SUSE | SUSE Federal

White Paper

SUSE for High Performance Computing

Power AI and Analytics

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Power your missions with a high performance computing platform that supports and manages data-intensive artificial intelligence, machine learning and analytics workloads.

Data has become one of the most critical mission resources. With the amount and speed of data growing faster than ever, how can you harness it to unlock insights that generate value and deliver real-time consumer services? High performance computing (HPC) from SUSE empowers you to extract insights from big data for advanced analytics, machine learning (ML) and artificial intelligence (AI). Learn why establishing an HPC infrastructure today is vital to supporting your mission-critical applications of tomorrow.

Generate Insights that Matter

Mission success is increasingly determined by your ability to execute data-intensive workloads at speed. AI, ML, and advanced analytics require the ability to process ever-growing amounts of unstructured data quickly, and translate insights into improved services. With a diverse set of applications relying on large, unstructured data sets, such as autonomous vehicles, medical analysis, and chat bots, AI is already bringing value to diverse sectors, and stands to grow exponentially in the near term.

Creating an HPC infrastructure on your own can be an overwhelming task. Composing a working HPC environment is difficult and time-consuming, especially if it requires expertise you may not already have in-house. It also entails updating and testing numerous software components to ensure performance. Start-up complexity and ongoing maintenance can extend your time to solution.

Market at a Glance

The creation of enterprise data is exploding around the world. As a result, federal agencies and departments looking to generate value through AI, ML and analytics must learn how to crunch an increasing amount of information in an efficient and scalable manner.

50%
of organizations lack sufficient AI and data literacy skills to achieve business value[1]

95%
of all real-time data will be associated with the Internet of Things by 2025[2]

100%
of the world's top 500 supercomputers run Linux

1 Gartner: A Data and Analytics Leader's Guide to Data Literacy (2019)
2 IDC: Enormous Growth in Data is Coming — How to Prepare for It, and Prosper From It

With years of experience building mission-critical Linux solutions, SUSE is your best partner to deliver mission-ready, software-defined HPC infrastructure. Our scalable, high performance open source operating system can simplify your workload, crunch massive data quickly, and help you solve complex problems faster than ever.

HPC Applications in Action

The opportunities for AI, ML and advanced analytics touch every sector including retail, manufacturing, healthcare, aerospace and entertainment.

Accurate forecasting with big data
A national weather forecaster relies on SUSE HPC solutions to integrate 22 million data points daily, including readings from 10,000 distributed sensors

Supercomputing that interfaces with consumer IT equipment
Japan's highest performing cluster-type computer relies on SUSE HPC solutions to deliver groundbreaking research to both high-end and consumer IT equipment

Powerful computing with energy savings
One of the world's most powerful supercomputers for science and industrial research saves 35% in energy costs through efficiency with SUSE HPC solutions

The SUSE Difference

Simplify

Creating an optimal platform to run and manage high-performance workloads can be challenging. Evolving hybrid cloud architectures, rapid innovation in containerized solutions, and the need to integrate with diverse and legacy systems can quickly result in complexity.

SUSE delivers a holistic approach that spans services, infrastructure and support in an open ecosystem. Our HPC solutions simplify cluster management, workload scheduling and performance monitoring. You can also run HPC on a wide range of hardware from the edge to the core to the cloud. The upside is that you can focus on your mission objectives knowing SUSE will deliver innovation for every phase of your journey.

Modernize

Applying HPC to analyze your fast-growing volume of data can generate outsized costs, especially if you try to stand up bespoke systems or transfer large data streams between on-premises and cloud services.

Modern HPC solutions from SUSE provide flexible computing to power AI, ML, and advanced analytics from a range of cost-effective on-premise clusters such as industry-standard x86 or Aarch64 hardware, GPUs, and next-gen applications such as computing from edge to core to cloud. SUSE management software controls deployment and maintenance across all stack components so you can adapt your HPC environment on-demand and hit performance targets while staying in budget.

Accelerate

Time is valuable — quite literally, so the value of your data starts to decay the moment it's recorded. You benefit most from HPC solutions when you can minimize development and maintenance overhead without sacrificing application performance.

SUSE helps you realize faster time-to-value with an accelerated HPC environment, providing AI and ML frameworks for developing and deploying high-performance and time-sensitive workloads. Our solutions also foster collaboration and common HPC management and performance tools, including intelligent workload management, to streamline operations. As a result, working with SUSE helps you build, deploy, and scale your HPC solutions more efficiently than ever.

"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."

GÜNTHER TSCHABUSCHNI
CIO
Central Institution for Meteorology and Geodynamics in Austria

SUSE Solutions for High Performance Computing

SUSE Linux Enterprise High Performance Computing

A highly scalable, high performance open source operating system designed to utilize the power of parallel computing for modeling, simulation and advanced analytics applications. This product is built for easy adoption across lower-cost Arm-based hardware all the way up to the largest supercomputers in the world – with a focus on flexibility and providing SUSE-supported capabilities (i.e., Slurm for workload management) for today's HPC environments. SUSE Linux Enterprise High Performance Computing delivers compute power and scale to support your analytics applications of today, and tomorrow.

AI/ML Frameworks

An AI software stack that enables popular AI/ML frameworks such as TensorFlow and Caffe2, plus packages and containers to jumpstart AI deployment in High Performance Computing environments. SUSE's Package Hub provides access to curated third-party packages that have been tested with SUSE Linux Enterprise. Developer frameworks for building AI and machine learning applications – including TensorFlow and Caffe – are available through Package Hub today.

SUSE Enterprise Storage

An intelligent software-defined storage solution, powered by Ceph technology, that enables you to transform your enterprise storage. Gain a simple-to-manage, agile infrastructure with increased speed of delivery, durability and reliability. Reduce capital expenditures and alleviate proprietary hardware lock-in with a truly open software-defined storage solution that saves 30% or more in hardware costs. SUSE solutions can to scale to thousands of nodes and multi-hundred petabyte environments and beyond to power the growing data requirements of your AI, ML and advanced analytics applications.

Contact us for a trial, or learn more about our products:

SUSE Linux Enterprise High Performance Computing

SUSE Package Hub

SUSE Enterprise Storage

Additional contact information and office locations:
www.suse.com

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