Application Report
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Host USB Support on DVEVM

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ABSTRACT

The TMS320DM6446 device can be configured as a universal serial bus (USB) host or slave device. When configured as a host, it can support USB mass storage devices such as USB flash drives which are widely used today to transfer pictures, music, and documents between PCs, laptops, and portable devices; however, this support is not enabled by default. This document outlines the necessary steps for enabling the host USB support for mass storage devices on the digital video evaluation module (DVEVM).

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1 Building the Linux® Kernel With Host USB Mass Storage Support

The USB mass storage devices are the most common type of USB devices on the market. This section assumes that you are familiar with the *DVEVM Software Setup* section from the *DVEVM Getting Started Guide* (SPRUE66) that is included in the DVEVM kit. The *DVEVM Software Setup* section demonstrates the process of building a Linux kernel. This section uses the same directory structure defined in that document. The following steps demonstrate enabling support for host USB mass storage devices, such as USB flash-drives, on DVEVM.

1. Go to the directory where the Linux Support Package (LSP) is found, on the host Linux workstation.

   ```
   host $ cd /home/user/workdir/lsp/ti-davinci
   ```

2. Bring up Linux kernel configuration utility.

   ```
   host $ make ARCH=arm CROSS_COMPILE=arm_v5t_le- xconfig
   ```

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3. Go to *Device Drivers* → *USB support*, check (as opposed to '*', or 'M') the *USB Mass Storage support* box.

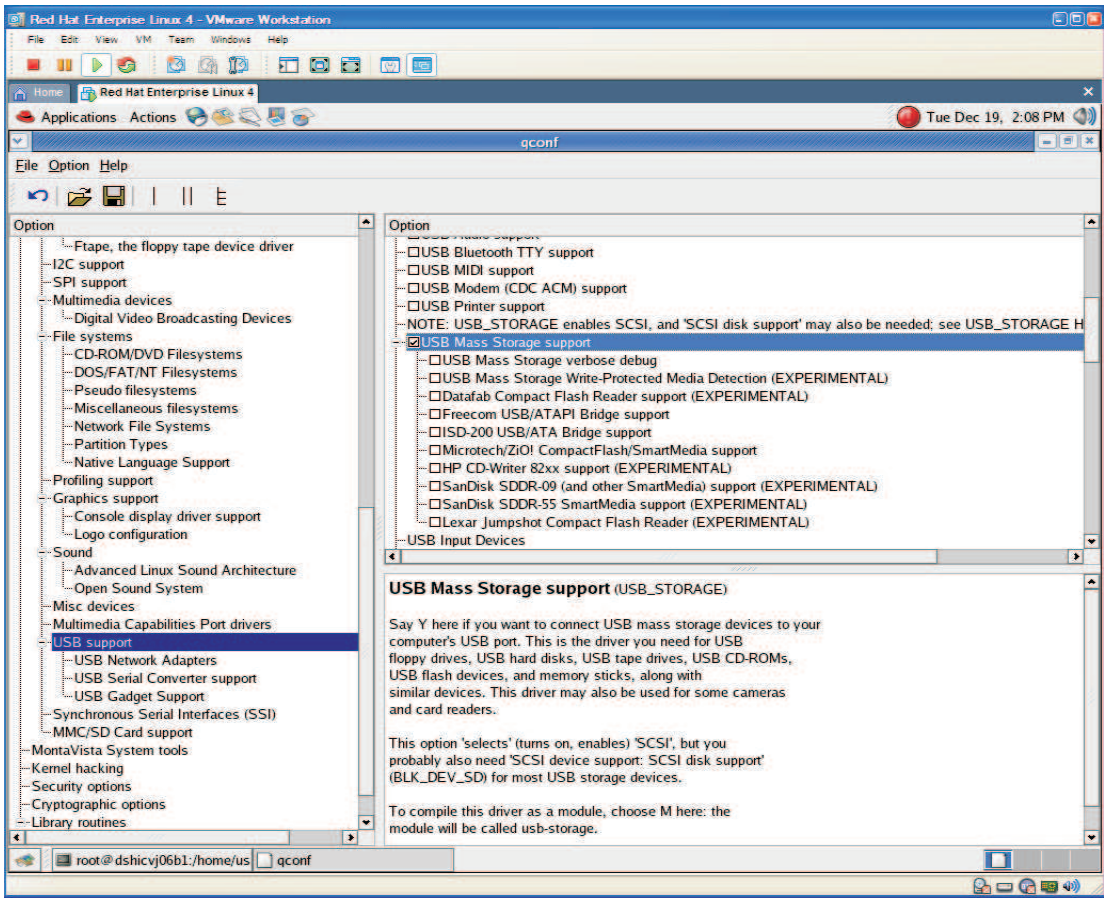

Figure 1. Xconfig Utility Showing How to Enable USB Host Mass Storage Support

4. Go to *Device Drivers* → *SCSI device support*, check the *SCSI disk support* box

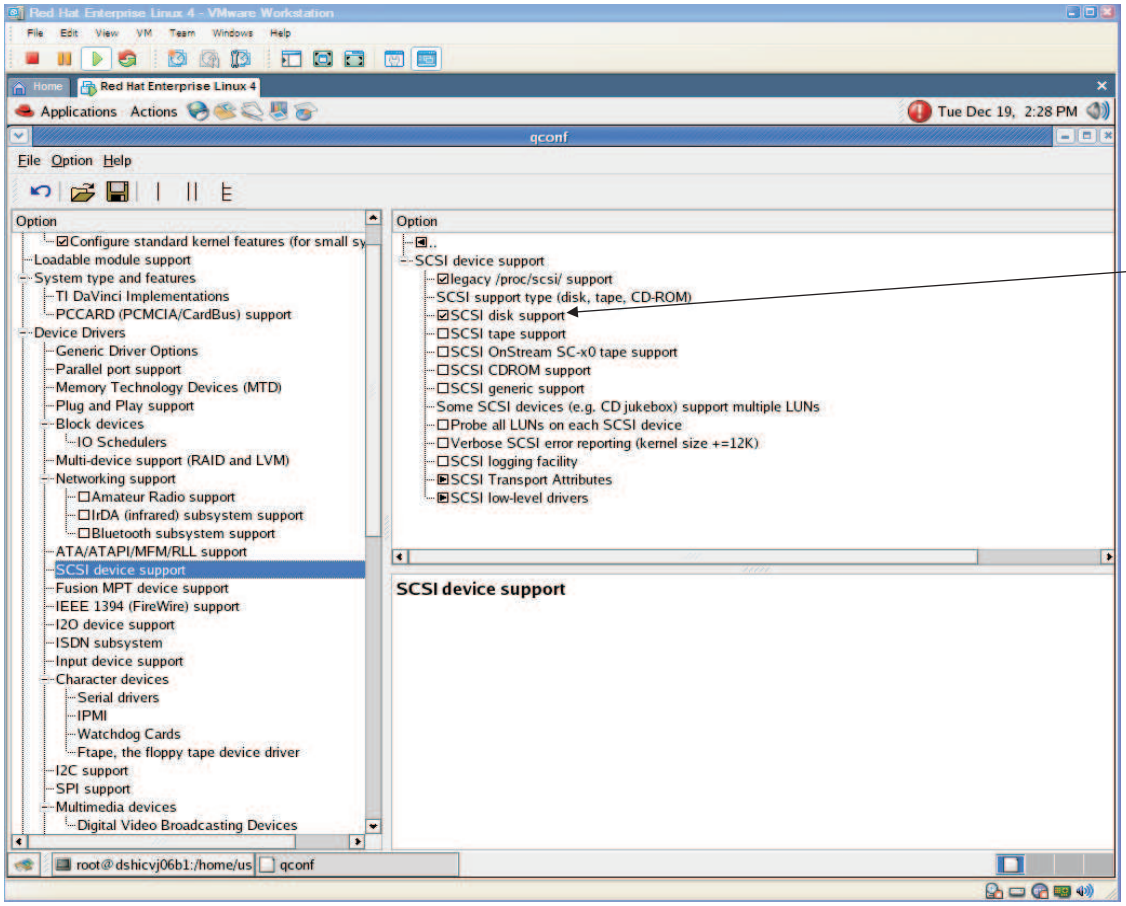

Figure 2. Xconfig Utility Showing How to Enable SCSI Disk Support

5. Save the settings and exit the xconfig application.
6. If you are not already logged in as *user*, log in as *user* prior to building the Linux kernel in the next step (similar to the steps in the *DVEVM Getting Started Guide* (SPRUE66)).

```
host $ su user
```

7. Perform a make clean.

```
host $ make clean
```

8. Build the Linux kernel.

```
host $ make ARCH=arm CROSS_COMPILE=arm_v5t_le- uImage
```

You now have a Linux kernel that supports USB host mass storage.

2 Mounting USB Flash Key Drive

The steps in Section 1 must be completed before you continue.

1. Log in as *user* on the host machine, copy the Linux kernel image with USB support to the TFTP directory and change the permissions to the image file.

```
host $ cp ~/workdir/lsp/ti_davinci/arch/arm/boot/uImage /tftpboot
host $ chmod a+r /tftpboot/uImage
```

2. Configure the u-boot parameters so the DVEVM uses the TFTP to load the Linux kernel from the host machine and NFS mounts file system from the host machine as shown in Figure 3. Note that all the remaining steps in this section take place on the terminal applications window as opposed to the host workstation. With the terminal application running, power on the DVEVM and press any key on your terminal window to stop the u-boot's autoboot sequence. At the u-boot prompt, type the following commands:

Note: Replace 00:0E:99:02:51:F4 with the MAC address found on your DVEVM board and all instances of 192.168.1.103 with the IP address on your host workstation.

```
EVM # setenv ethaddr 00:0E:99:02:51:F4
EVM # setenv serverip 192.168.1.103
EVM # setenv ipaddr dhcp
EVM # setenv bootfile uImage
EVM # setenv bootcmd 'dhcp;bootm'
EVM # setenv bootargs 'console=ttyS0,115200n8 noinitrd rw ip=dhcp root=/dev/nfs
nfsroot=192.168.1.103:/home/user/workdir/filesys,nolock mem=120M'
EVM # saveenv
```

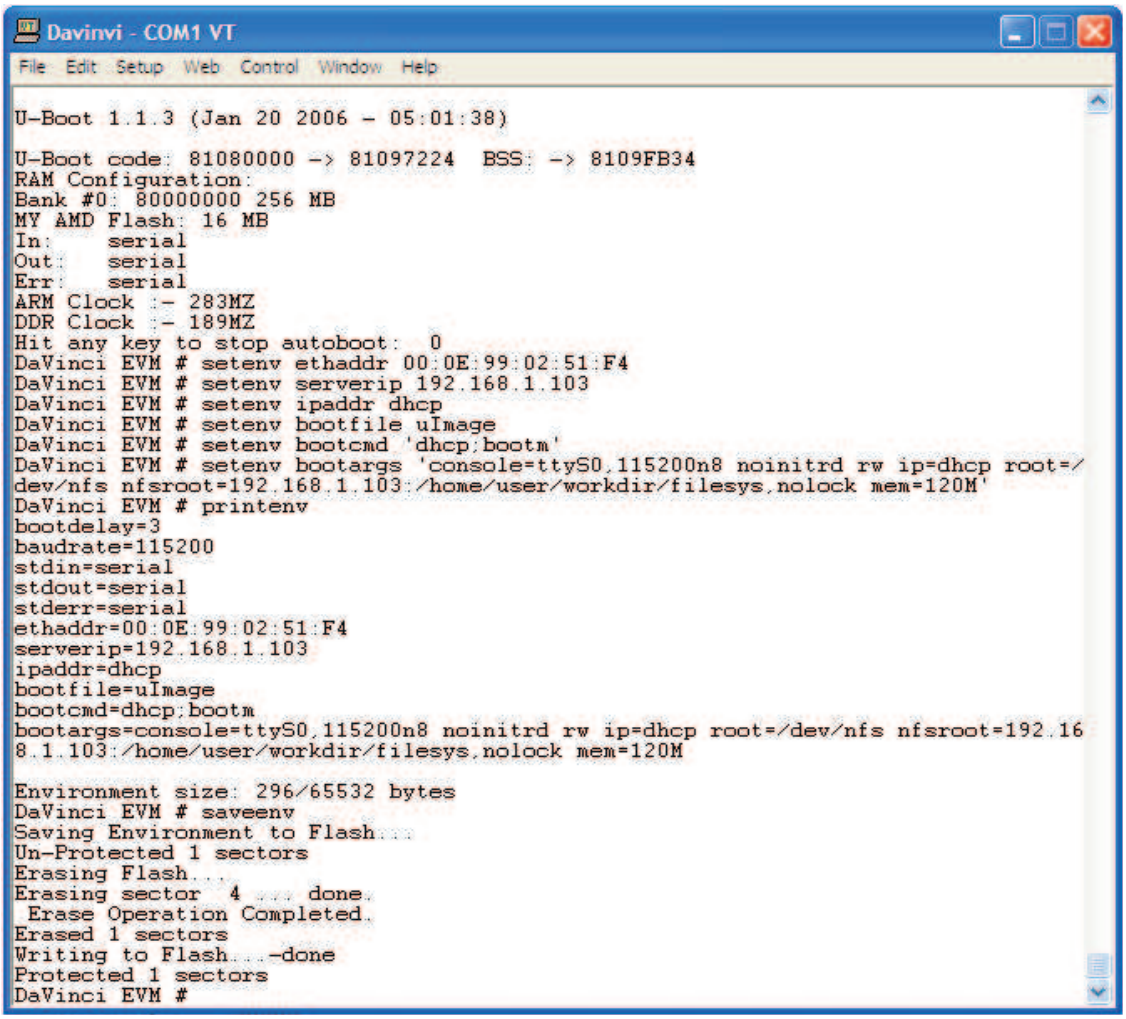

Figure 3. Tera Term Capture Showing How to Load Linux Kernel via TFTP

3. Turn off the DVEVM and make sure J7 jumper is set in position 2-3; this puts the DVEVM in the USB host mode (factory default is position 1-2).
4. Power on the DVEVM, and log in as root on your terminal window. The DVEVM should be running the Linux kernel with USB support from the host workstation's /tftpboot directory.

5. Make a mount point for the USB flash key. The mount can be located anywhere you want, but a common convention is to place this under the '/mnt' directory.

```
$ mkdir /mnt/flashkey
```

Note: This step only needs to be done once.

6. Insert a FAT or FAT32 formatted USB flash key into the DVEVM; you may seem some log messages indicating the USB flash key was detected.
7. Mount the flash key.

```
$ mount –t vfat /dev/sda1 /mnt/flashkey
```

8. Once the flash key is mounted, you can access it like any other file system; for example, to play a video file stored in the flash key using the decode demo, simply type:

```
$ cd /opt/dvevm
$./decode –v /mnt/flashkey/example-video.m2v
```

3 References

- *DVEVM Getting Started Guide* (SPRUE66)

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