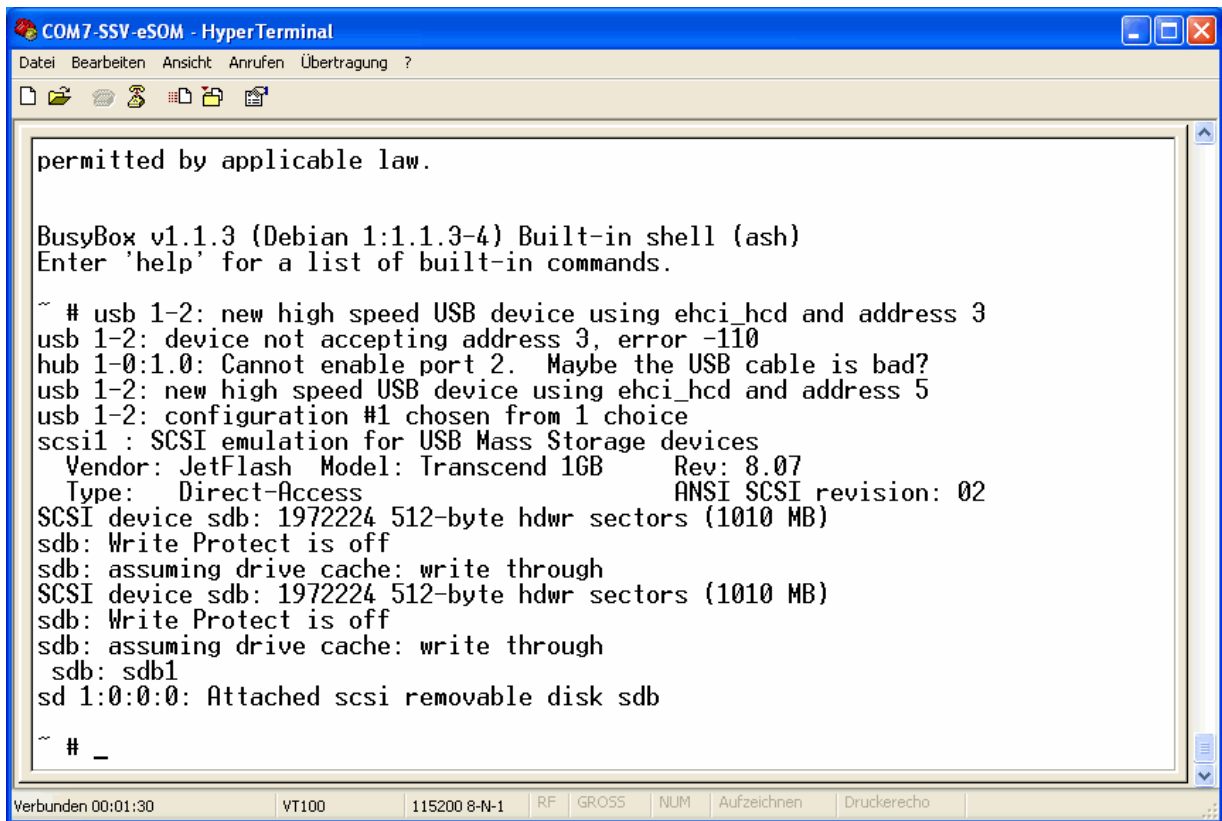


How to upgrade the eSOM/2586 MIN-Linux to MAX-Linux

The following steps describe how to upgrade the preinstalled MIN-Linux of the eSOM/2586 to a full-featured Debian MAX-Linux. The eSOM/2586 MAX-Linux is available on a USB stick.

To follow these steps it is necessary to access the eSOM/2586 MIN-Linux over a RS232-based serial console. To run the MAX-Linux default configuration, the eSOM/2586 needs a VGA-sized TFT LCD with a 4-wire touch screen.

- **1. Step:** Connect the USB stick with the ready-to-install MAX-Linux over a USB interface cable to connector J9 (USB1 of the USB1/USB2 connector) of the BB6/eSOM base board (see *Base Board BB6/eSOM Hardware Reference Manual* for more information). Watch the USB driver messages for the device name. The USB stick will be the disk device *sdb* or *sdb1*.



```
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permitted by applicable law.

BusyBox v1.1.3 (Debian 1:1.1.3-4) Built-in shell (ash)
Enter 'help' for a list of built-in commands.

~ # usb 1-2: new high speed USB device using ehci_hcd and address 3
usb 1-2: device not accepting address 3, error -110
hub 1-0:1.0: Cannot enable port 2. Maybe the USB cable is bad?
usb 1-2: new high speed USB device using ehci_hcd and address 5
usb 1-2: configuration #1 chosen from 1 choice
scsi1 : SCSI emulation for USB Mass Storage devices
Vendor: JetFlash Model: Transcend 1GB Rev: 8.07
Type: Direct-Access ANSI SCSI revision: 02
SCSI device sdb: 197224 512-byte hdwr sectors (1010 MB)
sdb: Write Protect is off
sdb: assuming drive cache: write through
SCSI device sdb: 197224 512-byte hdwr sectors (1010 MB)
sdb: Write Protect is off
sdb: assuming drive cache: write through
sdb: sdb1
sd 1:0:0:0: Attached scsi removable disk sdb

~ # _
```

- **2. Step:** The USB stick contains the two files *esom2586-rootfs.tar.gz* and *syslinux.cfg*. The archive file *esom2586-rootfs.tar.gz* offers a new file system for the eSOM/2586 NAND flash. This file system is the main difference between the MIN- and MAX-Linux. The Linux kernel for both versions is the same. Please mount the USB stick with one of the following two command lines to the eSOM/2586 directory */mnt*:

```
mount -t vfat /dev/sdb /mnt
```

or

```
mount -t vfat /dev/sdb1 /mnt
```

```

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~ # usb 1-2: new high speed USB device using ehci_hcd and address 3
usb 1-2: device not accepting address 3, error -110
hub 1-0:1.0: Cannot enable port 2. Maybe the USB cable is bad?
usb 1-2: new high speed USB device using ehci_hcd and address 5
usb 1-2: configuration #1 chosen from 1 choice
scsi1 : SCSI emulation for USB Mass Storage devices
        Vendor: JetFlash Model: Transcend 1GB Rev: 8.07
        Type:   Direct-Access ANSI SCSI revision: 02
SCSI device sdb: 1972224 512-byte hdwr sectors (1010 MB)
sdb: Write Protect is off
sdb: assuming drive cache: write through
SCSI device sdb: 1972224 512-byte hdwr sectors (1010 MB)
sdb: Write Protect is off
sdb: assuming drive cache: write through
sdb: sdb1
sd 1:0:0:0: Attached scsi removable disk sdb

~ # mount -t vfat /dev/sdb1 /mnt
~ # ls -al /mnt
drwxr-xr-x  2 root  root    4096 Jan  1  1970 .
drwxr-xr-x 17 root  root   1024 Sep 19  2008 ..
-rwxr-xr-x  1 root  root  142987867 May 20  2009 esom2586-rootfs.tar.gz
-rwxr-xr-x  1 root  root    379 Feb  4  2009 syslinux.cfg
~ # _
    
```

- **3. Step:** Mount the internal partition of the eSOM/2586 NAND flash to `/media/sda5`. Then change the directory and run the `gzip` tool to unpack `esom2586-rootfs.tar.gz`.

```

mount /dev/sda5 /media/sda5
cd /media/sda5
tar xvzf /mnt/esom2586-rootfs.tar.gz
    
```

```

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./sbin/raw
./sbin/ifdown
./sbin/rmmod.modutils
./sbin/syslog-ng
./sbin/ip6tables-restore
./sbin/iptables-save
./sbin/findfs
./sbin/fsck
./sbin/kallsyms
./sbin/modinfo
./sbin/mingetty
./sbin/e2fsck
./sbin/sulogin
./sbin/getty
./sbin/fdisk
./sbin/blkid
./sbin/modprobe.modutils
./sbin/telinit
./sbin/ipmaddr
./sbin/slattach
./sbin/fsck.cramfs
./sbin/sfdisk
./sbin/dhclient3
_
    
```

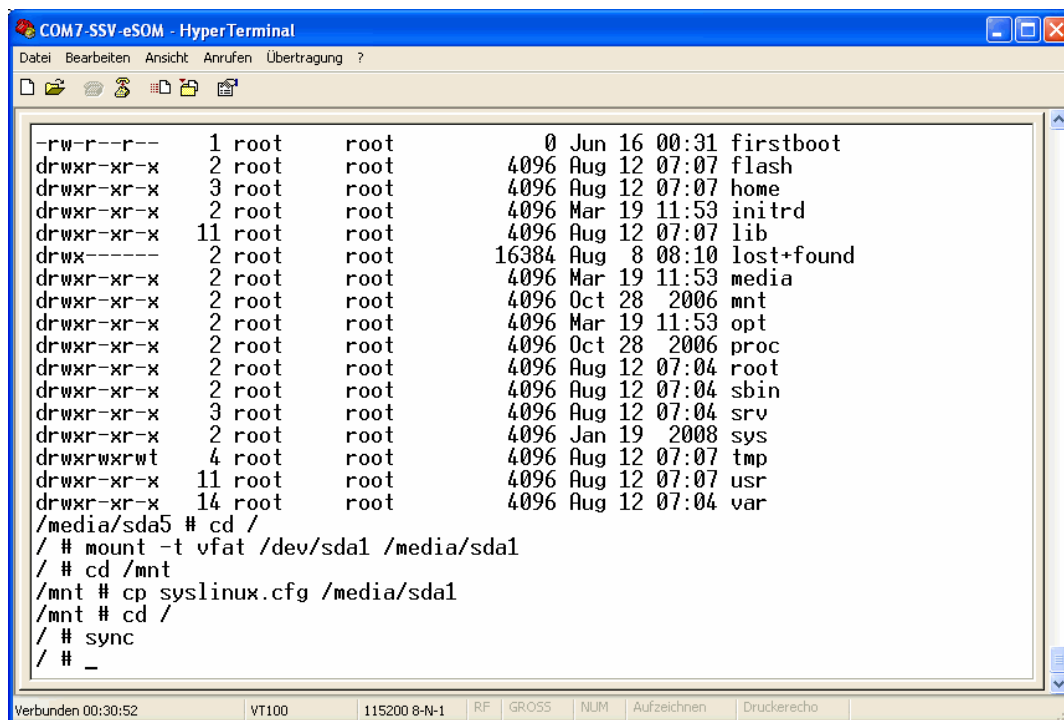
This will extract the archive file and create the complete new root file system in the extended partition of the eSOM/2586 NAND flash. Because the final file system will occupy about 300 Mbytes in flash memory this may take a while (approx. 10 minutes). So please be patient and leave the system alone to do its job. Do not remove the USB stick during this process or power down the eSOM/2586. This may lead to data loss or leave your system unusable. So please take care.

After the *gzip* tool finish's so please check with the following command line the new files and directories within */media/sda5*.

```
ls -al
```

- **4. Step:** With the following sequence of command lines we modify the eSOM/2586 Linux boot loader within the directory */media/sda1* to boot from now on the MAX-Linux:

```
cd /
mount -t vfat /dev/sda1 /media/sda1
cd /mnt
cp syslinux.cfg /media/sda1
cd /
sync
```

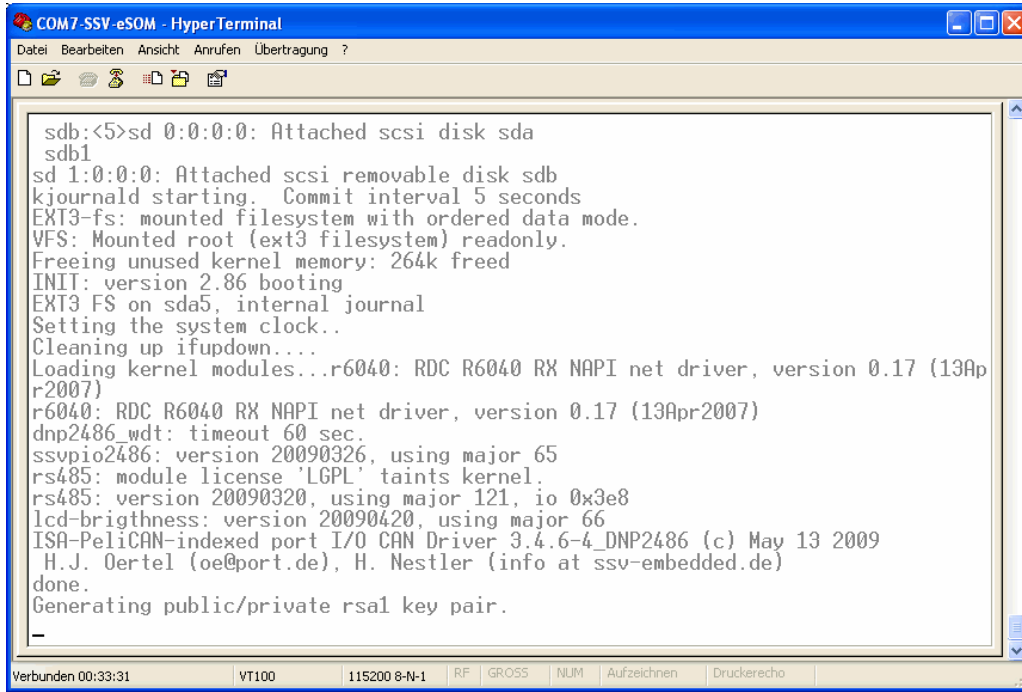


- **5. Step:** Finally we have to un-mount the directories */media/sda1*, */media/sda5* and */mnt* from the root file system.

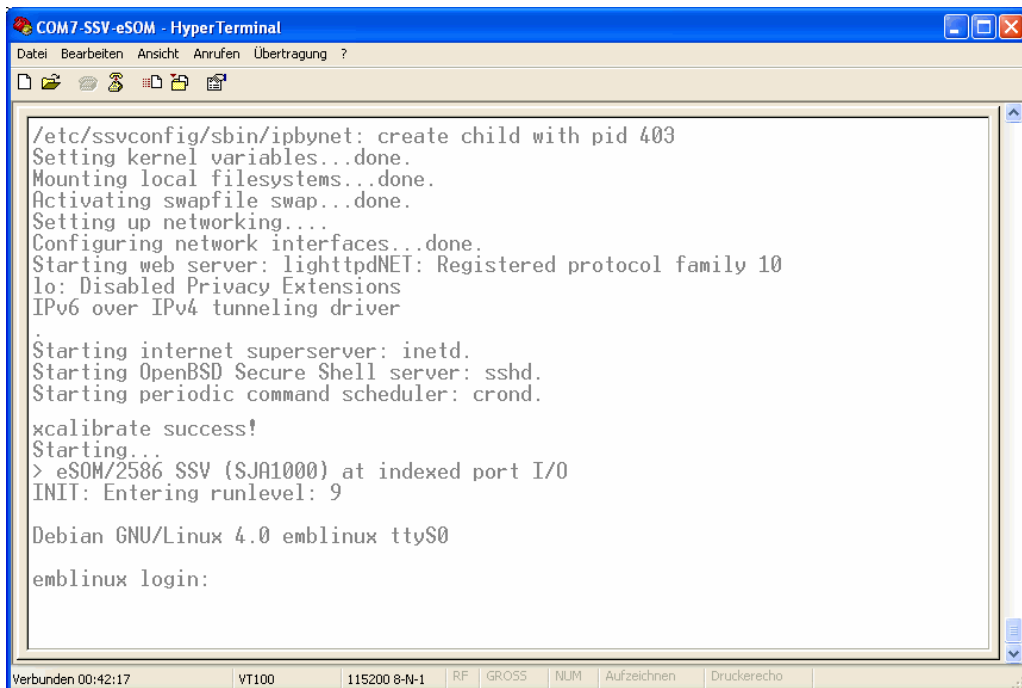
```
umount /media/sda1
umount /media/sda5
```

`umount /mnt`

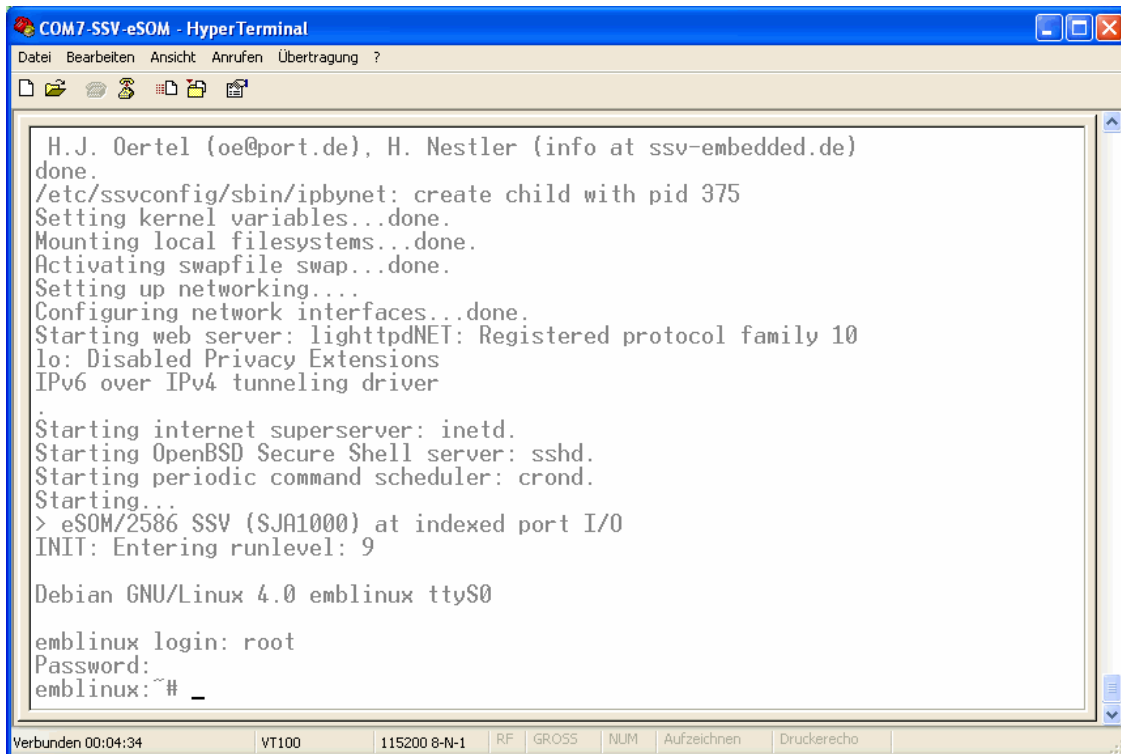
- **6. Step:** Now please reboot the eSOM/2586 and watch the output message in the VGA TFT LCD very carefully.



- **7. Step:** Within the first MAX-Linux boot process the eSOM/2586 executes some special tasks. After the SSL key generation the MAX-Linux runs a touch screen calibration program. So please watch the VGA TFT LCD and touch the calibration points if the calibration program is requesting this help.



Finally store the touch screen calibration data into the eSOM/2586 NAND flash. After this the eSOM/2586 MAX-Linux is ready for your first login with user name *root* and password *root*.



```
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H.J. Oertel (oe@port.de), H. Nestler (info at ssv-embedded.de)
done.
/etc/ssvconfig/sbin/ipbynet: create child with pid 375
Setting kernel variables...done.
Mounting local filesystems...done.
Activating swapfile swap...done.
Setting up networking...
Configuring network interfaces...done.
Starting web server: lighttpdNET: Registered protocol family 10
lo: Disabled Privacy Extensions
IPv6 over IPv4 tunneling driver
.
Starting internet superserver: inetd.
Starting OpenBSD Secure Shell server: sshd.
Starting periodic command scheduler: crond.
Starting...
> eSOM/2586 SSV (SJA1000) at indexed port I/O
INIT: Entering runlevel: 9

Debian GNU/Linux 4.0 emblinux ttyS0

emblinux login: root
Password:
emblinux:~# _
```

- **8. Step:** Erase the file */etc/resolv.conf*. This step will be only necessary after the first MAX-Linux login.

```
rm /etc/resolv.conf
```

That is all.