



linux what sleep state transitions generate a PrepareForSleep signal

The **PrepareForSleep** D-Bus signal in Linux is generated during transitions into and out of major system sleep states initiated by systemd/logind, including suspend (S3), hibernate, hybrid sleep, and their software equivalents like s2idle and freeze.^{[1] [2] [3]}

Signal Generation

- PrepareForSleep is emitted with **argument TRUE** right before the system enters any sleep state triggered by systemd/logind (e.g., via Suspend(), Hibernate(), HybridSleep(), or Sleep()).^{[2] [4] [1]}
- It is emitted again with **argument FALSE** after the system wakes up from the sleep state, signaling that the system has resumed operation.^{[4] [1] [2]}
- The transitions it covers include:
 - **Suspend (S3, RAM sleep)**
 - **Hibernate (S4, disk sleep)**
 - **Hybrid sleep (RAM + disk)**
 - **Suspend-to-idle (s2idle, freeze)** when invoked via systemd/logind

Sleep State Details

- These sleep states correspond to the kernel's supported power states: s2idle, standby, freeze, mem (shallow/deep), and disk.^{[5] [3]}
- The signal is not emitted for hardware-initiated or kernel-only automatic low-level sleep unless mediated by systemd/logind actions.^[1]

Practical Usage

- Applications listen for PrepareForSleep(TRUE) to prepare (save state, stop timers) and PrepareForSleep(FALSE) to restore or resume.^{[6] [1]}

Summary Table

Sleep Transition	PrepareForSleep Signal Emitted?	Argument Value
systemd/logind Suspend (S3, mem)	Yes	TRUE (before), FALSE (after) ^{[1] [2]}
Hibernate (S4, disk)	Yes	TRUE (before), FALSE (after) ^{[1] [2]}
HybridSleep	Yes	TRUE (before), FALSE (after) ^{[1] [2]}

Sleep Transition	PrepareForSleep Signal Emitted?	Argument Value
Suspend-to-idle (s2idle, freeze) ^[5]	Yes, if via systemd/login	TRUE (before), FALSE (after) ^{[1] [3]}
Low-level kernel-only sleep ^[1]	No	n/a ^[1]

Includes freeze if systemd/login is the initiator. ^[5]

E.g., aggressive hardware power management. ^[1]

In summary, any **systemd/login-initiated system sleep state transition** (Suspend, Hibernate, HybridSleep, Suspend-Then-Hibernate, and their variants) will reliably generate the PrepareForSleep signal for D-Bus subscribers every time sleep is entered and exited. ^{[2] [4] [1]}



1. <https://www.freedesktop.org/wiki/Software/systemd/inhibit/>
2. <https://man.archlinux.org/man/org.freedesktop.login1.5.en>
3. <https://www.freedesktop.org/software/systemd/man/systemd-sleep.conf.html>
4. https://www.reddit.com/r/linuxquestions/comments/ofd3xp/how_to_get_systemd_sleep_script_to_run_after/
5. <https://docs.kernel.org/admin-guide/pm/sleep-states.html>
6. <https://forum.qt.io/topic/69485/do-an-operation-when-computer-goes-to-sleep>
7. <https://whynothugo.nl/journal/2022/10/26/systemd-locking-and-sleeping/>
8. <https://forum.manjaro.org/t/how-are-sleep-events-handled-such-that-applications-have-time-to-capture-current-state/170583>
9. <https://www.kernel.org/doc/html/v5.4/admin-guide/pm/sleep-states.html>
10. <https://discourse.gnome.org/t/dbus-signal-after-wake-from-suspend/20267>