

# mini2440 开发板之 andriod 使用手册

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开发平台：

RedHat 9.0 + mini2440 开发板

使用内核版本类型：

linux-2.6.25-android-1.0\_r1.tar.gz

下载地址：<http://code.google.com/p/android/downloads/list>

交叉编译器：

arm-2008q3-72-arm-none-linux-gnueabi-i686-pc-linux-gnu.tar.bz2

下载地址：

<http://www.codesourcery.com/sgpp/lite/arm/portal/release642>

或者直接复制下面地址

<http://www.codesourcery.com/sgpp/lite/arm/portal/package3686/public/arm-none-eabi/arm-2008q3-66-arm-none-eabi-i686-pc-linux-gnu.tar.bz2>

## 第一部分：内核映像及文件系统介绍

1、zImage: andriod 内核映像文件。支持触摸屏（目前没有校屏程序，点击不太准），支持 nfs 文件系统启动，支持 RTC(可以正确显示 google 时钟)，支持 DM9000 网卡，支持 yaffs 文件系统，电源管理等。

2、nfs\_root\_andriod.tar.gz: nfs 方式启动文件系统，可以看到很绚丽的 google 大钟和 google 浏览器。

3、final\_config.rar: 内核配置文件（可以自己用命令 `mv final config .config` 放到内核下进行编译）。

（为何不提供 yaffs 文件系统而采用 NFS 启动方式：主要原因是 mini2440 开发板提供的 nand flash 太小，只有 64M 空间，这里需要至少 80M 的空间）

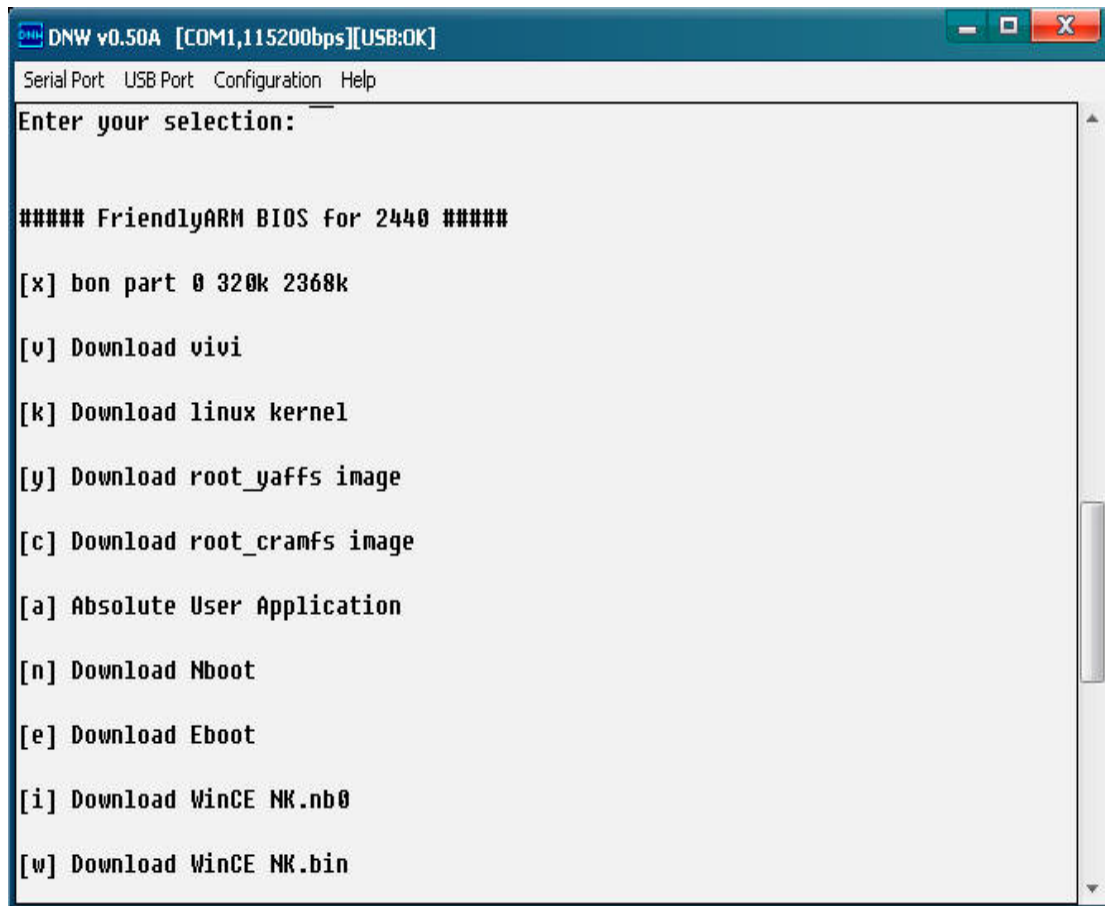
## 第二部分：使用说明

（注意：开发环境和 redhat9.0 系统的安装大家可以参考 mini2440 开发板手册。这里给出一些新的修改。）

使用方法：

（以下步骤 1—4 在 windows 下操作，5—7 在 linux 下操作）

1、打开 DNW 工具，切换到 norflash 启动方式，给开发板上电，启动 supervivi 的菜单。如下图所示：



2、选择“k”，（[k] Download linux kernel），然后通过usb下载内核zImage(就是上面的zImage)。

3、选择“b”（[b] Boot the system），启动内核看看是否可以正确引导内核。出现下面内容表示已经正确引导了。

.....

```
[s] Set the boot parameters
[t] Print the TOC struct of wince
[u] Backup NAND Flash to HOST through USB(upload)
[r] Restore NAND Flash from HOST through USB
[q] Goto shell of vivi
```

Enter your selection: b

Copy linux kernel from 0x00050000 to 0x30008000, size = 0x00200000 ... done

zImage magic = 0x016f2818

Setup linux parameters at 0x30000100

linux command line is: "console=ttySAC0 root=nfs nfsroot=192.168.1.100:/nfs\_root

ip=192.168.1.70 init=/init"

MACH\_TYPE = 782

NOW, Booting Linux.....

Uncompressing

Linux.....

done, booting the kernel.

Linux version 2.6.25 (root@localhost.localdomain) (gcc version 4.3.2 (Sourcery G++ Lite 2008q3-72) ) #13 PREEMPT Tue Mar 31 10:06:46 CST 2009  
CPU: ARM920T [41129200] revision 0 (ARMv4T), cr=c0007177  
Machine: SMDK2440  
ATAG\_INITRD is deprecated; please update your bootloader.  
Memory policy: ECC disabled, Data cache writeback  
CPU S3C2440A (id 0x32440001)  
BUG: mapping for 0x19000000000 at 0xd0000000 overlaps vmalloc space  
MM: CPU does not support supersection mapping for 0x19000000000 at 0xd0000000  
S3C244X: core 405.000 MHz, memory 101.250 MHz, peripheral 50.625 MHz  
S3C24XX Clocks, (c) 2004 Simtec Electronics  
CLOCK: Slow mode (1.500 MHz), fast, MPLL on, UPLL on  
USB Control, (c) 2008 panyingyun  
CPU0: D VIVT write-back cache  
CPU0: I cache: 16384 bytes, associativity 64, 32 byte lines, 8 sets  
CPU0: D cache: 16384 bytes, associativity 64, 32 byte lines, 8 sets  
Built 1 zonelists in Zone order, mobility grouping on. Total pages: 16256  
Kernel command line: console=ttySAC0 root=nfs nfsroot=192.168.1.100:/nfs\_root  
ip=192.168.1.70 init=/init  
irq: clearing subpending status 00000003  
irq: clearing subpending status 00000002  
PID hash table entries: 256 (order: 8, 1024 bytes)  
timer tcon=00000000, tcnt a4ca, tcfg 00000200,00000000, usec 00001e57  
Console: colour dummy device 80x30  
console [ttySAC0] enabled  
Dentry cache hash table entries: 8192 (order: 3, 32768 bytes)  
Inode-cache hash table entries: 4096 (order: 2, 16384 bytes)  
Memory: 64MB = 64MB total  
Memory: 60684KB available (3620K code, 447K data, 116K init)  
SLUB: Genslabs=12, HWalign=32, Order=0-1, MinObjects=4, CPUs=1, Nodes=1  
Mount-cache hash table entries: 512  
CPU: Testing write buffer coherency: ok  
net\_namespace: 152 bytes  
android\_power\_init  
android\_power\_init done  
NET: Registered protocol family 16  
S3C2410 Power Management, (c) 2004 Simtec Electronics  
S3C2440: Initialising architecture  
S3C2440: IRQ Support  
S3C24XX DMA Driver, (c) 2003-2004,2006 Simtec Electronics  
DMA channel 0 at c4800000, irq 33  
DMA channel 1 at c4800040, irq 34  
DMA channel 2 at c4800080, irq 35  
DMA channel 3 at c48000c0, irq 36

S3C244X: Clock Support, DVS off  
SCSI subsystem initialized  
usbcore: registered new interface driver usbfs  
usbcore: registered new interface driver hub  
usbcore: registered new device driver usb  
NET: Registered protocol family 2  
IP route cache hash table entries: 1024 (order: 0, 4096 bytes)  
TCP established hash table entries: 2048 (order: 2, 16384 bytes)  
TCP bind hash table entries: 2048 (order: 1, 8192 bytes)  
TCP: Hash tables configured (established 2048 bind 2048)  
TCP reno registered  
NetWinder Floating Point Emulator V0.97 (double precision)  
ashmem: initialized  
NTFS driver 2.1.29 [Flags: R/W DEBUG].  
yaffs Mar 29 2009 19:58:25 Installing.  
io scheduler noop registered  
io scheduler anticipatory registered  
io scheduler deadline registered  
io scheduler cfq registered (default)  
Console: switching to colour frame buffer device 30x20  
fb0: s3c2410fb frame buffer device  
s3c2440-uart.0: s3c2410\_serial0 at MMIO 0x50000000 (irq = 70) is a S3C2440  
s3c2440-uart.1: s3c2410\_serial1 at MMIO 0x50004000 (irq = 73) is a S3C2440  
s3c2440-uart.2: s3c2410\_serial2 at MMIO 0x50008000 (irq = 76) is a S3C2440  
brd: module loaded  
loop: module loaded  
nbd: registered device at major 43  
DM9000 ethernet driver V1.26 I/O: c4816300, VID: 90000a46  
Linux video capture interface: v2.00  
ovcamchip: v2.27 for Linux 2.6 : OV camera chip I2C driver  
usbcore: registered new interface driver ov511  
drivers/media/video/ov511.c: v1.64 for Linux 2.5 : ov511 USB Camera Driver  
Driver 'sd' needs updating - please use bus\_type methods  
S3C24XX NAND Driver, (c) 2004 Simtec Electronics  
s3c2440-nand s3c2440-nand: Tacls=1, 9ns Twrph0=4 39ns, Twrph1=1 9ns  
NAND device: Manufacturer ID: 0xec, Chip ID: 0x76 (Samsung NAND 64MiB 3,3V  
8-bit)  
Scanning device for bad blocks  
Creating 3 MTD partitions on "NAND 64MiB 3,3V 8-bit":  
0x00000000-0x00030000 : "Bootloader(Panyingyun)"  
0x00050000-0x00250000 : "Kernel(panyingyun)"  
0x00250000-0x03dac000 : "User(panyingyun)"  
s3c2410-ohci s3c2410-ohci: S3C24XX OHCI  
s3c2410-ohci s3c2410-ohci: new USB bus registered, assigned bus number 1

```
s3c2410-ohci s3c2410-ohci: irq 42, io mem 0x49000000
usb usb1: configuration #1 chosen from 1 choice
hub 1-0:1.0: USB hub found
hub 1-0:1.0: 2 ports detected
Initializing USB Mass Storage driver...
usbcore: registered new interface driver usb-storage
USB Mass Storage support registered.
s3c2410_udc: debugfs dir creation failed -19
mice: PS/2 mouse device common for all mice
usbcore: registered new interface driver appletouch
s3c2410 TouchScreen successfully loaded
input: s3c2410 TouchScreen as /class/input/input0
S3C24XX RTC, (c) 2004,2006 Simtec Electronics
s3c2410-rtc s3c2410-rtc: rtc disabled, re-enabling
s3c2410-rtc s3c2410-rtc: rtc core: registered s3c as rtc0
i2c /dev entries driver
s3c2440-i2c s3c2440-i2c: slave address 0x10
s3c2440-i2c s3c2440-i2c: bus frequency set to 98 KHz
s3c2440-i2c s3c2440-i2c: i2c-0: S3C I2C adapter
usbcore: registered new interface driver hiddev
usbcore: registered new interface driver usbhid
drivers/hid/usbhid/hid-core.c: v2.6:USB HID core driver
logger: created 64K log 'log_main'
logger: created 64K log 'log_events'
logger: created 64K log 'log_radio'
TCP cubic registered
NET: Registered protocol family 1
NET: Registered protocol family 17
RPC: Registered udp transport module.
RPC: Registered tcp transport module.
s3c2410-rtc s3c2410-rtc: setting system clock to 2009-03-31 17:01:31 UTC
(1238518891)
request irq 51 success!
IP-Config: Guessing netmask 255.255.255.0
IP-Config: Complete:
    device=eth0, addr=192.168.1.70, mask=255.255.255.0, gw=255.255.255.255,
    host=192.168.1.70, domain=, nis-domain=(none),
    bootserver=255.255.255.255, rootserver=192.168.1.100, rorpcbind: server
192.168.1.100 not responding, timed out
Root-NFS: Unable to get nfsd port number from server, using default
Looking up port of RPC 100005/1 on 192.168.1.100
```

#### 4、设置 nfs 启动参数

首先复位 mini2440 开发板，回到 supervivi 的菜单，选择“s”，可以到设置启动

参数的菜单（如下图所示）。

```
[t] Print the TOC struct of wince
[u] Backup NAND Flash to HOST through USB(upload)
[r] Restore NAND Flash from HOST through USB
[q] Goto shell of vivi
Enter your selection: s

##### Parameter Menu #####

[r] Reset parameter table to default table
[s] Set parameter
[v] View the parameter table
[w] Write the parameter table to flash memeory
[q] Quit
Enter your selection:
```

继续选“s”，设置参数。  
出现下面界面：

```
##### Parameter Menu #####

[r] Reset parameter table to default table
[s] Set parameter
[v] View the parameter table
[w] Write the parameter table to flash memeory
[q] Quit

Enter your selection: s
Enter the parameter's name(mach_type, media_type, linux_cmd_line, etc):
linux_cmd_line
Enter the parameter's value(if the value contains space, enclose it with "):
"console=ttySAC0 root=nfs nfsroot=192.168.1.100:/nfs_root ip=192.168.1.70
init=/init"
Change linux command line to "console=ttySAC0 root=nfs
nfsroot=192.168.1.100:/nfs_root ip=192.168.1.70 init=/init"

##### Parameter Menu #####
```

输入修改启动命令行，linux\_cmd\_line  
回车后，输入"console=ttySAC0 root=nfs nfsroot=192.168.1.100:/nfs\_root ip=192.168.1.70 init=/init”。  
回到刚刚设置菜单下面选择“w”，写入修改后的参数。

```
DNW v0.50A [COM1,115200bps][USB:OK]
Serial Port  USB Port  Configuration  Help

[q] Quit

Enter your selection: v
Number of parameters: 9
name          :          hex          integer
-----
mach_type     :    0000030e           782
media_type    :    00000003            3
boot_mem_base :    30000000       805306368
baudrate      :    0001c200       115200
xmodem        :    00000001            1
xmodem_one_nak : 00000000            0
xmodem_initial_timeout : 000493e0       300000
xmodem_timeout :    000f4240       1000000
boot_delay    :    01000000       16777216
Linux command line: console=ttySAC0 root=nfs nfsroot=192.168.1.100:/nfs_root
ip=192.168.1.70 init=/init

##### Parameter Menu #####

[r] Reset parameter table to default table

[s] Set parameter
```

这里可以用“v”,查看修改是否成功和正确。

```
DNW v0.50A [COM1,115200bps][USB:OK]
Serial Port  USB Port  Configuration  Help

[q] Quit

Enter your selection: v
Number of parameters: 9
name          :          hex          integer
-----
mach_type     :    0000030e           782
media_type    :    00000003            3
boot_mem_base :    30000000       805306368
baudrate      :    0001c200       115200
xmodem        :    00000001            1
xmodem_one_nak : 00000000            0
xmodem_initial_timeout : 000493e0       300000
xmodem_timeout :    000f4240       1000000
boot_delay    :    01000000       16777216
Linux command line: console=ttySAC0 root=nfs nfsroot=192.168.1.100:/nfs_root
ip=192.168.1.70 init=/init

##### Parameter Menu #####

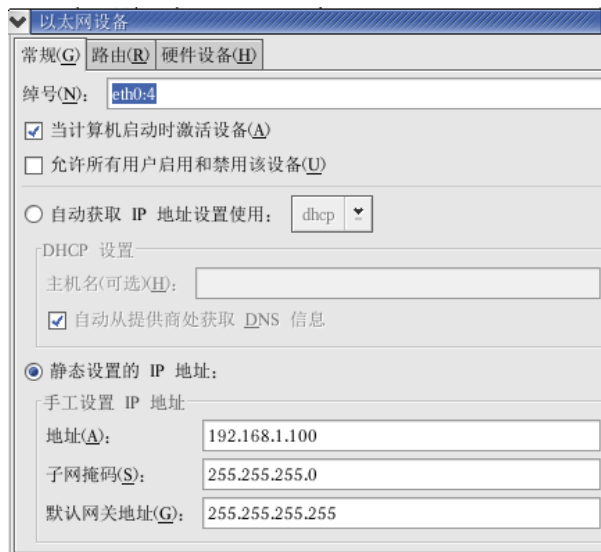
[r] Reset parameter table to default table
```

5、修改 nfs 设置文件/etc/exports

/nfs\_root \*(rw,sync,no\_root\_squash)

6、设置主机 IP 地址

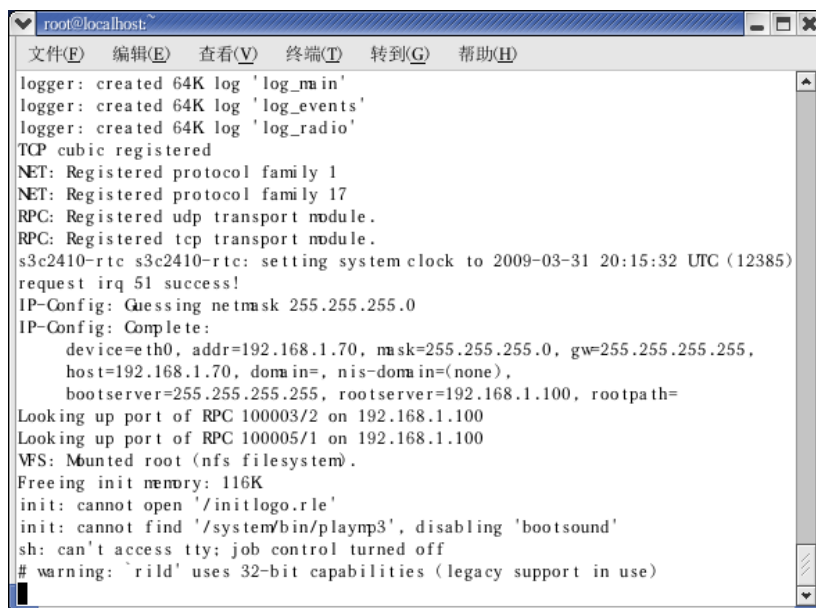
地址：192.168.1.100 子网掩码：255.255.255.0 默认网关：255.255.255.255



7、nfs\_root\_andriod.tar.gz 拷贝到/目录下,解压 tar zxvf nfs\_root\_andriod.tar.gz

这样在根目录下就存在一个 nfs\_root 目录,里面就是 andriod 启动所需要的文件系统。最后在终端中输入命令 exportfs -r 命令更新/etc/exports(在提示找不到文件系统时,试试这个命令)。

启动时串口信息:



启动时 LCD 显示:





启动后桌面显示:

