

Advantech AE Technical Sharing Document

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Category Type	FAQ	Related OS	Linux OS
Abstract	FAQ _Reference: System may freeze while running Linux OS on Bay Trail platform.		
Related Product	Bay Trail Platform: UNO-2271G, UNO-2372G, UNO-2473G, AIMC-2000, PCI-7032, ARK-5261,etc.		

■ **Problem Description:**

Customers feedback that their platform with [Bay Trail CPU\(Embedded\)](#) freeze while running Linux OS.

The phenomenon of freeze might include: screen hang, blank screen, no response while LAN pinging, system freeze, no lighting change of Keyboard (NumLock or CapsLock), etc.

■ **Brief Analysis and Solution :**

※The suggestions are referring to technical forums for user's reference.

After trying several methods, we have few suggestions to set in BIOS and Linux OS.

- 1) Disable "Intel EIST (Enhanced Intel Speed-Step Technology)" option in BIOS (fig.1).
- 2) Set "max CPU C-state" to C1 if the option is available in BIOS (fig.2).
- 3) Set "intel_idle.max_cstate=1" after the string "splash" in boot/grub/grub.cfg(fig.3), then check the setting by "cat /proc/cmdline" as figure 4.

The main purpose is to turn off all power saving functions to prevent from system freeze again.

We have not met customer feedback that the problem happens again after these inputs.

But there is still no official evidence from Intel about the solution.

Fig.1

SS RTC Wake Settings	(013F) Hardware Prefetcher	Yes	Default	Enabled	Enabled
Sensil Port Console Redir	(0141) Adjacent Cache Line Prefetch	Yes	Default	Enabled	Enabled
CPU Configuration	(0147) Data Reuse Optimization	Yes	Default	Enabled	Enabled
PPM Configuration	(0149) Intel Virtualization Technology	Yes	Default	Enabled	Enabled
Thermal Configuration	(014B) Power Technology	Yes	Default	Disable	Disable
IDE Configuration	(0152) EIST	Yes	Default	Enabled	Enabled
Miscellaneous Configurati	(0136) Turbo Mode	Yes	Default	Enabled	Enabled
LPSS & SOC Configurati	(0154) Performance/Watt	Yes	Default	Traditional	Traditional
LAN Controller	(0169) P-STATE Coordination	Yes	Default	HW_ALL	HW_ALL
System Component	(0161) CPU C3 Report	Yes	Default	Disabled	Disabled
AMI Graphic Output Prot	(0163) CPU C6 report	Yes	Default	Enabled	Enabled
Network Stack Configura	(0165) CPU C7 report	Yes	Default	Enabled	Enabled
CSM Configuration	(0167) Interrupt Filtecing	Yes	Default	Enabled	Enabled
	(0158) Package C State limit	Yes	Default	No Limit	No Limit
	(0158) Package C State limit	Yes	Default	No Limit	No Limit
	(016E) Local APIC Mode	Yes	Default	Auto	Auto
	(00F5) Factory TDC Limit	Yes	Default		

Fig.2

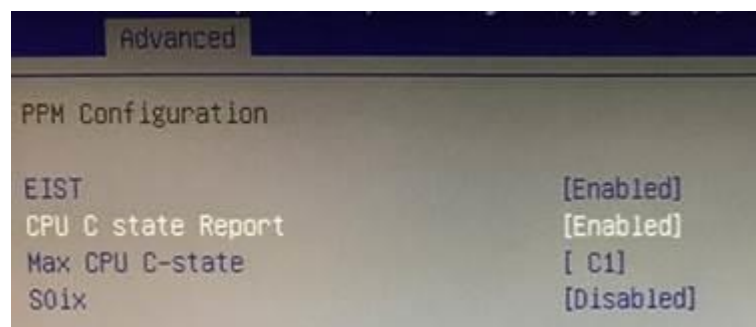


Fig.3

```

grub.cfg
/boot/grub

insmod ext2
set root='hd0,msdos1'
if [ x$feature_platform_search_hint = xy ]; then
  search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1 e793cecd-bbcf-4b22-878b-9908dc622e44
else
  search --no-floppy --fs-uuid --set=root e793cecd-bbcf-4b22-878b-9908dc622e44
fi
linux /boot/vmlinuz-4.15.0-29-generic root=UUID=e793cecd-bbcf-4b22-878b-9908dc622e44
quiet splash $vt handoff
initrd /boot/initrd.img-4.15.0-29-generic
}
submenu 'Advanced options for Ubuntu' $menuentry_id_option 'gnulinux-advanced-e793cecd-bbcf-4b22-878b-9908dc622e44' {
  menuentry 'Ubuntu, with Linux 4.15.0-29-generic' --class ubuntu --class gnu-linux --class os $menuentry_id_option 'gnulinux-4.15.0-29-generic-advanced-e793cecd-bbcf-4b22-878b-9908dc622e44' {
    recordfail
    load_video
    gfxnode $linux_gfx_mode
    insmod gzio
    if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
    insmod part_msdos
    insmod ext2
  }
}

```

Fig.4

A terminal window titled "Terminal" showing a shell prompt "joylot@joylot-pc:~". The user enters the command "cat /proc/cmdline". The output is displayed on the next line: "BOOT_IMAGE=/boot/vmlinuz-4.15.0-29-generic root=UUID=e793cecd-bbcf-4b22-878b-9908dc622e44 ro quiet splash intel_idle.max_cstate=1 vt.handoff=7". The prompt returns to "joylot@joylot-pc:~".

```
Terminal
joylot@joylot-pc:~
joylot@joylot-pc:~$ cat /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-4.15.0-29-generic root=UUID=e793cecd-bbcf-4b22-878b-9908dc622e44 ro quiet splash intel_idle.max_cstate=1 vt.handoff=7
joylot@joylot-pc:~$
```

■ **Contact Window:**

If you need further information from headquarter, please contact PAE Tony.Cheng #7820.