



Education through the cloud

Russian university launches innovative eLearning platform for anywhere, anytime learning

Russia's North Eastern Federal University (NEFU) teaches over 20,000 students, covering subjects including engineering, sciences, humanities and social sciences, mathematics and information sciences and medicine. Based in the city of Yakutsk, it operates five satellite sites across the Republic of Sakha. The University worked with Intel Corporation, Inline and RSC to move all its educational content and applications onto a cloud-based platform so that students and lecturers can access all the resources they need from any location. Not only has this delivered a richer learning experience, but it helps the University to reach students in more rural areas at no additional cost.



CHALLENGES

- **Be the leader in eLearning.** Deploy first end-to-end, cloud-based solution to revolutionize the education process
- **Reach more students.** Enable learners in remote rural areas to benefit from higher education
- **Digitize content.** Provide access to rich learning tools and materials through the cloud, accessible from anywhere and any client device

SOLUTIONS

- **A new concept.** Intel designed the model for a new eLearning platform and supported implementation. Hardware and connectivity were provided by Inline Group and the cloud-based educational platform by RSC Group
- **Far-reaching cloud.** Servers powered by Intel® Xeon® processors E5 and E7 families host a cloud environment that students and faculty can access from any Internet-enabled device using any standard browser
- **Subject-specific content.** Educational cloud platform RSC Universum* includes background materials, tests and learning applications, all tailored to specific educational programs



IMPACT

- **Personalized learning.** Students can access more of the content that interests them most, at the time most convenient to them
- **Easy expansion.** Cloud-based model means the university can reach more rural students without investing in new physical sites
- **Built to last.** Flexible platform can be adapted as the needs of students change, with new features and functionality easy to add

Book bags to laptop bags

Gone are the days of students carrying heavy bags full of textbooks. With the increasing prevalence of mobile technology and wireless Internet access, the most up-to-date, detailed and relevant information is usually now found online. To keep up with this evolution, national governments and international educational bodies are encouraging schools and universities to adopt more online and digital content and services.

By incorporating the use of information and communications technology (ICT) devices and skills into the classroom or lab, educational institutions can not only provide students with new and dynamic content, they are also helping to develop important skills for life in the workplace, such as research, presenting and use of standard office applications.

Recognizing this trend and eager to set an example for the rest of Russia, NEFU set up its Unified Information Service Environment (UISE) project to create a cloud-based eLearning platform. Its vision was to build a cloud-based environment students and faculty can use to access lesson content, background material, tests and subject-specific applications through any Internet-enabled device.

It had a few desktop PCs on-site already, which had some materials saved on them for students to access, but most learning content was book-based, making it hard to update. This also meant that students in rural areas sometimes could not access their course materials properly.



University gives rural students an enhanced digital education while keeping costs down

To do so, they may need to travel to one of the university's satellite sites and even then, their tutor may have been based elsewhere. The university wanted to create a comprehensive online environment that provided the same high-quality content and resources to every student, no matter where they are in the country, or even the world.

Education in the cloud

As one of the first universities in Russia to make the challenging leap to an eLearning model, NEFU wanted to work with experts who could help it succeed. For this reason, it worked with Intel to create a concept for how the new system would work and a roadmap for implementation. Local systems integrator Inline Group provided the hardware and connectivity elements of the new model, with the educational cloud software platform, called RSC Universum*, coming from RSC Group. The solution Intel designed is based on a fleet of around 150 HP servers, powered by Intel Xeon processors E5 and E7 families, which support the cloud environment. All content can be accessed through any Web browser (with an authorized username and password), using any device. This means students who have their own PCs or laptops can log on using them. Lecturers and students who are unable to afford to buy their own device are provided with one of 400 Lenovo* laptops.

The university chose to make use of this Intel Xeon processor-based platform as its Intel® Virtualization Technology for Directed I/O (Intel® VT-x and VT-d) features provide a significant performance boost for virtual machines. In addition, the performance-per-Watt advantages of the Intel technology enable the university to save power – and therefore costs – in its data center. This combination of performance and cost efficiency help the university's

eLearning solution to work faster and more reliably while optimizing total cost of ownership (TCO).

The cloud platform provides students with three key resources – written, visual and audio content to support their learning and provide information to supplement lectures and lab sessions; tests to regularly enforce new information learned; and subject-specific applications (for math, chemistry or computer-aided engineering courses) to help students practice skills they learn in class. Flexibility was built in so that each subject or faculty could develop its own applications and functionality according to the needs of its students.

The initial stage of implementation saw around 500 pieces of content being added to the platform for six selected courses. For around six weeks, about 150 students piloted the use of the platform.

Upon the successful completion of the pilot program, the university began to roll out use of the cloud platform to more student groups, bringing another 4,000 on board. At the same time, 997 teachers from across the university were trained in the usage methodology which the university had developed with input from Intel. These first adopters were then tasked with sharing their knowledge and training colleagues to use the platform, following the peer-to-peer training model used by the Intel® Teach program.

An e-computing continuum

After just six months, the university was sure it had made the right decision to take this ambitious step, having created a full e-computing continuum which covers hardware, content and connectivity. The platform is designed to last, yet is adaptable enough that it can incorporate new features at any time. Being made up of standard technologies that anyone can use, the university hopes it will set a pattern for other universities to follow.

Spotlight on North Eastern Federal University

North Eastern Federal University, previously known as Yakutsk State University, is a school for higher learning in Yakutsk, Siberia. Established in 1956, it is the largest institution of higher learning in the north east of Russia. It has 10,000 students, 800 academic staff, four institutes (medical, finance and economics, and pedagogical) and 10 departments (mathematics, physics, philology, law and history, foreign languages, geology and prospecting, technical and engineering).

The ability to offer a remote education service is also a huge boon for NEFU. In a country as large as Russia, the population is often spread over a very large area, making it difficult to reach students in rural areas. Now, if they have access to the Internet, they can benefit from all the resources and applications that students on the Yakutsk campus do, with no difference in the quality of their learning experience.

Another important goal for the university is to deliver these remote services to far-off students without investing in new physical sites, essentially increasing the student population without the associated overhead costs.

The students themselves now enjoy a much more tailored syllabus, with access to more detail on elements of their course that interest them. Since their content and applications are available to them 24/7, students can also choose when they study, fitting their course around other commitments and responsibilities. Moreover, they will be able to retain access to their course material, test results and coursework through the cloud even after they move on from university.

NEFU has a three-year plan in place to develop and enhance its cloud environment, and keep itself at the forefront of ICT innovation, as Valery Syromyatikov, deputy principal for IT, explains: "We plan to further widen the circle of lecturers and students, connect new workplaces and access devices, as well as create new services within the system."



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