

Suspend/Hibernation Notifiers

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There are some operations that subsystems or drivers may want to carry out before hibernation/suspend or after restore/resume, but they require the system to be fully functional, so the drivers' and subsystems' `->suspend()` and `->resume()` or even `->prepare()` and `->complete()` callbacks are not suitable for this purpose.

For example, device drivers may want to upload firmware to their devices after resume/restore, but they cannot do it by calling `:c:func:'request_firmware()'` from their `->resume()` or `->complete()` callback routines (user land processes are frozen at these points). The solution may be to load the firmware into memory before processes are frozen and upload it from there in the `->resume()` routine. A suspend/hibernation notifier may be used for that.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\driver-api\pm\linux-master) (Documentation) (driver-api) (pm)notifiers.rst, line 19); [backlink](#)

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Subsystems or drivers having such needs can register suspend notifiers that will be called upon the following events by the PM core:

PM_HIBERNATION_PREPARE

The system is going to hibernate, tasks will be frozen immediately. This is different from PM_SUSPEND_PREPARE below, because in this case additional work is done between the notifiers and the invocation of PM callbacks for the "freeze" transition.

PM_POST_HIBERNATION

The system memory state has been restored from a hibernation image or an error occurred during hibernation. Device restore callbacks have been executed and tasks have been thawed.

PM_RESTORE_PREPARE

The system is going to restore a hibernation image. If all goes well, the restored image kernel will issue a PM_POST_HIBERNATION notification.

PM_POST_RESTORE

An error occurred during restore from hibernation. Device restore callbacks have been executed and tasks have been thawed.

PM_SUSPEND_PREPARE

The system is preparing for suspend.

PM_POST_SUSPEND

The system has just resumed or an error occurred during suspend. Device resume callbacks have been executed and tasks have been thawed.

It is generally assumed that whatever the notifiers do for PM_HIBERNATION_PREPARE, should be undone for PM_POST_HIBERNATION. Analogously, operations carried out for PM_SUSPEND_PREPARE should be reversed for PM_POST_SUSPEND.

Moreover, if one of the notifiers fails for the PM_HIBERNATION_PREPARE or PM_SUSPEND_PREPARE event, the notifiers that have already succeeded for that event will be called for PM_POST_HIBERNATION or PM_POST_SUSPEND, respectively.

The hibernation and suspend notifiers are called with `:c:data:'pm_mutex'` held. They are defined in the usual way, but their last argument is meaningless (it is always NULL).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\driver-api\pm\linux-master) (Documentation) (driver-api) (pm)notifiers.rst, line 66); [backlink](#)

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To register and/or unregister a suspend notifier use `:c:func:'register_pm_notifier()'` and `:c:func:'unregister_pm_notifier()'`, respectively (both defined in `:file:'include/linux/suspend.h'`). If you don't need to unregister the notifier, you can also use the `:c:func:'pm_notifier()'` macro defined in `:file:'include/linux/suspend.h'`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\driver-api\pm\linux-master) (Documentation) (driver-api) (pm)notifiers.rst, line 70); [backlink](#)

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