SUSE® Linux Enterprise Live Patching

Downtime is expensive, even when it is planned. SUSE® Linux Enterprise Live Patching virtually eliminates the need for downtime—and allows for easier planning of scheduled downtime—by applying critical Linux kernel fixes outside of maintenance windows. SUSE Linux Enterprise Live Patching offers a proactive and dynamic approach to kernel maintenance that saves your company valuable time and money by never needing to stop the kernel.

Product Overview

SUSE Linux Enterprise Live Patching is a simple open source solution that delivers live kernel patching without the need to reboot. With this subscription offering based on the kGraft project, you can perform patching without interrupting your mission-critical workloads and in-memory databases, saving the cost of downtime and increasing service availability. Because it builds on to the existing SUSE Linux Enterprise kernel infrastructure and uses familiar deployment methods, SUSE Linux Enterprise Live Patching is an easy way to make operating system maintenance more efficient and secure.

SUSE Linux Enterprise Live Patching puts you in charge of your kernel updates and service availability. Even when urgent kernel updates are needed, SUSE Linux Enterprise Server can run continuously—with zero execution interruptions, not even a millisecond—while you apply critical kernel patches in the background.

Key Benefits

SUSE Linux Enterprise Live Patching keeps your systems running smoothly and securely on the front end while critical updates are applied on the back end.

- **Increase service availability**—*SUSE Linux Enterprise Live Patching keeps your business running by keeping your in-memory databases, servers and mission-critical systems running while you update the kernel. It can even patch kernel functions that are being actively executed by the operating system—no reboot necessary. Increased service availability also ensures that you can meet or exceed your IT service-level agreements.*
- **Reduce planned downtime**—*Patching the kernel unobtrusively when necessary reduces the need for planned system downtime significantly. This means processes like crucial and time-consuming product simulations can run to completion without being interrupted by urgent kernel updates.*

System Requirements

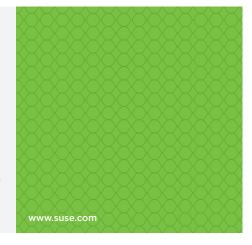| ■ Minimum requirements: |
| --- |
| *A system that runs SUSE Linux Enterprise Server 12* |
| *Zypper must be installed and configured to receive updates* |

■ Supported processor platforms:
x86_64

For detailed product specifications and system requirements, visit: **www.suse.com/products/server/technical-information/**

SUSE Linux Enterprise Live Patching provides a stream of packages to update a running kernel without interruption. With this subscription offering from SUSE, you can perform patching without rebooting your system, saving the cost of downtime and increasing service availability.

■ **Maintain security and stability**— *Your systems are vulnerable when the kernel is not up-to-date. SUSE Linux Enterprise Live Patching allows you to apply critical kernel patches right when you need them rather than waiting until the next planned maintenance window. The patches are also signed by SUSE, which aligns with advanced security requirements and further minimizes the exposure to security risks.*

Key Features

■ **Zero execution interruption**— *Stopping the kernel is problematic for low-latency applications such as transactional databases. SUSE Linux Enterprise Live Patching doesn't stop the system during patching. The patching infrastructure is built directly in to SUSE Linux Enterprise Server 12, and SUSE Linux Enterprise Live Patching uses the familiar ftrace-based approach to perform the updates. This happens without ever stopping the kernel, not even for a moment.*

■ **Minimalist design**—*SUSE Linux Enterprise Live Patching is easy to add to your existing code base. It consists of only a small amount*

of code because it leverages the technologies and ideas already present in the upstream Linux kernel: ftrace and its mcount-based space allocation in function prologues, the INT3/IPI-NMI patching also used in jump labels and read-copy-update (RCU)-like code updating that does not require kernel stoppage. A kernel live patch is a kernel module and relies on the in-kernel module loader to link the new code with the kernel.

■ **Security**—*The SUSE Linux Enterprise Live Patching kernel module is signed by SUSE. This approach complies with advanced security technologies such as UEFI secure boot, which require kernel modules to be signed by an approved signing key. Via this signature, you can minimize your exposure to security risks by verifying that a kernel live patch has been created by SUSE.*

■ **Familiar deployment methods**—*Like all maintenance updates, the patches delivered by SUSE Linux Enterprise Live Patching are delivered as signed RPMs. Introducing the solution into your established administrative process is simple because you can reuse existing deployment methods, including but not limited to YaST®, zypper, SMT and SUSE Manager.*

Contact your local SUSE Solutions Provider, or call SUSE at:

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