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High memory management API changes

Tuesday, 13 September 2022 10:00 (30 minutes)

There was a time when the Linux kernel was 32bit but hardware systems had much more than 1GB of memory. A solution was developed to allow the use of high memory (HIGHMEM). High memory was excluded from the kernel direct map and was temporarily mapped into and out of the kernel as needed. These mappings were made via kmap_*() calls.

With the prevalence of 64bit kernels the usefulness of this interface is waning. But the idea of memory not being in the direct map (or having permissions beyond the direct map mapping) has brought about the need to rethink the HIGHMEM interface.

This talk will discuss the changes to the kmap_*() API and the motivations driving them. This includes the status of a project to rework the HIGHMEM interface as of the LPC conference.

Finally how does HIGHMEM affect the modern architectures in use? Is it finally time to remove CONFIG_HIGHMEM? Or is there still a need for 32 bit systems to support large amounts of memory in production environments?

I agree to abide by the anti-harassment policy

Yes

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