

# Case Study

## Sibneftegeofizika

»Sibneftegeofizika needs a reliable computing cluster to process the information we receive in the course of geophysical research. Fujitsu succeeded in offering server solutions that combine an acceptable cost for procurement and maintenance, with a high level of performance, reliability and scalability«

Yevgeniy Krivoshein, IT Manager, Sibneftegeofizika



### The customer

Country: Russia  
Industry: Geophysical surveying  
Founded: 1994  
Website: [www.sibngf.ru](http://www.sibngf.ru)



### The challenge

Sibneftegeofizika needed to upgrade its system for processing geophysical data to work on projects in geological surveying of oil and gas companies. When processing and interpreting (earth structure modelling) high-capacity computing resources are needed, which the company did not have. The upgraded computing system would enable the company to take part in larger scale projects, where high performance computing systems are essential.

### The solution

Management decided to create and introduce its own IT infrastructure with a PRIMEFLEX for HPC cluster based on Fujitsu PRIMERGY RX4770 M1 Servers, a Fujitsu ETERNUS DX500 storage system, VMware vSphere 5.5 virtualization platform and OC Red Hat Enterprise Linux Server software.

### The customer

Sibneftegeofizika is a multi-discipline geophysical enterprise that performs all types of 2D and 3D seismic survey field work, geophysical borehole surveying, processing and geological/geophysical interpretation and monitoring the degree of exploration of areas using seismic surveying and drilling. Sibneftegeofizika is a leader in the deployment of state-of-the-art technologies when performing field work, processing and interpreting materials. In terms of volumes of work, Sibneftegeofizika features in the top five Russian geophysical companies. Over the last 14 years, more than 80,000 linear kilometers of 2D CDP method profiles and more than 6,000 km<sup>2</sup> of 3D profiles have been processed, using explosive, vibration and impulse sources of seismic wave excitation. The application of the latest equipment and technologies for field work, processing and interpretation, in combination with highly qualified specialists, enables the resolution of the most complex geological tasks, from adjustment of the geometry of productive strata to the forecasting of their porosity and permeability parameters and creation of geological models of reservoirs with recommendations on exploration drilling.

### The challenge

When choosing Fujitsu as its supplier for high-tech server equipment to build a new system for processing and interpreting geophysical material, Sibneftegeofizika focused primarily on parameters such as high performance and fault tolerance, offered at a reasonable cost. In addition, based on customer feedback, the purchased Fujitsu PRIMEFLEX for HPC system facilitates flexible expansion of computing capacity at comparatively low cost, both in terms of human and financial resources. During the selection process, Fujitsu could justify its advantages over the competition by organizing a factory tour for Sibneftegeofizika specialists, with a demonstration of the technical features of the facility, which proved decisive in the final choice of servers and data storage systems in favor of Fujitsu.

### The benefits

- Integrated component standby capabilities
- Comprehensive management covering the entire lifecycle
- Lower power and cooling costs

### The solution

Sibneftegeofizika opted for the Fujitsu ETERNUS DX500 data storage system and PRIMERGY RX4770 M1 servers to upgrade its computing system. The design was developed with the customer's IT specialists and Softline engineers. PRIMERGY servers deploy a virtualization cluster using VMware vSphere 5.5 Hypervisor. It creates virtual machines controlled by the Red Hat Enterprise Linux Server operating system for data processing and interpretation. Fujitsu PRIMERGY RX4770 M1 significantly simplifies the performance of tasks, associated with IT infrastructure optimization, such as server virtualization and consolidation. Equipped with Intel® Xeon® E7 v2 processors, this server ensures a considerable enhancement in performance when working with complex workloads such as data-heavy applications, including in-memory applications, and real-time analytics. Images of virtual machines of the Sibneftegeofizika computing cluster are stored on the Fujitsu ETERNUS DX500 data storage system which enables the simultaneous performance of production and analytical tasks, using only one data storage system. Using various emergency recovery methods, including switch-over to standby equipment that the user never notices, with remote replication and production of snapshots of system images, an unparalleled operating stability is achieved.

The Fujitsu PRIMEFLEX for HPC environment deploys a complex system for calculating the seismic activity of Sibneftegeofizika. The calculation makes use of specialist software Paradigm, Geocluster, KingDom, Hampson-Russell and others, which has complex architecture and consists of several services:

- Computing nodes
- A master node that manages the computing nodes
- An NFS storage for storing data and facilitating general access to data for the computing nodes.

### Products and services

PRIMEFLEX for HPC environment consisting of:

- FUJITSU Server PRIMERGY RX4770 M1
- FUJITSU Storage ETERNUS DX500

### The benefit

Implementation of the project to create a new computing cluster involved all the company's IT divisions, the tender department and the commercial unit. Based on the results of project introduction, Sibneftegeofizika performed a significant upgrade of its existing IT infrastructure, increasing its computing capacity by more than a factor of ten. The Fujitsu PRIMEFLEX for HPC cluster presented Sibneftegeofizika with new opportunities to implement large-scale projects and it helped satisfy all modern requirements placed on design and survey organizations with respect to geological investigations. The virtualization system based on VMware vSphere 5.5 helped to increase effectiveness of the existing computing capacity.

"Sibneftegeofizika needs a reliable computing cluster to process the information we receive in the course of geophysical research. Fujitsu succeeded in offering server solutions that combine at acceptable cost for procurement and maintenance, with a high level of performance, reliability and scalability," explained Yevgeniy Krivoshein, IT Manager at Sibneftegeofizika.

### Conclusion

As a consequence of the considerable and ever-growing volumes of data that have to be processed by Sibneftegeofizika's computing capacity, the company is ready to continue the upgrade of this IT complex. In the near future an expansion of the PRIMEFLEX for HPC environment is planned to double the capacity of the data storage system and to increase the processor capacity to 1,000 cores.

In collaboration with



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2015-03-05

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