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## Improving kexec boot time

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Maintaining an up-to-date host kernel offers significant advantages such as enhanced security, performance and reliability. One of the primary challenges in live updating the host kernel is the long downtime experienced by guest Virtual Machines (VMs). Several factors contribute to this downtime such as VM snapshot and VM restore time, the biggest one being the time taken to (kexec) reboot the host kernel. In this session we will go through the work that has been done on reducing kernel boot times in a typical server configuration by up to 80%, including parallelizing smpboot, optimizing TSC synchronization, and the work currently being done to streamline the initialization of struct pages when using HugeTLB Vmemmap Optimization (HVO). Additionally, we will go through optimizations that can be done in more specialized scenarios such as skipping PCI probe for certain devices and skipping purgatory. We will also look at the remaining areas which still occupy a significant boot time in the optimized kernel, such as enabling ACPI interpreter and ACPI table loads and discuss if there are ways to optimize/reduce time taken for these.

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