

Applicable platform:

MSM8920, MSM8940, MSM8952, MSM8953, MSM8976, MSM8996, MSM8998, SDM450, SDM630, SDM632, SDM636, SDM660, SDM670, SDM845.....

Issue/problem description:

AP can't sleep because of IPA wakelocks such as IPA_WS and IPA_RM.

IPA driver hold a wakelock ("IPA_WS") to prevent AP suspend as long as there is embedded data transfer.

During active data transfer it is expected that AP will not go to suspend.

Upon data inactivity, IPA driver will release the wakelock and allow AP to go to suspend.

Issue Analysis:

We can compare the timestamps of the IPA wakelock in kernel log and the packets in tcpdump. If there is data packet on WWAN interfaces such as rment_data1 and rment_ipa0, IPA wakelock is hold expectedly by this time, this is not issue.

[Example log] There is packet around the time when IPA wakelock is hold, then release the IPA wakelock when data inactivity.

<kernel log>

```
879 <3>[ 3376.451502] (3)[1922:system_server]PM: suspend entry 2018-09-12 00:29:38.993142920 UTC
```

```
885 <6>[ 3376.479795] (0)[1922:system_server]active wakeup source: IPA_WS
```

```
890 <3>[ 3376.508790] (0)[1922:system_server]PM: suspend exit 2018-09-12 00:29:39.050436670 UTC
```

<tcpdump>

```
67 2018-09-12 00:29:38.793094 0.000452 10.73.206.95 54.201.185.41 TLSv1.2 1421 Application Data
```

```
3707 <3>[ 3497.462672] (1)[1922:system_server]PM: suspend entry 2018-09-1
```

3713 <6>[3497.499441] (1)[1922:system_server]active wakeup source: IPA_RI

3715 <6>[3497.499465] (1)[1922:system_server]active wakeup source: IPA_W

3720 <3>[3497.528452] (0)[1922:system_server]PM: suspend exit 2018-09-12

167 2018-09-12 00:31:40.019348 0.000117 216.58.221.142 10.73.206.95 TLSv1.2 102 Application Data

4246 <3>[3520.633948] (1)[1922:system_server]PM: suspend entry 2018-09-1

4252 <6>[3520.678689] (1)[1922:system_server]active wakeup source: IPA_RI

4253 <6>[3520.678721] (1)[1922:system_server]active wakeup source: IPA_W

4258 <3>[3520.711786] (3)[1922:system_server]PM: suspend exit 2018-09-12

278 2018-09-12 00:32:03.173271 0.000015 216.58.220.202 10.73.206.95 TCP 68 443→42702 [ACK] Seq=3559 Ack=3717 Win=69632 Len=0 TSval=143588811 TSecr=805154

10448 <3>[3779.444389] (2)[1922:system_server]PM: suspend entry 2018-09-

10455 <6>[3779.482803] (3)[1922:system_server]active wakeup source: IPA_

10460 <3>[3779.521197] (2)[1922:system_server]PM: suspend exit 2018-09-1

450 2018-09-12 00:36:21.930863 0.000114 203.118.242.92 10.73.206.95 DNS 383 Standard query response 0x1741 CNAME locp-sg.viber.com CNAME locp-sg.aws.viber.com A 52.220.255.241 A 52.220.255.244

40778 <3>[5059.464736] (2)[1922:system_server]PM: suspend entry 2018-09-

40784 <6>[5059.506095] (1)[1922:system_server]active wakeup source: IPA_

40789 <3>[5059.536655] (2)[1922:system_server]PM: suspend exit 2018-09-1

1502 2018-09-12 00:57:42.000960 7.872036 10.73.206.95 31.13.95.34 TLSv1.2 112 [TCP Retransmission] Application Data

This analysis method is also applying to IRQ SPS and GSI.

If you find that the IPA wakelock is hold all the time without any data transmission, this may be an issue.

For this issue, we need more logs.

For example:

1, adb and kernel logs with following IPA messages enabled.

```
echo -n "file rmnet_ipa.c +p" > /d/dynamic_debug/control
```

```
echo -n "file ipa_rm.c +p" > /d/dynamic_debug/control
```

```
echo -n "file ipa_rm_resource.c +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_inc_client_enable_clks +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_inc_client_enable_clks_no_block +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_dec_client_disable_clks +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_inc_acquire_wakelock +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_dec_release_wakelock +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_ap_suspend +p" > /d/dynamic_debug/control
```

```
echo -n "func ipa_sps_irq_control +p" > /d/dynamic_debug/control
```

(These cmds needed to execute again if you reboot.)

2, tcpdump on all interfaces

3, crashdumps (capture it when this issue reproduced)

```
root@dandelion:/ # cat /d/ipa/keep_awake
```

IPA APPS power state is OFF

//if it's off, set it to on

```
root@dandelion:/ # echo 1 > /d/ipa/keep_away
```

```
root@dandelion:/ # cat /d/ipa/keep_away
```

IPA APPS power state is ON

//trigger crash

Using QXDM run "send_data 75 37 03 00 00" in command window or "echo c > /proc/sysrq-trigger"

About the detail logs, we can check further in SR.

Qualcomm
Confidential - May Contain Trade Secrets
2022-07-29 05:12:26 GMT
freddy_liu@askey.com