Applicable platform:

All Platforms

Issue/problem description:

This document is to summary the RPM/MPM interrupt debug in RBC/Idle related issue.
Please enable all Power Debug Sysfs Nodes to check the kernel logs mentioned in this doc.
echo 1 > /sys/module/kernel/parameters/initcall_debug
echo 1 > /sys/kernel/debug/clk/debug_suspend
echo 0 >/sys/module/qpnp_rtc/parameters/poweron_alarm
echo 1 > /sys/module/msm_show_resume_irq/parameters/debug_mask
echo 32 > /sys/module/msm_pm/parameters/debug_mask
echo 9 > /sys/module/mpm_of/parameters/debug_mask

What's RPM/MPM interrupt:
RPM Interrupts
The Resources Power Manager (RPM) is a dedicated processor for managing the SOC shared resources. Interrupts into the RPM subsystem are used mostly as part of the messaging flow between the other SOC subsystems and RPM.

MPM Interrupts
The Modem Power Manager (MPM) is part of the RPM subsystem. Its main function is to operate as a sleep controller for the SOC, allowing different low-power sleep modes. Normally its interrupt means some SOC subsystem wakes up from the LPM.

The typical logs about RPM/MPM interrupt looks like below
06-07 20:45:26.473 0 0 W gic_show_resume_irq: 200 triggered qcom,smd-rpm
06-07 20:45:26.473 0 0 W gic_show_resume_irq: 203 triggered 601d0.qcom,mpm

or in the later chipset like 8976/8998, etc.
[102.654856] gic_show_resume_irq: 53 triggered qcom,glink-smem-native-xprt-rpm
[102.654856] gic_show_resume_irq: 132 triggered 7781b8.qcom,mpm

Actually the RPM/MPM wakes up has too many reason, here just list some typical cases for the references.
1. If the logs has only smd-rpm/qcom,mpm interrupt, no other interrupts printed. Then check the wake up timestamp carefully.

a. If the interrupts are contiueusly occurs, looks like never stopping the wake up. Which means there are some external pending IRQ here, please check the peripherals like nfc, fp controller, motion sensors, etc.

b. If the interrupts are randomly or periodically occurs, and has some extra logs like

06-07 22:45:26.974 0 0 I : Suspended for 0.000 seconds
06-07 22:45:26.974 0 0 I : First wakeup lock:[timerfd]
Which means the interrupt is caused by timer. Please refer to KBA-161215181455 to debug it .

2. Besides the RPM/MPM interrupts, has more other irqs occurs with them.

a. the extra interrupt is from modem, the logs looks like below
[06-07 14:25:49.257] [0][3331: system_server]gic_show_resume_irq: 57 triggered qcom,smd-modem
or
[06-07 14:01:01.989] [0][3331: system_server]gic_show_resume_irq: 58 triggered qcom,smsm-modem
Then please refer to [Power]IRQ57/qcom,smd-modem wakeup debugging flow (KBA-170209003759)

to get the detailed QMI logs, then root cause the sub-module by QMI message service_id.

b. the extra interrupt is from spmi, the logs looks like below
06-07 09:53:56.695 0 0 W gic_show_resume_irq: 222 triggered 200f000.qcom,spmi
Then the interrupt is caused by spmi devices, normally from PMIC/FuelGauge.

c. the extra interrupt is from tsens, the logs looks like below
[3543.291867] gic_show_resume_irq: 216 triggered tsens_interrupt
Then the interrupt is caused by thermal sensor, please check the thermal logs whether some thermal protection is triggered.