

# 8M\_flash info 说明文档

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# 前言

## 概述

介绍基于 allwinner tina V459-SDK 在 8M\_flash 上的相关信息。

## 读者对象

本文档主要适用于以下人员

- 开发人员及关心固件打包人员
- 产品人员

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# 8M\_flash 优化

## Uboot 优化

对于 uboot 的裁剪主要采取关闭某些不必要的功能达到目的详情见下图

```
#cmd
CONFIG_CMD_SUNXI_TIMER=n
CONFIG_CMD_SUNXI_SPRITE=n
CONFIG_CMD_SUNXI_EFEX=n
CONFIG_CMD_FASTBOOT=n
CONFIG_CMD_GPT=n
CONFIG_CMD_FAT=y
CONFIG_CMD_SUNXI_DMA=n
CONFIG_CMD_SF=y
CONFIG_CMD_SF_TEST=n
CONFIG_CMD_PART=n
CONFIG_SUNXI_PART_UPDATE=y
CONFIG_CMD_BDI=n
CONFIG_CMD_CONSOLE=n
CONFIG_CMD_GO=n
CONFIG_CMD_EXPORTENV=n
CONFIG_CMD_IMPORTENV=n
CONFIG_CMD_EDITENV=n
CONFIG_CMD_ENV_EXISTS=n
CONFIG_CMD_CRC32=n
CONFIG_CMD_MEMORY=n
CONFIG_CMD_FLASH=n
CONFIG_CMD_LOADB=n
CONFIG_CMD_LOADS=n
CONFIG_CMD_ECHO=n
CONFIG_CMD_ITEST=n
CONFIG_CMD_SOURCE=n
CONFIG_CMD_SETEXPR=n
CONFIG_CMD_MISC=n
CONFIG_SPINOR_LOGICAL_OFFSET=736
#I2C
#CONFIG_SYS_I2C_SUNXI=y
#CONFIG_SYS_SUNXI_R_I2C0_SLAVE=0x34
#CONFIG_SYS_SUNXI_R_I2C0_SPEED=400000
#CONFIG_R_I2C0_ENABLE=y
#power
#CONFIG_SUNXI_POWER=y
#CONFIG_SUNXI_PMU=y
#CONFIG_SUNXI_BMU=y
#CONFIG_AXP2101_POWER=y
# flash
CONFIG_SUNXI_FLASH=y
#CONFIG_SUNXI_NAND=y
CONFIG_SUNXI_SDMMC=y
CONFIG_MMC=y
CONFIG_SUNXI_SPINOR=y
CONFIG_SUNXI_NOR_IMG=y
CONFIG_PWM_NOT_USE=y
#usb otg config
#CONFIG_SUNXI_USB=y
#CONFIG_SUNXI_EFEX=y
#CONFIG_SUNXI_FASTBOOT=y
#partition
CONFIG_EFI_PARTITION=y
#image
CONFIG_ANDROID_BOOT_IMAGE=y
#sprite
CONFIG_SUNXI_SPRITE=y
#CONFIG_SUNXI_SECURE_STORAGE=y
CONFIG_SUNXI_SPRITE_RECOVERY=n
```

需要值得注意的一点是 CONFIG\_SPINOR\_LOGICAL\_OFFSET 这个宏的值需要设置为保证+32能够整除 128 且大于最小的 uboot.fex 的扇区值(512bytes 一个扇区), 否则会存在很多 mbr(gpt)错误或者刷机不成功,以及 app 重启等各种问题。

通过裁剪预计 uboot 能从 320k 降到 180k 的空间

## Kernel 优化

Kernel 的优化主要通过更换 kernel 的压缩方式优化, 通过 kernel menuconfig 或者 config 文件将 kernel 的压缩方式从 gzip 改为 xz 压缩。可将 2.4M 的 kernel 降为 2.0M

```

index 2b2a150..97c0309 100755
--- a/configs/y30lgb/linux/config-4.9
+++ b/configs/y30lgb/linux/config-4.9
@@ -42,9 +42,9 @@ CONFIG_HAVE_KERNEL_LZMA=y
 CONFIG_HAVE_KERNEL_XZ=y
 CONFIG_HAVE_KERNEL_LZO=y
 CONFIG_HAVE_KERNEL_LZ4=y
-CONFIG_KERNEL_GZIP=y
+# CONFIG_KERNEL_GZIP is not set
+# CONFIG_KERNEL_LZMA is not set
-# CONFIG_KERNEL_XZ is not set
+CONFIG_KERNEL_XZ=y
 # CONFIG_KERNEL_LZO is not set
 # CONFIG_KERNEL_LZ4 is not set
 CONFIG_DEFAULT_HOSTNAME="(none)"

```

另外可以辅助关闭一些 kernel 对应的宏可从 2.0M 降为 1.8M

```

7065 -# CONFIG_CEPH_FS is not set
7066 -# CONFIG_CIFS is not set
7067 -# CONFIG_NCP_FS is not set
7068 -# CONFIG_CODA_FS is not set
7069 -# CONFIG_AFS_FS is not set
7070 +# CONFIG_NETWORK_FILESYSTEMS is not set
7071 CONFIG_NLS=y
7072 CONFIG_NLS_DEFAULT="iso8859-1"
7073 CONFIG_NLS_CODEPAGE_437=y
7074 @@ -2680,14 +2657,14 @@ CONFIG_PANIC_TIMEOUT=0
7075 -# CONFIG_SCHED_STACK_END_CHECK is not set
7076 # CONFIG_DEBUG_TIMEKEEPING is not set
7077 # CONFIG_TIMER_STATS is not set
7078 -CONFIG_DEBUG_PREEMPT=y
7079 +# CONFIG_DEBUG_PREEMPT is not set
7080
7081 #
7082 # Lock Debugging (spinlocks, mutexes, etc...)
7083 #
7084 # CONFIG_DEBUG_RT_MUTEXES is not set
7085 # CONFIG_DEBUG_SPINLOCK is not set
7086 -CONFIG_DEBUG_MUTEXES=y
7087 +# CONFIG_DEBUG_MUTEXES is not set
7088 # CONFIG_DEBUG_WW_MUTEX_SLOWPATH is not set
7089 # CONFIG_DEBUG_LOCK_ALLOC is not set
7090 # CONFIG_PROVE_LOCKING is not set
7091 @@ -2695,9 +2672,9 @@ CONFIG_DEBUG_MUTEXES=y
7092 # CONFIG_DEBUG_ATOMIC_SLEEP is not set
7093 # CONFIG_DEBUG_LOCKING_API_SELFTESTS is not set
7094 # CONFIG_LOCK_TORTURE_TEST is not set
7095 -CONFIG_STACKTRACE=y
7096 +# CONFIG_STACKTRACE is not set
7097 # CONFIG_DEBUG_KOBJECT is not set
7098 -CONFIG_DEBUG_BUGVERBOSE=y
7099 +# CONFIG_DEBUG_BUGVERBOSE is not set
7100 # CONFIG_DEBUG_LIST is not set
7101 # CONFIG_DEBUG_PI_LIST is not set
7102 # CONFIG_DEBUG_SG is not set
7103 @@ -2784,7 +2761,7 @@ CONFIG_EARLY_PRINTK=y
7104 # CONFIG_EARLY_PRINTK_DIRECT is not set
7105 # CONFIG_PID_IN_CONTEXTIDR is not set
7106 # CONFIG_DEBUG_SET_MODULE_RONX is not set
7107 -CONFIG_SUNXI_DUMP=y
7108 +# CONFIG_SUNXI_DUMP is not set
7109 # CONFIG_CORESIGHT is not set
7110
7111 #
7112 @@ -2990,7 +2967,6 @@ CONFIG_NLATTR=y
7113 # CONFIG_DDR is not set
7114 # CONFIG_IRQ_POLL is not set
7115 CONFIG_LIBFDT=y
7116 -CONFIG_OID_REGISTRY=y
7117 # CONFIG_SG_SPLIT is not set
7118 # CONFIG_SG_POOL is not set
7119 CONFIG_ARCH_HAS_SG_CHAIN=y
7120 diff --git a/configs/y30lgb/linux/sys_partition_nor.fex b/configs/y30lgb/linux/sys_partition_nor.fex
7121 index 3f90c21..0c5df34 100755

```

通过 kernel 的裁剪可从 2.4M 降到 1.8M ， 整体节省 600k 空间

## Rootfs 优化

Rootfs 的优化主要同样是更改压缩方式从 gzip 到 xz，可将 rootfs 从 1.4M 优化到 1.2M，但是值得注意的一点是此时 kernel 需要使能 xz 的解压功能(默认支持 gzip)

# App 优化

App 优化主要通过删除一些功能不是很强烈的库和一些 log 图片,音频文件,以及将一些大文件通过 7z 压缩的方式打入包内达到目的,将原本 7.3M 的 home.fex 降到 4.4M

## 8M\_flash 固件信息

### 固件总体信息

	name	real size	offset(sys_config)	offset(+uboot start)	扇区大小 (512byte)
1:	uboot	294912		128 (0x80) (除外)	240
2:	mbr(gpt)	16384	0	736 (0x2e0)	32
3:	boot(kernel)	1877768	32	768 (0x300)	3712
4:	rootfs		3744	4480 (0x1180)	2304
5:	home		6048	6784 (0x1a80)	8960
6:	env		15008	15744 (0x3d80)	256
7:	mfg		15264	16000 (0x3e80)	128
8:	conf		15392	16128 (0x3f00)	128
9:	udisk		15520		0
10:			15615		15
11:	gpt(bak)		15647		1

```
0x00000000000000-0x0000000060000 : "uboot"
0x0000000060000-0x0000000230000 : "boot"
0x0000000230000-0x0000000350000 : "rootfs"
0x0000000350000-0x00000007c0000 : "home"
0x00000007c0000-0x00000007e0000 : "env"
0x00000007e0000-0x00000007f0000 : "mfg"
0x00000007f0000-0x0000000800000 : "conf"
0x0000000800000-0x0000000857e00 : "UDISK"
```

## App 信息

1	/	d 0775	0	0:0	app
2		d 0775	0	0:0	base
3		f 0664	23 ( 91)	0:0	homever
4		d 0775	0	0:0	qigan
5	/app	f 0664	23 ( 91)	0:0	.appver
6		d 0775	0	0:0	audio_file
7		d 0775	0	0:0	ca
8		d 0775	0	0:0	cloud
9		f 0775	96144 ( 58923)	0:0	cloudAPI
10		f 0775	399588 ( 252926)	0:0	crypt_file
11		f 0775	22984 ( 16269)	0:0	dispatch
12		f 0775	67680 ( 38380)	0:0	init.sh
13		f 0775	3823 ( 1413)	0:0	localbin
14		d 0775	0	0:0	localko
15		d 0775	0	0:0	locallib
16		d 0775	0	0:0	log_server
17		f 0775	16288 ( 9294)	0:0	mp4record
18		f 0775	31240 ( 19820)	0:0	oss.7z
19		f 0775	475129 ( 490857)	0:0	p2p_tnp
20		f 0775	260744 ( 161052)	0:0	rmm.7z
21		f 0664	1046277 ( 1080899)	0:0	script
22		d 0775	0	0:0	upgrade_firmware
23		f 0775	9668 ( 5249)	0:0	watch_process
24		f 0775	9700 ( 4979)	0:0	wifi.sh
25		f 0775	358 ( 315)	0:0	wp_cmd
26		f 0775	286 ( 204)	0:0	
27	/app/audio_file	d 0775	0	0:0	common
28		d 0775	0	0:0	simplecn
29		d 0775	0	0:0	us
30	/app/audio_file/common	f 0775	3490 ( 3626)	0:0	capture.aac
31		f 0775	10453 ( 10861)	0:0	poweroff.aac
32		f 0775	8743 ( 8485)	0:0	record_end.aac
33		f 0775	3691 ( 3827)	0:0	record_start.aac
34		f 0775	7869 ( 8091)	0:0	wait.aac
35	/app/audio_file/simplecn	f 0775	11263 ( 10679)	0:0	ban_device.aac
36		f 0775	11263 ( 10485)	0:0	bindkey_fail.aac
37		f 0775	6144 ( 5485)	0:0	connecting.aac
38		f 0775	15207 ( 15751)	0:0	device_wrong.aac
39		f 0775	11263 ( 11162)	0:0	download_fail.aac
40		f 0775	5119 ( 4490)	0:0	downloading.aac
41		f 0775	6314 ( 6015)	0:0	pwdwrong.aac
42		f 0775	5631 ( 5200)	0:0	scanok.aac
43		f 0775	10581 ( 9316)	0:0	success.aac
44		f 0775	9727 ( 9237)	0:0	timeout.aac
45		f 0775	9898 ( 9376)	0:0	updating.aac
46		f 0775	8418 ( 8758)	0:0	wifi_connect_failed.aac
47		f 0775	5290 ( 4951)	0:0	wifi_connected.aac
48	/app/audio_file/us	f 0775	9958 ( 9946)	0:0	bindkey_fail.aac
49		f 0775	5290 ( 4985)	0:0	connecting.aac
50		f 0775	13667 ( 13587)	0:0	download_fail.aac
51		f 0775	5290 ( 4965)	0:0	downloading.aac
52		f 0775	5647 ( 5508)	0:0	pwdwrong.aac
53		f 0775	7522 ( 7292)	0:0	scanok.aac
54		f 0775	13141 ( 12918)	0:0	success.aac
55		f 0775	10282 ( 9970)	0:0	timeout.aac
56		f 0775	10410 ( 10419)	0:0	updating.aac
57		f 0775	5973 ( 5469)	0:0	wifi_connected.aac
58	/app/ca	f 0775	1261 ( 1023)	0:0	ca.crt
59		f 0775	4795 ( 3690)	0:0	gd_bundle-g2-g1.crt
60	/app/localbin	f 0775	5912 ( 3305)	0:0	reboot_by_watchdog
61		f 0775	94580 ( 79477)	0:0	wifi_conf
62	/app/localko	f 0775	10464 ( 4887)	0:0	cpld_periph.ko
63		f 0775	5932 ( 2764)	0:0	hmac.ko
64		f 0775	5404 ( 2807)	0:0	md4.ko
65		f 0775	4540 ( 2178)	0:0	pid_list.ko
66		f 0664	9036 ( 4141)	0:0	ssp_ms41909.ko
67	/app/locallib	f 0775	12	0:0	libYiHm.so -> libYiHm.so.3
68		f 0775	17	0:0	libYiHm.so.3 -> libYiHm.so.3.5.26
69		f 0775	162876 ( 100472)	0:0	libYiHm.so.3.5.26
70		f 0775	15896 ( 7760)	0:0	libnetcommon.so
71		f 0775	214652 ( 56707)	0:0	libnna.so
72	/app/script	f 0775	4755 ( 1531)	0:0	default.script
73		f 0775	68 ( 136)	0:0	ethdhcp.sh
74		f 0775	91 ( 144)	0:0	factory_test.sh
75		f 0775	103 ( 165)	0:0	get_mem.sh
76		f 0775	828 ( 272)	0:0	info.sh
77		f 0775	121 ( 164)	0:0	killapp.sh
78		f 0775	1384 ( 562)	0:0	killwifi.sh
79		f 0775	55 ( 123)	0:0	mount_sd.sh
80		f 0775	318 ( 233)	0:0	start_lua.sh
81		f 0775	3229 ( 974)	0:0	update.sh
82		f 0775	353 ( 285)	0:0	usb2sd.sh
83		f 0775	241 ( 196)	0:0	wificonnect.sh
84		f 0775	70 ( 138)	0:0	wifidhcp.sh
85		f 0775	121 ( 162)	0:0	wifitest.sh
86	/base	f 0664	23 ( 91)	0:0	.basever
87		f 0775	36864 ( 7797)	0:0	iso8859-1-24x48.bin
88		f 0775	4096 ( 1436)	0:0	iso8859-1-8x16.bin
89		d 0775	0	0:0	ko
90		d 0775	0	0:0	tools
91		d 0775	0	0:0	wifi
92	/base/ko	f 0775	11852 ( 5556)	0:0	cam_sensor.ko
93		f 0775	5820 ( 2423)	0:0	icplus.ko
94		f 0775	0 ( 0)	0:0	topfile
95		f 0775	23684 ( 13625)	0:0	videobuf2-core.ko
96		f 0775	11180 ( 5836)	0:0	videobuf2-dma-contig.ko
97		f 0775	3404 ( 1428)	0:0	videobuf2-memops.ko
98		f 0775	13344 ( 6807)	0:0	videobuf2-v4l2.ko
99		f 0775	25292 ( 12465)	0:0	vin_io.ko
100		f 0775	133388 ( 63882)	0:0	vin_v4l2.ko

```

106 f 0775 0 ( 0) 0:0 topfile
107 f 0775 23684 ( 13625) 0:0 videobuf2-core.ko
108 f 0775 11180 ( 5836) 0:0 videobuf2-dma-contig.ko
109 f 0775 3404 ( 1428) 0:0 videobuf2-memops.ko
110 f 0775 13344 ( 6807) 0:0 videobuf2-v4l2.ko
111 f 0775 25292 ( 12465) 0:0 vin_io.ko
112 f 0775 133388 ( 63882) 0:0 vin_v4l2.ko
113 /base/tools
114 f 0775 11616 ( 6376) 0:0 checkdisk
115 f 0775 1850 ( 927) 0:0 extpkg.sh
116 f 0775 30 ( 98) 0:0 fdisk.input
117 f 0775 42752 ( 25873) 0:0 fsck.fat
118 f 0775 23196 ( 13674) 0:0 mkfs.fat
119 f 0775 69492 ( 38179) 0:0 wpa_cli
120 f 0775 613112 ( 393408) 0:0 wpa_supplicant
121 /base/wifi
122 f 0775 1514052 ( 799331) 0:0 8188fu.ko
123 /qigan
124 f 0664 23 ( 91) 0:0 .qgver
125 d 0775 0 0:0 ko
126 d 0775 0 0:0 lib
127 /qigan/ko
128 f 0775 11856 ( 5518) 0:0 gc2053_mipi.ko
129 f 0775 12572 ( 5924) 0:0 sc2232_mipi.ko
130 f 0775 11760 ( 5070) 0:0 sensor_power.ko
131 /qigan/lib
132 f 0775 114344 ( 83845) 0:0 libaw_aacdec.so
133 f 0775 65356 ( 41247) 0:0 libaw_mp3dec.so
134 f 0775 57940 ( 37198) 0:0 libaw_wavdec.so
135 f 0775 83420 ( 43922) 0:0 libcdx_base.so
136 f 0775 21588 ( 9845) 0:0 libcdx_common.so
137 f 0775 265292 ( 163290) 0:0 libcdx_parser.so
138 f 0775 21648 ( 10528) 0:0 libcdx_stream.so
139 f 0775 25848 ( 12813) 0:0 libcutils.so
140 f 0775 25684 ( 12574) 0:0 libhwdisplay.so
141 f 0775 13396 ( 6122) 0:0 libion.so
142 f 0775 13604 ( 5726) 0:0 liblog.so
143 f 0775 115956 ( 74374) 0:0 librgb_ctrl.so
144 f 0775 9300 ( 2815) 0:0 libsample_confparser.so
145 f 0775 17600 ( 9019) 0:0 libsmartlink.so
146
147
148 Compression mode: priority
149 Compressors:
150 none compr: 862 blocks (1622094) decompr: 0 blocks
151 zlib (prio:80) + compr: 1893 blocks (2805379/5034107) decompr: 0 blocks
152 lzma (prio:70) - compr: 0 blocks (0/0) decompr: 0 blocks
153 rtime (prio:50) + compr: 1 blocks (30/47) decompr: 0 blocks
154 Compression errors: 0
155 mkimage -A arm -T filesystem -C none -n xiaoyi-home -d /home/lijun/projsdkv1/applications/out/v459_y301gb/home.j
156 Image Name: xiaoyi-home
157 Created: Tue Nov 19 14:32:51 2019
158 Image Type: ARM Linux Filesystem Image (uncompressed)
159 Data Size: 4648960 Bytes = 4540.00 kB = 4.43 MB
160

```

Uboot 占用大小 384K(包含 boot0 uboot gpt 等等)  
 Kernel 占用大小 1.8M  
 Rootfs 占用大小 1.2M  
 App 占用大小 4.4M  
 Env 占用大小 128K  
 Mfg 占用大小 64K  
 Conf 占用大小 64K  
 总计 8M