Changes in Linux PM Core Since v3.14

Rafael J. Wysocki

Intel Open Source Technology Center

July 21, 2015

OpenSource
TECHNOLOGY CENTER

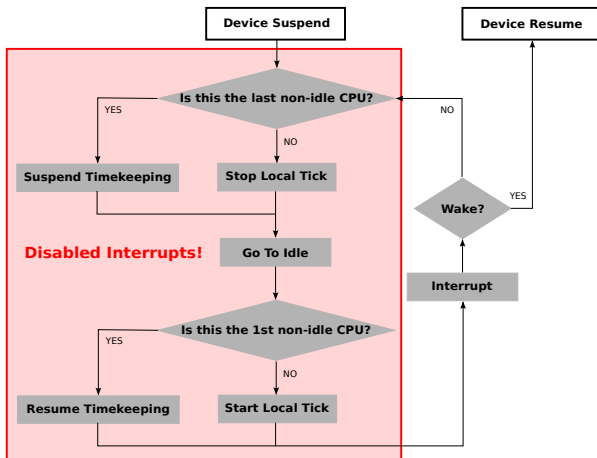# Suspend-to-Idle Idea
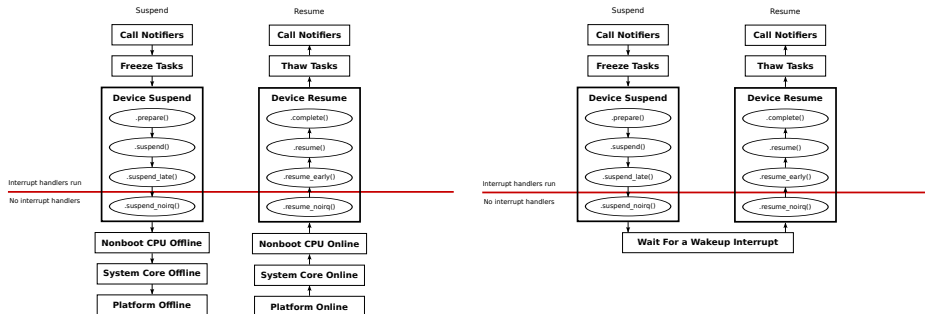
Suspend-to-Idle: Why Bother?

Suspend-to-idle vs full suspend

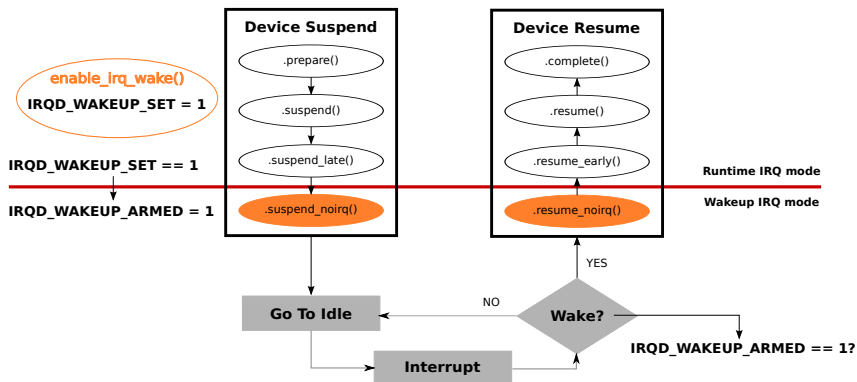- Platform support not required (not used).
- May be made faster.

Suspend-to-idle vs runtime idle

- Fewer interrupts (less interrupt jitter).
- Forced (rather than voluntary) transitions to low-power states.

OpenSource
TECHNOLOGY CENTER

Suspend-to-Idle: Quiescent Mode (Shipped In 4.0)

Suspend-to-Idle: Wakeup

Assorted Changes Related To System Suspend/Resume

- Asynchronous execution of all device suspend/resume callbacks (3.15).
- Delayed resuming of runtime-suspended devices during system suspend (3.15).
- New helpers to run device runtime PM callbacks during suspend/resume (3.15).
- PM core support for avoiding to resume runtime-suspended devices during system suspends (3.16).
- ACPI PM domain support for avoiding to resume runtime-suspended devices during system suspends (3.16).
- Suspend/resume trace events (3.16).
- Version 3.0 of analyze_suspend.py (3.17).
- Consolidation of device PM Kconfig options (CONFIG_PM_RUNTIME removal; 3.19).
- PCI core support for avoiding to resume runtime-suspended devices during system suspend (4.0).
- PM tracing support for the suspend phase of system suspend/resume transitions (4.1).
- Support for automated device wakeup IRQ handling (4.2-rc).

OpenSource
TECHNOLOGY CENTER

CPUfreq

Core changes

- Ton of fixes (each kernel version).
- Preserve sysfs directories/files over CPU offline/online (v4.2-rc).

intel_pstate

- New CPU IDs (each kernel version).
- Hardware Managed Performance States (HWP) support (3.19).
- "force" command line switch (3.19).

OpenSource
TECHNOLOGY CENTER

CPUfreq Contd.

cpufreq-dt

- Common driver for DT-based platforms.
- DT bindings for Operating Performace Points.
- Multiple platforms use it.

OpenSource
TECHNOLOGY CENTER