

## Lenovo

Industry and Location  
Software & Technology | China

Product(s) and Service(s)  
SUSE Linux Enterprise Server for SAP Applications  
SUSE Manager

SUSE Manager gives Lenovo a single platform for managing all its Linux installations

# Success Story

## At-a-Glance

Lenovo aims to continuously improve efficiency, but the complexity of managing its extensive Linux landscape was a huge obstacle to productivity, requiring months of work each year to maintain security patches. With SUSE® Manager, these challenges are a thing of the past. SUSE Manager gives Lenovo a single platform for managing all its Linux installations—including SUSE Linux Enterprise Server (SLES) for SAP Applications—complete with automatic patching that has cut the administrator workload by 50%.

## Introducing Lenovo

### Overview

Founded in 1984 in a guard shack in Beijing, Lenovo has grown to become China's leading personal technology company, and the world's largest PC vendor. Today, Lenovo is a global Fortune 500 company with annual revenues of USD 45 billion. It employs more than 57,000 people in over 60 countries, and serves customers across more than 160 countries.

Lenovo operates 46 research centers around the world, dedicated to innovation across the company's entire portfolio of PCs, smartphones, tablets, TVs, servers, workstations and storage devices. In China, Lenovo has developed a vast distribution network that ensures almost no consumer needs to travel more than 50 kilometers to buy a Lenovo computer.



### Challenge

Expanding at a prodigious rate, Lenovo has grown faster than the market for four consecutive years. As the company flourished, Lenovo's China division found that its aging infrastructure could no longer deliver the performance necessary to support the company's business-critical SAP applications, which it uses to manage practically every element of its operations and finances.

The SAP applications were powered by mid-range servers running a UNIX-based operating system, and Lenovo decided that it was time to embrace a new approach.

Heng Zhang, Linux engineer at Lenovo, said: "Our UNIX operating system was proprietary software, so we were severely limited in what we could do with it. Specifically, it was preventing us from taking advantage of some of the outstanding open source solutions that were emerging. Expensive software licenses and labor costs also contributed to a high total cost of ownership—and since the underlying hardware locked us into that version of UNIX, we didn't have the luxury of shopping around for a better deal."

Keen to avoid vendor lock-in, Lenovo decided to migrate its SAP applications to x86 hardware running an open source, Linux

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Linux Engineer  
Lenovo

operating system. Switching to Linux would give Lenovo the autonomy it was looking for, and also prompted the company to address another challenge that it was facing.

“We were already using Linux for some of our non-SAP applications,” said Heng Zhang. “We were running a host of different Linux distributions and versions, and keeping them all up-to-date with the most recent security patches was a hugely time-consuming task. We had to manually build a patch source for every edition of every distribution, each of which could take up to a week. And after we had built the sources, we would have to update them every week to keep up with new releases from the vendors. Even then, we would still have to manually install the patches, which would take at least 10 minutes per machine.

“All of this manual work was tremendously inefficient, and we couldn’t even be sure that every machine was up-to-date, because we could only review them once every month or two—this represented a security risk, and also threatened to compromise our regulatory compliance.”



Lenovo realized that when it migrated its SAP applications to x86 servers and introduced even more Linux versions, the problem was only going to get worse—so it began looking for a way to cut the complexity and manual work of managing its Linux environment.

### **Solution**

The first step for Lenovo was to choose a Linux distribution for its SAP applications.

“We selected SUSE Linux Enterprise Server for SAP Applications,” said Heng Zhang. “It’s

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purpose-built to support SAP solutions, and SUSE Linux Enterprise Server has an excellent reputation as the leading Linux distribution for enterprise organizations. We were confident that it would be able to meet our new, more demanding requirements.”

SLES for SAP Applications is performance optimized and configured to provide the best possible support for SAP applications, and is regularly updated with new optimizations as SAP releases new versions of its products— making it the perfect solution for Lenovo’s mission-critical SAP environment.

Heng Zhang said: “SUSE Linux Enterprise Server integrates exceptionally well with our SAP applications, and deploying SAP modules is far easier than it ever was on our old architecture thanks to SUSE’s sophisticated installation wizard.”

As an open source platform, SUSE Linux Enterprise Server (SLES) has given Lenovo complete freedom to utilize emerging technologies, releasing the business from the constraints of vendor lock-in. “SUSE also offered an attractive total cost of own-

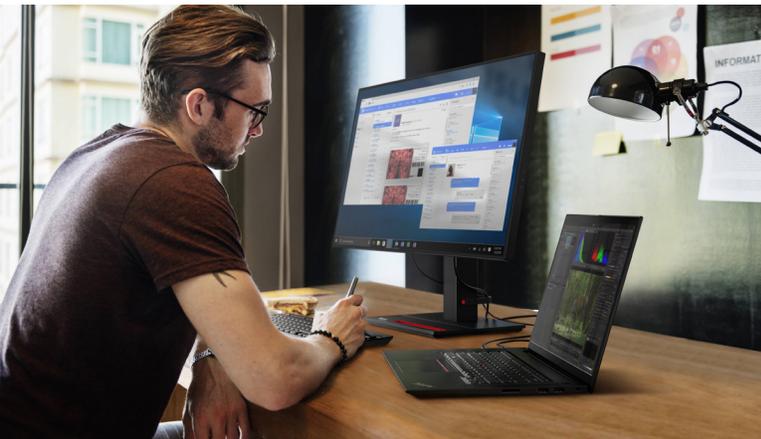
ership,” said Heng Zhang. “The operating and administration costs of Linux on x86 hardware are far lower than those of UNIX on mid-range computers. With a proprietary operating system, the vendor holds all the cards and sets their own terms; In contrast, the Linux arena is a free market, and SUSE offered a very competitive and compelling price.”

With SLES for SAP Applications supporting Lenovo’s SAP environment, finding a solution for managing Linux was easy.

Heng Zhang said: “Once we had settled on the SUSE operating system, SUSE Manager presented itself as the natural choice for managing our growing Linux landscape.”

SUSE Manager provides a single, centralized point of control for almost all of Lenovo’s Linux servers, dramatically simplifying administration.

“SUSE Manager integrates seamlessly with SUSE Linux Enterprise Server,” said Heng Zhang. “This was especially important since SUSE Linux Enterprise Server was set to ac-



count for more than a third of all our Linux installations, and would be supporting our core business applications—we wanted the best possible tool for managing our principal operating system.”

In addition to being optimized for SLES, one of the key benefits of SUSE Manager is that it supports multiple Linux distributions. Lenovo can manage SLES for SAP Applications, Red Hat Enterprise Linux, and more, all through a single platform. SUSE Manager is also compatible with a wide variety of hardware, including x86 machines, mid-range computers, and mainframes. It also supports physical, virtual, and cloud environments—catering to the full spectrum of Lenovo’s Linux deployments.

SUSE Manager automates patching and system upgrades, completely eliminating the need to manually build and maintain patch sources. Heng Zhang said: “Whenever a vendor releases a new version or service pack, SUSE Manager retrieves the path automatically, and we can install it with a single click. In the unlikely event that something goes wrong in the patching process, it’s just as easy to roll back to the previous state with 100% reliability.”

The SUSE solution also automates system configuration and provisioning, helping Lenovo install new instances of Linux rapidly and easily. Automated monitoring, tracking, and reporting give Lenovo complete visibility into the status of its Linux environment, ensuring it can keep all its servers up-to-date and compliant with regulations.

Lenovo is also taking advantage of SUSE’s expert support services. Heng Zhang said: “It’s enormously reassuring to know that if anything goes wrong that we can’t fix, SUSE’s engineers are just a phone call away.”

## Results

With SLES for SAP Applications supporting its SAP environment, Lenovo is enjoying the performance, reliability, and availability it needs to maintain its strong growth trajectory.

“Migrating from our old UNIX-based operating system onto SUSE Linux Enterprise Server for SAP Applications has delivered all of the benefits we were hoping for,” said Heng Zhang. “We have more than strong enough performance to satisfy the needs of the business, even as Lenovo continues to expand.”

SLES for SAP Applications has enabled Lenovo to take back control of its IT development strategy. With an open source operating system at the heart of its business, Lenovo has complete freedom to choose the technology solutions that suit it best, unconstrained by vendor lock-in.

The productivity of Lenovo’s Linux administrators is reaching unprecedented heights thanks to SUSE Manager.

“In the past, we had to dedicate up to eight people to completing the manual patch-building and maintenance work,” said Heng Zhang. “Today, the same tasks require only two or three people, and take a fraction of the time. We used to spend approximately three months each year on manual patching; with SUSE Manager we’ve brought that down to two weeks. Through patching automation alone, we’ve been able to cut the Linux administrator workload by at least 50%.”

Free from time consuming manual labor, Linux administrators can put their expertise to use in tasks that bring value to the business. Employee satisfaction has also risen now that staff can focus on more engaging work.

Lenovo is using SUSE Manager to manage almost one thousand Linux servers, across a range of different distributions. Heng Zhang said: “We can view and control our entire Linux landscape through a single tool. It doesn’t matter if it’s a physical server or virtualized, or if it’s SUSE or Red Hat—everything is in one place. That level of simplification and consolidation is proving invaluable.”

SUSE Manager is also delivering considerable security improvements. Not only does SUSE Manager ensure that all of Lenovo’s Linux servers are up to date with the latest security patches, it also helps the company address system vulnerabilities as soon as they arise.

Heng Zhang said: “When we were still managing our Linux environment manually, if there was a security loophole—for example the infamous ‘Heartbleed’ bug in 2014—we had no way to quickly determine which, if



any, of our servers were affected, and the impact could be substantial. Now, we can carry out a simple search on SUSE Manager to see how many machines are compromised, and then we can use the tools within SUSE Manager to quickly fix the problem. Often, SUSE Manager is able to resolve issues automatically without affecting ongoing applications. In the majority of cases, we can go from problem detection to solution within a single day.”

Looking to the future, Lenovo is working on migrating some of its core SAP applications to SAP HANA in-memory technology, using SLES for SAP Applications as its operating system of choice. “Even SAP’s own HANA installations are running on SUSE Linux Enterprise Server,” said Heng Zhang. “Between our own positive experiences with the operating system, SAP’s endorsement, and its overwhelming popularity, we had no trouble choosing SUSE Linux Enterprise Server for SAP Applications to support our growing SAP HANA deployment.”

Heng Zhang said: “SUSE has helped us transform our IT architecture. In the past, we were paying too much for an infrastructure that struggled to meet the demands of our business. Today we have a high-performing, cost-effective, and labor-efficient

architecture fit for a world-leading enterprise.”

### Benefits

- Reduced Linux administrator workload by 50%, saving months of work each year.
- Reduced staff for manual patching from eight to two. Reduced maintenance staff from eight to two and reduce patching time requirement from three months to two weeks.
- Enabled Lenovo to effortlessly manage nearly 1,000 instances of Linux.
- Accelerated detection and elimination of security loopholes.

**Find out how SUSE can help you become an innovation hero!**

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