

Firmware programming instructions for BF609 EVSK

There is one image that needs to be programmed for the BF609 EVSK:

- Vision Application Demo Programmed into SD Card

This document discusses how to program this SD card with the firmware image.

Required hardware and software

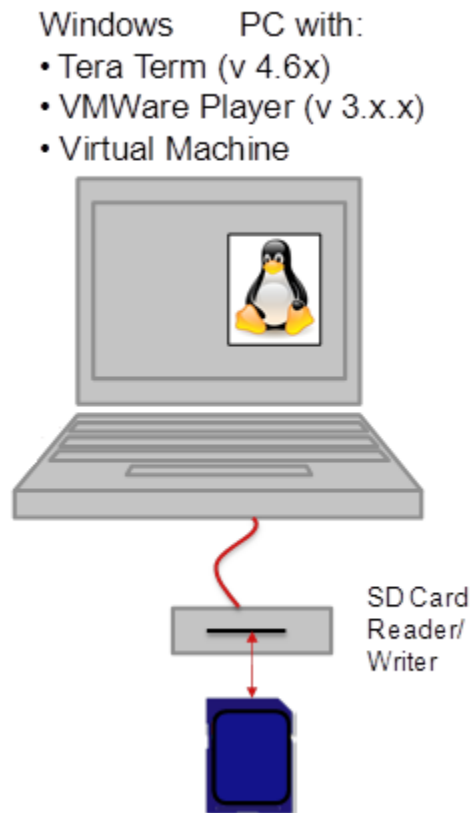
Required Hardware:

- PC running Windows XP
 - o At least 2GB of memory installed
 - o USB port
- External SD Card adapter

Required Software:

- VMWare Player (v5.0.0 or later)
- Ubuntu 10.4 VMware image, preconfigured with TFTP server already running
- BF609 EVSK Firmware Package (zip file), which includes:
 - o Root filesystem tar file (VisionApp.ldr)
 - o SD card make script (make_sdcard.sh)

The following diagram shows the hardware setup required to program the images into the board.



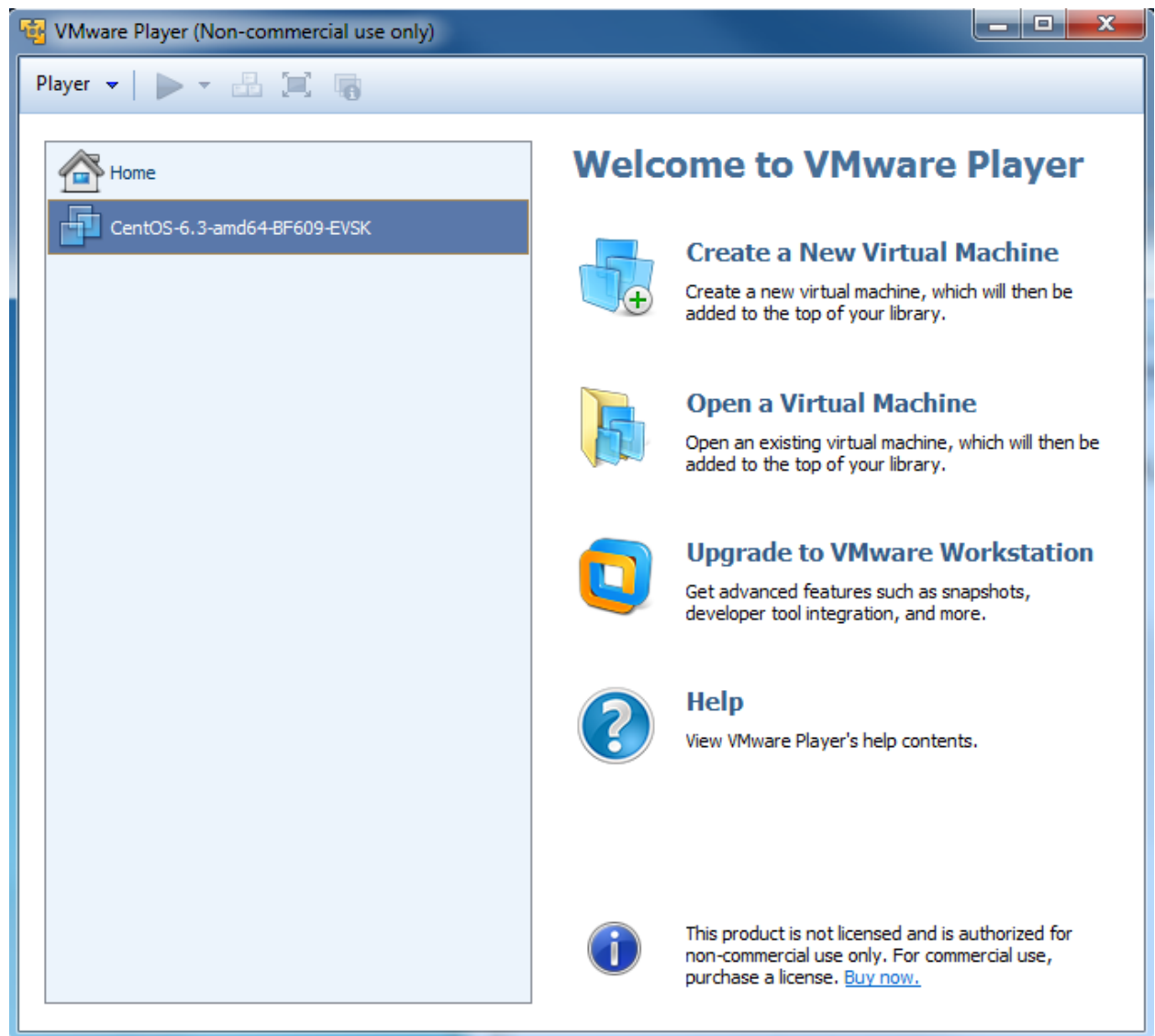
On lab production workstation:

1. Launch VMware, select Centos (BF609 EVSK) virtual machine and play the virtual machine.

Step 1) Unpacking the Firmware Package

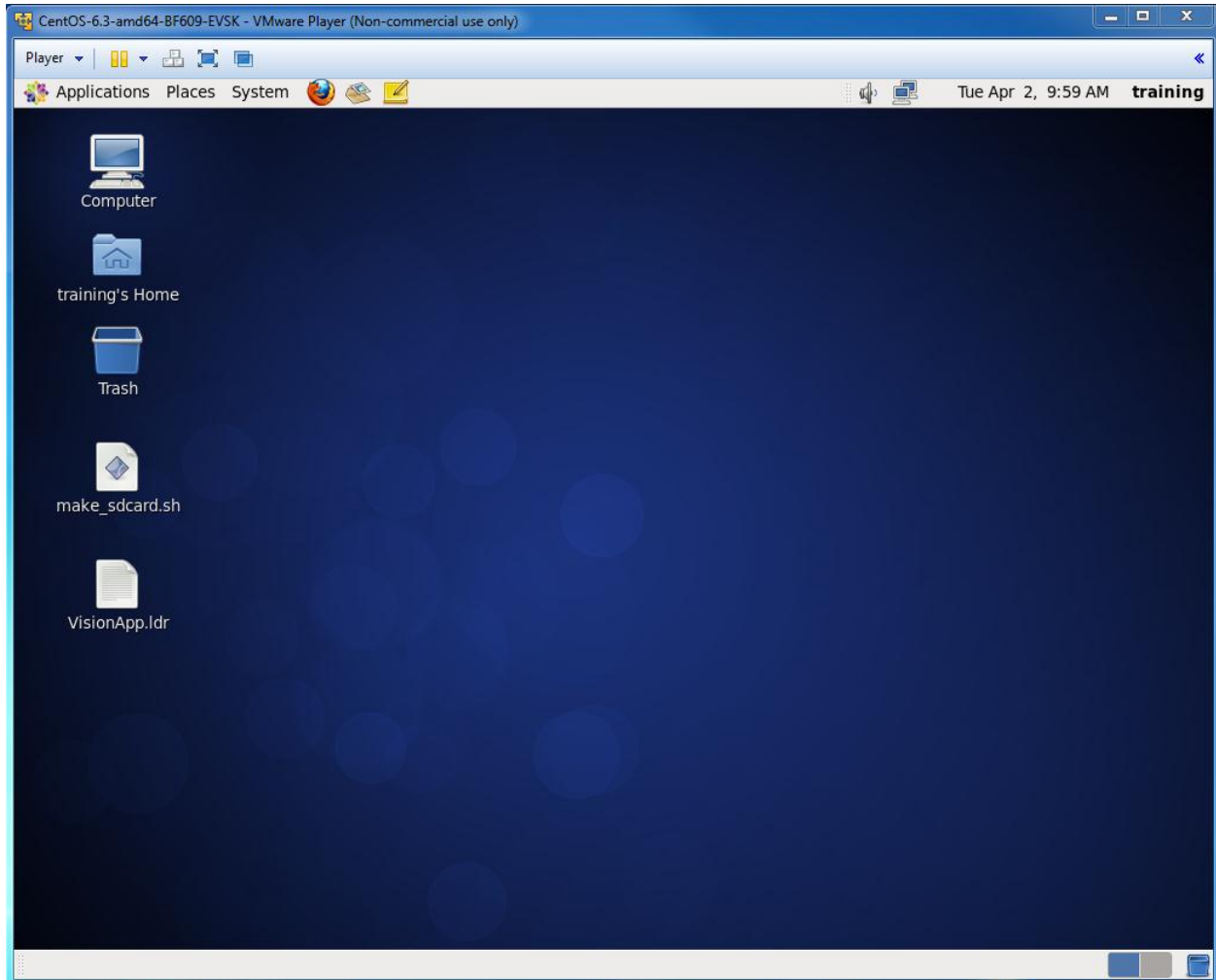
Note: This step needs only be done once per host configuration or test workstation setup)

- 1) Open VMware Player and start the CentOS 6.3 virtual machine for BF609 EVSK. Select the training user to login to the desktop environment, the password is **Avnet**

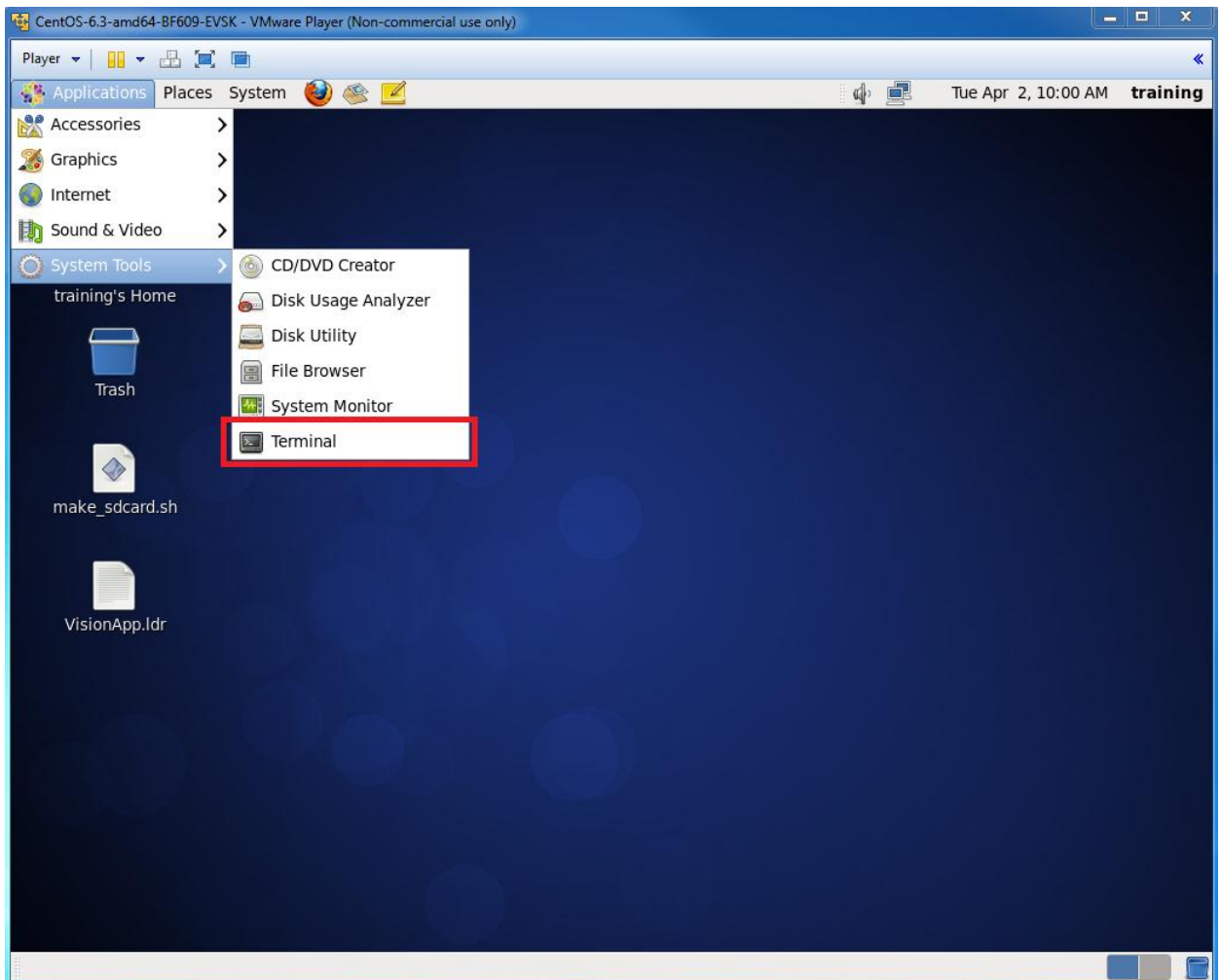


- 2) Drag and drop the following files from the **Production Test** folder into the VMware Player window:
 - a. Vision Application image file (VisionApp.ldr)
 - b. SD card make script (make_sdcard.sh)

When you are done you should see something like this:



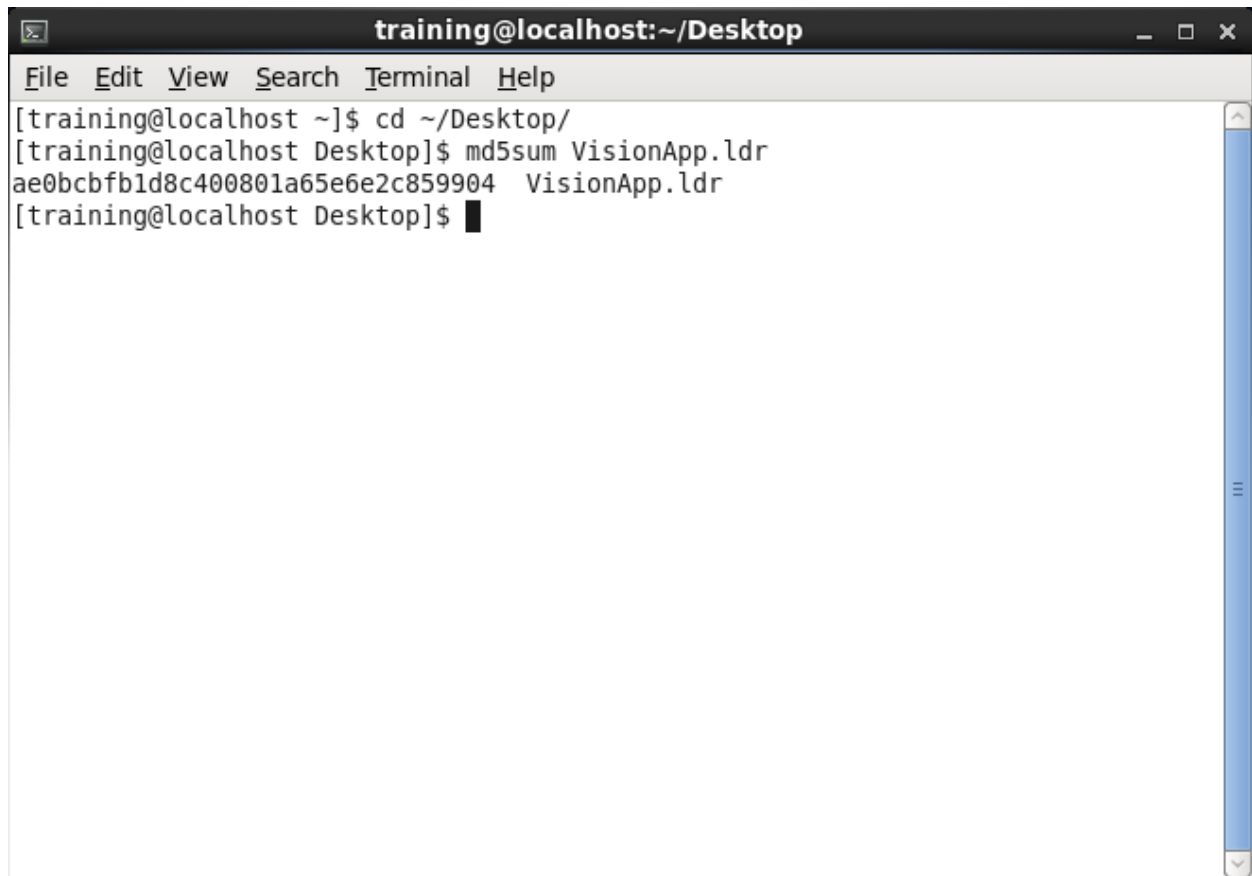
- 3) On the CentOS Desktop, open a terminal session using the **Applications→System Tools→Terminal** menu item.



4) In the terminal window, type the following commands to check the firmware archive:

```
$ cd ~/Desktop  
$ md5sum VisionApp.ldr
```

The result for the MD5 checksum command should match the string **ae0bcbfb1d8c400801a65e6e2c859904** and if the checksums do not match, the firmware image is corrupt or out of date.

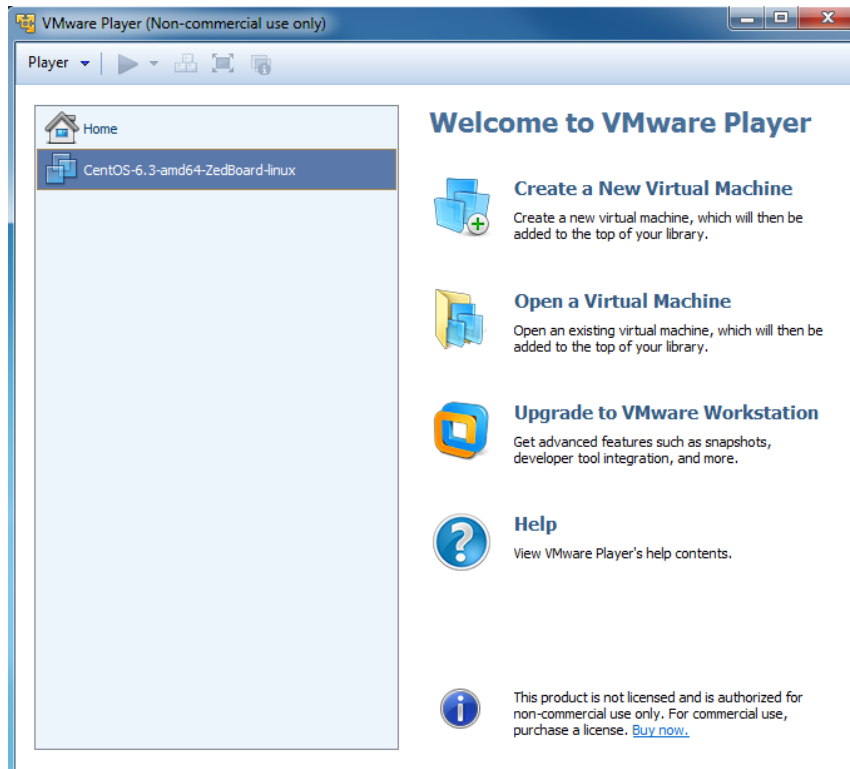
A screenshot of a terminal window titled "training@localhost:~/Desktop". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal content shows the following commands and output:

```
[training@localhost ~]$ cd ~/Desktop/  
[training@localhost Desktop]$ md5sum VisionApp.ldr  
ae0bcbfb1d8c400801a65e6e2c859904 VisionApp.ldr  
[training@localhost Desktop]$
```

5) The production configuration setup is now complete.

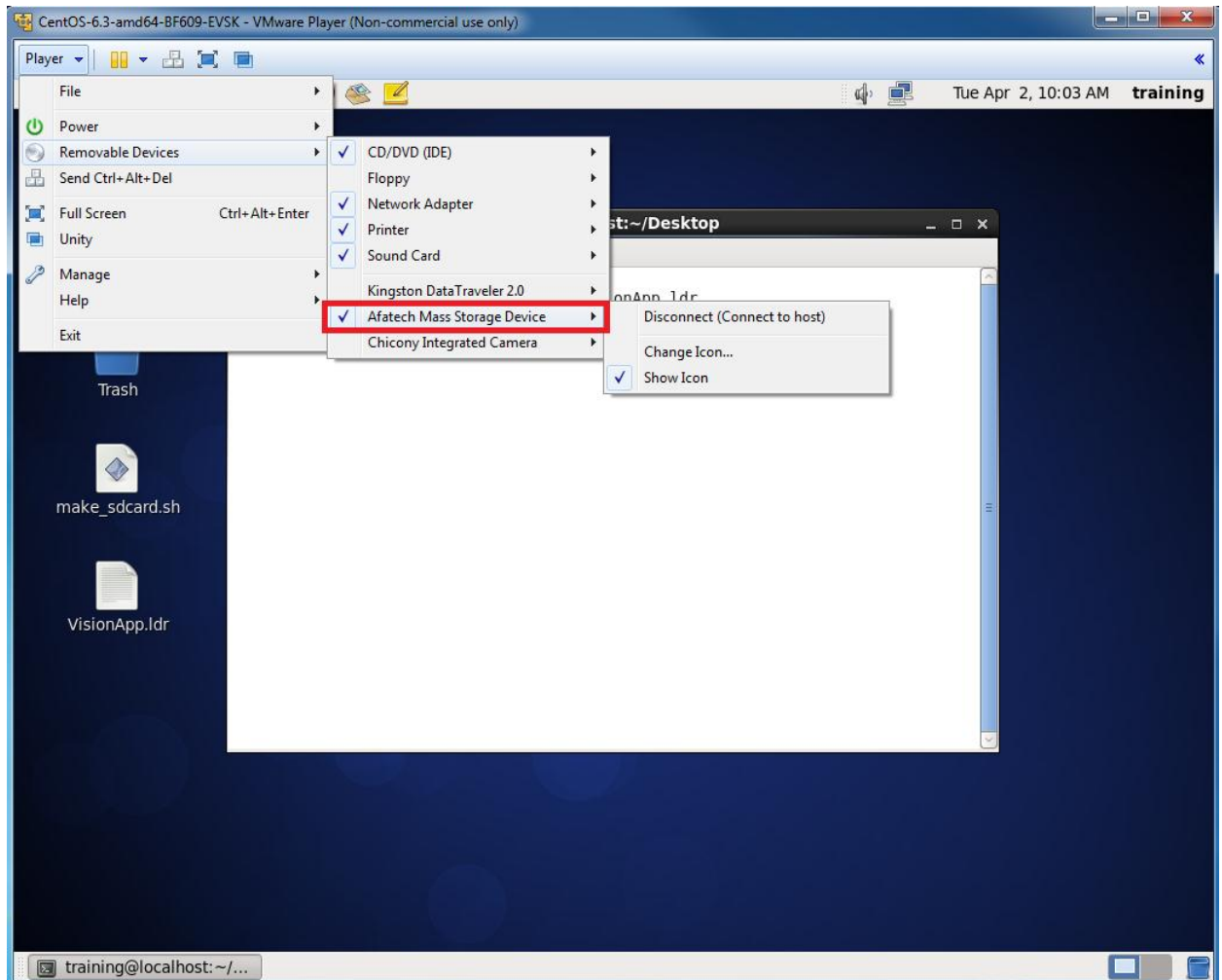
Step 2) Configuring the SD Card

- 1) If the VMware guest OS is not already opened, start the CentOS 6.3 virtual machine for BF609 EVSK. Select the training user to login to the desktop environment, the password is **Avnet**

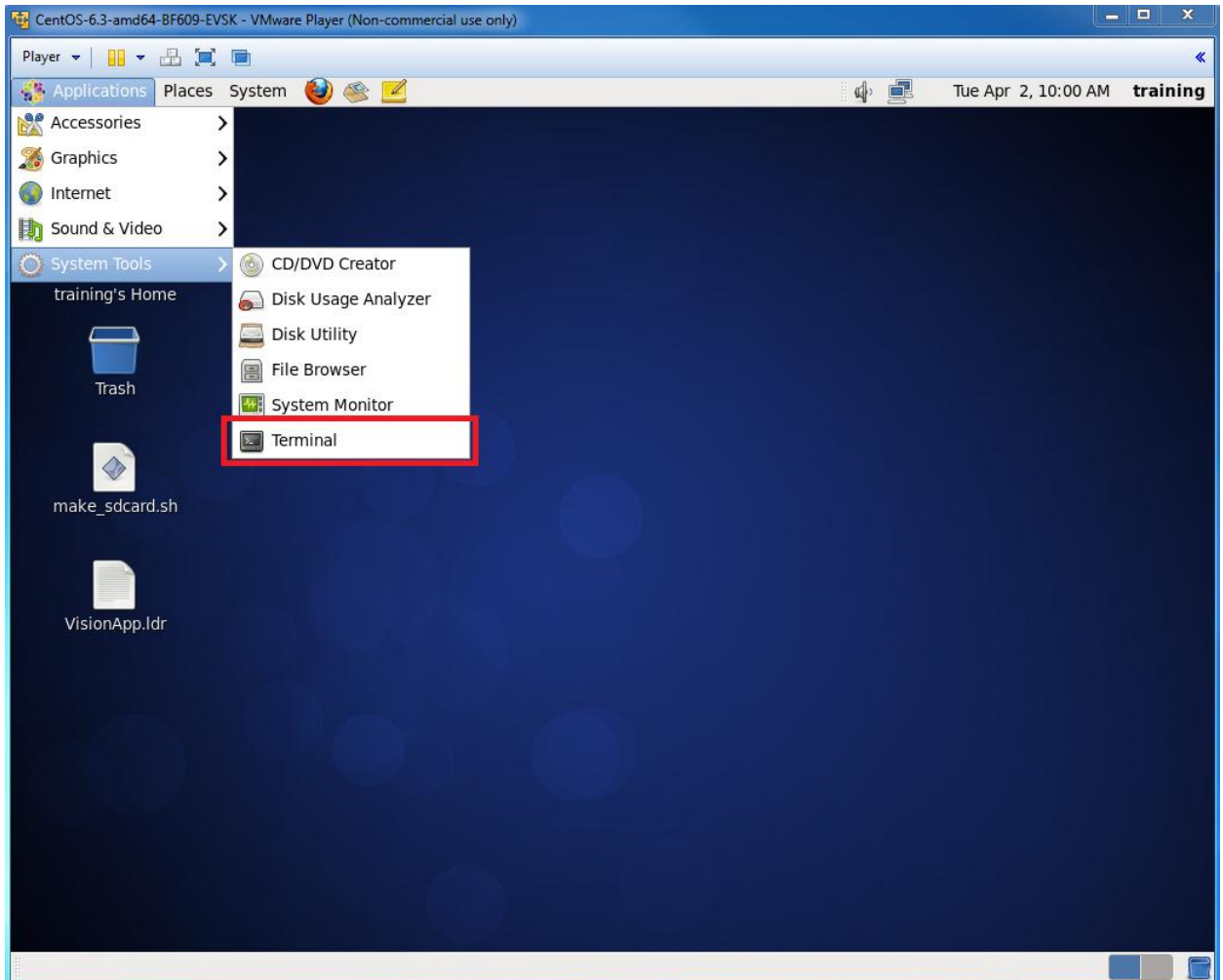


- 2) Connect your SD card USB adapter to the computer without an SD card inserted.

- 3) In the VMware Player window locate the **Player→Removable Devices** menu item and search through the list of devices to locate the device that represents the SD card reader. If the SD card reader device is already selected with a check mark adjacent to it, move on to the next step. Otherwise, connect the device to the guest OS by selecting the **Connect** menu item under the device listing. The device will automatically be removed from the Windows host OS and enumerated under the CentOS guest OS.



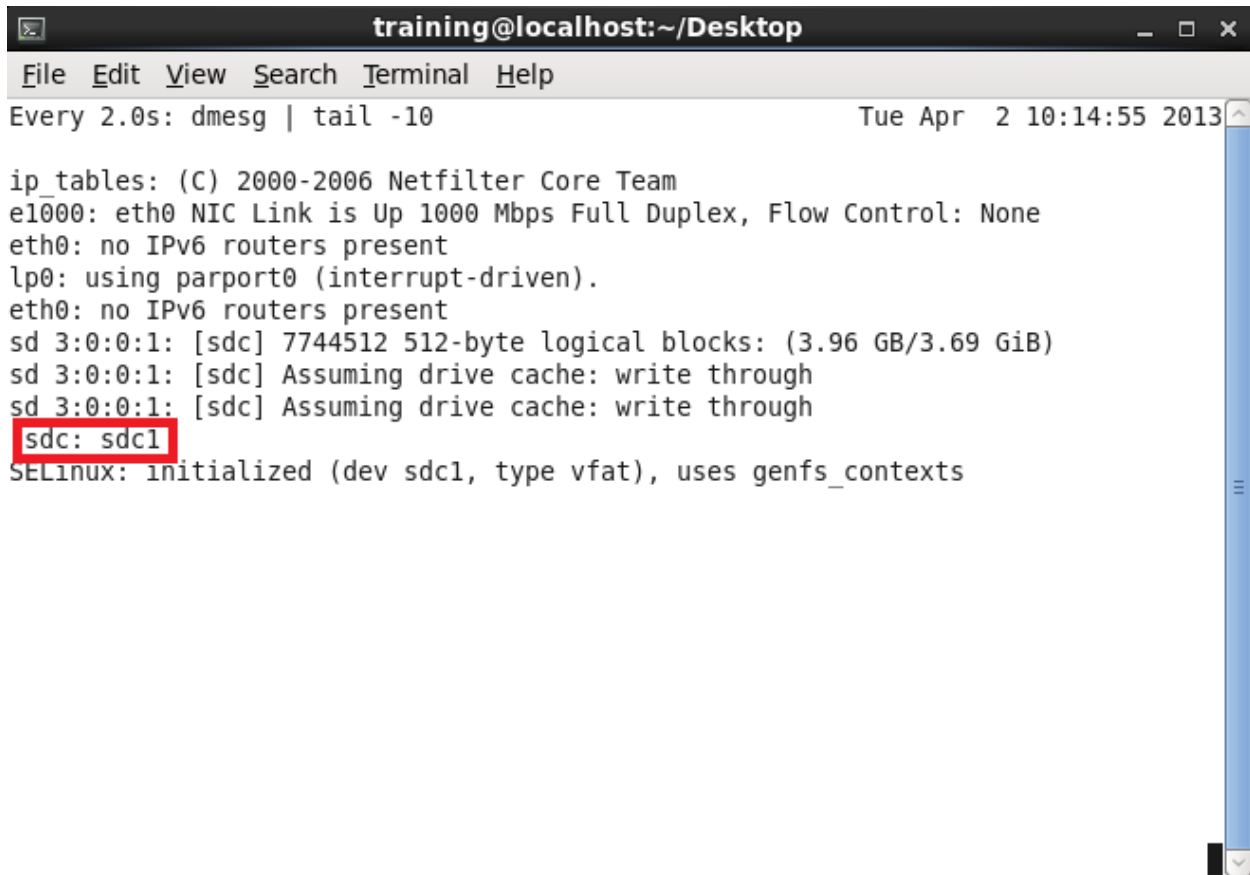
- 4) In the CentOS guest OS, open a terminal session if one is not already open.



- 5) Type the following commands into the terminal window to launch the **watch** utility:

```
$ cd ~/Desktop  
$ watch "dmesg | tail -10"
```

6) Plug in the SD Card to the SD Card adapter. You should see something like this:

A terminal window titled 'training@localhost:~/Desktop' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'dmesg | tail -10' is running. The output shows kernel messages for the SD card, with 'sdc: sdc1' highlighted in a red box. The messages include information about the SD card's logical blocks, drive cache, and SELinux initialization.

```
training@localhost:~/Desktop
File Edit View Search Terminal Help
Every 2.0s: dmesg | tail -10 Tue Apr 2 10:14:55 2013
ip_tables: (C) 2000-2006 Netfilter Core Team
e1000: eth0 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: None
eth0: no IPv6 routers present
lp0: using parport0 (interrupt-driven).
eth0: no IPv6 routers present
sd 3:0:0:1: [sdc] 7744512 512-byte logical blocks: (3.96 GB/3.69 GiB)
sd 3:0:0:1: [sdc] Assuming drive cache: write through
sd 3:0:0:1: [sdc] Assuming drive cache: write through
sdc: sdc1
SELinux: initialized (dev sdc1, type vfat), uses genfs_contexts
```

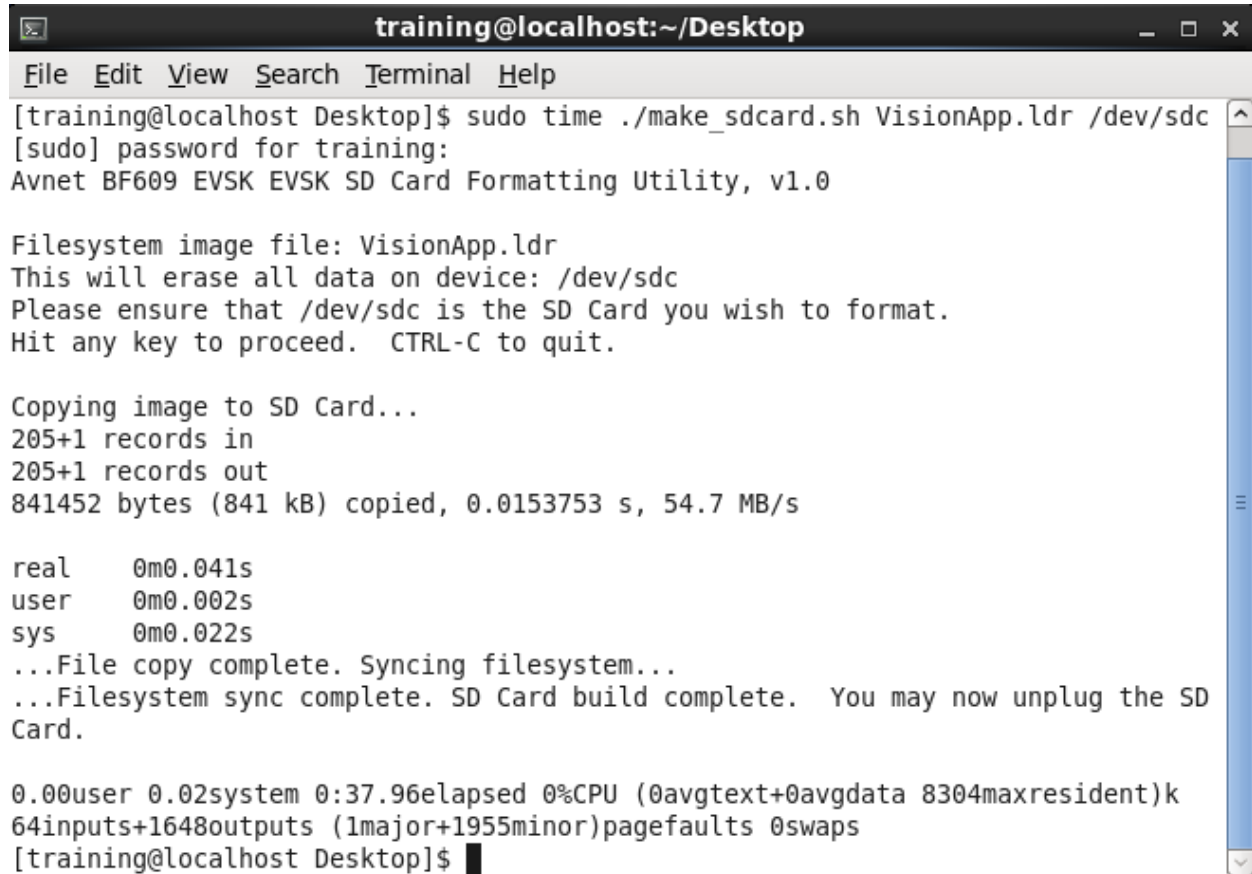
- a. In the above snapshot, the text “sdc” is highlighted this represents the disk device of the SD card that was inserted. The “sdc1” represents the first partition on the device that was used for this example but is not significant for this firmware programming operation. The last letter you see on the disk device may be different on your host (sdb, sdc, sdd, etc.). **Make a note of this device for the next steps.**
- b. Exit the **watch** utility by hitting CTRL-c to return to the command prompt.

- 7) Run the following command in the terminal window to begin writing the firmware image to the SD Card:

```
$ sudo time ./make_sdcard.sh VisionApp.ldr /dev/sd{b,c,d}
```

Where the **b,c,d** suffix is the letter you discovered during step 1 above. You may also be prompted for the sudo password for the training user, enter the password **Avnet**

An example of this command is shown in the image below.



```
training@localhost:~/Desktop
File Edit View Search Terminal Help
[training@localhost Desktop]$ sudo time ./make_sdcard.sh VisionApp.ldr /dev/sdc
[sudo] password for training:
Avnet BF609 EVSK EVSK SD Card Formatting Utility, v1.0

Filesystem image file: VisionApp.ldr
This will erase all data on device: /dev/sdc
Please ensure that /dev/sdc is the SD Card you wish to format.
Hit any key to proceed.  CTRL-C to quit.

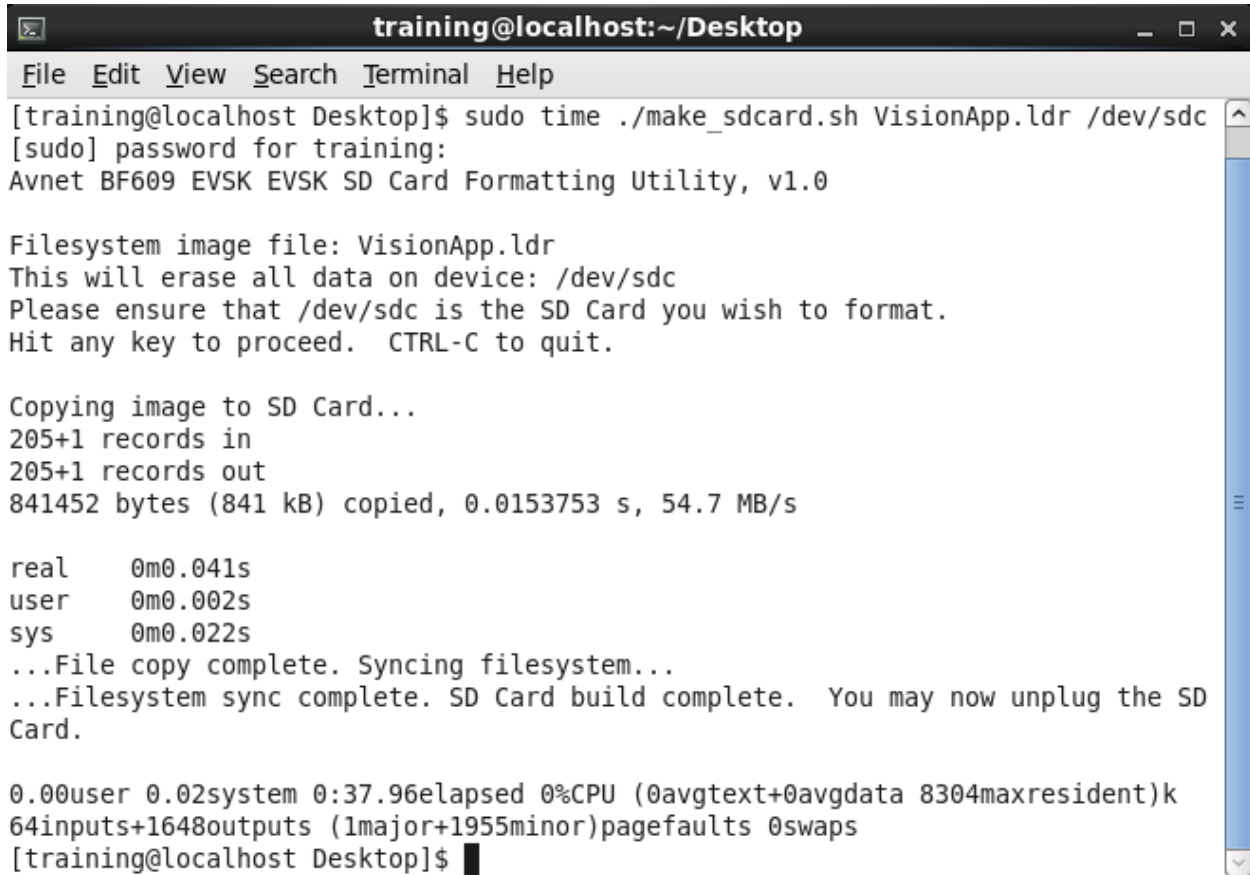
Copying image to SD Card...
205+1 records in
205+1 records out
841452 bytes (841 kB) copied, 0.0153753 s, 54.7 MB/s

real    0m0.041s
user    0m0.002s
sys     0m0.022s
...File copy complete. Syncing filesystem...
...Filesystem sync complete. SD Card build complete.  You may now unplug the SD
Card.

0.00user 0.02system 0:37.96elapsed 0%CPU (0avgtext+0avgdata 8304maxresident)k
64inputs+1648outputs (1major+1955minor)pagefaults 0swaps
[training@localhost Desktop]$
```

Follow the prompts to hit any key to proceed with the firmware and selected disk configuration. You will not have to press any additional keys until the programming process is complete. This step can take 10 to 20 seconds depending on the system configuration.

- 8) When you see the completion prompts and time report, the SD card programming is complete and the SD Card can be removed from the USB adapter.



```
training@localhost:~/Desktop
File Edit View Search Terminal Help
[training@localhost Desktop]$ sudo time ./make_sdcard.sh VisionApp.ldr /dev/sdc
[sudo] password for training:
Avnet BF609 EVSK EVSK SD Card Formatting Utility, v1.0

Filesystem image file: VisionApp.ldr
This will erase all data on device: /dev/sdc
Please ensure that /dev/sdc is the SD Card you wish to format.
Hit any key to proceed. CTRL-C to quit.

Copying image to SD Card...
205+1 records in
205+1 records out
841452 bytes (841 kB) copied, 0.0153753 s, 54.7 MB/s

real    0m0.041s
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...File copy complete. Syncing filesystem...
...Filesystem sync complete. SD Card build complete. You may now unplug the SD
Card.

0.00user 0.02system 0:37.96elapsed 0%CPU (0avgtext+0avgdata 8304maxresident)k
64inputs+1648outputs (1major+1955minor)pagefaults 0swaps
[training@localhost Desktop]$
```

HINT: Use the up arrow at the command prompt to repeat commands used in recent history.

NOTE: When done with all programming, close the VMware player from the **Player→Exit** menu selection.

Version History

Version	Date	Description/Change
1.0	02 Apr 2013	Initial Revision