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NEWS

"We have a lot to offer for students"

More than 5400 CPU cores, over 120 servers, around 40 terabytes of random access memory (RAM), almost 2000 switches and around 5000 access points: "We are well prepared for the winter semester," Norbert Hartmannsgruber says. He holds a doctorate in physics and heads the department Benutzer-nahe Dienste (BDS) at the Leibniz Supercomputing Centre (LRZ). 17,000 new students have enrolled at Munich's universities only, and an estimated 13,000 more users will therefore access the infrastructure that the LRZ as IT service provider makes available to [universities and colleges in Munich and Bavaria](#), the Bayerische Staatsbibliothek and research institutes. For [students](#) the LRZ provides useful services that facilitate their work. Hartmannsgruber explains these services*:

In the winter semester many courses are organized online: Does the LRZ have to increase capacities for this? **Dr. Norbert Hartmannsgruber:** We expanded our systems, storage space and the Münchner Wissenschaftsnetz (MWN) during the pandemic lockdown and are well prepared for the winter semester. Everything is under control and working. We hear that first-year students are more likely to study locally to make them feel more at home at the universities and in Munich, while students, that are more advanced in their studies, are offered more online courses. We manage the online teaching together with the universities, which offer their own solutions for lectures, seminars and event recordings in addition to the MWN or the video conferencing tool meet.LRZ. We regularly exchange intensive information with those responsible for IT at the universities and colleges so that possible bottlenecks or problems can be quickly eliminated.

The LRZ is a service provider for universities and colleges - does it also offer services for students? **Hartmannsgruber:** We have a lot to offer for students, even though the LRZ usually does not contact them directly, but rather via the universities, their faculties or institutes. With the MWN, with Bayern-WLAN and Eduroam we bring free, secure Internet directly into lecture halls and seminar buildings. With LRZ Sync+Share or BayernShare, students can exchange files as easily as with Google Drive or Dropbox, their data is then stored on servers in Bavaria in compliance with data protection regulations. Through negotiations for campus-wide licenses, we are able to provide students with up-to-date office programs and software relevant to their subjects and offer them via their departments. A Sophos-license is another of our offerings - the [anti-virus program](#) can be downloaded on student's private desktops and notebooks and is updated regularly. Students can also learn how to use office programs and buy manuals that have been proven to work well with, p.e Excel, Access, Photoshop and the like.

But most offers do not come directly from the LRZ... **Hartmannsgruber:** We provide services and technology that colleges and universities distribute to students. Students first need a user ID of their university and can use it to register for LRZ services or in the MWN. Only for trainings or manuals they contact the LRZ directly. If they have problems with software, internet, connections, the universities and faculties are also the first point of contact persons with whom we cooperate closely.

In libraries the WLAN is often difficult to set up or does not work: Do you have a tip? **Hartmannsgruber:** This is also often the case in larger lecture halls and is due to the fact that all mobile devices usually log in at the access points installed near the entrance and these are then overwhelmed. More bandwidth and a better connection is given to those who interrupt the login and only establish it when they have found their place. Then the devices usually connect to less busy access points. In addition, metal shelves shield the WLAN, and those who work online in the library should do so at the tables on the edge and not between shelves. But now we wish all freshmen and students a good start to the winter semester, despite the difficult conditions". **(vs)**

More about User ID of [LMU](#) and [TUM](#)

* By the way: Students who like to work with computers and IT technology can also earn money at the LRZ. We are regularly looking for student assistants for the servicedesk and other exciting tasks. More at [JOB OFFERS](#)

Support for digitization

Online lectures and seminars via video conferencing for more than 400,000 students in Bavaria: The universities and colleges in Munich and Bavaria are fully occupied with digitizing research, teaching and administrative processes. The Leibniz Supercomputing Centre (LRZ) is providing the necessary technical resources for this, including the [Münchner Wissenschaftsnetz \(MWN\)](#): "We are ready for the winter semester and are providing universities and research institutes with secure transmission rates and practical services for research and teaching", explains Professor Dr. Helmut Reiser, Deputy Director of the LRZ and Head of the Communications Networks Department. "With the MWN we have been reliably providing the central infrastructure for networked communication for years, now also for the administration of the Munich universities".

Ludwig-Maximilians-Universität (LMU) and Technical University of Munich (TUM) have just commissioned Bavaria's largest scientific computing centre to operate their administration networks. "The operation of the MWN was and still is a core competence of the LRZ, so it is a logical step that we are now delegating the operation and responsibility for our administration

networks there", said Markus Haggemiller, IT Manager of the TUM's Administration Department. His colleague Dr. Oliver Diekamp, head of the IT department at the LMU, explains the reasoning behind the move as follows: "By supporting the LRZ, we can focus our internal resources better on our core tasks and the digitalization of further university processes."

Reliably secure services, efficient processes

The MWN stretches from the Zugspitze to the Wendelstein and via Munich to Triesdorf in northern Bavaria. It reliably connects universities and research institutes in the greater Munich area and offers students and scientists:inside, among other things, mobile access via WLAN and access to the Internet as well as the possibility of seamlessly integrating the home office via secure Virtual Private Networks (VPN). At peak times, up to 40,000 people access the MWN simultaneously, and around 300,000 mobile devices log in there regularly. LMU and TUM now want to use this infrastructure for their administration. "The LRZ has the competent personnel, the know-how and the technology for the reliable operation of complex networks. We are pleased to be able to benefit from tis expertise," says Diekamp from the LMU.

The IT service provider for science and research has systematically documented technical equipment and processes on which its services are based. For this purpose, the LRZ 2019 was certified according to the ISO standards 20000 and 27001 for service management and IT security. This also convinced LMU and TUM, because significantly higher security requirements are placed on administrative networks: "The demands for IT security are growing," says TUM-expert Haggemiller. "An important factor in bundling resources and competence at the LRZ now are the certifications of the data center, which guarantee stringent processes".
(vs)

MWN – MÜNCHNER WISSENSCHAFTSNETZ

NETZKOMPONENTEN IM MANAGEMENT



2.206 Switches
4.832 Access Points

STANDORTE



630 Standorte

BANDBREITE



262,5 Gbit/s X-Win



10 Gbit/s M-net



DATENMENGE PRO MONAT

eingehend 3,4 TB

ausgehend 2,2 TB



WLAN

300.000 verschiedene Geräte

14.000 Nutzer in 5 Minuten



VPN

117 TB Datenvolumen pro Monat

4.767 gleichzeitige Verbindungen



DNS

400.000 eingetragene IPv4 Adressen

3.325 verwaltete Domains

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Stand: Oktober 2020

Understanding the past

Virtualized testimonials interviewing yourself: That is the goal of the project "[Learning with digital testimonials](#)" ([LediZ](#)) of the Ludwig-Maximilians-Universität Munich (LMU), which is currently undergoing practical testing. The Leibniz Supercomputing Centre (LRZ) has put together a technology package consisting of laptop, external hard drive, 3D glasses and beamer for the team



led by Professor Dr. Anja Ballis from the Department of Didactics of German Language and Literature and Professor Markus Gloe from the Geschwister Scholl Institute for Political Science, so that the virtual alter egos of Abba Naor and Eva Umlauf can go on a journey. After a one-week stay at the concentration camp memorial site in Dachau, LediZ was used during the days of reflection at an Allgäu grammar school and will soon be used in even more schools: "I am impressed that it is possible to keep Holocaust testimony alive through virtual reality," says Stefan Dieter, who holds a doctorate in history and teaches Protestant religion, history and German at the Carl von Linde grammar school in Kempten. "This offers pupils the chance to speak and interact with a person who has experienced the past".

In early 2020, [LediZ](#) was presented to politics and the public. Naor and Umlauf were interviewed and filmed stereoscopically so that pupils and other interested people can

question them virtually about the Holocaust and the persecution of Jews during the Nazi era. These recordings are now played back using a voice control system for which the original questions were semantically and linguistically varied. If students ask questions, the control system searches for the appropriate answers from the filmed personalities who appear to be in the room.

This appears lively and natural. "Pupils are more media-affine today," adds Dieter. "That makes the additional attraction of learning with virtual contemporary witnesses.

LediZ is still a demonstration object: the team operates the technology on site. "It would be desirable that teachers can handle virtual witnesses as a matter of course", says Daniel Kolb from the Centre Virtual Reality and Visualization (V2C) at the LRZ. "But currently we are all still learning ourselves, improving technology and equipment and observing reactions. Nevertheless LediZ has already been expanded. The project "Learning Paths - Didactic Innovation for the Classroom" integrates the digital dialogues into the learning platform Moodle, also develops teaching materials to deepen the conversations. Future teachers: with LediZ, they are preparing for lessons with digital media. (vs)

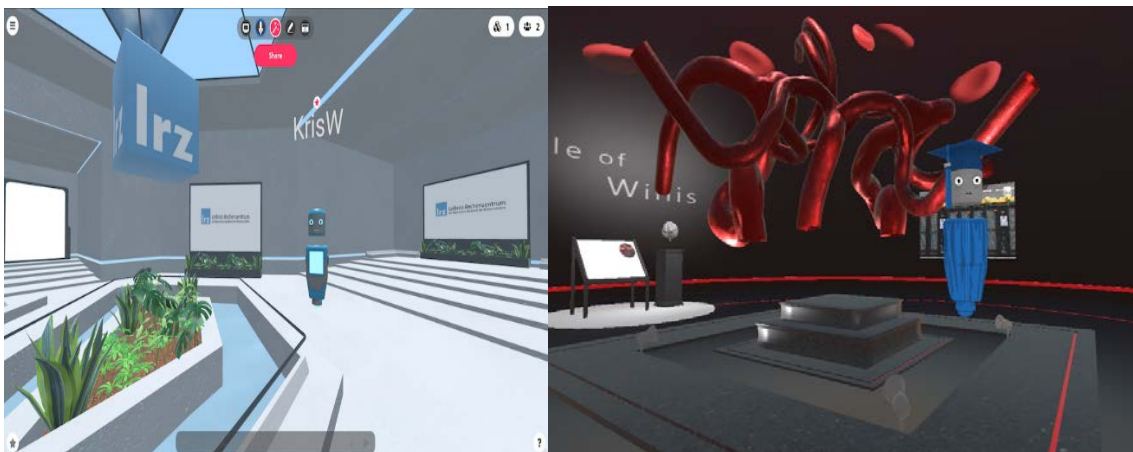
Figures of the month

Exchanging know-ledge and best practices creates security: Since mid-August, the Leibniz Supercomputing Centre (LRZ) has been linked to the [URLhaus of Abuse.ch](#), a non-profit initiative for cybersecurity from Switzerland. It collects features that indicate the compromise of websites or systems. These Indicators of Compromise (IOC) are mostly malware, they are listed by URLhaus and qualified by activity, type, source, domain or URL. "URLhaus lives from active reporters who report their sightings regularly and promptly", Daniel Weber from the Network Planning team explains the principle. "We became a malware reporter because we encounter a lot of malware domains during security monitoring in the MWN". Since the LRZ has registered, it has already reported **221,753 malicious software** to URLhaus - making it the top reporter of abuses. **98%** of these are [Mozi files](#) - a malware family for Linux systems, which is based on the source codes of older malwares and is preferably used for Distributed Denial of Service (DDoS) attacks. Systems infected with Mozi automatically attack new targets. However, the LRZ messages are having an effect: In **216,163 cases** the IOC could be removed. " Operators of compromised servers, who register at URLhaus, receive a message. If their systems are infected with malware, they can quickly remove it," reports Weber. This slows down Mozi. Successful reporting thus increases security in the MWN. (vs)

WORKSHOPS & EVENTS

SC virtual - to get a taste of the HPC community

Another digital fair: [Supercomputing 2020](#) will also take place virtually or digitally this year, **from November 9 to 19, 2020**. This gives interested parties a chance to gain an insight into the HPC community, new technologies and topics. However, admission is required to attend the tutorials and lectures in the first SC week. But the exhibition **from November 17th to 19th** can be visited for free - by appointment. The LRZ is part of both programs and presents research projects like CompBioMed and the visualization of blood flow in Mozillahubs, but also the SuperMUC-NG. For networking and discussions, the LRZ invites interested parties and partners to the digital beer garden: it's worth taking a look. Incidentally, registrations and registrations will continue beyond the conference until **December 7, 2020**: That's the good thing about digital conferences - they can be attended for longer and without time pressure.



Ideas for sustainable IT technology

Politicians discover the power of hackathons. From **November 13 to 15**, the [Bavarian State Ministry of Digital Affairs](#) is organizing such a code festival and the Leibniz Supercomputing will be part of it: [#FutureTech4Climate](#) is looking for codes, programs, apps and other technical solutions to slow down climate change. As has been the case for decades, the LRZ and its team are committed to ideas for saving energy in digitization and supercomputing. Participants can use current sensor data from SuperMUC-NG and his colleagues to develop control modules for computers and other ideas for sustainable computing. To evaluate the data, however, they should know programming languages such as R or C, be proficient in Excel and have initial experience with Big Data. The hackathon begins on Friday with a digital meeting of the teams and ends on Sunday with the presentation of the ideas. By the way, the best of 5 categories will be awarded with 2500 Euro each.



The winners will be announced and awarded on **November 19** during the [Bavarian Digital Summit 2020](#). There will also be an interesting program for this day: Chimpanzee researcher Dr. Jane Goodall will talk about nature conservation and IT, while Dieter Kranzlmüller, head of the LRZ, will present technologies for energy-efficient supercomputing made in Garching: hot water cooling, adsorption and smart control.

Efficient Coding

Even application developers who are fluent in OpenMP and MPI often cannot imagine how their code works on supercomputers. Parallelism is only half the way to good performance. If serial code is slow, resources will be wasted despite good scaling. The PRACE course from December 2 to 4, 2020, will therefore impart knowledge about the interactions between software and hardware and show bottlenecks of processors and computing nodes. Participants will learn techniques such as pipelining, superscaling, and the Roofline model for performance analysis, as well as the handling of caches, memory interfaces.

[Informations and registration](#)

C++ for software-engineering

Object-oriented software design with the programming language C++ is the focus of this online course **from November 18 to 20**. Participants will learn the most important programming concepts and procedures. The goal is to produce robust, reliable code that can be maintained and further developed. [Full up](#) (will be repeated in 2021).

Drugs Development with Schroedingers Suite

The development platform of Schroedinger Materials Science Suite offers functions for modeling, development of machine learning systems, data analysis and collaboration. It is therefore particularly suitable for drug development and the sorting of active ingredients. In the two-day workshop on **December 2 and 3, 2020**, participants will work on computer-aided modeling tasks in the fields of chemical and biological molecule design in practical and interactive presentations. The topics are target analysis, preparation of a substance library, virtual screening cascades and other methods of drug research. [Information and registration](#)

Handling the supercomputers of LRZ

Those who could not participate in October will get another chance to get to know the Linux cluster of the LRZ **on 9 December**. The half-day online course explains the handling of the cluster and the most important applications to calculate and display flows in the cluster. [Informations und registration](#)

Poster printing runs out

In **March 2021**, the Leibniz Supercomputing Centre will cease printing posters. For a long time, posters replaced presentations during conferences and discussions and enabled group discussions. Now they no longer really fit in with the times. Therefore, the LRZ is giving up this service step by step.

JOB OFFERS

You will find an international and diverse team in Garching, which is constantly growing. If you don't find a suitable job profile below, please visit the [career page](#) of the Leibniz Supercomputing Centre or send an [unsolicited application](#). We are LRZ - and curious about you!

[Software Developer Web/PHP](#) (m,f,d)

[Storage Systems Engineer](#) (m,f,d)

[Trainees IT-Systems Electronic](#) (m,f,d)

[Trainees IT Specialist System Integration](#) (mf,d)

[Working student for front end development](#) (m,f,d)

[Working student for the Service-Desk](#) (m,f,d)

MORE TO READ

Here you will find links to latest information from the german-european supercomputing community and our cooperation partners

[Publikations](#) of the Gauss Centre for Supercomputing (GCS): GCS-News und Inside

[Infoletters](#) of the Gauß-Alliance

Publikations of PRACE: [PRACE Digest, Jahresbericht](#)

INFORMATIONS & IMPRINT

- The LRZ Newsletter is published in German and English. You can find the latest and former editions on the [LRZ-Website](#).
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- You can subscribe or unsubscribe the LRZ-Newsletter via our [website](#).
- Current information about the LRZ and about courses and events can also be found on [Twitter](#) and [LinkedIn](#).

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