

网卡固件升级工具用户手册

2023 年 9 月

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历史

版本	描述	发布/日期
1.0	第一个发布版本，完整介绍了 PCI Utils 工具的运行环境、使用以及可能遇到的错误描述。	Mengyuan Lou 2019 年 09 月 29 日
2.0	发布了 arm64, ppc64le, mips64 平台工具	Mengyuan Lou 2019 年 11 月 8 日
3.0	将网卡千兆工具和万兆工具合为了一体	Mengyuan Lou 2019 年 12 月 11 日
3.6.0	修复 -A 选项，一张卡出问题后，整个流程就退出的问题	Limin Pan 2021 年 07 月 22 日
3.6.1	加上了 flash 写保护的操作，新增 -l、-a、-d 选项	Limin Pan 2021 年 08 月 13 日
3.6.4	添加芯片版本、image 版本检查，新增 -T、-R 选项	Limin Pan 2021 年 11 月 21 日
3.6.5	添加 wxtool show 的功能分支，添加 -F 烧写时可以用 -s 指定设备的功能	Limin Pan 2021 年 12 月 28 日
3.6.6	添加烧写时对 image 的校验功能，新增 -n、-A、-i 选项	Limin Pan 2022 年 04 月 22 日
3.6.7	增加万兆网卡升级时对 device_id 和 subs_id 的检查， 增加升级时对 img 和 sig 文件 MD5 值的打印， 增加升级时对升级次数的检查，确保每次上电只能升级一次， 新增 -S、-I 选项	Limin Pan 2022 年 09 月 25 日
3.6.8	增加了编译安全选项， 增加了 show -i 选项对 phy mode 和 flash bypass 的检查， 增加了修改 SN 号时同时将 SN 号存储在 vpd 的功能， 修改固件信息的校验方式，由 md5 修改为 sha256	Zhongxin Zhang 2022 年 10 月 13 日
3.6.9	修改 -m 参数修改网卡网口 MAC 地址的功能	Zhongxin Zhang 2022 年 10 月 18 日
3.6.10	增加使用 lspci -vvn 查看 vpd 的相应信息， 增加中断烧录功能	Zhongxin Zhang 2022 年 11 月 29 日
3.6.11	增加 -N 参数带辅电设备修改 SN 号后重启即可生效的功能 查看无指定域名网口信息时默认将域名设置为 0000	Guangqing Cheng 2023 年 3 月 13 日
3.6.12	修复了 3.6.11 版本烧录固件时，domain 不为 0 时出现的段错误问题； 修复固件不能正常工作时仍发解锁命令导致错误打印的问题； 修复 -A 命令升级固件时，其中一张网卡需要修改 mac 时（为默认	Guangqing Cheng 2023 年 8 月 4 日

	<p>mac), 导致后续网卡都需要修改 mac 的问题;</p> <p>修复万兆网卡升级时 Subsystem ID 判断错误的问题;</p> <p>修复升级或更新 vpd 区域时, 固件头部校验值计算错误的问题;</p> <p>增加了烧录时 slot 号中域名的打印;</p> <p>增加了对 88x3310 phy (万兆直出电口卡) 寄存器的读取支持;</p> <p>增加使用-C 选项烧录时的二次确认功能;</p> <p>增加对 vpd 区域为 0x170 的固件的烧录以及 vpd 更新功能;</p> <p>增加千兆卡升级时对 image 的检查;</p> <p>修复 3.6.8-3.6.11 版本工具烧录千兆 10015 (及之前) 版本带 wol 功能固件后重启 PCIe 无法连接的问题</p>	
3.7.0	<p>增加 upgrade 命令, 自动升级与千兆卡匹配的固件;</p> <p>修复 3.6.12 版本与此前版本 mdio 读写外部寄存器方式不一致的问题</p>	<p>Guangqing Cheng 2023 年 8 月 11 日</p>
3.7.1	<p>增加 mac 保护功能, 即使烧录过程中断, mac 也不会丢失;</p> <p>修复 3.7.0 千兆升级使用-A 参数升级时的段错误问题</p>	<p>Guangqing Cheng 2023 年 9 月 25 日</p>

一、须知

在使用网卡固件升级工具前，建议仔细阅读本手册的全部内容。因为本手册对于工具使用的环境、工具使用的流程，甚至工具使用中可能遇到的种种问题均有详细描述，可以帮助用户更快地实现对使用芯片设计的网卡设备的固件烧录需求，也可以帮助用户更快速地定位烧录过程中遇到的问题。

如果对手册内容存疑，或者在阅读完手册后仍有其他疑问。请及时联系销售或者技术支持人员，谢谢！

1.1 概述

网卡固件升级工具是一套可在线（通过 PCIe 总线接口）烧录网卡控制芯片固件（Image）的实用程序。

运用该套烧录程序，用户可以自行烧录固件（完成功能升级、固件修复等操作），也可以自定义网卡的物理地址。

该套工具基于 Linux 内核开发，包括以下内容：

- ① 《工具使用手册》文档一份
- ② “wxtool”可执行程序
- ③ 用于烧录的标准固件文件，存放在“./image/”目录下

注意：在进行后续内容阅读之前，请检查确保已经拥有固件升级工具的全部内容。

1.2 准备

在使用固件升级工具进行固件烧录之前，请确保以下准备工作正确完成。

1.2.1 平台

提供的烧录工具是编译好的可执行程序，需要在兼容的平台上才可以运行。以下是工具的原始编译环境，请首先确保运行平台的兼容性：

基础版：

x86: wxtool_x86

特殊版：

arm64: wxtool_arm64

mips64: wxtool_mips64

sw64: wxtool_sw64

sw64_3231: wxtool_sw64_3231

loongarch64: wxtool_loongarch64

1.2.2 硬件

网卡板上所有元器件已经正确焊接，电源模块供电正常，晶振工作正常，电路板各项阻值检测正常。

将待烧录的网卡正确接入到满足兼容性的硬件平台上（PCIe 插槽），烧录程序最多支持 16 张网卡的轮流烧录。

注意：烧录固件过程无需接入网络。

1.2.3 使用

为升级工具加上执行权限

```
[root@localhost tools_upgrade]# ls
image wxtool_x86
[root@localhost tools_upgrade]# chmod +x wxtool_x86
[root@localhost tools_upgrade]# ls
image wxtool_x86
```

1.2.4 注意

该工具兼容万兆千兆 4 口、2 口、1 口网卡的升级，升级时请注意交互选项，1 为千兆 1 口卡，2 为千兆 2 口卡，3 为千兆 4 口卡，4 为万兆卡：

```
root@share-pc:/home/plm# ./wxtool_3.6.7 -F RP2000P2SFP-SW_2000e/RP2000P2SFP-SW_2000e.img
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10_Gigabit_nics
please input choose number: █
```

二、使用

用户在使用固件升级工具烧录固件的过程中，可以在工具执行前，主动通过工具支持的“命令”选项进行一些个性化操作，也会在工具执行过程中，被动接收到工具的一些“交互”提示，提示用户对接下来的可选操作进行选择。

2.1 提醒

(1) 在使用 wxtool 3.6.9 及以下版本，烧录千兆固件版本 10018 及以下，万兆固件版本 2000e 及以下时，烧写过程中，禁止因为任何原因，中断烧写程序。这会导致网卡故障损坏。

(2) 烧写固件完成后，必须掉电重启使 flash reload 生效。禁止不重启连

续执行烧录固件操作。这会导致网卡故障损坏。

(3) 使用 wxtool 3.6.6 及以上版本，烧录固件时，要将签名文件和固件文件放于同级目录。原因：用于烧录固件时对固件进行安全校验，防止 img 被修改后，烧录到设备造成的意外。

```
[root@localhost demo]# ls
SF400T_10016.img SF400T_10016.sig
[root@localhost demo]#
```

如果没有签名文件，烧录时会报相应没有签名文件错误。

```
root@-PC:~/zzx# ./wxtool -F img/RP2000P2SFP_2000e.img
Please Select which kind of NIC to upgrade:
 1. 1000M_nics_1ports
 2. 1000M_nics_2ports
 3. 1000M_nics_4ports
 4. 10_Gigabit_nics
please input choose number: 4
SIG_FILE:img/RP2000P2SFP_2000e.sig

FILE SHA256 sum:
sha256sum: img/RP2000P2SFP_2000e.sig: 没有那个文件或目录
89dfac3de2c7641f0de753bf1b49caaa3da8c0305d6c85d09381b093093bdfde  img/RP2000P2SFP_2000e.img

Image verify failed...
Please check your image
```

(4) 禁止重复烧录固件，烧录后必须重启，否则会报如下错误。

```
root@-PC:~/zzx# ./wxtool -F RP2000P2SFP_2000e.img
Please Select which kind of NIC to upgrade:
 1. 1000M_nics_1ports
 2. 1000M_nics_2ports
 3. 1000M_nics_4ports
 4. 10_Gigabit_nics
please input choose number: 4
SIG_FILE:RP2000P2SFP_2000e.sig

FILE SHA256 sum:
8660e1b33ff1dbdd8925ff5b0d040f980ecbaddea0cd512fab5b428ea03969e4  RP2000P2SFP_2000e.sig
89dfac3de2c7641f0de753bf1b49caaa3da8c0305d6c85d09381b093093bdfde  RP2000P2SFP_2000e.img

Verified OK

Raptor PCI Utils tool is started.
We will download 1 in 1 cards depends on the configuration.

The Following adaptor cards has been upgraded:
[ No.0 ] 03:00.0
Please reboot your machine and retry

[ERROR] Raptor PCI Utils upgrading is failed! Only 0 cards are upgraded for 1 cards!!
```

2.2 烧录相关功能

2.2.1 【-F】：烧录固件

程序默认读取当前运行目录下“./image/”目录中名为“prd_flash_golden.img”的固件文件，用户也可以通过“-F”带参选项指定一个需要烧录的新固件文件，参数就是新固件的文件名（带路径）。烧录过程中打印 SHA256 值，并检查 id。

命令：./wxtool -F xxx.img(可在其后加上-s 参数指定烧录网卡)

```
root@bgw-PC:/home/cgq# ./wxtool_sw64 -F SF400T_B_1001a.img -i
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10_Gigabit_nics
please input choose number: 3
Please wait 2 Rocket cards flash upgrading ....

More than one of our adaptor cards were found, but without of '-A' option specified. Please select a adaptor to download.

Please select a PCI device before upgrading.
[ 0 ] 0001:27:00.0 [ 1 ] 0001:29:00.0 :
Please select slot index: 0

Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The image's sub_id : 0401
The card's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
flash write-protect register val : 0
Start to download No.0 adaptor card [ 0001:27:00.0 ]:
Old: MAC Address0 is: 020203040506
    MAC Address1 is: 020203040507
    MAC Address2 is: 020203040508
    MAC Address3 is: 020203040509
    SN is: ffffffffffffffff
Please type in New MAC Address: 020303030405
Please type in SN: 021345678912245678

vpd_sn_change_t
id_str: WX GbE Family Controller
pn_str: WX1860A4-B
sn_str: 021345678912245678
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 0001:27:00.0 ] flash .... complete 99%
New: MAC Address0 is: 020303030405
    MAC Address1 is: 020303030406
    MAC Address2 is: 020303030407
    MAC Address3 is: 020303030408
    SN is: 021345678912245678

Download Complete 100
[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!
```

注：

- 若 flash 中 0 口 mac 地址为默认 02:02:03:04:05:06（上述执行结果截图中即为默认 MAC 地址），需要输入新的 mac 地址（只能输入单播 mac 地址）和 SN 号（只能输入 18 位 16 进制字符组成的字符序列），重启机器才能生效；若 flash 中 0 口 mac 地址不是默认地址，则使用 flash 中原有的地址，重启机器才能生效；
- 烧录时若输入的新的 MAC 地址，烧录成功后成为网口 0 的 MAC 地址，网口

1 的 MAC 地址加 1，网口 2 的 MAC 地址加 2，以此类推；

- 当加上-s 参数指定网卡进行烧录时，可以输入<BUS>:<DEVICE>或者<BUS>:<DEVICE>.<FUNCTION>来进行指定，下述烧录命令同样如此（但是-s 参数必须要放在-F 参数后）。
- 若烧录的固件带“ncsi”/“wol”/“SW”/“-A”字段，烧录时则会打印：

```
FILE SHA256 sum:
b78ald1bc55ffb48ffeb4acdbe4f3caab19ae9f249f5a11c1a02ca1a5e86178 SF400T_B_10018 arm64.wol.ncsi..ig
7496f18863e830c24ff7493809252b35d58a9797c9880622916fa73fad5ceea9 SF400T_B_10018 arm64.wol.ncsi..mg

Verified OK
Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The image's sub_id : c401
The card's sub_id : c401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.0 adaptor card [ 07:00.0 ]:
Old: MAC Address0 is: 020202030405
    MAC Address1 is: 020202030406
    MAC Address2 is: 020202030407
    MAC Address3 is: 020202030408
    SN is: 0000000000000000

vpd_sn_change_t
id_str: GbE Family Controller [arm] [wol] [ncsi]
```

如图烧录的是带“arm64”“wol”“ncsi”字段的固件，id_str 则也会打印相对应的三个字段；

重启后使用 `lspci -s xx:xx.x -vvv` 查看[Product Name]行：

```
LnkSta2: Target Link Speed: 507/s, EnterCompliance- Speed0/s-
Transmit Margin: Normal Operating Range, EnterModifiedCompliance- ComplianceSOS-
Compliance De-emphasis: -6dB
LnkSta2: Current De-emphasis Level: -6dB, EqualizationComplete-, EqualizationPhase1-
EqualizationPhase2-, EqualizationPhase3-, LinkEqualizationRequest-
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: GbE Family Controller [arm] [wol] [ncsi]
```

注意：2000f 及以上的千兆固件不会再打印“wol”和“ncsi”两个字段。

- 3.6.12 版本增加烧录时域名的打印

```

root@bgw-PC:/home/cgq/em/em_upgrade_image# ./wxtool -F /home/cgq/SF400T_B_1001a.img -s 0001:27:00.0 -I
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10_Gigabit_nics
please input choose number: 3
Please wait 1 Rocket cards flash upgrading ....

Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The image's sub_id : 0401
The card's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
flash write-protect register val : 0
Start to download No.0 adaptor card [ 0001:27:00.0 ]:
Old: MAC Address0 is: 3009f922995f
    MAC Address1 is: 3009f9229960
    MAC Address2 is: 3009f9229961
    MAC Address3 is: 3009f9229962
    SN is: 020186042210100820

vpd_sn_change_t
id_str: WX GbE Family Controller
pn_str: WX1860A4-B
sn_str: 020186042210100820
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 0001:27:00.0 ] flash .... complete 99%
New: MAC Address0 is: 3009f922995f
    MAC Address1 is: 3009f9229960
    MAC Address2 is: 3009f9229961
    MAC Address3 is: 3009f9229962
    SN is: 020186042210100820

Download Complete 100
[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!

```

2.2.2 【-M】: 选择片外存储器（Flash）厂商

只有万兆卡使用该参数，千兆网卡默认为 SST，-M 2 选项可不写。

命令：./wxtool -F xxx.img -M 2

由于不同厂商的片外存储器（Flash）在指令上存在差异，所以需要一
个对 Flash 厂商的选择选项。目前程序支持三家厂商：

【0】 Winbond 华邦；

【1】 Spanish；

【2】 SST 的 Flash 芯片

选择不同厂商可以用“-M”带参选项完成，参数是厂商对应的数字索引，
例如选择 SST，就使用命令：./wxtool -F xxx.img -M 2。

另外，推荐选用的 Flash 容量大小为：8M 字节 = 128 (sector) * 64K 字
节 (sector size)。

注意：如遇到不支持的 Flash 厂商或者芯片型号，请联系技术支持。(烧录前确

认下硬件类型，不能随便使用，后果自负!!!)

2.2.3 【-A】: 多张网卡时的全选使能

若系统上有多张与 F 参数后接入的 xxx.img 的 chip version (A 版本或者 B 版本) 与 subsystem id 一致的网卡，加上 -A 参数可以同时烧录这么多张网卡；不加 -A 参数烧录时则需要选择要烧录的网卡。

命令: ./wxtool -F xxx.img -A

```
root@loongson-pc:/home/zzx/em# ./wxtool -F SF400T_B_10018.img -A
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10_Gigabit_nics
Please input choose number: 3
Please wait 2 Rocket cards flash upgrading ....

SIG_FILE:SF400T_B_10018.sig

FILE SHA256 sum:
c8a19e474b30796ea26b39c2512b5d738417fd01ce36e5fc099dee937e034ad SF400T_B_10018.sig
120b065b56bc11fcd7ebec5f51dc204e84f20fc289d8ec63ed7e0f9f5d6e2de SF400T_B_10018.img

Verified OK
Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The image's sub_id : 0401
The card's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.0 adaptor card [ 04:00.0 ]:
Old: MAC Address0 is: 020202030405
MAC Address1 is: 020202030406
MAC Address2 is: 020202030407
MAC Address3 is: 020202030408
SN is: ffffffffffffffff

vpd_sn_change_t
id_str: GbE Family Controller
pn_str: WX1860A4-B
sn_str: ffffffffffffffff
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 04:00.0 ] flash .... complete 100%
New: MAC Address0 is: 020202040506
MAC Address1 is: 020202040507
MAC Address2 is: 020202040508
MAC Address3 is: 020202040509
SN is: ffffffffffffffff
```

```
SN is: ffffffffffffffff

Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The image's sub_id : 0401
The card's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.1 adaptor card [ 07:00.0 ]:
Old: MAC Address0 is: 020202040506
MAC Address1 is: 020202040507
MAC Address2 is: 020202040508
MAC Address3 is: 020202040509
SN is: 123456789123456789

vpd_sn_change_t
id_str: GbE Family Controller
pn_str: WX1860A4-B
sn_str: 123456789123456789
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 07:00.0 ] flash .... complete 100%
New: MAC Address0 is: 020202040506
MAC Address1 is: 020202040507
MAC Address2 is: 020202040508
MAC Address3 is: 020202040509
SN is: 123456789123456789

[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 2 cards are upgraded!!
```

注意: -A 后不用加具体数字

- A 命令升级固件时，当其中一张网卡需要修改 mac 时（为默认 mac），导致后续网卡都需要修改 mac，此问题在 3.6.11 及以前版本出现

```
Checking sub_id .....
The image's sub_id : 0000
The card's sub_id : 0000
It is a right image
Checking dev_id .....
The image's dev_id : 1001
The card's dev_id : 1001
flash write-protect register val : 0
Start to download No.0 adaptor card [ 05:00.0 ]:
Old: MAC Address0 is: 020203040506
MAC Address1 is: 020203040507
SN is: ffffffffffffffff
Please type in New MAC Address: 020303030505
Please type in SN: 123456789012345678
vpd_sn_change_t
id_str: Wang Xun 10GbE Family Controller
pn_str: SP1000A
sn_str: 123456789012345678
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to download image to adaptor ..... complete 99%
lan0 - 0x18036 : 1804 - 0x18037 : 0050
lan0 : main: 24 - pre: 4 - post: 16
lan1 - 0x18036 : 1804 - 0x18037 : 0050
lan1 : main: 24 - pre: 4 - post: 16
New: MAC Address0 is: 0x020303030505
MAC Address1 is: 0x020303030506
SN is: 123456789012345678
Download Complete 100Checking sub_id .....
The image's sub_id : 0000
The card's sub_id : 0000
It is a right image
Checking dev_id .....
The image's dev_id : 1001
The card's dev_id : 1001
flash write-protect register val : 0
Start to download No.1 adaptor card [ 06:00.0 ]:
Old: MAC Address0 is: 020303030303
MAC Address1 is: 020303030304
SN is: 123456789012345678
Please type in New MAC Address:
```

网卡1修改

导致网卡2也要修改

3.6.12 版本解决

```
MAC Address2 is: 020303030303
MAC Address3 is: 020203040509
SN is: 012345678912345678
Please type in New MAC Address: 020303030303
Please type in SN: 012345678987654321
vpd_sn_change_t
id_str: WX GbE Family Controller
pn_str: WX1860A4-B
sn_str: 012345678987654321
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 0001:27:00.0 ] flash .... complete 99%
New: MAC Address0 is: 020303030303
MAC Address1 is: 020303030304
MAC Address2 is: 020303030305
MAC Address3 is: 020303030306
SN is: 012345678987654321
Download Complete 100Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The image's sub_id : 0401
The card's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
flash write-protect register val : 0
Start to download No.1 adaptor card [ 0001:29:00.0 ]:
Old: MAC Address0 is: 020404050606
MAC Address1 is: 020404050607
MAC Address2 is: 020404050608
MAC Address3 is: 020404050609
SN is: 012345678912345678
vpd_sn_change_t
id_str: WX GbE Family Controller
pn_str: WX1860A4-B
sn_str: 012345678912345678
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 0001:29:00.0 ] flash .... complete 99%
New: MAC Address0 is: 020404050606
MAC Address1 is: 020404050607
```

网卡1修改后

网卡2不会修改mac, 直接烧录

2.2.4 【-K】: 自动选择模式

该参数在烧录时自动选择模式，不用再手动选择网卡类型，1,2,3,4 分别对应烧录时选择的千兆 1 口，千兆 2 口，千兆 4 口，万兆。选择错误会有报错退出。

```
root@ ~ -PC:~/zzx# ./wxtool -F SF400T_B_10018.img -K 3
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10 Gigabit nics
Please wait 1 Rocket cards flash upgrading ....

SIG_FILE:SF400T_B_10018.sig

FILE SHA256 sum:
cbaa19e474b30796ea28b39c2512b5d738417fd01ce36e5fc099dee937e034ad SF400T_B_10018.sig
120b065b56bfc11fcd7bebc5f51dc204e84f20fc289d8ec63ed7e0f9f5d6e2de SF400T_B_10018.img

Verified OK
Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The card's sub_id : 0401
The image's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.0 adaptor card [ 03:00.0 ]:
Old: MAC Address0 is: 020304050607
    MAC Address1 is: 020304050608
    MAC Address2 is: 020304050609
    MAC Address3 is: 02030405060a
    SN is: 00000000000000000000

vpd_sn_change_t
id_str:      GbE Family Controller
pn_str: WX1860A4-B
sn_str: 00000000000000000000
Start to upgrade PCI [ 03:00.0 ] flash .... complete 100%
New: MAC Address0 is: 020304050607
    MAC Address1 is: 020304050608
    MAC Address2 is: 020304050609
    MAC Address3 is: 02030405060a
    SN is: 00000000000000000000

[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!
```

2.2.5 【-U】: 烧录时强制写入 new MAC 地址和 SN 号

命令: `./wxtool -F xxx.img -U`

对固件进行升降级，烧录时必须输入新的 MAC 地址和 SN 号（此时输入的 SN 号是 18 位 16 进制字符组成的字符序列）。


```

root@-PC:~/zzx# ./wxtool -F SF400T_B_10018.img -U
Please Select which kind of NIC to upgrade:
  1. 1000M_nics_1ports
  2. 1000M_nics_2ports
  3. 1000M_nics_4ports
  4. 10_Gigabit_nics
please input choose number: 3
Please wait 1 Rocket cards flash upgrading ....

SIG_FILE:SF400T_B_10018.sig

FILE SHA256 sum:
cbaa19e474b30796ea28b39c2512b5d738417fd01ce36e5fc099dee937e034ad SF400T_B_10018.sig
120b065b56bfc11fcd7bebc5f51dc204e84f20fc289d8ec63ed7e0f9f5d6e2de SF400T_B_10018.img

Verified OK
Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The card's sub_id : 0401
The image's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.0 adaptor card [ 03:00.0 ]:
Old: MAC Address0 is: 020304050607
    MAC Address1 is: 020304050608
    MAC Address2 is: 020304050609
    MAC Address3 is: 02030405060a
    SN is: 000000000000000000
Please type in New MAC Address: 020204050609
Please type in SN: 123456789987654320

vpd_sn_change_t
id_str: GbE Family Controller
pn_str: WX1860A4-B
sn_str: 123456789987654320
Start to upgrade PCI [ 03:00.0 ] flash .... complete 100%
New: MAC Address0 is: 020204050609
    MAC Address1 is: 02020405060a
    MAC Address2 is: 02020405060b
    MAC Address3 is: 02020405060c
    SN is: 123456789987654320

[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!

```

old MAC和SN

输入的new MAC和new SN

new MAC和SN

烧录时输入的新的 MAC 地址，烧录成功后成为网口 0 的 MAC 地址，网口 1 的 MAC 地址加一，网口 2 的 MAC 地址加 2，以此类推。

烧录成功后重启使用 `lspci -s xx:xx.x -vvv` 查看 vpd，[SN]为烧录时写入的 SN 号，[RV] checksum good:

```

Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: Taixinyun GbE Family Controller
Read-only fields:
[PN] Part number: WX1860A4-B
[SN] Serial number: 123456789987654320
[RV] Reserved: checksum good, 4 byte(s) reserved
End
Capabilities: [100 v2] Advanced Error Reporting
UESta: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq-
UEMsk: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq-
UESvrt: DLP+ SDES+ TLP- FCP+ CmpltTO- CmpltAbrt- UnxCmplt- RxOF+ MalfTLP+ ECRC- UnsupReq-
CESta: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
CEMsk: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
AERCap: First Error Pointer: 00, GenCap+ CGenEn- ChkCap+ ChkEn-
Capabilities: [148 v1] Alternative Routing-ID Interpretation (ARI)

```

烧录时写入的 SN 多少，[SN]行显示的 SN 号即为多少（包括全 F 的 SN 号）。

2.2.6 【-U -S】：烧录时强制写入 24 位 ASCII 码字符和 SN 号

命令：./wxttool -F xxx.img -U -S

对固件进行升降级，烧录时必须输入新的 MAC 地址和 SN 号（此时输入的 SN 号为任意字符（包括数字、大小写字母、特殊符号等），且长度小于等于 24 位）。

```

Start to download No.0 adaptor card [ 03:00.0 ]:
Old: MAC Address0 is: 300203040506
MAC Address1 is: 020304050608
MAC Address2 is: 020304050609
MAC Address3 is: 02030405060a
SN is dowdfg
Please type in New MAC Address: 020304050607
Please type in SN: WDFHV,
vpd_sn_change_t
id_str: Taixinyun GbE Family Controller
pn_str: PN-10003-B
sn_str: WDFHV,

```

烧录成功后重启使用 `lspci -s xx:xx.x -vvv` 查看 vpd，[SN]为烧录时写入的 SN 号，[RV] checksum good:

```

Transmit Margin: Normal Operating Range, EnterModifiedCompliance- ComplianceSOS-
Compliance De-emphasis: -6dB
LnkSta2: Current De-emphasis Level: -6dB, EqualizationComplete-, EqualizationPhase1-
EqualizationPhase2-, EqualizationPhase3-, LinkEqualizationRequest-
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: Taixinyun GbE Family Controller
Read-only fields:
[PN] Part number: WX1860A4-B
[SN] Serial number: ffffffffffffffff
[RV] Reserved: checksum good, 4 byte(s) reserved
End
Capabilities: [100 v2] Advanced Error Reporting
UESta: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UEMsk: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UESvrt: DLP+ SDES+ TLP- FCP+ CmpltTO- CmpltAbrt- UnxCmplt- RxOF+ MalfTLP+ ECRC- UnsupReq- ACSViol-
CESta: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
CEMsk: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
AERCap: First Error Pointer: 00, GenCap+ CGenEn- ChkCap+ ChkEn-
Capabilities: [148 v1] Alternative Routing-ID Interpretation (ARI)

```

烧录时写入的 SN 多少，[SN]行显示的 SN 号即为多少（包括全 F 的 SN 号）。

注意：当烧录的千兆固件版本 10018 及以下时，可能出现以下情况：

当固件名称过长（如：SF400T_B_10018.arm64.wol.ncsi.img）时，烧录时若写入的 SN 序列较长，烧录过程会打印：“INFO: The size of the vpd exceeds the limit”：

```
Please type in New MAC Address: 020202030405
Please type in SN: wdhdafdosfhlf,kjg

vpd_sn_change_t
id_str: GbE Family Controller [arm] [wol] [ncsi]
pn_str: WX1860A4-B
sn_str: wdhdafdosfhlf,kjg
INFO: The size of the vpd exceeds the limit
Erase sector1 command, return status = 0
Start to erase flash ..... complete 100%
Start to upgrade PCI [ 07:00.0 ] flash .... complete 100%
New: MAC Address0 is: 020202030405
    MAC Address1 is: 020202030406
    MAC Address2 is: 020202030407
    MAC Address3 is: 020202030408
New SN is wdhdafdosfhlf,kjg

[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!
```

重启后用 ./wxtool -s xx:xx.x -S -i 命令查看仍然可以看到烧录时写入的 SN 号；

使用 lspci -s xx:xx.x -vvn 命令查看 vpd 将不会打印[SN]行：

```
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
ilities: [d0] Vital Product Data
Product Name: GbE Family Controller [arm] [wol] [ncsi]
Read-only fields:
[PN] Part number: WX1860A4-B
[RV] Reserved: checksum good, 4 byte(s) reserved
End
ilities: [100 v2] Advanced Error Reporting
UESSta: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UEMsk: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UESvrt: DLP+ SDES+ TLP- FCP+ CmpltTO- CmpltAbrt- UnxCmplt- RxOF+ MalfTLP+ ECRC- UnsupReq- ACSViol-
CESta: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
```

2.2.7 【-C】：烧录时使用 img 文件中的 MAC 地址和 SN 号

命令： ./wxtool -F xxx.img -C

使用 -C 命令，在烧写固件的时候，会使用 img 里面的 MAC 地址与 SN 号：

```

root@bgw-PC:~/zzx# ./wxtool -F SF400T_B_10018.img -C
Please Select which kind of NIC to upgrade:
  1. 1000M_nics_1ports
  2. 1000M_nics_2ports
  3. 1000M_nics_4ports
  4. 10_Gigabit_nics
please input choose number: 3
Please wait 1 Rocket cards flash upgrading ....

SIG_FILE:SF400T_B_10018.sig

FILE SHA256 sum:
cbaal9e474b30796ea28b39c2512b5d738417fd01ce36e5fc099dee937e034ad SF400T_B_10018.sig
120b065b56bfc11fcd7bebc5f51dc204e84f20fc289d8ec63ed7e0f9f5d6e2de SF400T_B_10018.img

Verified OK
Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The card's sub_id : 0401
The image's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.0 adaptor card [ 03:00.0 ]:
Old: MAC Address0 is: 020204050609
     MAC Address1 is: 02020405060a
     MAC Address2 is: 02020405060b
     MAC Address3 is: 02020405060c
     SN is: 123456789987654320

vpd_sn_change_t
id_str: GbE Family Controller
pn_str: WX1860A4-B
sn_str: 123456789987654320
Start to upgrade PCI [ 03:00.0 ] flash .... complete 100%
New: MAC Address0 is: 020203040506
     MAC Address1 is: 020203040507
     MAC Address2 is: 020203040508
     MAC Address3 is: 020203040509
     SN is: ffffffffffffffff

[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!

```

img文件中的内容

同时在 3.6.12 版本开始，增加了二次确认功能

```

root@bgw-PC:/home/cgq/em/em_upgrade_image# ./wxtool -F /home/cgq/SF400T_B_1001a.img -I -C
Please Select which kind of NIC to upgrade:
  1. 1000M_nics_1ports
  2. 1000M_nics_2ports
  3. 1000M_nics_4ports
  4. 10_Gigabit_nics
please input choose number: 3
option -C is set
This will lose the original mac and sn?[y/n]:

```

烧录成功后重启使用 `lspci -s xx:xx.x -vvn` 查看[SN]为空，[RV] checksum good:

千兆固件版本 10018 及以下，万兆固件版本 2000e 及以下，不打印[SN]行：

```

Compliance De-emphasis: -6dB
LnkSta2: Current De-emphasis Level: -6dB, EqualizationComplete-, EqualizationPhase1-
EqualizationPhase2-, EqualizationPhase3-, LinkEqualizationRequest-
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: GbE Family Controller
Read-only fields:
[PN] Part number: WX1860A4-B
[RV] Reserved: checksum good, 4 byte(s) reserved
End
Capabilities: [100 v2] Advanced Error Reporting
UESSta: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UEMsk: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UESvrt: DLP+ SDES+ TLP- FCP+ CmpltTO- CmpltAbrt- UnxCmplt- RxOF+ MalfTLP+ ECRC- UnsupReq- ACSViol-
CESSta: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
CEMsk: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
AERCap: First Error Pointer: 00, GenCap+ CGenEn- ChkCap+ ChkEn-
Capabilities: [148 v1] Alternative Routing-ID Interpretation (ARI)

```

千兆固件版本 10019 及以上，万兆固件版本 2000f 及以上，打印[SN]行，但其后为空：

```

Read-only fields:
[PN] Part number: WX1860A4-B
[SN] Serial number:
[RV] Reserved: checksum good, 4 byte(s) reserved
[100 v2] Advanced Error Reporting

```

注意：-U 参数和 -C 参数不能同时使用。

2.2.8 【-I】：烧录过程中忽略签名文件

命令：./wxtool -F xxx.img -I

使用 -I 命令，在烧写固件过程中会跳过 sig 文件且不打印 SHA256 值：

```

root@PC:~/zzx# ./wxtool -F SF400T_B_10018.img -I
Please Select which kind of NIC to upgrade:
  1. 1000M_nics_1ports
  2. 1000M_nics_2ports
  3. 1000M_nics_4ports
  4. 10 Gigabit_nics
please input choose number: 3
Please wait 1 Rocket cards flash upgrading ....

Checking chip/image version .....
The image chip_v is B
The nic chip_v is B
Checking sub_id .....
The card's sub_id : 0401
The image's sub_id : 0401
It is a right image
Checking dev_id .....
The image's dev_id : 0103
The card's dev_id : 0103
Start to download No.0 adaptor card [ 03:00.0 ]:
Old: MAC Address0 is: 020304050608
MAC Address1 is: 020203040507
MAC Address2 is: 020203040508
MAC Address3 is: 020203040509
SN is: ffffffffffffffff

vpd_sn_change_t
id_str: GbE Family Controller
pn_str: WX1860A4-B
sn_str: ffffffffffffffff

```

2.2.9 【-D】: 烧录固件时读取 flash 中的 efuse 值

命令: `./wxtool -F xxx.img -D`

Flash 在第一次通电的时候, 会从芯片里面读取 efuse 值并保存, 当后续更换了芯片或者更换 flash 时, flash 与芯片里面的 efuse 值会不同, 会影响网卡的正常使用, 如速率切换失败, 必须再重新烧一次 img, 添加 -D 参数, 让 flash 重新读取 efuse 值。

千兆网卡固件刷新的时候, 若跨 (10006) 版本进行固件刷新, 例如: 从 10005 升级到 10016, 或者从 10006 降级到 10004, 均需要加上 -D 参数。**【其他情况不要使用此参数】**。

2.2.10 【-T】: 烧录固件时不检查 Device id, Subsys id

命令: `./wxtool -F xxx.img -T`

烧写 device id、subsys id 与网卡不一致的固件, 尽量不要随意混烧 (如: 带.ncsi 固件和不带.ncsi 固件不能混烧)。

注: B 版芯片第一次烧写时, 需添加-T 参数。

2.2.11 【-R】: 烧录时忽略固件版本

命令: `./wxtool -F xxx.img -R`

烧写 chip version 与网卡不一致的固件, 如: A 芯片烧写 B 固件, B 芯片烧写 A 固件。**切记不要混烧, 后果自负!!! 一般不使用该参数。**

2.2.12 【-E】: 烧录时写入 TX_EQ

-E 后的三个值分别为 main, pre, post, 满足公式 $\text{main} + \text{pre}/4 + \text{post}/4$

≤ 40 , 修改后需要卸载加载驱动生效。烧录时加上 -E 会保留上次的 wxtool 写入的值, 不加 -E 参数就会变为默认值。

默认值分别为:

Sfi: 24 4 16

Kr: 27 8 44

Kx/kx4: 40 0 0

命令：先使用-s -E 参数修改，再使用./wxtool -F xxx.img -E 烧录，否则使用的是默认值：

```
root@ ~ -PC:~/zzx# ./wxtool -s 03:00.1 -E 30 30 30
0x18036 : lele - 0x18037 : 005e
root@ ~ -PC:~/zzx# ./wxtool -s 03:00.0 -E 30 30 30
0x18036 : lele - 0x18037 : 005e
root@ ~ -PC:~/zzx# ./wxtool -F RP2000P2SFP_2000e.img -E
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10 Gigabit_nics
please input choose number: 4
SIG_FILE:RP2000P2SFP_2000e.sig

FILE SHA256 sum:
8660e1b33ff1dbdd8925ff5b0d040f980ecbaddea0cd512fab5b428ea03969e4 RP2000P2SFP_2000e.sig
89dfac3de2c7641f0de753bf1b49caaa3da8c0305d6c85d09381b093093bdfde RP2000P2SFP_2000e.img

Verified OK

Raptor PCI Utils tool is started.
We will download 1 in 1 cards depends on the configuration.

Checking sub_id .....
The card's sub_id : 2000
The image's sub_id : 2000
It is a right image
Checking dev_id .....
The image's dev_id : 2001
The card's dev_id : 2001
Start to download No.0 adaptor card [ 03:00.0 ]:
Old: MAC Address0 is: 020304050607
    MAC Address1 is: 020304050608
    SN is: 00000000000000000000

vpd_sn_change t
id_str: 10GbE Family Controller
pn_str: WX1820AL
sn_str: 00000000000000000000
Start to download image to adaptor: complete 100%
lan0 - 0x18036 : lele - 0x18037 : 005e
lan0 : main: 30 - pre: 30 - post: 30
lan1 - 0x18036 : lele - 0x18037 : 005e
lan1 : main: 30 - pre: 30 - post: 30
New: MAC Address0 is: 0x020304050607
    MAC Address1 is: 0x020304050608
    SN is: 00000000000000000000
```

注：需要先解锁，此参数必须在万兆 2000b 及以上固件版本使用，在其他固件版本上使用会影响网卡功能。

2.2.13 中断烧录相关功能：

注意：该功能需要 wxtool 工具在 3.6.10 及以上版本，千兆固件版本 10019 及以上，万兆固件版本 2000f 及以上

在不同的烧录过程中，中断烧录，会存在不同情况，如果此时 MAC 地址与 SN 号变为全 F 时，

```
show nic info
adaptor card [ 04:00.0 ] info:
MAC Address0 is: 0xffffffffffff
Store SN: ffffffffffffffffff
SN is: ffffffffffffffffff

The chip version is A
code=638.000, temperature is 65.50
```


再次重新烧录固件，此时烧录时需要写入新的 MAC 地址和 SN 号：

```
mac_valid: 00
Start to download No.0 adaptor card [ 04:00.0 ]:
Old: MAC Address0 is: ffffffff
MAC Address1 is: ffffffff
MAC Address2 is: ffffffff
MAC Address3 is: ffffffff
SN is: ffffffff
Please type in New MAC Address: 020202030405
MAC Address0 is: 0x020202030405
MAC Address1 is: 0x020202030406
MAC Address2 is: 0x020202030407
MAC Address3 is: 0x020202030408
Please type in SN: 123456789123456789
```

- 在已烧录成功后再中断烧录，不进行重启即直接烧录可以看到 ERROR 报错，需要重启机器才能再次烧录：

```
More than one of our adaptor cards were found, but without of '-A' option specified.

Please select a PCI device before upgrading.
[ 0 ] 04:00.0 [ 1 ] 07:00.0 :
Please select slot index: 0

Select [ 2 ] flash for upgrading.
dev_num : 2 - active_dev_num : 1
=====check_image_version=====
=====check_image_version=====
The Following networking adaptor cards has been upgraded:
[ No.0 ] 04:00.0
Please reboot your machine and retry

Only 0 cards are upgraded for 0 cards!!
```

报错信息

2.2.14. upgrade 命令自动烧录匹配固件

前提条件：在 wxtool 同级目录下，创建一个名为 wx_img 的目录（创建命令：mkdir wx_img），在 wx_img 中存放各个固件

```
root@bgw-PC:/home/cgq# mkdir wx_img
root@bgw-PC:/home/cgq# cp -a wxii/* wx_img/
root@bgw-PC:/home/cgq# ls wx_img/
SF100F-LY-YT_1001a.img  SF100T_B_1001a.img  SF400HT_10019.img  SF400T_1001a.img  SF400T_B_1001a.img
SF100F-YT_1001a.wol.img  SF200T_B_1001a.img  SF400HT_1001a.img  SF400T-3033_B_1001a.arm64.img  SF400T_B_f001001a.img
```

支持范围：网迅 SF200T 系列，SF200HT 系列，SF400T 系列，SF400HT 系列，切勿烧录非标准固件及定制固件（网卡识别不到）

命令：./wxtool upgrade

该命令会对机器上所有网迅千兆卡的固件分析四元组（ vendor ID、device ID、Sub vendor ID、Subsystem ID），pxe 类型（arm64,arm64/x86,no_pxe,三合一），A/B 版本，随后会从 wx_img 目录中选取与之匹配的固件进行多张卡烧录，烧录结果可在当前目录中生成的 log 文件查看

a) wx_img 目录下均有与网卡匹配的固件，烧录成功结果如下

```
/home/cgq/wx_img/  17:06:00 1521
名称      ^ Date modified 17:06:00 1522
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[ 17:06:00 2209
[ 17:06:00 2210
[ 17:06:00 2211
[ 17:06:00 2212
[ 17:06:00 2213
[ 17:06:00 2214
[ 17:06:00 2215
[ 17:06:00
```

b) 重复烧录, wx_img 目录中没有对应 img, 都会报错, 报错信息如下

```
/home/cgq/wx_img/
名称
SF100F-LY-YT_1001a.img 2023/06/16
SF100F-YT_1001a.wol.img 2023/06/16
SF400HT_10019.img 2023/03/06
SF400HT_1001a.img 2023/06/16
SF400T-3033_B_1001a.arm64.img 2023/07/10
SF400T_1001a.img 2023/08/09
SF400T_B_1001a.img 2023/07/10
SF400T_B_1001a.no_pxe.img 2023/07/10
SF400T_B_f001001a.img 2023/07/10

Download Complete 100%
The Following networking adaptor cards has been upgraded:
[ No.1 ] 0001:28:00:0
Please reboot your machine and retry
no matched img for [ No.2 ] 0001:29:00:0 found in dir wx_img

[ ^_^ ] [ QAQ ] Emnic PCI Utils upgrading is succeeded! 1 cards are upgraded!!

[NO] [PCIe BDF] [Device Type] [Chip Version] [Upgrade Result] [Matched Img]
0 0001:27:00:0 SF400T A success SF400T_1001a.img
1 0001:28:00:0 SF400T A failed SF400T_1001a.img
2 0001:29:00:0 SF400T B failed not found
```

c) wx_img 目录下放有多个版本的匹配固件, 该命令会选择最高版本烧录

该命令注意:

当前版本只支持网迅千兆卡, 尚不支持万兆卡 (后续版本会开发), 不会对万兆卡进行升级操作。

当前版本不会检验固件的 sig 文件是否存在 (后续版本会检验), wx_img 目录下是否存在固件的 sig 文件都不影响烧录。

当前版本只支持标准固件, 不支持非标准固件、定制固件、非标准版本号固件 (比如 f121001a)。

2.2.15 烧录中断, 重新烧录无需输入 mac

烧录固件过程中强制中断, 重新烧录无需再输入 mac, 该版本会将实际 mac 备份到某区域使其不丢失

1. 修改 mac

```
847 [root@localhost cgq]# ./wxtool -s 09:00:0 -m 020404040404
848 flash write-protect register val : 0
849 read==bus=9, dev=0, func=0
850
851 New:MAC Address0 is: 0x020404040404
852
853 Newbackup:MAC Address0 is: 0x020404040404
```

2.烧录中断重新烧录无需输入 mac

```
854 [root@localhost cgq]# ./wxtool -f RP1000P2SFP_20010.img -i
855 Please Select which kind of NIC to upgrade:
856 1. 1000M_nics_1ports
857 2. 1000M_nics_2ports
858 3. 1000M_nics_4ports
859 4. 10_Gigabit_nics
860 please input choose number: 4
861
862 Raptor PCI Utils tool is started.
863 We will download 1 in 1 cards depends on the configuration.
864
865 Checking sub_id .....
866 The image's sub_id : 0000
867 The card's sub_id : 0000
868 It is a right image
869 Checking dev_id .....
870 The image's dev_id : 1001
871 The card's dev_id : 1001
872 flash write-protect register val : 0
873 Start to download No.0 adaptor card [ 0000:09:00.0 ]:
874 Old: MAC Address0 is: 020404040404
875 MAC Address1 is: 02030405080a
876 SN is: ffffffffffffffff
877
878 vpd_sn_change_t
879 id_str: Wang Xun 10GbE Family Controller
880 pn_str: SP1000A
881 sn_str: ffffffffffffffff
882 Erase sector1 command, return status = 0
883 Retore mac addr in backup area
884 Retore mac addr in backup area
885 Start to erase flash ..... complete 100%
886 Start to download image to adaptor ..... complete 13^C

887 [root@localhost cgq]# ./wxtool -f RP1000P2SFP_20010.img -i
888 Please Select which Kind of NIC to upgrade:
889 1. 1000M_nics_1ports
890 2. 1000M_nics_2ports
891 3. 1000M_nics_4ports
892 4. 10_Gigabit_nics
893 please input choose number: 4
894
895 Raptor PCI Utils tool is started.
896 We will download 1 in 1 cards depends on the configuration.
897
898 Checking sub_id .....
899 The image's sub_id : 0000
900 The card's sub_id : 0000
901 It is a right image
902 Checking dev_id .....
903 The image's dev_id : 1001
904 The card's dev_id : 1001
905 flash write-protect register val : 0
906 Get backup mac addr in backup area.
907 Start to download No.0 adaptor card [ 0000:09:00.0 ]:
908 Old: MAC Address0 is: 020404040404
909 MAC Address1 is: 02030405080a
910 SN is: ffffffffffffffff
911
912 vpd_sn_change_t
913 id_str: Wang Xun 10GbE Family Controller
914 pn_str: SP1000A
915 sn_str: ffffffffffffffff
916 Start to erase flash ..... complete 100%
917 Start to download image to adaptor ..... complete 99%
918 lan0 - 0x18036 : 1804 - 0x18037 : 0050
919 lan0 - main: 24 - pre: 4 - post: 16
920 lan1 - 0x18036 : 1804 - 0x18037 : 0050
921 lan1 - main: 24 - pre: 4 - post: 16
922 New: MAC Address0 is: 0x020404040404
923 MAC Address1 is: 0x02030405080a
924 SN is: ffffffffffffffff
925
926 Download Complete 100
927 [ ^_^ ] Raptor PCI Utils upgrading is succeeded! 1 cards are upgraded!!
928
929 [root@localhost cgq]#

933 [root@localhost ~]# ifconfig enp9s0f0
934 enp9s0f0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
935 ether 02:04:04:04:04:04 txqueuelen 1000 (Ethernet)
936 RX packets 0 bytes 0 (0.0 B)
937 RX errors 0 dropped 0 overruns 0 frame 0
938 TX packets 0 bytes 0 (0.0 B)
939 TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
940
941 [root@localhost ~]#
```

中断烧录

重新烧录无需修改mac地址, mac地址重启生效

2.3 查看相关功能

2.3.1 【--help】: 查看帮助信息

命令: ./wxtool -help

```
root@~:~/zxx# ./wxtool --help

Usage: ./wxtool -F [<image>] [<options><arguments>]
Used to download image via online PCIe, for more detail operation and error information,
please refer to 'Raptor PCI Utils User Manual.doc'.
Please contact your sales or technology support to check suitable FLASH model and document support.

Please use '--help' option to get detail information of tool.
Please use '--version' option to check the version number of tool.

Support options:
-F      To select an Image File, default is using image/prd_flash_gloden.img
-M [SP] To select a Flash manufacturer, [0] Winbond, [1] Spanish, [2] SST. Default is SST.
-A      To upgrade image of all of our devices. Or, program will give user a selection when multiple devices were found.
-U      Force to update MAC Address and Serial Number.
-C      1.Not to update MAC Address and Serial Number for input;2.Use mac and sn store in image
-K      Auto to choose mode.
-D [EM] To erase efuse.
-T      To use test mode.
-E [SP] To store TXEQ in flash (1.support after 0x2000b version).
        if you want to set different vlaue for two ports ,please use wxtool -s slot -E x x x
-S      SN can use any characters no more than 24.
-I      Ignore to check SSL sign.

Usage: ./wxtool -s xx:xx.x [<options>]
Please use '--help' option to get detail information of tool.
Please use '--version' option to check the version number of tool.

Support options:
-s      To select an pci slot which can use lspci to see
        ./wxtool -s 02:00.0
```

2.3.2 【--version】: 查看工具版本信息

命令: ./wxtool -version

```
root@~:~/zxx# ./wxtool --version
wxtool version: 3.6.7
```

2.3.3 【-s -i (-S)】: 查看网卡信息

命令 1: ./wxtool -s 03:00.0 -i 查看对应网卡的信息;

执行结果 1: 显示对应网口的 MAC、SN 号【SN 为 18 位 16 进制数】, 0 口显示当前芯片温度, 千兆会显示芯片版本 A 或 B;

```
root@~:~/zxx# ./wxtool -s 03:00.0 -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x020203040506
SN is: ffffffffffffffffffff

The chip version is B
code=546.000, temperature is 42.50
```

命令 2: ./wxtool -s 03:00.0 -S -i

执行结果 2: 显示对应网口的 MAC、SN 号【SN 为小于等于 24 位任意字符】, 0 口显示当前芯片温度, 千兆会显示芯片版本 A 或 B;

```

root@ubuntu-PC:~/zzx# ./wxtool -s 03:00.0 -S -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x020203040506
SN is wdfg

The chip version is B
code=595.000, temperature is 54.75

```

注意:

- 若烧录时填入的 SN 号为小于等于 24 位 ASCII 码字符组成的字符序列 (即烧录时加上参数-S), 此时不加-S 参数查看网卡信息时显示的 SN 号为全 0:

```

root@ubuntu-PC:~/zzx# ./wxtool -s 03:00.0 -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x020203040506
SN is: 00000000000000000000

The chip version is B
code=0.000, temperature is -94.00

```

- 若烧录时填入的 SN 号为 18 位十六进制字符组成的字符序列 (即烧录时不加参数-S), 此时加上-S 参数查看网卡信息时显示的 SN 号为乱码:

```

root@ubuntu-PC:~/zzx# ./wxtool -s 03: -S -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x020203040506
SN is: yyyyyyyyyyyyyyyyyyyy!

The chip version is B
code=594.000, temperature is 54.50

```

- 鉴于以上两种情况, 烧录时加上了-S 参数填入 24 位 ASCII 码字符组成的 SN 号在查看时也应该用-S 参数查看; 同样地, 烧录时未加上-S 参数查看时也不要加-S 参数查看。

- 若-s 参数后只接入<BUS>:或者<BUS>:<DEVICE>, 仍可以正常打印显示网卡信息, 即程序只关注“<BUS>:”, 其后会自动补 0 (下述用例中若使用了-s 参数也是如此), 且打印显示的 MAC 地址为网口 0 的 MAC 地址:

```

root@ubuntu-PC:~/zzx# ./wxtool -s 03: -S -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x020203040506
SN is wdfg

The chip version is B
code=597.000, temperature is 55.25

```

2.3.4 【show】: 参数相关

2.3.4.1 -help: 查看参数 show 的具体用法

命令: `./wxtool show -help`

```
root@ -PC:~/zzx# ./wxtool show --help
Usage: wxtool show [<switches>]

Basic display modes:
-mm      Produce machine-readable output (single -m for an obsolete format)
-t       Show bus tree

Display options:
-v       Be verbose (-vv for very verbose)
-k       Show kernel drivers handling each device
-x       Show hex-dump of the standard part of the config space
-xxx     Show hex-dump of the whole config space (dangerous; root only)
-xxxx    Show hex-dump of the 4096-byte extended config space (root only)
-b       Bus-centric view (addresses and IRQ's as seen by the bus)
-D       Always show domain numbers

Resolving of device ID's to names:
-n       Show numeric ID's
-nn      Show both textual and numeric ID's (names & numbers)
-q       Query the PCI ID database for unknown ID's via DNS
-qq      As above, but re-query locally cached entries
-Q       Query the PCI ID database for all ID's via DNS

Use for wx nic self test
-i       Check chip status and show some info
-T [0-3](level) self-test level
         level >=1 need driver load

Selection of devices:
-s [[[[<domain>]:]<bus>]:]<slot>][. [<func>]] Show only devices in selected slots
-d [<vendor>]:<device>][:<class>]           Show only devices with specified ID's
```

2.3.4.2 【-i】:查看网卡固件信息

命令: `./wxtool show 【可选: -s slot 号】 -i;`

执行结果有四种情况, 包括以下内容涉及到可选参数有【-s slot 号】时都类似于以下提到的四种情况:

- 当未加上-s 参数查看时 (`./wxtool show -i`) 会显示系统上域名为 0000 的相关网卡的固件信息;
- 当加上-s 参数且 slot 号格式为<BUS>:<DEVICE> (`./wxtool show -s 03:00 -i`) 会显示域名为 0000 的相应网卡的固件信息;
- 当加上-s 参数且 slot 号格式为<BUS>:<DEVICE>.<FUNCTION> (`./wxtool show -s 03:00.0 -i`), 会显示域名为 0000 的相应网卡网口的固件信息;
- 当加上-s 参数且 slot 号格式为<DOMAIN>:<BUS>:<DEVICE>.<FUNCTION>, 会显示指定域名网卡网口的固件信息

```

root@loongson-pc:~# ./wxtool show -s 07:00.0 -i
07:00.0 Class 0200: Device 8088:0103 (rev 01)

chip status: ok
flash status: ok
Cab0 0: f00002a0
Flash 0: 5aa51000
fw version: 00010018
fw init: 00000003
chip_v: B
wol: disable
ncsi: disable
oprom arch: arm64/x86
phy : Internal
image_name: SF400T_B_10018.img

```

2.3.4.3 【-v】: 查看网卡 pcie 信息

命令: ./wxtool show 【可选: -s slot 号】 -v (或者 -vv 显示更详细的信息, -vvv 同理显示更加详细的信息)。

执行结果有四种情况: 未加上 -s 参数、-s <BUS>:<DEVICE>、-s <BUS>:<DEVICE>.<FUNCTION>、-s <DOMAIN>:<BUS>:<DEVICE>.<FUNCTION>。

- -s <BUS>:<DEVICE> (假如查看的是四口千兆网卡的信息, 则会打印所有四口的信息):

```

root@loongson-pc:~# ./wxtool show -s 07:00.v
07:00.0 Class 0200: Device 8088:0103 (rev 01)
Subsystem: Device 8088:0401
Flags: bus master, fast devsel, latency 0, IRQ 42, NUMA node 0
Memory at e005280000 (64-bit, non-prefetchable) [size=128K]
Memory at e0052c80000 (64-bit, non-prefetchable) [size=16K]
Expansion ROM at 52600000 [disabled] [size=512K]
Capabilities: [40] Power Management version 3
Capabilities: [50] MSI: Enable+ Count=1/1 Maskable+ 64bit+
Capabilities: [70] Express Endpoint, MSI 00
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Capabilities: [d0] Vital Product Data
Capabilities: [100] Advanced Error Reporting
Capabilities: [148] Alternative Routing-ID Interpretation (ARI)
Capabilities: [158] Single Root I/O Virtualization (SR-IOV)
Capabilities: [198] Transaction Processing Hints
Capabilities: [224] Vendor Specific Information: ID=0001 Rev=1 Len=038 <?>
Kernel driver in use: ngbe

07:00.1 Class 0200: Device 8088:0103 (rev 01)
Subsystem: Device 8088:0401
Flags: bus master, fast devsel, latency 0, IRQ 42, NUMA node 0
Memory at e0052820000 (64-bit, non-prefetchable) [size=128K]
Memory at e0052c84000 (64-bit, non-prefetchable) [size=16K]
Expansion ROM at 52680000 [disabled] [size=512K]
Capabilities: [40] Power Management version 3
Capabilities: [50] MSI: Enable+ Count=1/1 Maskable+ 64bit+
Capabilities: [70] Express Endpoint, MSI 00
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Capabilities: [d0] Vital Product Data
Capabilities: [100] Advanced Error Reporting
Capabilities: [148] Alternative Routing-ID Interpretation (ARI)
Capabilities: [158] Single Root I/O Virtualization (SR-IOV)
Capabilities: [198] Transaction Processing Hints
Capabilities: [224] Vendor Specific Information: ID=0001 Rev=1 Len=038 <?>
Kernel driver in use: ngbe

07:00.2 Class 0200: Device 8088:0103 (rev 01)
Subsystem: Device 8088:0401
Flags: bus master, fast devsel, latency 0, IRQ 42, NUMA node 0
Memory at e0052840000 (64-bit, non-prefetchable) [size=128K]
Memory at e0052c88000 (64-bit, non-prefetchable) [size=16K]
Expansion ROM at 52700000 [disabled] [size=512K]
Capabilities: [40] Power Management version 3
Capabilities: [50] MSI: Enable+ Count=1/1 Maskable+ 64bit+
Capabilities: [70] Express Endpoint, MSI 00
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Capabilities: [d0] Vital Product Data
Capabilities: [100] Advanced Error Reporting

```

- -s <BUS>:<DEVICE>.<FUNCTION>:


```

root@loongson-pc:~# ./wxtool show -s 07:00.0 -v
07:00.0 Class 0200: Device 8088:0103 (rev 01)
Subsystem: Device 8088:0401
Flags: bus master, fast devsel, latency 0, IRQ 42, NUMA node 0
Memory at e005280000 (64-bit, non-prefetchable) [size=128K]
Memory at e0052c80000 (64-bit, non-prefetchable) [size=16K]
Expansion ROM at 52600000 [disabled] [size=512K]
Capabilities: [40] Power Management version 3
Capabilities: [50] MSI: Enable+ Count=1/1 Maskable+ 64bit+
Capabilities: [70] Express Endpoint, MSI 00
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Capabilities: [d0] Vital Product Data
Capabilities: [100] Advanced Error Reporting
Capabilities: [148] Alternative Routing-ID Interpretation (ARI)
Capabilities: [158] Single Root I/O Virtualization (SR-IOV)
Capabilities: [198] Transaction Processing Hints
Capabilities: [224] Vendor Specific Information: ID=0001 Rev=1 Len=038 <?>
Kernel driver in use: ngbe

```

2.3.4.4 【-n】: 查看网卡 vendor id、device id

命令: ./wxtool show 【可选: -s slot 号】 -n

```

root@loongson-pc:~# ./wxtool show -s 03:00.0 -n
03:00.0 0200: 8088:0103 (rev 01)

```

注: 执行结果和命令同样也是有四种对应的情况, 具体参看 2.3.4.2 和 2.3.4.3 中所述。

2.3.4.5 【-m】: 查看网卡固件信息

命令: ./wxtool show 【可选: -s slot 号】 -m

```

root@loongson-pc:~# ./wxtool show -s 07:00.0 -m
07:00.0 "Class 0200" "Vendor 8088" "Device 0103" -r01 "Unknown vendor 8088" "Device 0401"

```

注: 执行结果和命令同样也是有四种对应的情况, 具体参看 2.3.4.2 和 2.3.4.3 中所述。

2.3.4.6 【-t】: 查看网卡 bus tree

命令: ./wxtool show 【可选: -s slot 号】 -t

```

root@loongson-pc:~# ./wxtool show -s 03:00.0 -t
+-[0000:03]---00.0
\-[0000:00]-

```

注: 执行结果和命令同样也是有四种对应的情况, 具体参看 2.3.4.2 和 2.3.4.3 中所述。

2.3.4.7 【-k】: 查看网卡内核驱动

命令: ./wxtool show 【可选: -s slot 号】 -k

```

root@loongson-pc:~# ./wxtool show -s 07:00.0 -k
07:00.0 Class 0200: Device 8088:0103 (rev 01)
Subsystem: Device 8088:0401
Kernel driver in use: ngbe

```

注: 执行结果和命令同样也是有四种对应的情况, 具体参看 2.3.4.2 和 2.3.4.3 中所述。

2.3.4.8 【-x】: 查看网卡配置空间的标准部分的十六进制转储

命令: ./wxtool show 【可选: -s slot 号】 -x

```

root@loongson-pc:~# ./wxtool show -s 07:00.0 -x
07:00.0 Class 0200: Device 8088:0103 (rev 01)
00: 88 80 03 01 06 04 10 00 01 00 00 02 00 00 80 00
10: 04 00 80 52 00 00 00 00 00 00 00 00 00 00 00 00
20: 04 00 c8 52 00 00 00 00 00 00 00 00 88 80 01 04
30: 00 00 f8 ff 40 00 00 00 00 00 00 00 67 01 00 00

```

注: 执行结果和命令同样也是有四种对应的情况, 具体参看 2.3.4.2 和 2.3.4.3 中所述。

2.3.4.9 【-D】: 查看指定域名编号网卡信息

命令: ./wxtool show 【可选: -s slot 号】 -D

```
root@loongson-pc:~# ./wxtool show -s 07:00.0 -D
0000:07:00.0 Class 0200: Device 8088:0103 (rev 01)
```

wxtool 3.6.11 版本可自动补全域名，默认为 0000

命令：./wxtool show -s xx:xx.x -D 默认显示域名为 0000 的网卡信息

命令：./wxtool show -s 0000:xx:xx.x -D 显示域名为 0000 的网卡信息

命令：./wxtool show -s 0001:xx:xx.x -D 显示域名为 0001 的网卡信息

注：执行结果和命令同样也是有四种对应的情况，具体参看 2.3.4.2 和 2.3.4.3 中所述。

2.3.4.10 【-b】：查看网卡网口信息

命令：./wxtool show 【可选：-s slot 号】 -b

```
root@loongson-pc:~# ./wxtool show -s 07:00.0 -b
07:00.0 Class 0200: Device 8088:0103 (rev 01)
```

注：

- 执行结果和命令同样也是有四种对应的情况，具体参看 2.3.4.2 和 2.3.4.3 中所述。
- -b 参数与 -q、-qq、-Q 参数的执行结果一样，可选其一。

2.3.4.11 【-T】：查看网卡 pcie, flash 等状态

命令：./wxtool show 【可选：-s slot 号】 -T [0-3]

```
root@loongson-pc:~# ./wxtool show -s 03:00.0 -T 0
03:00.0 "0200" "8088" "0103" -r01 "8088" "0401"
MAC : 0x020304050607
1.check pcie      status : [PASS]
2.check chip      status : [PASS]
3.check flash     status : [PASS]
4.check fw        status : [PASS]
5.check mbox      status : [PASS]

Self-test result : [PASS]
```

注：

- 执行结果和命令同样也是有四种对应的情况，具体参看 2.3.4.2 和 2.3.4.3 中所述。
- -T 1 (./wxtool show -s 03:00.0 -T 1) 执行结果相较于上述 level 0 多了检查 phy、sw 状态；
- -T 2 和 -T 3 目前同 -T 1 的结果一样，后续会继续增加检查的状态。

2.3.5 【-W】：查看信号质量测试发送波形

命令：./wxtool -s 02:00.0 -W

```
[root@localhost tools_upgrade]# ./wxtool_x86 -s 01:00.0 -W
wavetool ...
wavetool....
read==bus=1, dev=0, func=0
Please Select Wave Form Test Mode:
 1.1000M Test Mode 1
 2.1000M Test Mode 2
 3.1000M Test Mode 4
 4.100M(MLT-3) Channel A
 5.100M(MLT-3) Channel B
 6.10M for Diff.Voltage/TP-IDL/Jitter
 7.10M for Harmonic(all '1' pattern)
 8.10M for Harmonic(all '0' pattern)
 9.Back
10.Exit
please input choose number:█
```

2.3.6 【check】检查固件版本

命令: ./wxtool check xxx.img

```
[root@xttebukmlioogbj wxtool-all]# ./wxtool_x86 check demo/SF400T_10016.img
image is demo/SF400T_10016.img

fw version:      00010016
img_v:  A
wol:  disable
ncsi:  disable
oprom arch:      arm64/x86
image_name:      SF400T_10016.img
len : 18
SIG_FILE:demo/SF400T_10016.sig
Verified OK
```

2.4 查询修改相关功能

2.4.1 【-c -w/-r】查看加锁解锁状态

命令:

./wxtool -s 84:00.0 -c -w 0x184 0x70000000

./wxtool -s 84:00.0 -c -r 0x188

```
root@-PC:~/zzx# ./wxtool -s 03:00.0 -c -w 0x184 0x70000000
access to cab
root@-PC:~/zzx# ./wxtool -s 03:00.0 -c -r 0x188
access to cab
addr: 00000188 - value: 0000001c

root@-PC:~/zzx# ./wxtool -s 03:00.0 -c -w 0x184 0x70000000
access to cab
root@-PC:~/zzx# ./wxtool -s 03:00.0 -c -r 0x188
access to cab
addr: 00000188 - value: 00000000
```

如上图, value 值若为 0000001c, 则表示此时为加锁状态; value 值若为 00000000, 则表示此时为解锁状态。

注: -l 参数后接入的可以是 <BUS>:<DEVICE>, 也可以是 <BUS>:<DEVICE>.<FUNCTION> (任意一个 FUNCTION 号皆可)。

2.4.2 【-l】: 加锁/解锁

加锁命令: ./wxtool -s 84:00.0 -l 1

```
[root@localhost plm]# ./wxtool -s 84:00.0 -l 1
```

解锁命令: ./wxtool -s 84:00.0 -l 0

```
[root@localhost plm]# ./wxtool -s 84:00.0 -l 0
```

注: -l 参数后接入的可以是 <BUS>:<DEVICE>, 也可以是 <BUS>:<DEVICE>.<FUNCTION> (任意一个 FUNCTION 号皆可)。

2.4.3 【-s -m】: 修改网口 MAC 地址

命令: ./wxtool -s 02:00.0 -m 220203040506

```
root@-PC:~/zzx# ./wxtool -s 03:00.0 -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x220203040506 old MAC
SN is: 00000000000000000000

The chip version is B
code=596.000, temperature is 55.00
root@-PC:~/zzx# ./wxtool -s 03:00.0 -m 300203040506
New:MAC Address0 is: 0x300203040506
root@-PC:~/zzx# ./wxtool -s 03:00.0 -i
show nic info
adaptor card [ 03:00.0 ] info:
MAC Address0 is: 0x300203040506 new MAC
SN is: 00000000000000000000

The chip version is B
code=597.000, temperature is 55.25
```

注意:

- 执行 ./wxtool -s 03:00 (即未指定 FUNCTION 号) 时, 程序默认将修改网口 0 的 MAC 地址为新填入的 MAC 地址;
- 用此命令修改网口 MAC 地址必须先解锁, 修改后必须重启才能生效。

2.4.4 【-s (-N) (-S) -n】: 修改网卡 SN 号

命令: ./wxtool -s 03:00.0 -n 18 位十六进制数字

```
root@-PC:~/zzx# ./wxtool -s 03:00.0 -n 123456789987654321
old SN is: 00000000000000000000
new SN is: 123456789987654321

vpd_sn_change
id_str: Taixinyun GbE Family Controller
pn_str: PN-10003-B
sn_str: 123456789987654321
```

命令: ./wxtool -s 03:00.0 -S -n 小于等于 24 位 ASCII 字符串


```

root@-PC:~/zzx# ./wxtool -s 03:00.0 -S -n dowdfg
old SN is yyyyyyyyyyyyyyyyyyyyyy!
new SN is dowdfg

vpd_sn_change
id_str: Taixinyun GbE Family Controller
pn_str: PN-10003-B
sn_str: dowdfg

```

注意:

- 此命令修改 SN 号必须先解锁, 修改后必须重启才能生效;
- 若修改 SN 号为全 F 的字符串序列, 重启后使用 `lspci -s xx:xx.x -vvn` 命令查看 [SN] 为全 F, [RV] checksum good:

```

Transmit Margin: Normal Operating Range, EnterModifiedCompliance- ComplianceSOS-
Compliance De-emphasis: -6dB
LnkSta2: Current De-emphasis Level: -6dB, EqualizationComplete-, EqualizationPhase1-
EqualizationPhase2-, EqualizationPhase3-, LinkEqualizationRequest-
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: GbE Family Controller
Read-only fields:
[PN] Part number: WX1860A4-B
[SN] Serial number: ffffffffffffffff
[RV] Reserved: checksum good, 4 byte(s) reserved
End
Capabilities: [100 v2] Advanced Error Reporting
UESta: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UEMsk: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UESvrt: DLP+ SDES+ TLP- FCP+ CmpltTO- CmpltAbrt- UnxCmplt- RxOF+ MalfTLP+ ECRC- UnsupReq- ACSViol-
CESta: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
CEMsk: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
AERCap: First Error Pointer: 00, GenCap+ CGenEn- ChkCap+ ChkEn-
Capabilities: [148 v1] Alternative Routing-ID Interpretation (ARI)

```

- 当使用的是非最新版本的固件时可能出现以下情况:

当固件名称过长 (如: SF400T_B_10018.arm64.wol.ncsi.img) 时, 修改时若写入的 SN 序列较长, 会打印: “INFO: The size of the vpd exceeds the limit”:

```

vpd_sn_change
id_str: GbE Family Controller [arm] [wol] [ncsi]
pn_str: WX1860A4-B
sn_str: wdnakafnlasidsw3.
INFO: The size of the vpd exceeds the limit

vpd_sn_change
id_str: GbE Family Controller [arm] [wol] [ncsi]
pn_str: WX1860A4-B
sn_str:

```

重启后用 `./wxtool -s xx:xx.x -S -i` 命令查看仍然可以看到烧录时写入的 SN 号;

使用 `lspci -s xx:xx.x -vvn` 命令查看 vpd, [SN] 行为空:

```

Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: WX GbE Family Controller [arm] [wol] [ncsi]
Read-only fields:
[PN] Part number: WX1860A4-R
[SN] Serial number:
[RV] Reserved: checksum good, 4 byte(s) reserved
End
Capabilities: [100 v2] Advanced Error Reporting
UESta: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UEMsk: DLP- SDES- TLP- FCP- CmpltTO- CmpltAbrt- UnxCmplt- RxOF- MalfTLP- ECRC- UnsupReq- ACSViol-
UESvrt: DLP+ SDES+ TLP- FCP+ CmpltTO- CmpltAbrt- UnxCmplt- RxOF+ MalfTLP+ ECRC- UnsupReq- ACSViol-
CESSta: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
CEMsk: RxErr- BadTLP- BadDLLP- Rollover- Timeout- NonFatalErr+
AERCap: First Error Pointer: 00, GenCap+ CGenEn- ChkCap+ ChkEn-
Capabilities: [148 v1] Alternative Routing-ID Interpretation (ARI)
ARICap: MFVC- ACS-, Next Function: 1
ARICtl: MFVC- ACS-, Function Group: 0

```

对于带辅电的设备，修改 SN 号之后，需要断电重启才能生效，但对于部分定制固件，wxtool3.6.11 及以后版本可以通过添加 -N 参数修改 SN，reboot 后即可生效。

命令: ./wxtool -s 04:00.0 -N -n 18 位十六进制数字

```

[root@localhost em_upgrade_image]# ./wxtool -s 04:00.0 -N -n 001122334455667788
flash write-protect register val : 0
old SN is: ffffffffffffffff
new SN is: 001122334455667788

vpd_sn_change
id_str: WX GbE Family Controller
pn_str: WX1860A4
sn_str: 001122334455667788

```

使用 lspci -s 04:00.0 -vvv 查看

```

EqualizationPhase2-, EqualizationPhase3-, LinkEqualizationRequest-
Capabilities: [b0] MSI-X: Enable+ Count=9 Masked-
Vector table: BAR=4 offset=00000000
PBA: BAR=4 offset=00002000
Capabilities: [d0] Vital Product Data
Product Name: WX GbE Family Controller
Read-only fields:
[PN] Part number: WX1860A4
[SN] Serial number: 001122334455667788
[RV] Reserved: checksum good, 4 byte(s) reserved
End

```

注意:

- 用此命令修改网口 SN 号必须先解锁，修改后必须重启才能生效;
- -N 参数只有在某些定制固件且在带辅电设备上使用才有意义。

2.4.5 【-d】: mdio 读写外部 phy 寄存器

2.4.5.1 Marvell phy

```
[root@localhost cgq]# ./wxttool_mips64 -s 0a:00.0 -d -w 0x0 0x1e 0xa000
access to mdio
Device_type use default values 0x0.
Phy_addr: 0x0; Device_type : 0x0
[root@localhost cgq]# ./wxttool_mips64 -s 0a:00.0 -d -r 0x0 0x1e
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001e - value: 00000000
[root@localhost cgq]# ./wxttool_mips64 -s 0a:00.0 -d -w 0x0 0x16 0x0000
access to mdio
Device_type use default values 0x0.
Phy_addr: 0x0; Device_type : 0x0
[root@localhost cgq]# ./wxttool_mips64 -s 0a:00.0 -d -r 0x0 0x16
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 00000016 - value: 00000000
[root@localhost cgq]# ./wxttool_mips64 -s 0a:00.0 -d -r 0x0 0x2
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 00000002 - value: 00000141
[root@localhost cgq]# ./wxttool_mips64 -s 0a:00.0 -d -r 0x0 0x3
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 00000003 - value: 00000dd1
[root@localhost cgq]#
```

Marvell

如图所示，读取 0x2 的值左移 6 位，读取 0x3 的值右移 10 位，两个数进行或运算，值为 0x5043

```
ngbe_phy_read_reg_mdio(hw, NGBE_MDI_PHY_ID1_OFFSET, 0, &phy_id_high);
phy_id = phy_id_high << 6;
ngbe_phy_read_reg_mdio(hw, NGBE_MDI_PHY_ID2_OFFSET, 0, &phy_id_low);
phy_id |= (phy_id_low & NGBE_MDI_PHY_ID_MASK) >> 10;
```

2.4.5.2 裕泰 phy

按图中所示操作，yt8521 值为 11a ,yt8531 值为 e91a

```

[root@localhost cgq]# ./wxtool_mips64 -s 05:00.0 -d -w 0x0 0x1e 0xa000
access to mdio
Device_type use default values 0x0.
Phy_addr: 0x0; Device_type : 0x0
[root@localhost cgq]# ./wxtool_mips64 -s 05:00.0 -d -r 0x0 0x1e
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001e - value: 0000a000
[root@localhost cgq]# ./wxtool_mips64 -s 05:00.0 -d -w 0x0 0x1f 0x2
access to mdio
Device_type use default values 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001f - value: 00000002
[root@localhost cgq]# ./wxtool_mips64 -s 05:00.0 -d -r 0x0 0x1f
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001f - value: 00000002
[root@localhost cgq]# ./wxtool_mips64 -s 05:00.0 -d -r 0x0 0x3
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 00000003 - value: 0000011a
[root@localhost cgq]#

```

YT8521

```

[root@localhost cgq]# ./wxtool_mips64 -s 09:00.0 -d -w 0x0 0x1e 0xa000
access to mdio
Device_type use default values 0x0.
Phy_addr: 0x0; Device_type : 0x0
[root@localhost cgq]# ./wxtool_mips64 -s 09:00.0 -d -r 0x0 0x1e
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001e - value: 0000a000
[root@localhost cgq]# ./wxtool_mips64 -s 09:00.0 -d -w 0x0 0x1f 0x2
access to mdio
Device_type use default values 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001f - value: 00000002
[root@localhost cgq]# ./wxtool_mips64 -s 09:00.0 -d -r 0x0 0x1f
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 0000001f - value: 00000002
[root@localhost cgq]# ./wxtool_mips64 -s 09:00.0 -d -r 0x0 0x3
access to mdio
Device_type use default value 0x0.
Phy_addr: 0x0; Device_type : 0x0
addr: 00000003 - value: 0000e91a
[root@localhost cgq]#

```

YT8531

2.4.5.3 万兆直出电口卡 (3.6.12 版本新增)

按图中所示操作，值为 0x77

```

[root@localhost wxtool]# ./wxtool_3.6.12rc0 -s 05:00.0 -d -r 0x0 0x1f 0xf020
access to mdio
addr: 0000f020 - value: 00000138
[root@localhost wxtool]# ./wxtool_3.6.12rc0 -s 05:00.0 -d -w 0x0 0x1f 0xf020 0x77
access to mdio
addr: 0000f020 - value: 00000077

```

2.4.6 【-t】: 当前目录下生成 dump.img 文件

命令:./wxtool -s 85:00.0 -t 1

```
[root@localhost temp]# ./wxtool_x86 -s 85:00.0 -t 1
dump image in nic
=====finish=====
[root@localhost temp]# ls
dump.img  wxtool_x86
```

2.4.7 【-f -r】: 读 flash

命令: `./wxtool -s 03:00.0 -f -r 0x160`

```
root@-PC:~/zzx# ./wxtool -s 03:00.0 -f -r 0x160
access to flash
addr: 00000160 - value: ffffffff
```

2.4.8 【-f -w】: 写 flash

命令: `./wxtool -s 03:00.0 -f -w 0x160 0xaa`

```
root@-PC:~/zzx# ./wxtool -s 03:00.0 -f -r 0x160
access to flash
addr: 00000160 - value: ffffffff old value
root@-PC:~/zzx# ./wxtool -s 03:00.0 -f -w 0x160 0xaa
access to flash
root@-PC:~/zzx# ./wxtool -s 03:00.0 -f -r 0x160
access to flash
addr: 00000160 - value: 000000aa new value
```

2.5 出现报错及解决方法

2.5.1 没有检测到网卡设备

程序开始运行会首先在系统上寻找可用于烧录的网卡硬件设备，当系统上没有任何可执行设备，程序会报错并退出：

```
(base) [root@177-0-0-1 ~]# ./wxtool -F SF400HT_10018/SF400HT_10018.img
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10_Gigabit_nics
please input choose number: 3
Please wait 0 Rocket cards flash upgrading ....

No any Rocket cards were found! Program is exited!!
```

当收到这类错误信息时，还可以用 shell 命令“`lspci -d 8088`”来再次确认是否没有可用的网卡设备。

解决方法：先确定网卡设备是否正确接入系统，如果接入的网卡设备在系统上不存在，基本可以确定是 PCIe 的识别出现了问题。接下来需要先确定电路板设计、生产上是否存在问题，在排除电路板问题之后，可以联系公司，进一步对芯片进行检测。

2.5.2 固件文件无法打开

程序检查到可用的网卡设备后，就会加载指定（默认或者“-F”选项指定）的固件文件，如果指定的固件文件不存在，程序会报错并退出：

```
[root@localhost wxtool-all]# ./wxtool_x86 -F SF400T-S_10018/SF400T-S_10018.img
Please Select which kind of NIC to upgrade:
 1. 1000M_nics_1ports
 2. 1000M_nics_2ports
 3. 1000M_nics_4ports
 4. 10_Gigabit_nics
please input choose number: 3
Please wait 1 Rocket cards flash upgrading ....

ERROR: Can't open IMAGE File SF400T-S_10018/SF400T-S_10018.img!
[root@localhost wxtool-all]#
```

解决方法：核对指定的固件文件是否存在，将待烧录固件放到指定目录下。

2.5.3 烧录 Flash 出错

错误一：烧写固件报错，读 flash 地址 0 为 0xffffffff

```
ERROR: Program 0x5aa540 @addr: 0x00000000 is failed
Read data from Flash is : 0xffffffff
```

在整个烧录过程中，程序都会对 Flash 的写操作做读校验，确保烧录的数据是正确的。一旦校验出错，程序会立即报错并退出：

解决方法：芯片 SPI 操作经过严格测试，用于烧录的程序也经过反复验证。但是由于不同厂商的 Flash 芯片在指令，甚至 SPI 时序上有所不同，所以可能存在一些兼容性问题。对此，特别推荐使用已经通过公司测试的 Flash 厂商的对应 Flash 芯片，如果烧录仍然存在问题，请联系公司销售或者技术支持。

错误二：烧写固件报错，读 flash 地址 0 为 0x00000000

```
ERROR: Program 0x5aa51000 @addr: 0x00000000 is failed
Read data from Flash is : 0x00000000
```

```
/ # wxtool_mips64 -F /usr/image/SF400HT-B_10015.img -
Please Select which kind of NIC to upgrade:
 1. 1000M_nics_1ports
 2. 1000M_nics_2ports
 3. 1000M_nics_4ports
 4. 10_Gigabit_nics
please input choose number: 3
Please wait 1 Rocket cards flash upgrading ....

Firmware is not initied
Flash is not empty, fw has something wrong
start to download No.0 adaptor card [ 10:00.0 ]:
old: MAC Address0 is: 000000000000
    MAC Address1 is: 000000000000
    MAC Address2 is: 000000000000
    MAC Address3 is: 000000000000
SN is: 000000000000000000
ERROR: Program 0x5aa51000 @addr: 0x00000000 is failed
Read data from Flash is: 0x00000000
/ #
```

报错原因：1. flash 芯片虚焊 2. flash 输入输出接反了

解决方法：检查 flash 焊接以及周边电路

错误三：烧写固件报错：

ERROR: chip is malfunction, all LAN disabled or pcie link is down.

问题原因：1、所有的 lan 口都把 lan_dis 拉低了；2、硬件 pcie 链路出错

解决方法：1、检查相关硬件电路；

2、lspci -s <pcie slot> -xxx /lspci -s <pcie slot> -vvv 检查 pcie 链路

错误四：烧写固件报错：

ERROR: Fireware is not inited

ERROR: flash is empty

错误五：烧写固件报错：

ERROR: Fireware is not inited

ERROR: flash is not empty, fw has something wrong

2.5.4 报错 Upgrade_image_tools: map_mem_failed

解决方法:系统没有打开 iomem, 修改内核参数

注：需要使用 root 账户或者具有 root 权限的账户，或者执行时添加 sudo 命令，如果执行 ls /dev/mem 显示没有该文件，则参照官网驱动安装手册的 2.6 节，使用 ethtool -f 命令升级网卡固件

UOS, ubuntu 系列如下：

要在 UOS 系统上使用固件在线升级工具对网卡的固件进行升级操作，需要增加内核启动参数 iomem=relaxed：

1、编辑 /etc/default/grub 文件，修改 配置文件中

的 GRUB_CMDLINE_LINUX_DEFAULT 字段，在其原有的基础上 增加

如下内容：GRUB_CMDLINE_LINUX_DEFAULT="splash

quiet iomem=relaxed"。注：绿色部分为新增内容。有的系统上的 grub

配置文件中有两段 GRUB_CMDLINE_LINUX_DEFAULT，若是这样的

话，请将 2 处都做增加操作。

2、执行 update-grub 命令：生成新的 GRUB 配置文件，重启系统。

Kylin, centos 系列如下：

cat /proc/cmdline

```
[root@localhost ~]# cat /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-3.10.0-1062.el7.x86_64 root=UUID=f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87 ro crashkernel=auto spec
tre_v2=retpoline rhgb quiet LANG=en_US.UTF-8
```

vim /boot/efi/EFI/kylin/grub.cfg，在这个文件里找到上图中的那一行，(kylin 是变的，比如是 centos 系统这里就是 centos 等)

```

menuentry 'CentOS Linux (3.10.0-1062.el7.x86_64) 7 (Core)' --class centos --class gnu-linux --class gnu --class os --unrestricted $menuentry_id_option 'gnulinux-3.10.0-1062.el7.x86_64-advanced-f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87' {
    load_video
    set gfxpayload=keep
    insmod gzio
    insmod part_gpt
    insmod xfs
    set root='hd0,gpt2'
    if [ x$feature_platform_search_hint = xy ]; then
        search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2 --hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2 f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87
    else
        search --no-floppy --fs-uuid --set=root f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87
    fi
    linuxefi /boot/vmlinuz-3.10.0-1062.el7.x86_64 root=UUID=f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87 ro crashkernel=auto spectre_v2=retpoline rhgb quiet LANG=en_US.UTF-8
    initrd /boot/initramfs-3.10.0-1062.el7.x86_64.img
}
menuentry 'CentOS Linux (0-rescue-3ad2368d682046b6ae43f4cf1edc023a) 7 (Core)' --class centos --class gnu-linux --class gnu --class os --unrestricted $menuentry_id_option 'gnulinux-0-rescue-3ad2368d682046b6ae43f4cf1edc023a-advanced-f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87' {
    load_video
    set gfxpayload=keep
    insmod gzio
    insmod part_gpt
    insmod xfs
    set root='hd0,gpt2'
    if [ x$feature_platform_search_hint = xy ]; then
        search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2 --hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2 f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87
    else
        search --no-floppy --fs-uuid --set=root f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87
    fi
    linuxefi /boot/vmlinuz-3.10.0-1062.el7.x86_64 root=UUID=f9a97ce1-0ff1-4c3a-809b-3591a4cf8a87 ro crashkernel=auto spectre_v2=retpoline rhgb quiet LANG=en_US.UTF-8
    initrd /boot/initramfs-3.10.0-1062.el7.x86_64.img
}

```

在上图绿标处添加 iomem=relaxed，保存退出，并重启既可

2.5.5 报错 Error opening signature file xxx.sig

问题原因：使用 wxtool 3.6.6 及以上版本，烧录固件时，要将签名文件和固件文件放于同级目录。用于烧录固件时对固件进行安全校验，防止 img 被修改后，烧录到设备造成的意外。

```

[root@localhost demo]# ls
SF400T_10016.img SF400T_10016.sig
[root@localhost demo]#

root@PC:~/zzx# ./wxtool -F img/RP2000P2SFP_2000e.img
Please Select which kind of NIC to upgrade:
1. 1000M_nics_1ports
2. 1000M_nics_2ports
3. 1000M_nics_4ports
4. 10_Gigabit_nics
please input choose number: 4
SIG_FILE:img/RP2000P2SFP_2000e.sig

FILE SHA256 sum:
sha256sum: img/RP2000P2SFP_2000e.sig: 没有那个文件或目录
89dfac3de2c7641f0de753bf1b49caaa3da8c0305d6c85d09381b093093bdfde img/RP2000P2SFP_2000e.img

Image verify failed...
Please check your image

```

解决方法：1.检查是否有 sig 文件；2.检查 sig 文件大小是否正常；3.检查打印出来的 md5 是否正常；4.问对应的技术支持，拿到对应的 sig 文件。

2.5.6 执行 wxtool 工具报 glibc2.14 not found

解决方法：

- 1.要在 root 权限下操作较安全；
- 2.输入命令 `strings /lib/libc.so.6 | grep GLIBC_` 查看文件是否存在；
- 3.若不存在到 <http://ftp.gnu.org/gnu/glibc/glibc-2.14.tar.gz> 下载压缩包；
- 4.在压缩包的父目录下执行以下命令：

```
tar -xvf glibc-2.17.tar.gz
```

```
cd glibc-2.14
```

```
mkdir build
```

```
cd build
```

```

./configure --prefix=/usr --disable-profile --enable-add-ons --with-headers=/usr/include --with-binutils=/usr/bin

```



```
make -j 8  
make install
```

5.最后在输入 `strings /lib/libc.so.6 |grep GLIBC_` 可查看安装, 若为其他版本不存在则命令只需更改版本号。

2.5.7 烧录过程报错 Segmentation fault

- 解决办法: 使用 wxtool3.6.11 及以上版本
- 若烧录固件选择的网口 **domain** 不为全 0 时, 使用的是 3.6.11 及以前的版本, 可能会报以下的段错误, 使用 3.6.12 及以上版本可解决

```
root@bgw-PC:/home/cgq# ./wxtool_sw64 -F /home/cgq/SF400T_B_1001a.img -s 0001:27:00.0 -I  
Please Select which kind of NIC to upgrade:  
1. 1000M_nics_1ports  
2. 1000M_nics_2ports  
3. 1000M_nics_4ports  
4. 10_Gigabit_nics  
please input choose number: 3  
Please wait 1 Rocket cards flash upgrading ....  
  
Checking chip/image version .....  
The image chip_v is B  
The nic chip_v is B  
Checking sub_id .....  
段错误  
root@bgw-PC:/home/cgq#
```

2.5.8 版本 3.7.0 千兆-A 参数烧录到第二张卡报段错误 Segmentation fault

- 解决办法: 使用 wxtool3.7.1 及以上版本

三、结束

感谢抽空阅读本手册的全部内容, 后续如有任何需要请联系公司销售或者技术支持。如对本手册内容有任何建议, 也欢迎反馈。