

# Ksplice: Zero-Downtime Updates for Oracle Linux and Oracle VM

Ksplice updates the Linux operating system (OS) kernel and key user space libraries *while the OS is running* without a reboot or any interruptions. Only Oracle Linux Premier and Oracle VM Premier support subscriptions offer this unique capability, making it possible for you to keep up with important updates without burdening your team with the operational costs and disruptions associated with forced reboots.

## THE COST OF REBOOTING

Linux kernel updates with important new security and reliability patches are released about once per month. Updates for the Xen hypervisor and QEMU also are released regularly. Industry regulations and best practices require companies to apply these security updates and patches as soon as possible because security will be compromised by a failure to update. System administrators are forced to choose between known best practices versus forced system reboots that are costly and disruptive. Since Ksplice is fully integrated with Oracle Linux and Oracle VM Server for x86, Oracle Linux and Oracle VM Premier Support customers can increase the security, reliability and availability of their Oracle Linux and Oracle VM servers by applying updates without rebooting.

## WHY USE KSPLICE?

Ksplice allows system administrators to install critical patches with lower costs, less downtime, increased security, and greater flexibility and control.

- **Reduce operational costs.** Reboots typically need significant advanced planning and require costly supervision. Systems that contain numerous cores and large quantities of memory take a significant amount of time just to complete their Power On Self Test (POST). Complications can happen during a reboot: for example, services might not start properly, or the interrupted system may cause a problem with a separate system. Ksplice saves you this hassle and lets you focus elsewhere. You can eliminate long nights and weekends spent rebooting servers for kernel updates. In addition, you do not need to coordinate with system users about outages caused by reboots.

## KEY BUSINESS BENEFITS

- Lower your operational costs by reducing the amount of supervision time required for reboots.
- Improve application availability and uptime.
- Realize greater security with the ability to promptly install OS updates.
- Experience true enterprise support for Oracle Linux and Oracle VM.

- **Improve availability.** With Ksplice, updates are installed quickly—a few seconds to a few minutes—without interrupting running applications or the people using those applications. You can easily check on the current status of your systems before rolling out any needed updates. Installing those updates requires no downtime, so your systems are more available than ever. Critical updates and security patches are applied without rebooting. And if you want to roll back an update for any reason, you can do so easily without a reboot.
- **Improve security.** Postponing the installation of updates until a convenient time is a tempting practice but is also dangerous. Systems that are not up to date are vulnerable to well-known security problems. Ksplice makes it easy to keep your systems up to date and secure, so you can reduce your window of vulnerability by introducing updates in a timely manner. As a result, your security compliance is vastly improved by using Ksplice.
- **Experience true enterprise support.** Oracle Linux Premier Support and Oracle VM Premier Support customers benefit from using Ksplice for zero-downtime diagnostic and security patches. For customers running an Oracle solution, there is one point of support for the entire stack.

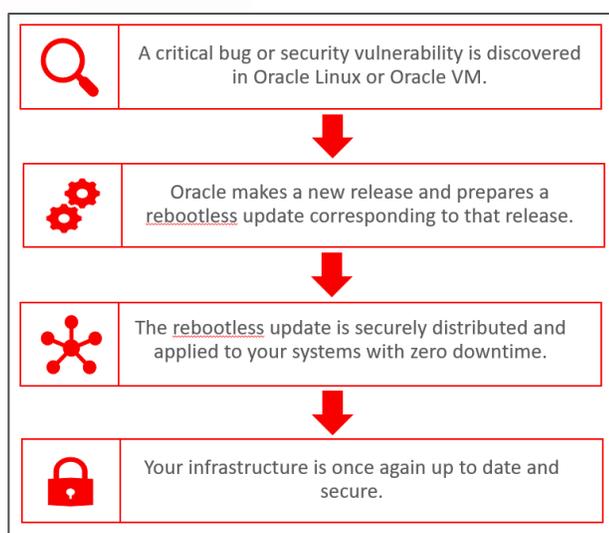


Figure 1: Oracle Linux and Oracle VM updates do not require system reboots with Ksplice

## ORACLE LINUX WITH KSPLICE

Oracle’s Ksplice service requires an access key which can be obtained by subscribing to Oracle Linux or Oracle VM Premier Support and then submitting a request via the Unbreakable Linux Network (ULN). After installing Ksplice on Oracle Linux, you can easily apply important updates for the Linux kernel without needing to reboot. Under the hood, Ksplice loads a Linux kernel module that rewrites portions of the running kernel to apply the updates.

An Enhanced Ksplice client for Oracle Linux can be installed to patch in-memory pages of Ksplice aware shared libraries such as `glibc` and `openssl`. A reboot is required after installing the Enhanced Ksplice client so that the system will use the Ksplice-aware versions of the user-space libraries.

## KSPLICE FOR ORACLE LINUX KEY FEATURES

- **Rollback capability.** Any update that can be applied using Ksplice can also be reversed without rebooting.
- **No performance impact.** Ksplice does not negatively affect performance. No daemon or system agent is required.
- **Web interface and API.** View and manage the status of Ksplice on all your systems from one place – a web interface or programmatically via a REST API.
- **Virtualization compatibility.** Ksplice on Oracle Linux works well in virtualized environments.
- **User-Space Patching.** Ksplice supports updates to many critical user-space libraries such as `glibc` and `OpenSSL` without rebooting.
- **Offline Updates.** Ksplice can update systems not directly connected to the Internet by using an internal update mirror.
- **Proxy support.** Ksplice supports standard HTTP proxies to pass through firewalls.
- **Access policies.** Ksplice offers access policies for individual systems or groups.
- **Email notifications.** Administrators can choose to be notified when new Ksplice updates are available for their systems.

## ORACLE VM SERVER WITH KSPLICE

Beginning with the release 3.4.5, Oracle VM Server for x86 supports Ksplice patching for the Dom0 kernel, Xen hypervisor and user-space packages. In a virtualized environment any forced reboot of the VM server nodes is an ordeal, requiring careful planning to migrate affected workloads or accept multiple outages. This is a major hassle and can severely impact productivity. With Ksplice support, Oracle VM administrators now have an enhanced set of tools to maximize application availability while virtualized.

## AN ESTABLISHED TRACK RECORD

With over 250,000 systems protected, over 10,000,000 updates applied, and over 4,000,000 reboots saved Ksplice can be trusted to keep your mission-critical systems up to date.

## KSPLICE FOR ORACLE VM KEY FEATURES

Ksplice covers the following Oracle VM Server for x86 components:

- Xen hypervisor
- Glibc
- OpenSSL
- QEMU

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