

SIA_RCS_OS.img系统镜像使用

2018年4月27日 12:14

系统镜像网盘地址：

链接：<https://pan.baidu.com/s/1hVI23BJUsR9OtsgdXXupEw>

提取码：p26f

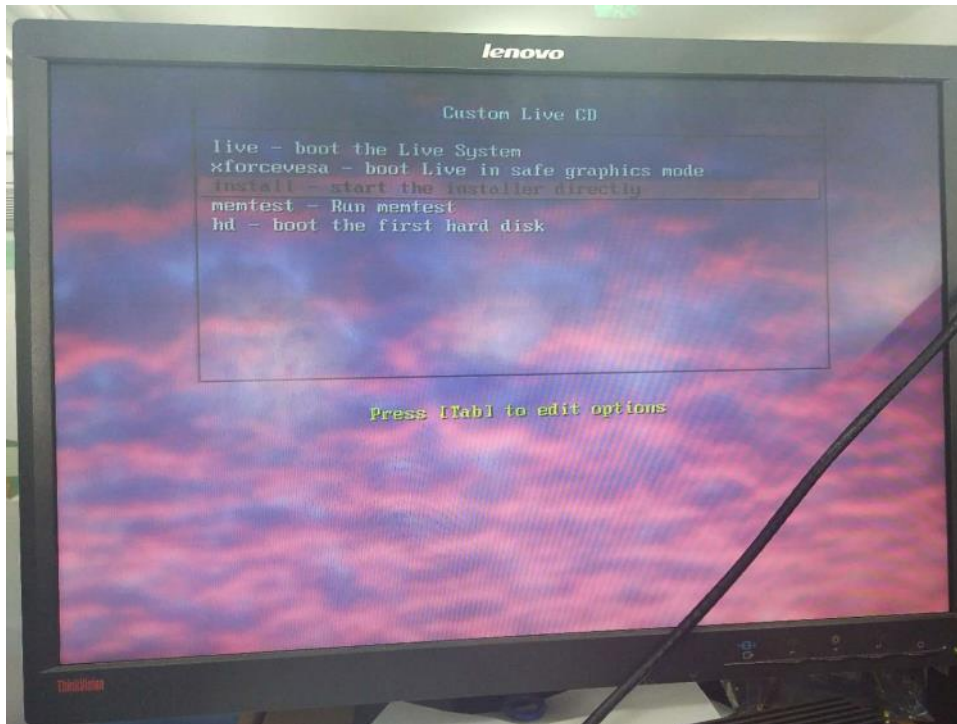
驱动开发所需内核源码下载：

链接：https://pan.baidu.com/s/1T8mCu-2ibUhX29cU_mrjmQ

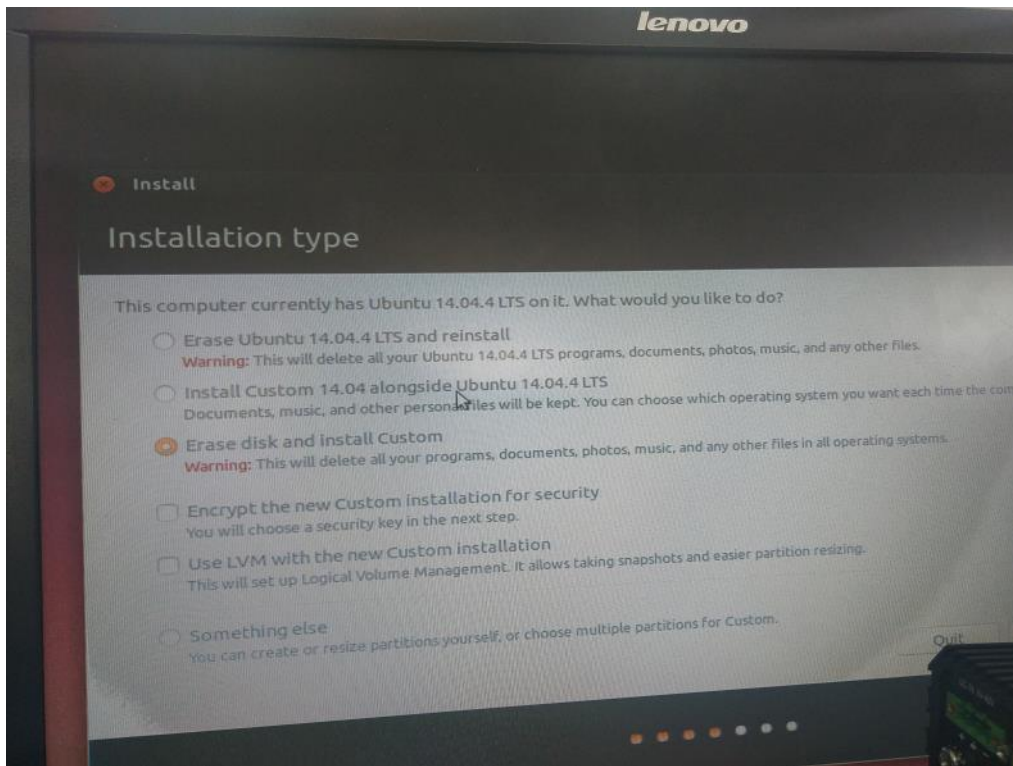
提取码：hf7c

用U盘做启动盘，重启选择U盘启动即可。

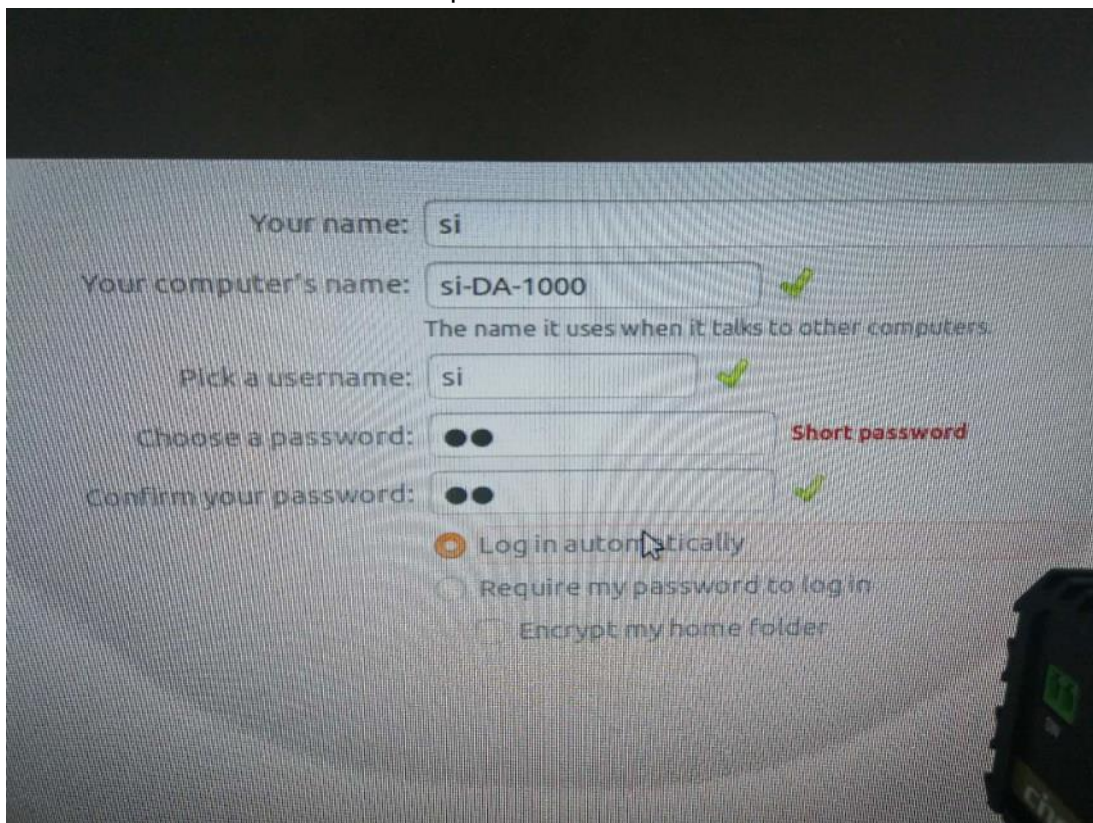
选择Install

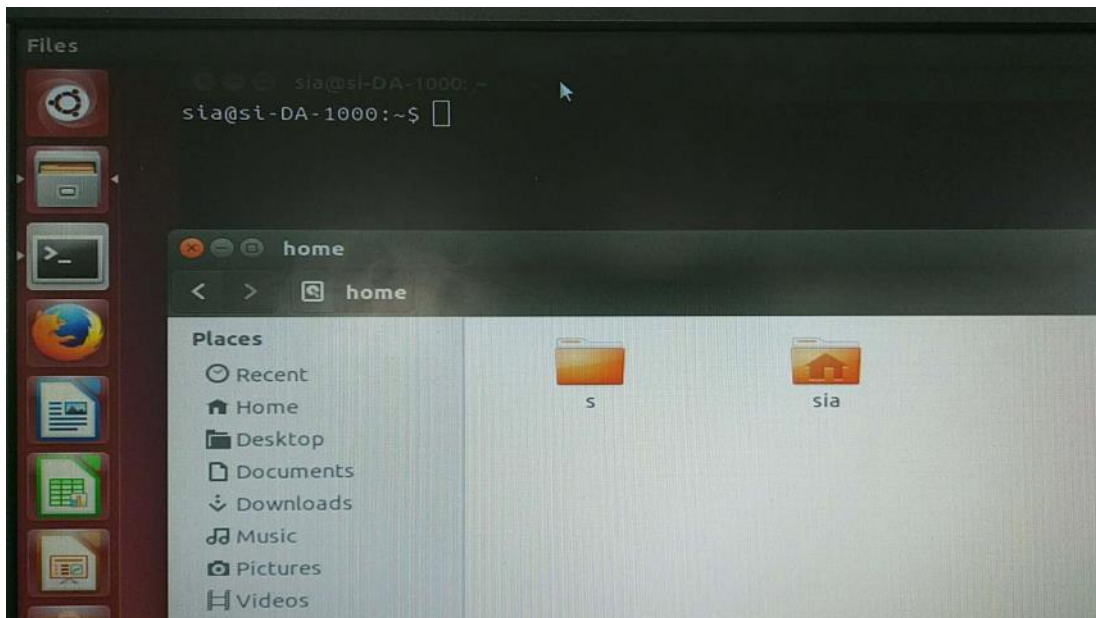


安装类型选择：Erase disk and install Custom



由于系统镜像中保留了普通用户数据，所以在安装过程中设置用户即密码页的设置并无效如：
如下图设置安装的结果，实际只有Your computer's name 改变，登录用户仍为sia。且并无si用户存在。





除此之外，所有安装过程与官方的Ubuntu安装完全一致。

装机完成进入系统后：

系统用户说明：所有用户的密码都是用户名

| | | | |
|------|------|--------|-----------|
| sia | 登录用户 | 普通用户 | /home/sia |
| s | | root权限 | /home/s |
| root | | root用户 | /root |

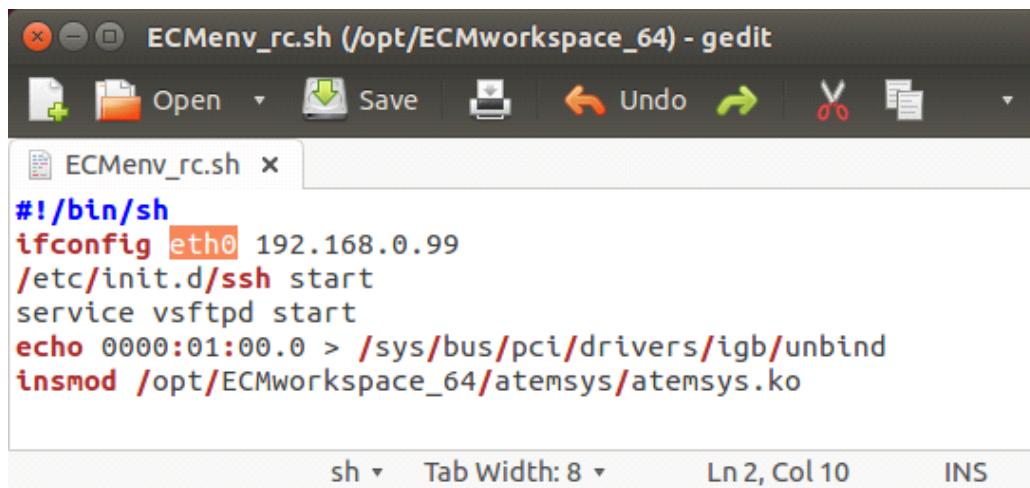
```

root@sia-DA-1000: ~
sia@sia-DA-1000:~$ su - root
Password:
root@sia-DA-1000:~# pwd
/root
root@sia-DA-1000:~# su - sia
sia@sia-DA-1000:~$ pwd
/home/sia
sia@sia-DA-1000:~$ su - s
Password:
root@sia-DA-1000:~# pwd
/home/s
root@sia-DA-1000:~#

```

★ 网口信息：原先设置eth0(一般选ifconfig中的第一个)为总线端口，eth1(一般选ifconfig中的第二个)为ssh调试口，重装机的总线端口可能会变化。

注：执行ifconfig命令，可以看到Ethernet网口信息：eth*或enp0s*。一般来说，缺失的那个网口被用作了总线端口，新装系统，如下图所示，是0000:01:00.0对应的Ethernet口用作了总线端口（echo行）

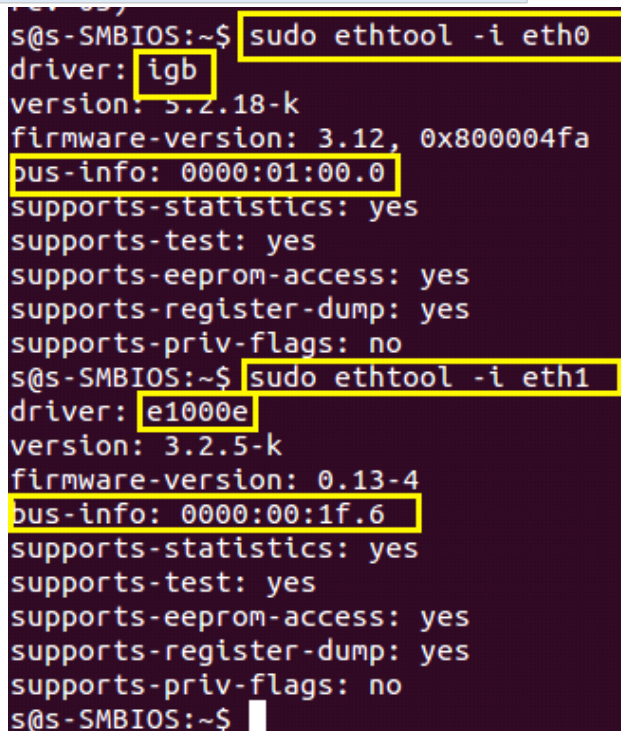


```
#!/bin/sh
ifconfig eth0 192.168.0.99
/etc/init.d/ssh start
service vsftpd start
echo 0000:01:00.0 > /sys/bus/pci/drivers/igb/unbind
insmod /opt/ECMworkspace_64/atemsys/atemsys.ko
```

★ 如果说所有Ethernet口都在，则需要：修改ECMenv_rc.sh文件中 echo行。

选取eth0，使用ethtool命令获取对应的ID号和driver信息，然后修改ECMenv_rc.sh文件
如下图：eth0 对应的ID号为 01:00.0；driver为：igb；具体值，根据装机实际情况确定。
然后，修改ECMenv_rc.sh文件中 echo行。请确保[bus-info]和[driver]具体值的准确性。

```
echo [bus-info] > /sys/bus/pci/drivers/[driver]/ubind
```



```
s@s-SMBIOS:~$ sudo ethtool -i eth0
driver: igb
version: 5.2.18-k
firmware-version: 3.12, 0x800004fa
bus-info: 0000:01:00.0
supports-statistics: yes
supports-test: yes
supports-eeprom-access: yes
supports-register-dump: yes
supports-priv-flags: no
s@s-SMBIOS:~$ sudo ethtool -i eth1
driver: e1000e
version: 3.2.5-k
firmware-version: 0.13-4
bus-info: 0000:00:1f.6
supports-statistics: yes
supports-test: yes
supports-eeprom-access: yes
supports-register-dump: yes
supports-priv-flags: no
s@s-SMBIOS:~$
```

★ 下图ifconfig中无eth1，说明实验机将eth1用作总线端口，因此需要重新分配ssh端口，用黄色底色标注的部分B-1。
如果ifconfig中有eth1设备，则无需重新分配ssh端口，步骤B-1跳过。

```
sia@si-DA-1000: ~  
sia@si-DA-1000:~$ ifconfig  
eth0      Link encap:Ethernet  HWaddr 2c:94:64:01:32:de  
          UP BROADCAST MULTICAST  MTU:1500  Metric:1  
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)  
          Interrupt:19 Memory:90500000-90520000  
  
eth2      Link encap:Ethernet  HWaddr 2c:94:64:00:fe:b7  
          UP BROADCAST MULTICAST  MTU:1500  Metric:1  
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)  
          Memory:90600000-9067ffff  
  
eth3      Link encap:Ethernet  HWaddr 2c:94:64:01:32:df  
          UP BROADCAST MULTICAST  MTU:1500  Metric:1  
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)  
          Interrupt:16 Memory:90400000-90420000
```

相关设置修正

A. EtherCAT总线程序测试

1. 找到端口:

终端执行>sudo ethtool -p ethx, 对应端口的灯会闪烁

```
sia@si-DA-1000: ~  
sia@si-DA-1000:~$ sudo ethtool -p eth0  
[sudo] password for sia:  
^Csia@si-DA-1000:~$ sudo ethtool -p eth1  
Cannot identify NIC: No such device  
sia@si-DA-1000:~$ sudo ethtool -p eth2  
^Csia@si-DA-1000:~$ sudo ethtool -p eth3  
█
```

可以看到eth1设备不存在, 由于用作了EtherCAT端口

2. 将从站连接到eth1对应的网口, 再执行runECM

到/opt/ECMworkspace_64路径下, 执行>sudo sh runECM.sh

```
sia@si-DA-1000: /opt/ECMworkspace_64
sia@si-DA-1000:/opt/ECMworkspace_64$ sudo ethtool -p eth0
[sudo] password for sia:
^Csia@si-DA-1000:/opt/ECMworkspace_64$ sudo ethtool -p eth1
Cannot identify NIC: No such device
sia@si-DA-1000:/opt/ECMworkspace_64$ ^C
sia@si-DA-1000:/opt/ECMworkspace_64$ sudo ethtool -p eth2
^Csia@si-DA-1000:/opt/ECMworkspace_64$ sudo ethtool -p eth3
^Csia@si-DA-1000:/opt/ECMworkspace_64$ sudo ethtool -p eth2

^Csia@si-DA-1000:/opt/ECMworkspace_64$ sudo sh runECM.sh
sia@si-DA-1000:/opt/ECMworkspace_64$ 48 241104 992
Full command line: -f "eni.xml"-i8254x 3 1 -b 1000 -v 3 -perf -t 0

000005 : Run demo now with cycle time 1000 usec
000005 : Using AuxClock
000005 : Calibrate tsc measurement... done: 2000 MHz
003006 : =====
003006 : Initialize EtherCAT Master
003006 : =====
003006 : EC-Master V2.9.1.06 (Protected) for Linux_x64 Copyright acontis t
ogies GmbH @ 2016
003006 : OsGetLinkLayerRegFunc: try to load '/opt/ECMworkspace_64/libemllI
so'
003007 : PCI: device 05:00.0 found
003007 : PCI: device 06:00.0 found
003008 : PCI: device 01:00.0 found
004732 : Unlicensed version, stop sending ethernet frames after 60 minutes
004852 : Retry sending a acyclic frame due to timeout
004852 : EtherCAT command IDX set value=0xdf
004972 : Retry sending a acyclic frame due to timeout
004972 : EtherCAT command IDX set value=0xe0
005071 : Bus scan successful - 6 slaves found
005090 : 1 identical messages skipped
005090 : *****
*****
005090 : Slave ID.....: 0x00000000
005090 : Bus Index.....: 0
005090 : Bus AutoInc Address.: 0x0000
005090 : Bus Station Address.: 0x03e9 (1001)
```

如图所示。找到了PCI设备01:00.0，

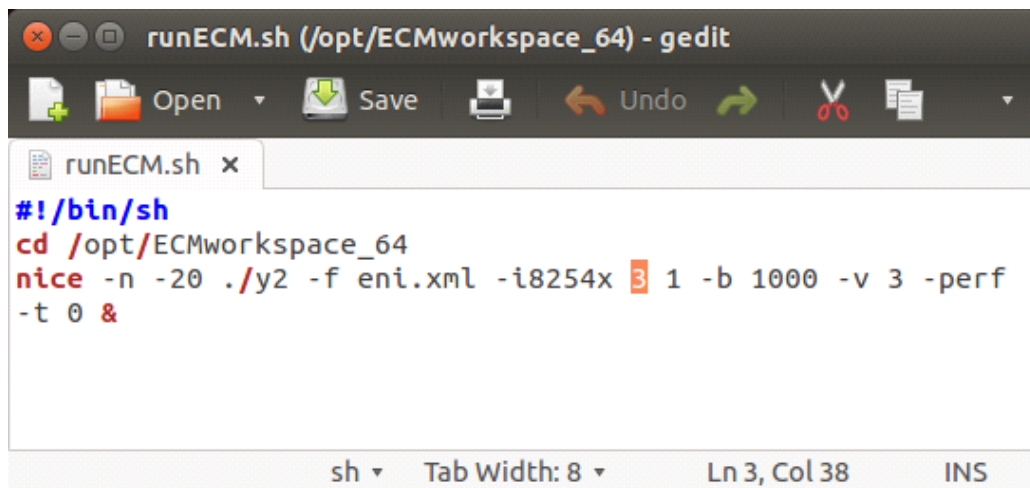
这与该路径下ECMenv_rc.sh文件中倒数第二行的设置一致。

```
ECMenv_rc.sh (/opt/ECMworkspace_64) - gedit
Open Save Undo
ECMenv_rc.sh x
#!/bin/sh
ifconfig eth0 192.168.0.99
/etc/init.d/ssh start
service vsftpd start
echo 0000:01:00.0 > /sys/bus/pci/drivers/igb/unbind
insmod /opt/ECMworkspace_64/atemsys/atemsys.ko
sh Tab Width: 8 Ln 2, Col 10 INS
```

如果，执行到此，报错PCI: device xx:xx.x not found

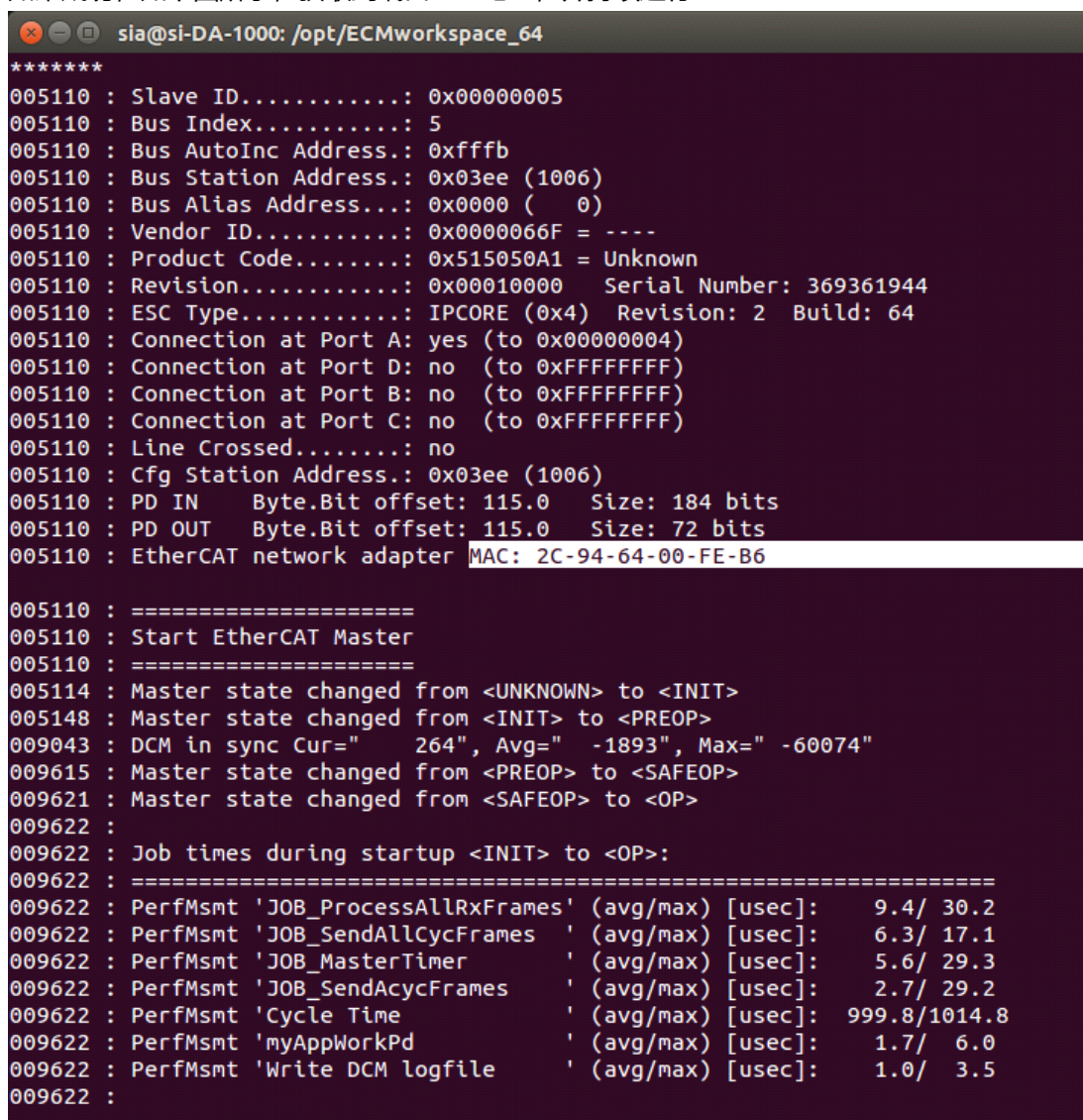
修改该路径下runECM.sh文件中，如下图所示选中参数，可选值为[1~N],N为端口个数

```
runECM.sh (/opt/ECMworkspace_64) - gedit
Open Save Undo
runECM.sh x
```

```
#!/bin/sh
cd /opt/ECMworkspace_64
nice -n -20 ./y2 -f eni.xml -i8254x 3 1 -b 1000 -v 3 -perf
-t 0 &
```

如果成功，如下图所示，获取到端口MAC地址，并持续运行



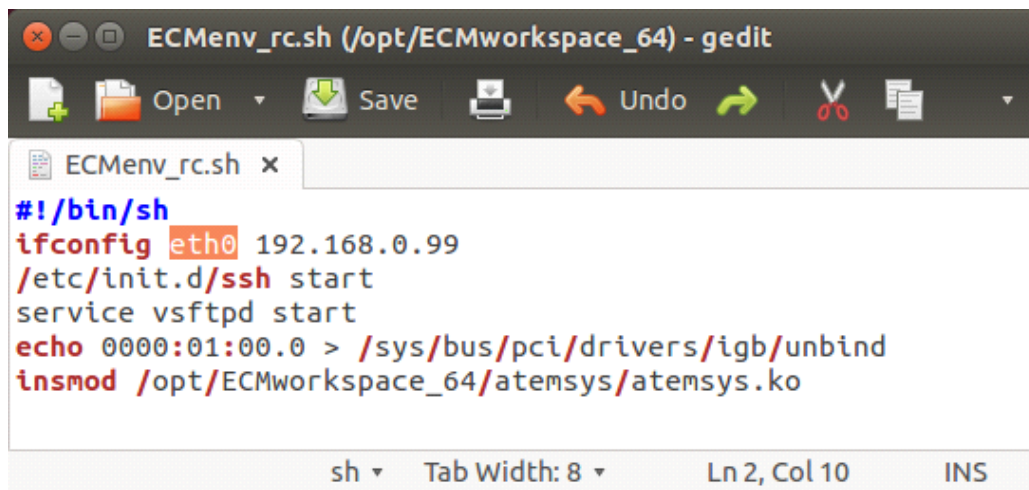
```
*****
005110 : Slave ID.....: 0x00000005
005110 : Bus Index.....: 5
005110 : Bus AutoInc Address.: 0xffffb
005110 : Bus Station Address.: 0x03ee (1006)
005110 : Bus Alias Address...: 0x0000 ( 0)
005110 : Vendor ID.....: 0x0000066F = ----
005110 : Product Code.....: 0x515050A1 = Unknown
005110 : Revision.....: 0x00010000 Serial Number: 369361944
005110 : ESC Type.....: IPCORE (0x4) Revision: 2 Build: 64
005110 : Connection at Port A: yes (to 0x00000004)
005110 : Connection at Port D: no (to 0xFFFFFFFF)
005110 : Connection at Port B: no (to 0xFFFFFFFF)
005110 : Connection at Port C: no (to 0xFFFFFFFF)
005110 : Line Crossed.....: no
005110 : Cfg Station Address.: 0x03ee (1006)
005110 : PD IN Byte.Bit offset: 115.0 Size: 184 bits
005110 : PD OUT Byte.Bit offset: 115.0 Size: 72 bits
005110 : EtherCAT network adapter MAC: 2C-94-64-00-FE-B6

005110 : =====
005110 : Start EtherCAT Master
005110 : =====
005114 : Master state changed from <UNKNOWN> to <INIT>
005148 : Master state changed from <INIT> to <PREOP>
009043 : DCM in sync Cur=" 264", Avg=" -1893", Max=" -60074"
009615 : Master state changed from <PREOP> to <SAFEOP>
009621 : Master state changed from <SAFEOP> to <OP>
009622 :
009622 : Job times during startup <INIT> to <OP>:
009622 : =====
009622 : PerfMsm 'JOB_ProcessAllRxFrames' (avg/max) [usec]: 9.4/ 30.2
009622 : PerfMsm 'JOB_SendAllCycFrames' (avg/max) [usec]: 6.3/ 17.1
009622 : PerfMsm 'JOB_MasterTimer' (avg/max) [usec]: 5.6/ 29.3
009622 : PerfMsm 'JOB_SendAcycFrames' (avg/max) [usec]: 2.7/ 29.2
009622 : PerfMsm 'Cycle Time' (avg/max) [usec]: 999.8/1014.8
009622 : PerfMsm 'myAppWorkPd' (avg/max) [usec]: 1.7/ 6.0
009622 : PerfMsm 'Write DCM logfile' (avg/max) [usec]: 1.0/ 3.5
009622 :
```

B. SSH连接修复

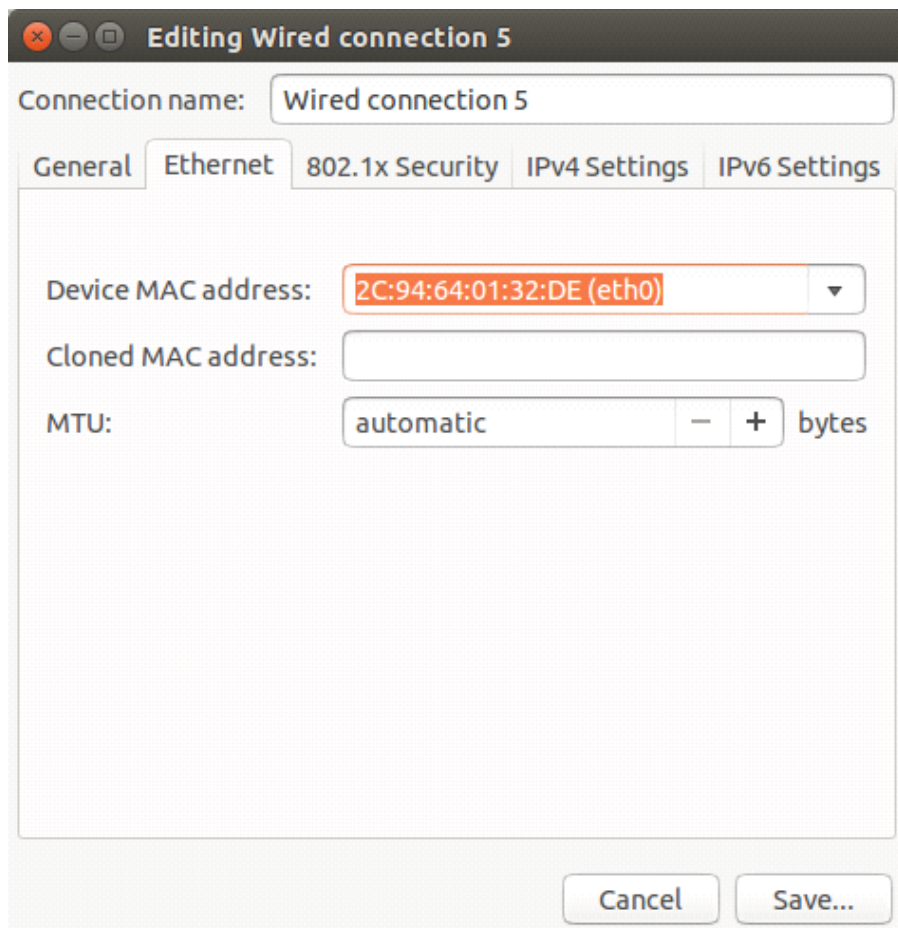
1. 修改文件，ECMenv_rc.sh //只有在端口发生变化时需要修改，装机完成后，初始值为eth1

原先设置eth0为总线端口，eth1为ssh调试口，如果原先的ssh端口被用作总线端口（ifconfig中无eth1设备），则需修改下图选中部分，重新配置SSH所在端口，修改为ifconfig中存在的端口，此处改为eth0



```
#!/bin/sh
ifconfig eth0 192.168.0.99
/etc/init.d/ssh start
service vsftpd start
echo 0000:01:00.0 > /sys/bus/pci/drivers/igb/unbind
insmod /opt/ECMworkspace_64/atemsys/atemsys.ko
```

2. 打开网络设置页，找到SSH对应的端口（括号中的eth?要对应ECMenv_rc.sh中设置），修改为Manel,给定IP: 192.168.0.99



Connection name: Wired connection 5

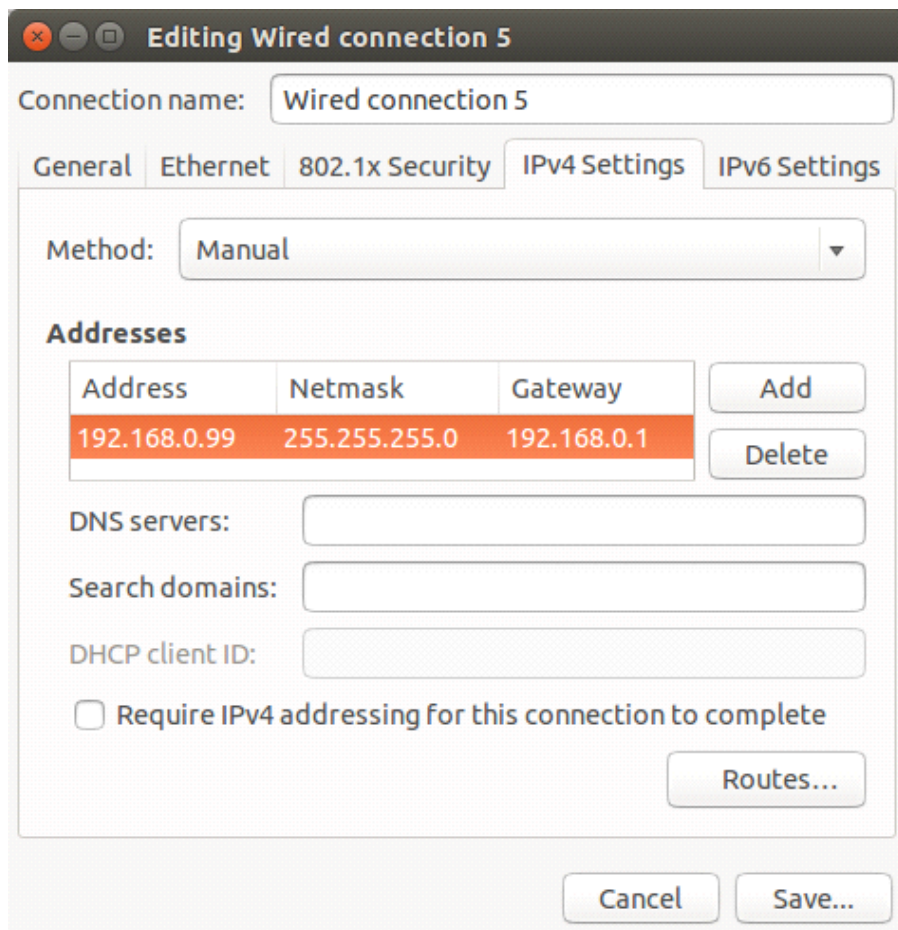
General Ethernet 802.1x Security IPv4 Settings IPv6 Settings

Device MAC address: 2C:94:64:01:32:DE (eth0)

Cloned MAC address:

MTU: automatic - + bytes

Cancel Save...



★ 3. 重新配置SSH-SERVER

```
>sudo dpkg-reconfigure openssh-server
```

```
>sudo /etc/init.d/ssh restart
```

4. 找打物理位置，连接到开发机

```
sia@si-DA-1000: ~
sia@si-DA-1000:~$ sudo ethtool -p eth0
[sudo] password for sia:
^Csia@si-DA-1000:~$ sudo ethtool -p eth1
Cannot identify NIC: No such device
sia@si-DA-1000:~$ sudo ethtool -p eth2
^Csia@si-DA-1000:~$ sudo ethtool -p eth3
```

测试之前，请先确认IP是否为192.168.0.99

```
>Ifconfig eth?
```

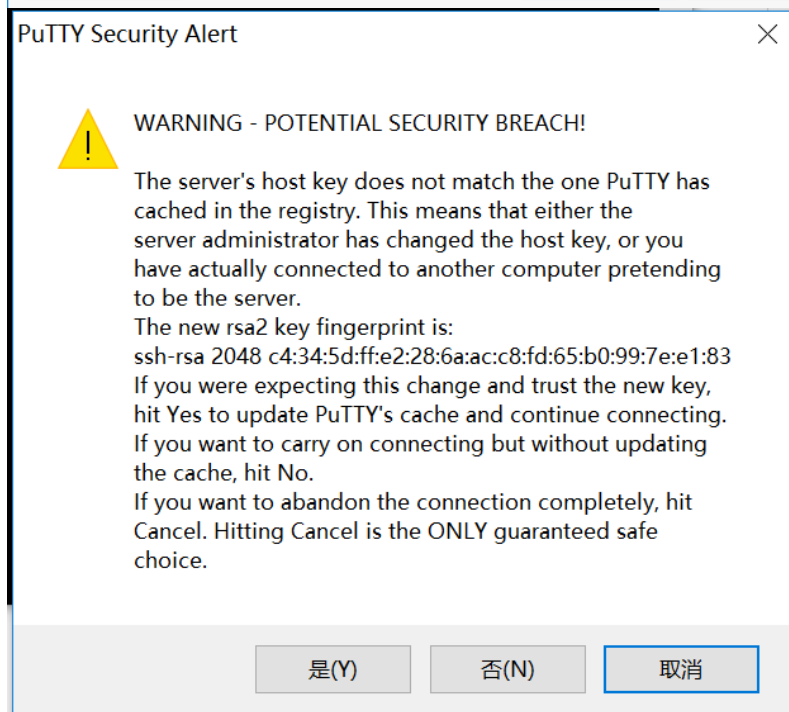
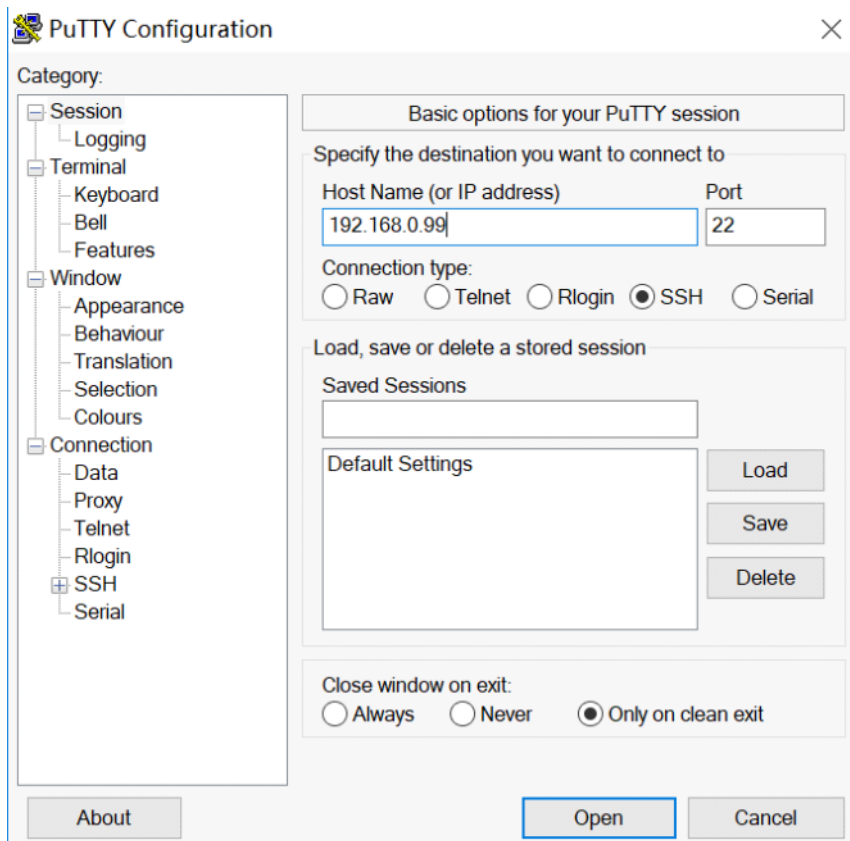
5. 开发机SSH访问工控机测试

Windows用PuTTY

Linux 在命令行执行> ssh root@192.168.0.99

第一次连接都会弹出提示，选择或输入yes即可。

以Windows为例：



```
root@si-DA-1000: ~
login as: root
root@192.168.0.99's password:
Welcome to Ubuntu 14.04.4 LTS (GNU/Linux 3.18.59-rt65 x86_64)

 * Documentation:  https://help.ubuntu.com/

410 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

-bash: export: `=': not a valid identifier
-bash: export: `:b0451de8-2ad7-4179a4fb-02a1744d4bd4': not a valid identifier
root@si-DA-1000:~#
root@si-DA-1000:~# ls
root@si-DA-1000:~# pwd
/root
root@si-DA-1000:~#
```

到此，说明SSH功能OK

c. 重启系统，再此测试

```
sia@si-DA-1000: ~
top - 23:53:11 up 1 min, 2 users, load average: 1.40, 0.59, 0.22
Tasks: 225 total, 1 running, 224 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.3 us, 0.3 sy, 0.0 ni, 99.3 id, 0.1 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem: 3951936 total, 699560 used, 3252376 free, 24748 buffers
KiB Swap: 4097020 total, 0 used, 4097020 free. 328468 cached Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 1240 root      -60 -20  99008  10136  6808  S   6.0   0.3   0:03.38 y2
    3 root       20  0     0     0     0  S   0.3   0.0   0:00.08 ksoftirqd/0
 1459 sia       20  0 124912  4972  4536  S   0.3   0.1   0:00.04 at-spi2-re+
 1987 sia       20  0  29148  3424  2868  R   0.3   0.1   0:00.24 top
    1 root       20  0  34024  4540  2692  S   0.0   0.1   0:09.11 init
    2 root       20  0     0     0     0  S   0.0   0.0   0:00.00 kthreadd
    4 root      -2  0     0     0     0  S   0.0   0.0   0:00.06 ktimersoft+
    5 root       20  0     0     0     0  S   0.0   0.0   0:00.00 kworker/0:0
    6 root       0 -20     0     0     0  S   0.0   0.0   0:00.00 kworker/0:+
    7 root       20  0     0     0     0  S   0.0   0.0   0:00.00 kworker/u8+
    8 root       20  0     0     0     0  S   0.0   0.0   0:00.07 rcu_preempt
    9 root       20  0     0     0     0  S   0.0   0.0   0:00.00 rcu_sched
   10 root       20  0     0     0     0  S   0.0   0.0   0:00.00 rcu_bh
   11 root       20  0     0     0     0  S   0.0   0.0   0:00.04 rcuop/0
   12 root       20  0     0     0     0  S   0.0   0.0   0:00.00 rcuos/0
   13 root       20  0     0     0     0  S   0.0   0.0   0:00.00 rcuob/0
   14 root      -2  0     0     0     0  S   0.0   0.0   0:00.00 rcub/0
```

执行>top,看到y2持续在，即总线OK

SSH测试，再次连接即可。不会弹出确认提示。