



Success Story

SUSE Linux Enterprise Server for HPC
openSUSE

Zentralanstalt für Meteorologie und Geodynamik (ZAMG)

As it sought to increase the granularity of its sophisticated weather forecasting models, ZAMG needed to get the most performance for its budget. After evaluating its options, the organization deployed a new HPI SGI supercomputer with 7,000 cores, running SUSE® Linux Enterprise Server for HPC. The stability of the operating system and outstanding support from SUSE ensure that ZAMG can always provide up-to-date weather information to citizens and government authorities across Austria.



Overview

Zentralanstalt für Meteorologie und Geodynamik (ZAMG) is a research institute of the Austrian Federal Ministry of Education, Science and Research. Headquartered in Vienna, the institute employs 360 people.

ZAMG provides crucial services ranging from weather forecasts to climate modeling and earthquake monitoring. The

organization works with partners like the European Space Agency to gain a better understanding of the effects of climate change and contributes to Open Data initiatives. ZAMG also operates the highest observatory in the world that can be used year-round, at 3,106m above sea level.

ZAMG specializes in short-term weather forecasting and delivers weather information for public events, including the PyeongChang 2018 Olympic and Paralympic Winter Games.

“The most important result for us is that with SUSE Linux Enterprise Server for HPC and the HPE SGI system, we got the best performance for our budget. SUSE is an innovator and we’re always eager to explore future capabilities with SUSE.”

DIPL. ING. MAG. GÜNTHER TSCHABUSCHNIG
CIO
Zentralanstalt für Meteorologie und Geodynamik

Challenge

To generate ever more accurate and detailed weather forecasts, ZAMG is constantly looking to increase the data resolution of its models.

Dipl. Ing. Mag. Günther Tschabuschnig, CIO at ZAMG, explains: “We’re always aiming higher. We currently generate three-hour forecasts every five minutes. Adding more detail to the forecasts requires huge computing capacities. Our main challenge



Zentralanstalt für Meteorologie und Geodynamik at a Glance:

A leading research institute based in Vienna, Austria, ZAMG offers a broad range of services, including weather forecasts as well as climate and earthquake monitoring.

■ Industry and Location

Research and Engineering, Vienna, Austria

■ Product and Services

SUSE Linux Enterprise Server for HPC
openSUSE

■ Results

- + Delivers maximum performance for the available budget on 7,000 cores
- + Enables flexible collaboration and easy exchange of applications between different research groups
- + Facilitates system administration across HPC and non-HPC systems

“The fact that SUSE Linux Enterprise Server for HPC is well-established is important to us, as we need to ensure 24/7 operations.”

DIPL.-MET. MATTHIAS LANGER

Head of Application Architecture and Development
Zentralanstalt für Meteorologie und Geodynamik

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is to balance innovation with available resources while ensuring that we provide critical meteorological information around the clock.”

ZAMG receives 22 million data points per day. Integrating satellite data into its forecasting models is the next step to making them even more accurate.

ZAMG plans to install 10,000 environmental sensors across Vienna. Big data analytics and artificial intelligence will be used to gain deeper insights into the interactions between weather and traffic based on this Internet of Things deployment.

Solution

Building on over 20 years of experience with SUSE Linux, ZAMG selected SUSE Linux Enterprise Server for HPC (High-Performance Computing) as the operating system for its powerful 7,000-core HPE SGI supercomputer.

Dipl.-Met. Matthias Langer, Head of Application Architecture and Development at ZAMG, elaborates: “We operate three HPC environments with a total of around 500 compute nodes running SUSE Linux Enterprise Server for HPC. Our biggest cluster provides a computing capacity of 600,000 GFlops.”

ZAMG also uses SUSE Linux Enterprise Server to power the highly scalable parallel file system Lustre, a popular open source solution within the HPC community. Big data analytics and machine

learning workloads with Apache Hadoop and Apache Spark also run reliably and fast on SUSE Linux Enterprise.

Besides its supercomputers, the organization runs openSUSE on 500 servers with KVM virtualization and 200 desktops. “We’ve had a very positive experience using SUSE Linux over the years,” says Günther Tschabuschnig. “The SUSE team is competent and SUSE Linux is extremely reliable.”

HPC system support is provided through the server vendor, but ZAMG also works directly with SUSE. Ing. Manfred Göstl, System Design and Systems Management at ZAMG, confirms: “The SUSE support team is very professional and quick to resolve technical issues. We enjoy working with SUSE, and appreciate that we can also ask for general advice on system architecture.”

Results

By running standard servers and HPC systems on SUSE Linux, ZAMG can manage all systems more efficiently and achieve a high level of standardization. The organization takes advantage of the built-in YaST® and AutoYaST tools to automate administration tasks.

Being able to run SUSE Linux on desktops also streamlines workflows for developers by enabling them to work on a platform closely aligned to the production environment. The ease of use of the SUSE desktop helps developers work more efficiently.

Matthias Langer remarks: “The fact that SUSE Linux Enterprise Server for HPC is well-established is important to us, as we need to ensure 24/7 operations. Thanks to Long Term Service Pack Support, we can plan over longer periods, protect our investment and maximize the value we get.”

SUSE Linux’s impressive flexibility is another plus point for ZAMG. Working on 180 projects with partner institutions, ZAMG often needs to install particular releases of software to ensure that specialized applications run smoothly. Matthias Langer says: “Portability of applications across HPC systems is key and we’ve never had any problems using SUSE Linux. This facilitates collaboration, enabling us to improve forecasting and advance research.”

Günther Tschabuschnig concludes: “The most important result for us is that with SUSE Linux Enterprise Server for HPC and the HPE SGI system, we got the very best performance for our budget. SUSE is an innovator and we’re always eager to explore future capabilities with SUSE, from OpenStack to Linux containers.”