

Weston 应用案例

本文档涉及案例包括：

- systemctl 命令的使用
- Weston 桌面的使能与关闭
- 将启动 log 打印在开发板屏幕上
- Kernel 启动 logo 的定制替换

1. 预定开发板

在动手实践本应用案例前先预定开发板：(以 i.MX8MP 为例，i.MX93 等同样适用)，打开云实验室网页，点击右上角登陆按钮输入账号密码。

<https://aiotcloud.nxp.com.cn/>

登陆后依次点击硬件 -> i.MX 8 系列开发板



找到 i.MX 8M Plus “可立即使用” 状态的板子，点击“8MPLUSLPD4-PEVK”进入。



然后点击“立即预定”按钮：



选择立即使用，填写使用结束时间

请选择预定日期、开始和结束时间 (北京时间) UTC+8

立即使用

15 45

确认预定

然后点击进入我的预定，

我的预定

请输入关键词

ID	CPU	开发板名称	编号	开始时间	结束时间	时长	操作时间	状态	调试
3838	IMX 8M Plus	BMPLUSLPD4-PEVK	#1	2024-06-27 14:45	2024-06-27 15:40	0.917h	2024-06-27 14:56	正常	调试 取消

点击右侧蓝色“调试”按钮，之后就进入到板子的实物页面和系统启动 log 页面。到此为止，板子预定并且启动成功。



IMX 8 series EVKS BMPLUSLPD4-PEVK-3 刷新显示器画面 (5分钟后再次点击刷新)

若调试对话框登录失败或卡顿，点击刷新对话框

本次调试结束时间: 18:30:00, 系统将在18:25:00回收资源

```

[ 23.763032] 8021q: adding VLAN 0 to HW filter on device eth1
[ OK ] Started Session c1 of User root.
[ OK ] Started Hostname Service.
[ OK ] Started Weston, a Wayland _positor, as a system service.
[ OK ] Reached target Graphical Interface.
[ OK ] Stopped ISP i.MX 8Mplus daemon.
[ OK ] Started ISP i.MX 8Mplus daemon.
Starting Record Runlevel Change in UTMF...
[ OK ] Finished Record Runlevel Change in UTMF.

NXP i.MX Release Distro 6.1-mickledore imx8mpevk ttyuxcl

imx8mpevk login: [ 54.075025] kauditd_printk_skb: 12 callbacks suppressed
[ 54.075035] audit: type=1334 audit(1719998558.357:16): prog-id=14 op=UNLOAD
[ 54.087283] audit: type=1334 audit(1719998558.357:17): prog-id=13 op=UNLOAD

imx8mpevk login:
imx8mpevk login:
imx8mpevk login:
  
```

PowerReset EVK

Upload File Download File

Reinstall system

TFTP error fix

Reconnection

2. systemctl 命令的使用

systemctl 是 linux 系统管理工具集 Systemd 的主要命令。

例如对系统的管理，在云实验室的板子以下命令，会看到对应的现象。

systemctl reboot 重启系统

systemctl poweroff 关机，关机后点击下面的 Reset-EVK 图标重新给开发板上电

system suspend 让系统进入 suspend 状态

关机和进入 suspend 后都需要点击下面的 Reset-EVK 按钮重启开发板。

```

153.942161] systemd-shutdown[1]: Syncing filesystems and block devices.
153.948697] systemd-shutdown[1]: Sending SIGTERM to remaining processes...
153.952500] systemd-journald[200]: Received SIGTERM from PID 1 (systemd-shutdown)
153.978257] audit: type=1335 audit(1721788067.664:26): pid=205 uid=0 audit=4234567235 tty=(none) ses=4234567235 com="systemd-journald" ses="/lib/systemd/systemd-journald" nl=mcgrpr1 cpmdisconnect rean1
153.384433] systemd-shutdown[1]: Sending SIGKILL to remaining processes...
153.412393] systemd-shutdown[1]: Unmounting file systems.
153.435090] systemd-shutdown[1]: All filesystems unmounted.
153.439788] systemd-shutdown[1]: All swap deactivated.
153.439788] systemd-shutdown[1]: All swap deactivated.
153.444342] systemd-shutdown[1]: All loop devices detached.
153.448762] systemd-shutdown[1]: Stopping MD devices.
153.458136] systemd-shutdown[1]: All MD devices stopped.
153.468162] systemd-shutdown[1]: Detaching DM devices.
153.471131] systemd-shutdown[1]: All DM devices detached.
153.476491] systemd-shutdown[1]: All filesystems, swap, loop devices, MD devices and DM devices detached.
153.543969] systemd-shutdown[1]: Syncing filesystems and block devices.
153.550780] systemd-shutdown[1]: Powering off.
153.555493] kvm: detaching hardware virtualization
153.607833] reboot: Power down
  
```

Reset-EVK

Upload File Download File

Reinstall system

TFTP error fix

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还有用于管理 systemd 里各种服务的启动、停止、重启、查看状态等：

systemctl enable
 systemctl start
 systemctl status
 systemctl stop
 systemctl kill

```
systemctl restart
systemctl analyze
```

其中 systemctl-analyze 可以用于分析启动耗时，具体参看《系统启动时间分析案例》。

3. Weston 桌面的使能与关闭

```
systemctl stop weston
```

 关闭 weston 桌面，可以看到屏幕变黑了

```
systemctl start weston
```

 使能 weston 桌面，如下图

4. 将启动 log 打印在开发板屏幕上

使用 fgconsole 命令查看开发板屏幕对应的 tty 序号。

```
root@imx8mpevk:~# fgconsole
7
```

第一次启动板子时，在 dmesg 中找到 kernel cmdline

```
console=ttyMXC1,115200 root=/dev/nfs ip=dhcp
nfsroot=192.168.100.250:/opt/REAL/NFS/IMX8MPEVK-4-root,v3,tcp
```

修改 defconfig 文件使能屏幕作为 console:

```
diff --git a/arch/arm64/configs/imx_v8_defconfig
b/arch/arm64/configs/imx_v8_defconfig
index 85762b37006f..16d8a67b5bd3 100644
--- a/arch/arm64/configs/imx_v8_defconfig
+++ b/arch/arm64/configs/imx_v8_defconfig
@@ -1105,3 +1105,5 @@ CONFIG_CORESIGHT_STM=m
 CONFIG_CORESIGHT_CPU_DEBUG=m
 CONFIG_CORESIGHT_CTI=m
 CONFIG_MEMTEST=y
+CONFIG_CMDLINE_FORCE=y
+CONFIG_CMDLINE="console=tty7 console=tty0,115200 earlycon dtb=imx8mp-
evk.dtb root=/dev/mmcblk1p2 rootwait rw"
```

按照上面的代码修改后，重新配置并编译代码

```
make imx_v8_defconfig
```

```
make -j$(nproc)
```

将编译好的内核 Image 上传到云实验室开发板 tftp 目录（参考《编译内核镜像并在云实验室开发板上运行.pdf》）

点击 Reset-EVK 按钮，启动过程中可以看到 log 打印在板子的屏幕上。但是启动后不能输入 root 来 login。需要做如下修改并重启开发板：

```
root@imx8mpevk:~# vi /etc/systemd/system/weston.service
```

```
[Unit]
```

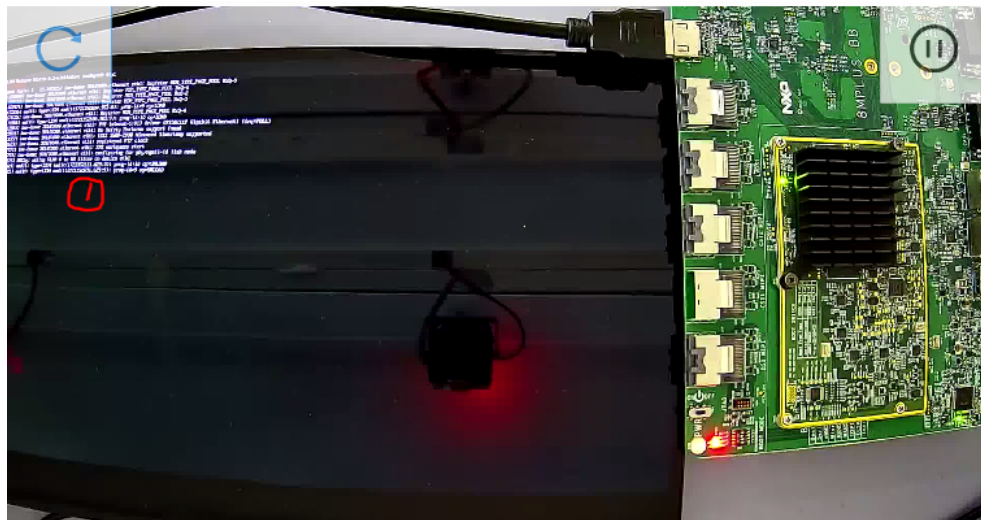
```
Description=Weston Wayland Compositor
```

```
After=graphical.target
```

```
[Service]
```

```
Type=simple ExecStart=/usr/bin/weston --tty=7
```

```
Restart=always
```



i.MX 8 series EVKs **BMPLUSLPD4-PEVK-7** 刷新显示器画面 (5分钟后再次点击刷新)

若调试时对话框登录失败或卡顿，点击刷新对话框 本次调试结束时间: 11:15:00，系统将提前5分钟回收资源

```

[ 6.460792] Sending DHCP requests ..
[ 13.218721] platform sound-bt-sco: deferred probe pending
[ 13.525081] , OK
[ 13.544955] IP-Config: Got DHCP answer from 192.168.100.250, my address is 192.168.100.65
[ 13.553946] IP-Config: Complete:
[ 13.557928] device=eth0, hwaddr=00:04:9f:09:3a:fc, ipaddr=192.168.100.65, mask=255.255.255.0, gw=192.168.100.1
[ 13.568071] host=192.168.100.65, domain=example.org, nis-domain=(none)
[ 13.575083] bootserver=192.168.100.250, rootserver=192.168.100.250, rootpath=
[ 13.575088] nameserver=192.168.100.250
[ 13.612616] imx-dmcc 30bf0000.ethernet eth1: FPE workqueue stop
[ 13.841099] imx-dmcc 30bf0000.ethernet eth1: PHY [stmmac-1:01] driver [RTL8211F Gigabit Ethernet] (irq=POLL)
[ 13.852161] imx-dmcc 30bf0000.ethernet eth1: configuring for phy/rgmii-id link mode
[ 13.909146] cfg80211: Loading compiled-in X.509 certificates for regulatory database
[ 13.920004] cfg80211: Loaded X.509 cert 'sforshee: 00b28ddf47aef9cea7'
[ 13.926728] platform regulatory.0: Direct firmware load for regulatory.db failed with error -2
[ 13.935573] platform regulatory.0: Falling back to sysfs fallback for: regulatory.db
[ 21.145925] imx-dmcc 30bf0000.ethernet eth1: Register MEM_TYPE_PAGE_POOL RxQ-0
[ 21.150840] imx-dmcc 30bf0000.ethernet eth1: Register MEM_TYPE_PAGE_POOL RxQ-1
[ 21.158183] imx-dmcc 30bf0000.ethernet eth1: Register MEM_TYPE_PAGE_POOL RxQ-2
[ 21.165474] imx-dmcc 30bf0000.ethernet eth1: Register MEM_TYPE_PAGE_POOL RxQ-3
[ 21.172656] audit: type=1334 audit(1721352600.953:6): prog-id=9 op=LOAD
[ 21.173126] imx-dmcc 30bf0000.ethernet eth1: Register MEM_TYPE_PAGE_POOL RxQ-4
[ 21.178960] audit: type=1334 audit(1721352600.961:7): prog-id=10 op=LOAD
[ 21.412803] imx-dmcc 30bf0000.ethernet eth1: PHY [stmmac-1:01] driver [RTL8211F Gigabit Ethernet] (irq=POLL)
[ 21.428828] imx-dmcc 30bf0000.ethernet eth1: No Safety Features support found
[ 21.433327] imx-dmcc 30bf0000.ethernet eth1: IEEE 1588-2008 Advanced Timestamp supported
[ 21.441659] imx-dmcc 30bf0000.ethernet eth1: registered PTP clock
[ 21.447773] imx-dmcc 30bf0000.ethernet eth1: FPE workqueue start
[ 21.453709] imx-dmcc 30bf0000.ethernet eth1: configuring for phy/rgmii-id link mode
[ 21.489175] 8021q: adding VLAN 0 to HW filter on device eth1

NXP i.MX Release Distro 6.1-mickledore imx8mpvk ttyMXCL

imx8mpvk login: [ 51.844869] audit: type=1334 audit(1721352631.629:8): prog-id=10 op=UNLOAD
[ 51.849023] audit: type=1334 audit(1721352631.629:9): prog-id=9 op=UNLOAD

imx8mpvk login:
imx8mpvk login: [ 2 ]

```

Reset-EVK
Upload File
Download File
Reinstall system
TFTP error fix
Reconnection
Download Manual
Community Q&A
Available Time
00-01-36-06

这样电脑调试串口终端和板子屏幕上的终端都可以输入命令，如上图 1 和 2 的位置。

5. Kernel 启动 logo 的定制替换

Kernel 启动过程中，会出现四个小企鹅（对于 4 核 8MP），在实际应用中，希望替换成自己制作的 logo。

由于 kernel 的 logo 格式是 ppm 的，所以要将一般的 bmp 图片转换成 ppm 格式，首先要有一台 ubuntu PC，安装格式转换工具：

```
sudo apt update
sudo apt install netpbm
```

比如我们用 u-boot 里的图片 freescale.bmp

```
git clone https://github.com/nxp-imx/u-boot-imx.git
```

```
cp u-boot-imx/tools/logos/freescale.bmp ~/
```

执行图片转换：

```
bmptopnm freescale.bmp > logo_linux.pnm
pnmquant 224 logo_linux.pnm > logo_linux_clut224.pnm
pnmtoplainpnm logo_linux_clut224.pnm > logo_linux_clut224.ppm
rm logo_linux.pnm logo_linux_clut224.pnm
```

默认情况下，kernel 启动过程中四个小企鹅是和 cpu 核数相关，所以需要修改代码，让我们的新 logo 只显示一份，kernel 源码做如下修改并重新编译（参考《编译内核镜像并在云实验室开发板上运行.pdf》）：

```
diff --git a/drivers/video/fbdev/core/fbmem.c b/drivers/video/fbdev/core/fbmem.c
index e24b29c4fa0f..74122612f863 100644
--- a/drivers/video/fbdev/core/fbmem.c
+++ b/drivers/video/fbdev/core/fbmem.c
@@ -693,7 +693,7 @@ int fb_show_logo(struct fb_info *info, int rotate)
         return 0;

         count = fb_logo_count < 0 ? num_online_cpus() : fb_logo_count;
-       y = fb_show_logo_line(info, rotate, fb_logo.logo, 0, count);
+       y = fb_show_logo_line(info, rotate, fb_logo.logo, 0, 1);
+       y = fb_show_extra_logos(info, y, rotate);

         return y;
```

编译后上传新镜像并重新运行，效果如下，可以看到 kernel 的小企鹅已替换为我们制作的 logo。

