

Industrial Products

Accelerating software development for cutting-edge factory automation

Siemens Digital Industries

Boosting productivity by over 30% with
Lenovo ThinkAgile VX Series, powered
by VMware vSAN™.



Lenovo

Powered by

vmware®

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Who is Siemens Digital Industries?

Siemens is a global technology company which enables the digital transformation of processes across a wide range of industries. The company is a leader in factory automation, with 45 million automation systems installed in plants around the world.

To make its vision of truly digital enterprises a reality, Siemens continues to innovate across disciplines, combining manufacturing systems with advanced automation software. Leveraging emerging concepts such as 'digital twins' of production facilities, Siemens works tirelessly to build more resource-efficient factories and support more resilient supply chains. With over 300,000 employees worldwide, Siemens generates revenues of more than €62 billion per year.

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The Challenge

Quality and reliability are key to Siemens' business success. That's why the Production Machine Automation Development House Chemnitz, part of the growing Siemens Digital Industries business, wanted to scale up its capacity to test more mission-critical code faster, to accelerate the development of new features, and to strengthen its position in the factory automation market further.

“Whether in a large warehouse or a factory—anywhere that businesses rely on conveyor belts, pick-and-place tools, assembly processes or other handling, folding, wrapping, and packaging steps—with our integrated and scalable SIMATIC Technology automation solutions, manufacturers can tackle even the most complex tasks. Whenever a machine needs to move goods, be it a cardboard box for delivery of online orders, metal, wood, glass, ceramic, or any other material, our solutions deliver the precision and speed needed to run efficient processes from start to end.”

Ronny Hopf

Head of Production Machine Automation Development House Chemnitz,
Siemens Digital Industries

Hopf continues: “With our team of 64 software developers and test engineers, we’re building sophisticated motion control software for our advanced SIMATIC Technology solutions, directly contributing to revenues of €1 billion per year. Naturally, we want to make sure our solutions that control complex configurations, such as multiple-axis drive systems, run smoothly and reliably. When we launch new features, they need to be tested thoroughly to safely enable the next stage of machine automation.”

Managing over 10 million lines of code and 60,000 test cases, the team was often slowed down by long-running build and test processes that could take up to 12 hours to complete.

“As development team, we have very specific performance requirements. We wanted to run more tasks in parallel more easily to speed up our development cycles, deliver new features more quickly, and lay the groundwork to move towards more automated, state-of-the-art DevOps processes in the future.”

Ronny Hopf

Head of Production Machine Automation Development House Chemnitz,
Siemens Digital Industries

Why **Lenovo**?

Siemens had identified that fast storage performance was key to accelerating its testing workflows. At the same time, the team needed to deliver this significant increase in performance on a tight budget. “Our goal was to completely modernize our internal IT resources,” says Hopf. “Lenovo understood our needs and offered a solution that took our specific challenges into account.”

After analyzing Siemens’ business requirements, Lenovo compiled a comprehensive package including implementation and support services as well as a backup solution. Using its extensive experience, the Lenovo team suggested realistic sizing options and advanced system configurations. “Easy access to the Lenovo Executive Briefing & Innovation Centers in Stuttgart was a big benefit for us,” remarks Hopf. “Lenovo demonstrated in a proof of concept that they could actually deliver the impressive performance that they promised. Being able to run benchmarks and see the real results convinced us that Lenovo is the ideal partner for us.”





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“Procurement processes often go through many stages. Thanks to the trust built between our teams within a short time, Lenovo was very supportive in getting the solution delivered and implemented swiftly. Together, we managed to deploy the new infrastructure solution 12 weeks faster than we expected, through smart and parallel scheduling of various tasks and processes.”

Ronny Hopf

Head of Production Machine Automation Development
House Chemnitz, Siemens Digital Industries

Implementing HCI with optimized performance

To meet the demanding storage performance requirements, Lenovo proposed a hyperconverged infrastructure (HCI) solution based on nine Lenovo ThinkAgile VX Certified Nodes, equipped with 2nd Gen Intel Xeon Scalable processors and ultra-fast NVMe storage.

Taking advantage of cost-efficient licensing options through Lenovo, the team deployed the VMware HCI Kit Advanced bundle complete with VMware vSphere® Enterprise Plus server virtualization and VMware vSAN™ Advanced storage virtualization.

Hardware

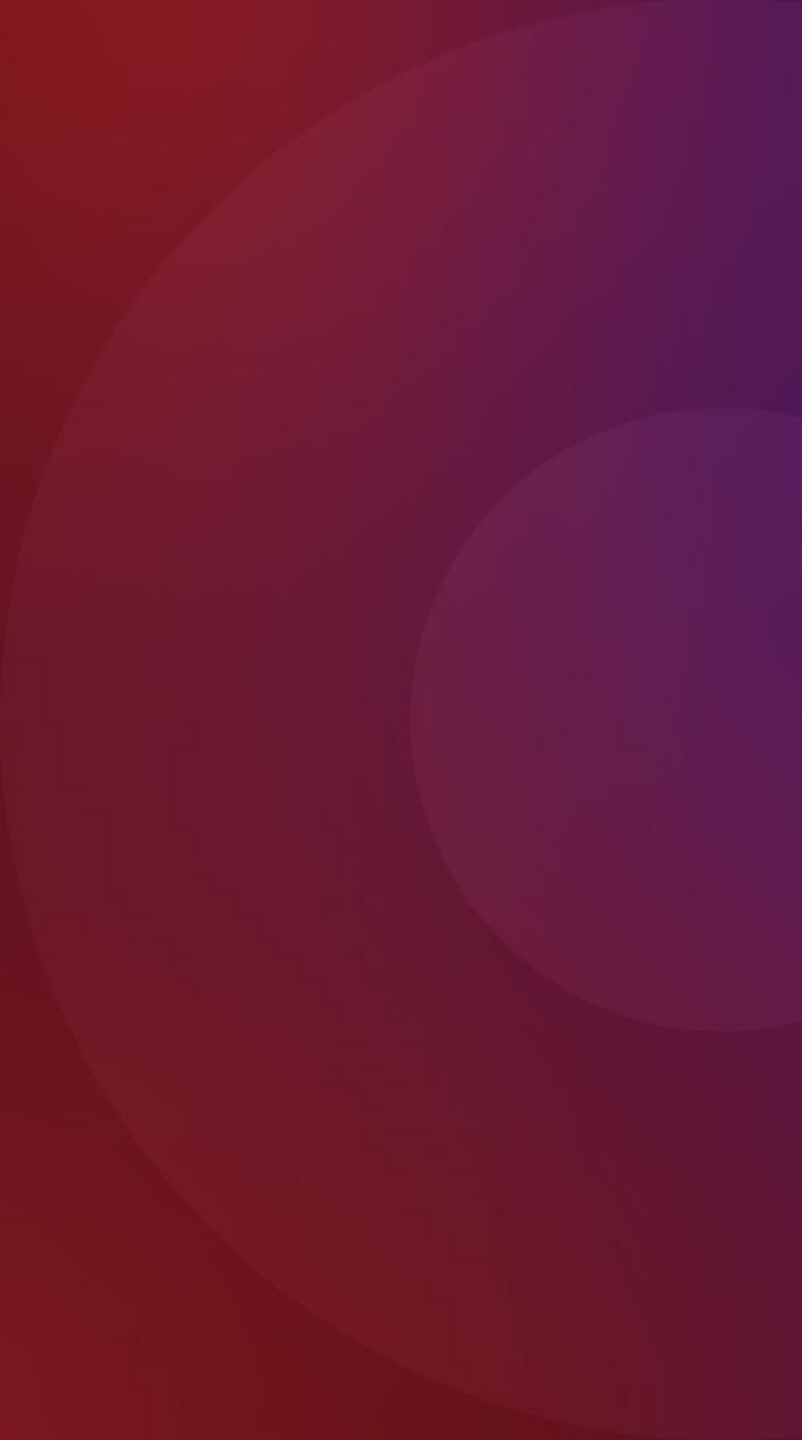
Lenovo ThinkAgile VX Certified Nodes
Lenovo ThinkSystem NVIDIA Tesla T4 GPUs
Lenovo ThinkSystem SR650
Lenovo ThinkSystem SR630
Lenovo ThinkSystem DE2000H Hybrid Storage Array
NVIDIA Spectrum Ethernet Switches SN2000 Series and SN3000 Series

Software

VMware HCI Kit Advanced
VMware vSphere® Enterprise Plus
VMware vSAN™ Advanced
Veeam Backup & Replication

Services

Lenovo Premier Support
Lenovo Professional Services



Hopf explains: “Guided by the results from the proof of concept, the Lenovo specialists configured the virtualized storage solution with three VMware vSAN disk groups per physical server to facilitate maximum performance and under 1 ms storage latency. This configuration is less common and while not all vendors we talked to were able to implement it, Lenovo embraced this challenge with remarkable results.”

The infrastructure solution combines Lenovo ThinkAgile VX Certified Nodes with NVIDIA Spectrum Ethernet Switches. Hopf adds: “Using Lenovo ThinkAgile VX with NVIDIA Spectrum Ethernet Switches enables virtualized networking with VMware vSphere, helping us to easily create complex network configurations so we can integrate existing systems, optimize access, and strengthen security.”

Ensuring cost-efficient, rapid, and easy recovery capabilities, Siemens also worked with Lenovo to implement Veeam Backup & Replication software, running across two locations on Lenovo ThinkSystem SR650 and SR630 servers connected to a Lenovo ThinkSystem DE2000H Hybrid Storage Array.

To prepare for the next phase of the development team's infrastructure modernization, Lenovo and Siemens also installed a smaller cluster with two Lenovo ThinkAgile VX Certified Nodes, different 2nd Gen Intel Xeon Scalable processors optimized for fast single-thread performance and added GPU acceleration with Lenovo ThinkSystem NVIDIA Tesla T4. "The small cluster helped us analyze the performance-critical characteristics of our build processes," says Hopf. "Thanks to Lenovo ThinkAgile VX and Lenovo ThinkSystem NVIDIA Tesla T4, we could flexibly experiment with a range of approaches to move from our old infrastructure to a fully virtualized configuration. And we now know exactly what kind of cluster we need to run our software build processes efficiently."



“Centralizing the provisioning of GPU resources has already made administration and maintenance much easier. The new Lenovo solution provides the foundation to run artificial intelligence and machine learning tasks more quickly to further enhance our product offering.”

Ronny Hopf

Head of Production Machine Automation Development House Chemnitz,
Siemens Digital Industries



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“We enjoy a very good relationship with our Lenovo team. It makes my life much easier that Lenovo is our single point of contact for our entire new hyperconverged infrastructure, virtualization, and backup solution. From the first moment, Lenovo listened to us and helped us achieve our key objectives, without getting distracted by features beyond the current scope of our IT modernization.”

Ronny Hopf

Head of Production Machine Automation Development
House Chemnitz, Siemens Digital Industries

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Results

With Lenovo ThinkAgile VX Series, Siemens has successfully modernized and improved its software development processes. The team gained flexibility with virtualization and has become much more productive. “Some of our 60,000 software tests now run 50% faster,” say Hopf. “This makes a big difference for our testing team.”

Build processes have also been cut from up to 12 hours to just 4 hours, speeding up development cycles, as the team could now move from sequential builds to more parallel software build processes.



33% faster and more productive product development



50% faster software testing



Up to 3x faster development cycles by moving from sequential to parallel builds



<1 ms storage latency ensures optimized build and test performance

The Lenovo solution is simpler to manage, and Siemens finds it easier to find skilled staff for system administration for its new modern virtualization solution.

Siemens highly values access to deep expertise through Lenovo Professional Services. And having just a single contact with Lenovo Premier Support streamlines support and maintenance.



“It is a great pleasure to work with the highly competent Lenovo Professional Services team. The new Lenovo solution will help us to transform our development processes, and move towards current best practices including containers and DevOps workflows with continuous integration tests.”

Ronny Hopf

Head of Production Machine Automation Development House Chemnitz,
Siemens Digital Industries

How Do You Test 10 Million Lines of Code Faster?

Accelerating testing to speed up overall product development with Lenovo and VMware.

Explore Software-Defined Infrastructure Solutions

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