

Non-destructive eComStation Installation to the ASUS EeePC.



Author: Ed Durrant

Support from: Rainer Stroebel and Peter Rehfisch

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Please note this is an initial build – it gets eCS operational but without network, sound or higher than VGA video resolution. These are being worked on but there was a demand from several people to document what we have achieved as a community, so far.

This project was to install eComStation (version 2.0 RC4) on the ASUS EeePC as I felt that the two would go together very well. The ASUS EeePC has limited power and capacity and eComStation runs well on lower powered systems.

The model of EeePC used in this project is the PC701 4G. This has a 900MHz Celeron running at 600MHz, a 7inch screen, an internal 4GB Solid State Disk, three USB ports, a built in SD memory card reader, webcam and 10/100 Ethernet and 802.11G WiFi networking. Some models also come with a V90 modem (but not the ones released in Australia). Not bad in a very portable (900grams) unit about this size of a A5 diary. My model was from the original “A” batch and has an empty mini PCIe socket where a larger Solid State Disk (presently up to 16GB in size) can be installed. Not all releases of this PC have the extra socket, so I did not want to use that approach to install eCS and these SSDs are hard to obtain and very expensive. On the other hand the speed and capacity of SD (camera) memory cards is increasing and the cost falling drastically at present. The EeePC has the ability to select which device to boot from (including USB devices) through a menu that is not dissimilar to the OS/2 boot manager menu in appearance. This appears if you press the escape key at startup (the same screen where you can enter the BIOS setup from by pressing F2).

As I did not want to risk losing the standard install on the PC, which uses 4 primary partitions and as such is not suitable for a shrinking process to create an extra partition, I was only left with the SD card option. This also appeals to me as it means one can have a complete operating system on a card about the size of your thumb nail and put it in when required and remove it otherwise. Using an SD card (ideally the same colour as the EeePC – which comes in a choice of 5 colours, Pearl white and black being the most common) it can't even be seen that it is there.

As you may know, eComStation 2.0 cannot at present be installed from a USB attached device (normally a CD/DVD Rom drive), so this meant that I needed to prepare the image on my desktop PC and then copy and adapt it to go onto the SD card.

I would not have achieved this project without the help of Rainer Stroebel (Germany) and Peter Rehfisch (Australia) who have had a lot of experience with booting from USB devices (which the card reader in the EeePC is). Thankyou to both of you !

The area where we had to change an “out of the box” installation config.sys is in the disk accessing area. To make an USB device acceptable to OS/2-eCS as a bootable device the /I13 parameter must be added to the usbd.sys base device drive and the OS2DASD basedev replaced with dani's DANIDASD with parameters to suit the hardware. DANIDASD.DMD needs to be copied into the \OS2\BOOT\ directory. (If you don't have the DANIDASD driver it can be downloaded from the Hobbes website). After a lot of trial and error and investigation it was found that eCS will see the SD card as drive D: and hence we needed to set the BD (boot drive) parameter to be D and “mount” (/MT) the first partition on our card as Aa. Without these changes (and removal of the OS2LVM Basedev) you will either get a Trap 000D abort or the message that OS/2 cannot operate your harddisk a little after the eCS globe logo goes away.

Pre-requisites:

- Working EeePC system
- Desktop system with space for a “template install” eCS D: partition.
- eComStation 2.0 install CD and license key
- Working Secure Digital memory card that can be totally wiped.
- SD Card reader/writer attached and operational on your desktop system
(I use the card reader in my Brother MFC 620CN Multi Function Centre – printer/scanner/fax/card reader)

OK, so now on to the section you have all been seeking – the step by step process so that you can do the same:

1. On an existing eCS 2.0 installed PC, adjust drive letters and freespace so that you can create a 1GB partition with the letter D:
2. Use the standard eCS 2.0 install to install to this partition, select the option to set your own configuration (the character based screens), in here change the available video to ONLY be VGA, then go on to the advanced install options in the install process itself and make sure you select the following options:
 - No audio adapter
 - No network adapter
 - VGA only graphics
 - HPFS formatted partition.
3. Once you have installed this “template” eComStation, you can boot it on your desktop system to make sure it works but do not make any changes to it.
4. To be able to use an SD card in PRM (partitioned removable media) mode with eCS and the EeePC, it first needs to be completely wiped. In Dfsee, follow the following steps:
 - file / open object to work with / disk / (SD Disk)
 - actions / erase, wipe selected areas / erase, wipe current object
 - mode=fdisk / mbr area operations / wipe start of disk to zero / (SD Disk)

NOTE: although Dfsee recommends a reboot at this stage to ensure the correct GEO of the card is read, I have found that when booting at this point my MFC card reader renders the card no longer accessible. My recommendation at this point is not to reboot. (please refer to the troubleshooting section at the end of this article for how I recover a non-working SD card problem caused by interrupting the process). You may be able to reboot if you are not using a reader with additional “intelligence to reject faulty cards” such as in MFCs.

Now we need to create the new partition:

- mode=fdisk / mbr area operations / new mbr code, erase tables / (SD Disk)
 - mode=fdisk / create new partition / (SD Disk)
 - create primary partition
 - partition type HPFS
 - create new mbr clear existing
 - do not include LVM data
 - set as active partition
 - IBM/Default Dfsee CHS style
5. Eject the disk (EJECT “drive:” from a command prompt).
 6. Remove & re-insert the card.
 7. Refresh removable media.

8. Format the SD card as HPFS.
9. Xcopy (using parameters /S /T /H /E /R /O /V) your previously prepared eCS partition to the card.
10. Add DANIDASD.DMD into the OS2\BOOT directory on the card.
11. Apply system tracks by running SYSINSTX (SD drive letter:) from \OS2\INSTALL\BOOTDISK on your running eCS 2.0 desktop system.
12. Required changes to the config.sys of the system on the SD Card

Add the /I13 Parameter to the USBDEV.SYS statement and move the statement so that it is the first of the USB device statements.

```
BASEDEV=USBDEV.SYS /V /I13
```

Comment the OS2LVM.DMD and OS2DASD.DMD statements

```
Rem Basedev=OS2LVM.DMD
Rem Basedev=OS2DASD.DMD
```

Add the DANIDASD.DMD statement

```
BASEDEV=DANIDASD.DMD /BD:D /MT:Aa
```

- For simplicity you can replace your Basedev section with the [Base Device Drivers] section below, this will ensure all basedevs are in the correct sequence:

```
REM [ Base Device Drivers ]
BASEDEV=IBMKBD.SYS
BASEDEV=TIMER0.SYS
BASEDEV=PRINT01.SYS
BASEDEV=CHKDSK.SYS
```

```
REM [ Base Device Drivers for USBBOOT ]
BASEDEV=USBDEV.SYS /V /I13
BASEDEV=USBHCD.SYS
BASEDEV=USBHCD.SYS
BASEDEV=USBHCD.SYS
BASEDEV=USBHCD.SYS
BASEDEV=USBHCD.SYS
BASEDEV=usbhid.sys
BASEDEV=USBMSD.ADD /V /FLOPPIES:0 /REMOVABLES:5
basedev=danis506.add /V
BASEDEV=DANIDASD.DMD /BD:D /MT:Aa
```

```
REM [ Other Base Device Drivers ]
rem BASEDEV=CADH.SYS
rem BASEDEV=IBM1FLPY.ADD
rem BASEDEV=USBCDROM.ADD
rem BASEDEV=DANIATAP.FLT
```

13. Eject the card from your desktop attached card reader.
14. Test boot in your EeePC:
 - a) insert the card in the card reader
 - b) turn on the EeePC
 - c) when the grey screen with press F2 for setup appears, press the escape key
 - d) the boot selection menu now appears, use the cursor key to go to the SD card reader and press enter.
 - e) If all goes well the system should boot up to a similar looking desktop to that of your "template partition". Turn on archiving before doing any modifications.
 - f) Install drivers (when available) for audio, networking and video.

HAVE FUN !!

Troubleshooting section:

- What if the SD card stops being accessible or is accessible but doesn't let you write to it or re-partition it? In my case I have found the only way to address this issue is to put the card into a camera and re-format it there and then restart the process from point 4 above.

References

For booting from USB and USB hints and tricks **OS4YOU Wiki** –
<http://www.os4you.de/wiki-usb-boot-en.html> and <http://www.os4you.de/wiki-usb-tricks-en.html>
(substitute de for en to access the german versions)

For general information on the EeePC **Eeeuser Wiki** –
<http://forum.eeeuser.com/index.php>

For DANIDASD and other OS/2 drivers **Hobbes site** -
<http://hobbes.nmsu.edu>

CARDSPEED - Card Readers and Memory Cards & SD Compatibility
<http://www.hjreggel.net/cardspeed/index.html#special-sd.html>