

TU GRAZ RELIES ON IGEL THIN CLIENTS

In order to allow better teaching in the field of bioinformatics on a UNIX basis, the Institute for Molecular Biotechnology at Graz University of Technology has opted for low-maintenance, lean thin clients.



The University - City of GRAZ

Since 2004, there has been a partnership between the University of Graz and the Graz University of Technology – NAWI Graz. The aim of this partnership is for large parts of the natural science faculties of both universities to work together both in research and in teaching, further strengthen these areas, develop them and promote them on the international stage. Given the success of the concept, NAWI Graz has evolved into a much admired scheme both nationally and internationally. For the future, there are plans to set up English-language Master's courses – primarily with a view to making the study courses more international. For example, the "Biotechnology" Master's course will be on offer in English only from the 2015/16 academic year.

SUMMARY

The Customer

- TU Graz – Institute for Molecular Biotechnology (IMBT)
- The university institute carries out research into cell and protein engineering as well as computational biotechnology

The Challenge

- Permanently reducing IT costs
- Reducing maintenance outlay
- All workstations UNIX-compatible

The Solution

- All 80 workstations at the IMBT were equipped with IGEL UD6-LX thin clients
- Cendio ThinLinc server CentOS 6.6 / 7

Key Benefits

- Smooth playback of videos in full-screen mode with 30 images per second
- Space-saving multiprotocol devices for a silent computing environment

Bioinformatics computer laboratory at the Institute for Molecular Biotechnology (IMBT)

The Institute for Molecular Biotechnology at the TU Graz is also part of the NAWI Graz partnership. This university institute carries out research into cell and protein engineering as well as computational biotechnology. The Computational Biotechnology working group operates the Bioinformatics computer laboratory which is available to students of both universities as part of the NAWI Graz partnership. Here, biology, biochemistry, biophysics and biotechnology students are taught life sciences IT under the supervision of Prof. Sensen. After studying in Germany, Prof. Sensen spent the next 20 years in Canada. His first stop was the Institute for Marine Biosciences (National Research Council) in Halifax, where he held various positions until he was appointed to the University of Calgary in 2001. Now he has returned to Europe and has been a Professor at the IMBT since September 2014.

The lecture timetable includes not only a practical introduction to bioinformatics but also its challenges, homology searches, alignments, protein structure prediction, genomic analysis, gene finding and integrative data analysis. Students also learn the basics when using UNIX systems, various operating systems, databases, the UNIX command line, C shell and tcsh.

The aim of all the lectures is

- To provide a basic knowledge of bioinformatics,
- To allow students to navigate through the main biological databases,
- To extract relevant data and
- To answer simple bioinformatics questions.

When he started work in Graz, Prof. Sensen's teaching sessions took place in the existing computer rooms of the TU Graz. Some of these feature computers based on MS Windows, often with a wide range of updates for individual programs and operating systems. In order to allow better teaching in the field of bioinformatics, new, low-cost devices on a UNIX basis – ideally low-maintenance thin clients – were needed. Using Google, the team looked for alternatives and tested devices from four manufacturers. A comparison of the time taken to load a YouTube video was the first impressive experience, and this led to an initial trial. No device apart from the IGEL UD6-LX thin client was able to play back videos smoothly in full-screen mode with 30 images per second.

IGEL thin clients for teaching

The following arguments played a key role in the decision to purchase thin clients:

- The data and applications for all thin clients within the system are now administered centrally on one server
 - The economical nature of server-based computing (SBC) – ideal for standard workstations
 - Virus protection for the server only thanks to read-only operating system
 - Administration, maintenance and support are minimized, thus reducing costs considerably
 - Flexible data access to various server environments such as Windows, Citrix, Linux, Unix etc.
 - The network is much quicker and highly available
 - Low power consumption and thus environmentally friendly
 - Long operating life – no fans or drives, no noise emissions or waste heat
 - User problems and data loss are avoided thanks to centralized storage
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IGEL thin clients for research

Bioinformatics is a relatively new, interdisciplinary science and forms an interface between biology, medicine, statistics and IT. Bioinformatics can be used in a wide range of areas. These include new methods for diagnosing and treating genetic disorders, cultivating new crop species and producing medicines via biological routes. Given that this range of applications is growing all the time, demand for additional bioinformatics specialists remains high. Universities have therefore been asked to expand their range of study courses and research opportunities – and the TU Graz has responded accordingly.

Conclusion to date, 60 IGEL UD6-LX thin clients have been connected to the central Cendio ThinLinc server. Thanks to a fast quad core processor and flexible expansion options, the UD6 can easily cope with the demanding applications encountered in university teaching and research. The new high-end model can effortlessly play back videos in full HD, run computer aided design (CAD) applications and even 3D applications. Complemented by numerous interfaces including USB 3.0 and a PCIe slot, the UD6-LX is the perfect work device for Prof. Sensen, his team and the students. After 10 months, Prof. Christoph Sensen has settled into life in the Styrian capital. 50% of the IT equipment from his former laboratory in Calgary worth around Can \$2.0 million when new is already in Graz. The rest will be delivered in a few weeks' time and will go into operation again at the TU Graz.

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