

Lenovo and the Power of Open Source with Linux[®]

Solution Brief



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Building Scalable AI with Linux, Lenovo, and NVIDIA[®]

In the rapidly evolving field of AI, leveraging open-source software and robust enterprise hardware platforms are crucial for maximizing efficiency and scalability.

This brief explores how Lenovo Workstations, NVIDIA-Certified Systems[™], and Linux OS create a powerful environment for AI development.

We highlight the advantages of using Linux and open-source software for AI projects and why Lenovo's certified solutions are an unmatched foundation for cutting-edge AI and Machine Learning (ML) workflows.

Why **Linux®** and Open-Source Software?



Security and Privacy

Linux offers built-in security, low malware risk, and respects privacy, minimizing vendor lock-in.



Performance

Linux is ideal for AI development, efficiently managing processes and high-performance tasks.



Customization

Tailor your OS with various interfaces and software, boosting development speed.



Community Support

A vast community ensures stability, continuous enhancements, and rapid innovation.



Cost Efficiency

Linux is free to use, significantly reducing costs compared to proprietary alternatives.

What is **Linux** and Open-Source Software?

Open-source refers to software designed for public access, known as open-source software (OSS). Anyone can modify and distribute this code, fostering collaborative development. OSS is often more affordable, flexible, and durable than proprietary software due to community-driven evolution. Linux is a leading open-source operating system (OS). It manages hardware resources like CPU, GPU, memory, and storage, acting as the bridge between applications and hardware to ensure seamless operation.



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Lenovo's Commitment to Linux® and Open-Source

Key benefits

Lenovo's investment in Linux-certified workstations highlights its commitment to providing reliable, high-performance systems optimized for complex development environments.

Comprehensive Certification

Lenovo's robust enterprise hardware platforms are certified on top Linux distributions such as Ubuntu and Red Hat, ensuring compatibility and performance.

Expert Support

Lenovo offers dedicated support for its Linux certified platforms, ensuring functionality and compatibility with future updates.

Preloaded Linux

All Lenovo Workstations are available with preloaded Linux, offering instant out-of-the-box readiness and certified hardware.

Canonical and Ubuntu in AI Development

Canonical, the publisher of Ubuntu, plays a vital role in the open-source ecosystem by providing security, support, and services across devices and cloud environments. Preferred by developers for its stability, Ubuntu ensures continuity and security for AI and ML development through long-term support releases.

Why Ubuntu?

- **NVIDIA® Driver Integration:**
Ubuntu comes with tested NVIDIA® drivers, enabling scalable ML projects across various hardware.
- **Community and LTS Support:**
Ubuntu's large community and LTS releases provide robust support, making it a top choice for developers and enterprises.
- **Security and Compatibility:**
Ubuntu's Expanded Security Maintenance (ESM) and certified hardware ensure AI projects are secure and widely compatible.



Linux distributions that do not have a certification procedure are rigorously tested and qualified by Lenovo.

Target Use Cases

- **ML Development:**
High-performance hardware is crucial for efficiently handling large datasets and complex models, with Lenovo and NVIDIA® providing the necessary computational power, software support, and reliability.
- **Generative AI:**
Lenovo's NVIDIA-Certified workstations offer the backbone needed for developing generative AI models, which require robust hardware for processing large volumes of data and generating creative outputs.
- **Development Environments**
All workstations are both certified by Linux and NVIDIA®, ensuring they provide reliable and predictable platforms for various development tasks, including software development, DevOps, data science, and web development.



Lenovo Workstations for Development



Development on-the-go

ThinkPad® P Series mobile workstations are designed for users that need to tackle AI development on the go. With NVIDIA RTX™ professional GPUs and powerful, multi-core processors from Intel® and AMD, Lenovo sets the standard for mobile workstations and ensures best-in-class reliability even when you're away from the office.



Predictability

Hit the ground running with Linux Certified and NVIDIA-Certified Systems™ that have been proven to deliver predictable performance and reliability enabling enterprises to quickly deploy optimized platforms for developers.



NVIDIA Certified

Lenovo works closely with NVIDIA® and the NVIDIA-Certified Systems™ program. Lenovo Workstations are evaluated by NVIDIA® engineers for performance, functionality, scalability, and security using the industry's most complete set of accelerated workload performance tests with the most powerful enterprise NVIDIA RTX™ GPUs and networking.



Performance

Lenovo Workstations are built with the latest NVIDIA RTX™ professional GPUs for the highest level of power and performance to handle the most demanding workloads without compromising on efficiency.



Security

Lenovo ThinkShield delivers complete protection wherever and whenever work happens. Providing protection throughout the lifecycle of a device, ThinkShield offers comprehensive security solutions that integrate AI for threat detection and response.

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Delivering industry-leading reliability, ultimate usability, and unparalleled performance, coupled with a commitment to open-source software and NVIDIA RTX™ graphics, makes Lenovo Workstations the ideal choice for enterprises excelling in AI development.

For more information visit <https://techtoday.lenovo.com/workstations/linux>

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