wednesday 15th July in Frankfurt, Germany.

DKRZ will also attend ISC'15 informing at its booth about its new HLRE-3-system and showing climate visualization on a climate globe.

About the German Climate Computing Center (DKRZ)

DKRZ is a unique national center for premium climate science: it provides high-performance computing platforms, sophisticated and high-capacity data management and related services.

Today, the complexity of the Earth system is one of the great scientific challenges. The Earth as a whole cannot be the object of experiments. Therefore, the computer systems of the DKRZ are the laboratory for climate research. Simultaneously the staff at DKRZ supports the scientists with the optimization of their climate model codes, with the analysis, visualization and the publication of the simulated data.

DKRZ is a limited company (GmbH) with four shareholders: Max Planck Society (55%), the City of Hamburg, being represented by the University of Hamburg (27%), the Alfred-Wegener-Institute for Polar and Marine Research (9%) and the Helmholtz Centre Geesthacht (9%). It was founded on November 11th, 1987. Currently DKRZ has about 70 employees. DKRZ's director, Prof. Dr. Thomas Ludwig, also leads the working group "Scientific computing" at the department of informatics of the University of Hamburg.

Further information: www.dkrz.de/

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About Bull, Atos technologies for the digital transformation

Bull is the Atos brand for its technology products and software, which are today distributed in over 50 countries worldwide. With a rich heritage of over 80 years of technological innovation, 2000 patents and a 700 strong R&D team supported by the Atos Scientific Community, it offers products and value-added software to assist clients in their digital transformation, specifically in the areas of Big Data and Cybersecurity.

Bull is the European leader in HPC and its products include bullx, the energy-efficient supercomputer; bullion, one of the most powerful x86 servers in the world developed to meet the challenges of Big Data; Evidian, the software security solutions for identity and access management; Trustway, the hardware security module and Hoox, the ultra-secure smartphone. Bull is part of Atos.

For more information: www.bull.com/

About Atos

Atos SE (Societas Europaea) is a leader in digital services with 2014 pro forma annual revenue of circa € 11 billion and 93,000 employees in 72 countries. Serving a global client base, the Group provides Consulting & Systems Integration services, Managed Services & BPO, Cloud operations, Big Data & Cyber-security solutions, as well as transactional services through Worldline, the European leader in the payments and transactional services industry. With its deep technology expertise and industry knowledge, the Group works with clients across different business sectors: Defense, Financial Services, Health, Manufacturing, Media, Utilities, Public sector, Retail, Telecommunications, and Transportation.

Atos is focused on business technology that powers progress and helps organizations to create their firm of the future. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and is listed on the Euronext Paris market. Atos operates under the brands Atos, Atos Consulting, Atos Worldgrid, Bull, Canopy, and Worldline.

For more information, visit: www.atos.net/

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