

COMMENTS

Normal Process

Brach Process

Refer or Call

Functions Set

Function or Instruction

xxxxx

Data set

xxx

Comments

xxxx

Comments for program

xxx

APIs for Userspace

xxxx

1

Set Noresume

add "nocompress"

"cmdline: root=xxx noresume xxx"

noreume

If user want system to cold boot up , add "noresume" to cmdline, then system will ignore the hibernation image.

2

Do Resume

echo disk > /sys/power/state

software\_resume()

1

Resume Prepare:  
1. read swap\_head to check resume flag  
2. prepare console for hibernation  
3. notify other modules  
4. create basic bitmap for snapshot  
5. freeze user process

swsusp\_check()  
pm\_prepare\_console()  
pm\_notifier\_call\_chain()  
create\_basic\_memory\_bitmaps()  
freeze\_processes()

Failed?

NO

YES

free\_basic\_memory\_bitmaps()  
pm\_notifier\_call\_chain()  
pm\_restore\_console()  
pm\_restore\_console()  
swsusp\_close()

resume failed

Go on cold booting

2

Read snapshot Image:  
1. prepare copy\_bm and orig\_bm  
2. prealloc memory and link in chain  
3. get swap header offset  
4. read pages from swap to free memory and mak the free memory in chain

snapshot\_write\_next()  
get\_swap\_reader()  
swap\_read\_page()  
load\_lamge()  
swap\_reader\_finish()

Failed?

NO

YES

swsusp\_free()  
thaw\_processes()

3

Stop Devices  
1. stop console  
2. stop devices

hibernation\_restore()  
suspend\_console()  
dpm\_suspend\_start()

Failed?

NO

YES

dpm\_resume\_end()  
resume\_console()  
pm\_restore\_console()

4

Stop Core Device and nonboot CPUs  
1. stop nonboot cpus  
2. disable local irq  
2. stop core device  
4. save processor state

dpm\_suspend\_end()  
disable\_nonboot\_cpus()  
local\_irq\_disable()  
syscore\_suspend()  
save\_processor\_state()

Failed?

NO

YES

swsusp\_free()  
restore\_processor()  
syscore\_resume()  
local\_irq\_enable()  
enable\_nonboot\_cpus()  
dmp\_resume\_start()

5

Copy Pages and Resume Target Kernel  
1. clear cpu psr  
2. copy pages  
3. reset cpu  
4. resume target kernel

swsusp\_arch\_resume()  
cpu\_init()  
call\_with\_stack()  
\_\_swsusp\_arch\_retore\_image

copy\_page()  
soft\_restart\_noirq()  
cpu\_reset()

cpu\_resume()

#

##  
sleep\_save\_sp is core data while restoring, idmap\_pdg is temporary page table for getting the perssion to write kernel pages

sleep\_save\_sp  
idmap\_pdg  
sp  
&cpu\_do\_resume()

ldrfd spl, {r4 - r11, pc}  
stmfd spl, {r4 - r11, lr}

Resume

#

If Resume Success, getting back to target kernel now, refer to hibernation flowchart go get next step.