Application Report
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Running Demo via ddd on DVEVM

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ABSTRACT

The TMS320DM6446 device includes an ARM core which can run the very popular Linux® operating system. One of Linux strengths is its open source approach enabling developers a wide range of development tools from free open source debugger applications such as ddd to sophisticated IDE-based debuggers sold by independent software vendors such as MontaVista's® DevRocket™ and Green Hills® system MULTI™.

The ddd application is an open source graphical interface to the popular open source gdb debugger. This application report outlines the steps for running the encode/decode demo that ships with the digital video evaluation module (DVEVM) via the ddd debugger application. It also shows the necessary steps for connecting the host ddd application to the target gdb server, loading the encode/decode demo into the ddd environment, setting break points in ddd, and stepping through the source code.

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1 Running the Encode/Decode Demo via ddd Debugger Application

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.

1.1 Setting Up the Host Linux Workstation

The following steps demonstrate how to set up the host Linux workstation:

1. Copy over the debug version of the demo; the debug version is required to be able to step through the source code. You may need to rebuild the demos if there is no debug directory present.

   ```
   host $ cd /home/user/workdir/filesys/opt/dvevm
   host $ cp /home/user/dvevm_1_XX/demos/encodedecode/debug/encodedecoded
   ```

2. Get the host IP address.

   ```
   host $ /sbin/ifconfig
   ```

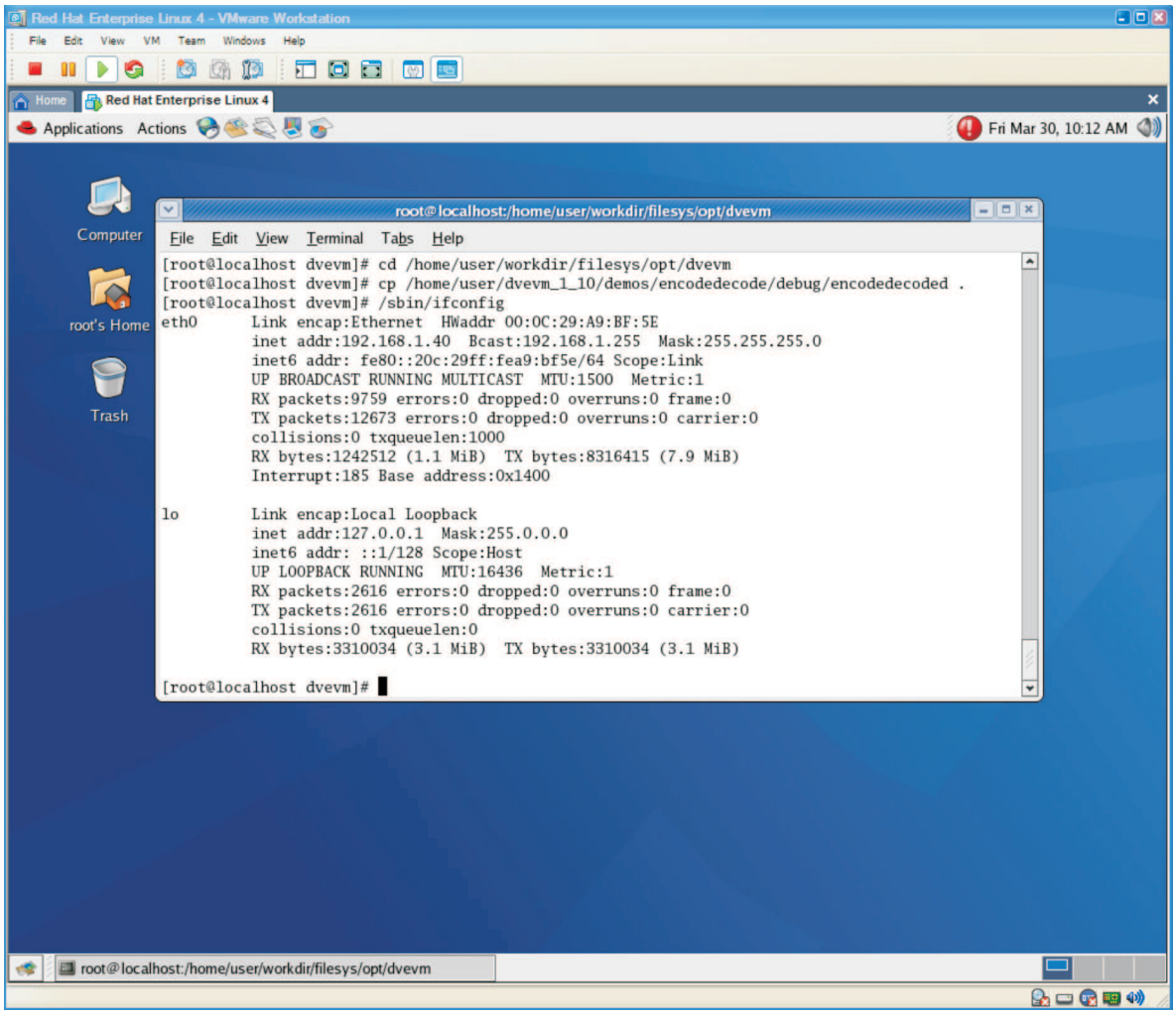

Figure 1. Screen Capture Showing Steps 1 and 2

1.2 Setting up the DVEVM Target

The following steps demonstrate how to set up the DVEVM target.

1. Configure the u-boot to the NFS Mount file system; for more detailed instructions on this process see the *DVEVM Getting Started Guide* (SPRUE66).
2. On Target DVEVM (see Figure 2).
   a. Go to */opt/dvevm* directory.
      ```
      target $ cd /opt/dvevm
      ```
   b. Run loadmodules.sh.
      ```
      target $ ./loadmodules.sh
      ```
   c. Run gdbserver. Use the host IP address from Step 2 in Section 1.1.
      ```
      target $ gdbserver 192.168.1.40:1000 encoded/decoded
      ```

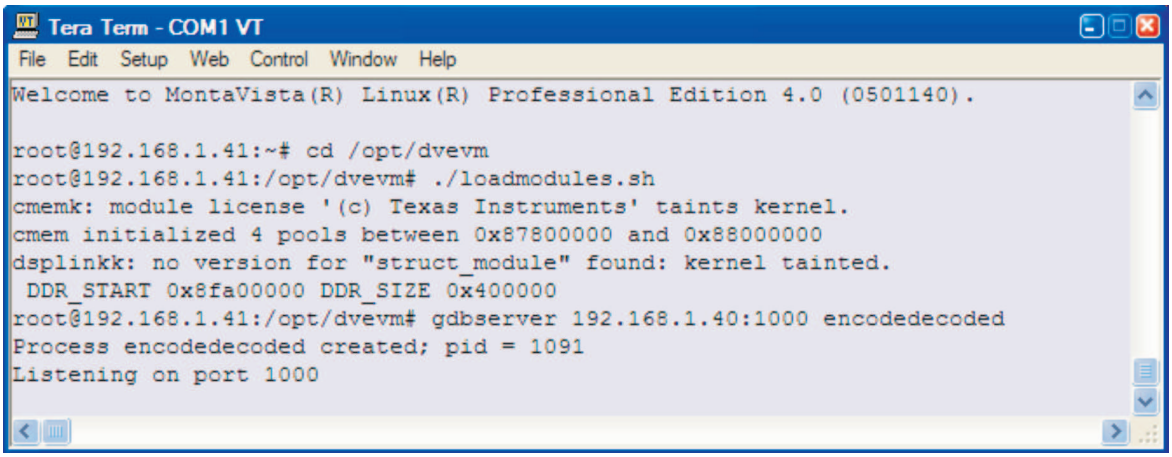

Figure 2. Tera Term Screen Showing Target DVEVM

1.3 Running the ddd Debugger Application

The following steps demonstrate how to run the ddd debugger application.

1. Launch ddd from a terminal window on the host workstation (see Figure 3); if your source code fails to open, execute it via the *Open* → *Program* menu option.

```
host $ ddd -debugger
/opt/dvevm/mv_pro_4.0/montavista/pro/devkit/arm/v5t_le_bin/arm_v5t_le_gd
b encodedecoded
```

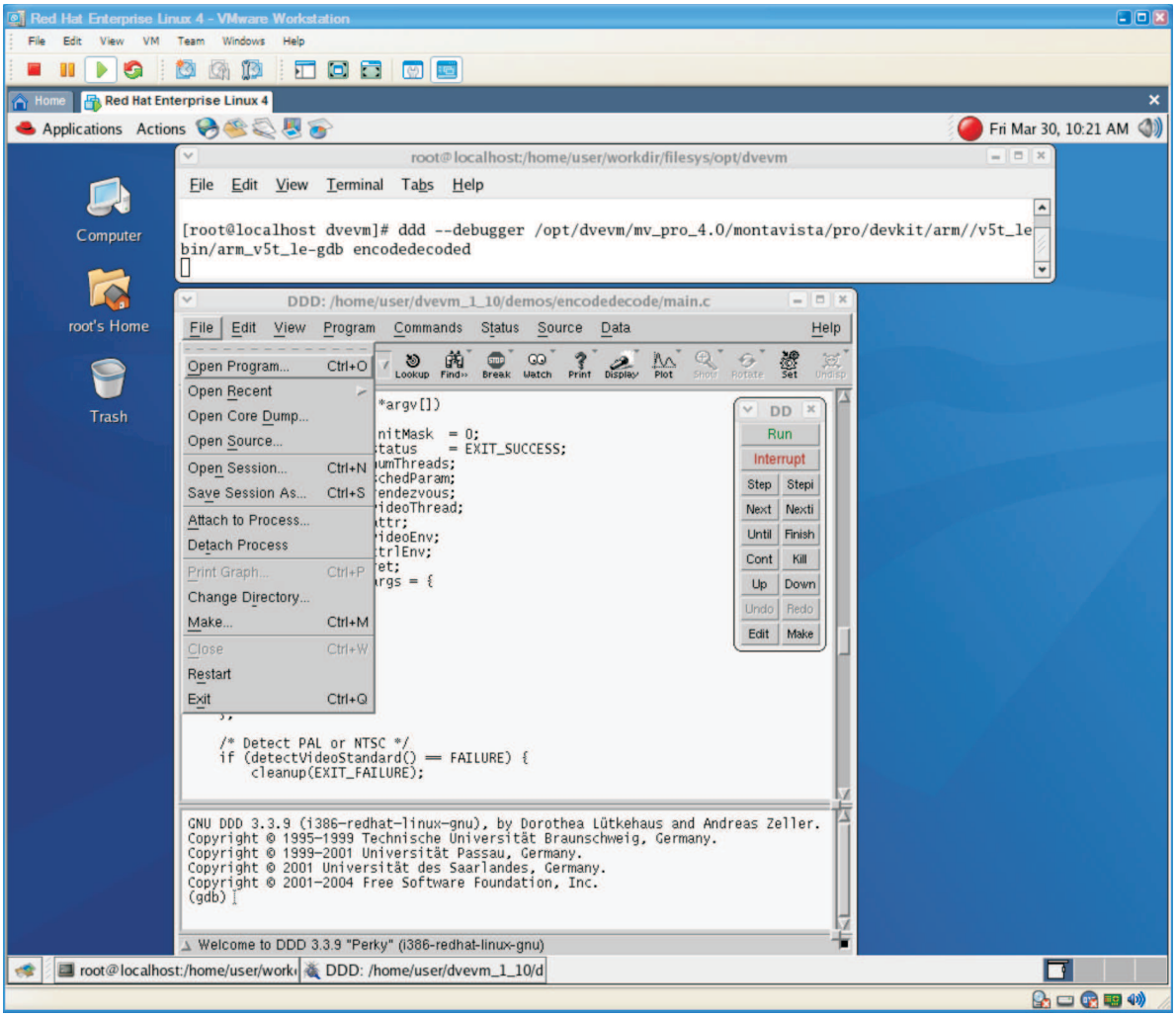

Figure 3. Steps for Launching ddd Application

2. Connect to the remote target (get the target IP address from the Linux prompt in Figure 2) using the *target remote* command (see Figure 4). Note that the IP address used in the following command is the same address for the target EVM (see the command prompt in the tera term window in the Figure 4). Also, note that the port number following the IP address is the same one used when launching the gdb server on the target (see Step 2C in Section 1.2).

```
gdb $ target remote 192.168.1.41:1000
```

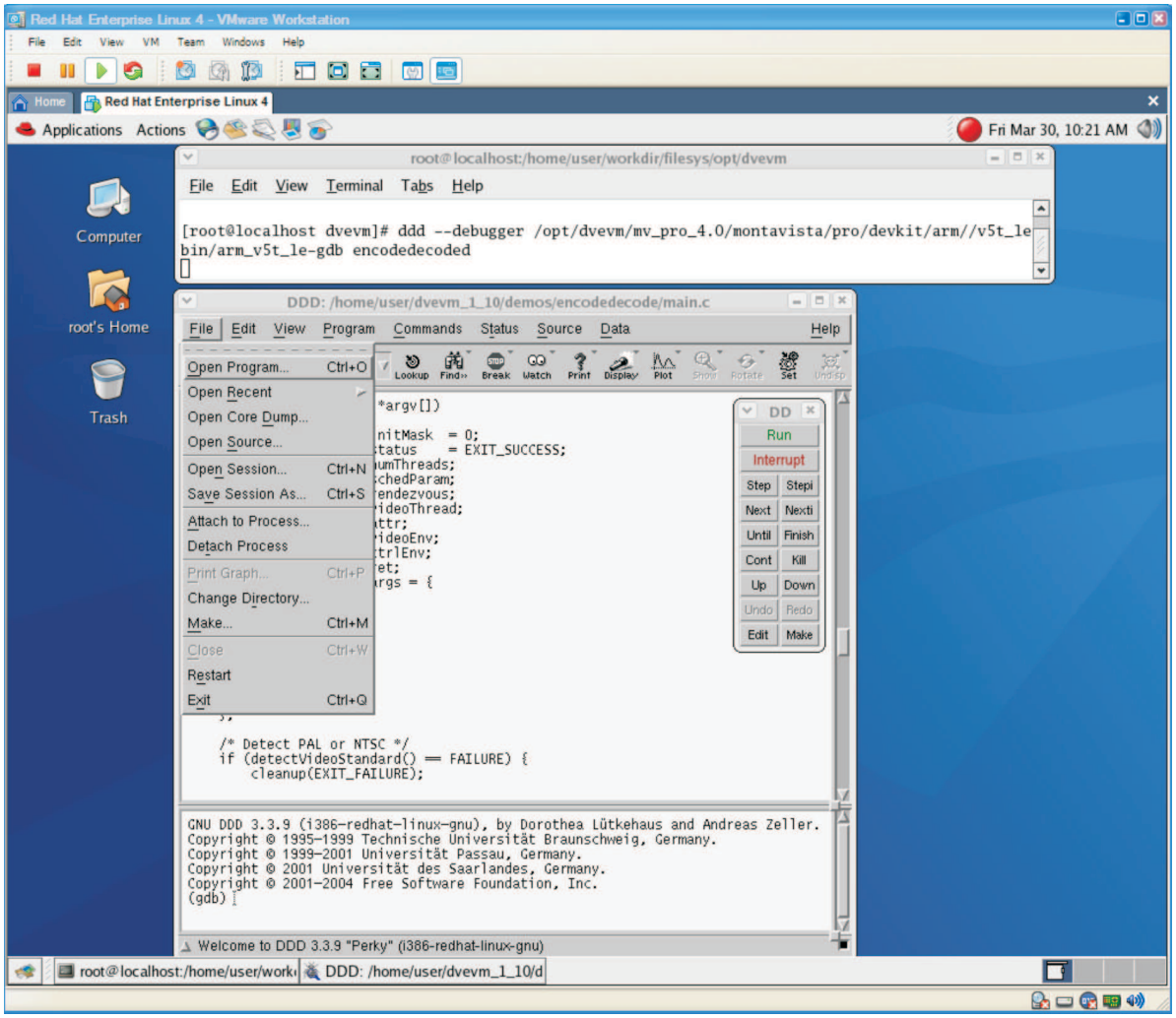

Figure 4. Remote Target Command

3. Set breakpoints by selecting the desired line; a red stop sign appears.
4. Start the demo by clicking on *CONT*.

Note: Do not click on *RUN*.

5. Step through the demo code by clicking *NEXT*; the current execution line is indicated by a green arrow. Figure 5 illustrates setting breakpoints and stepping through the code process.

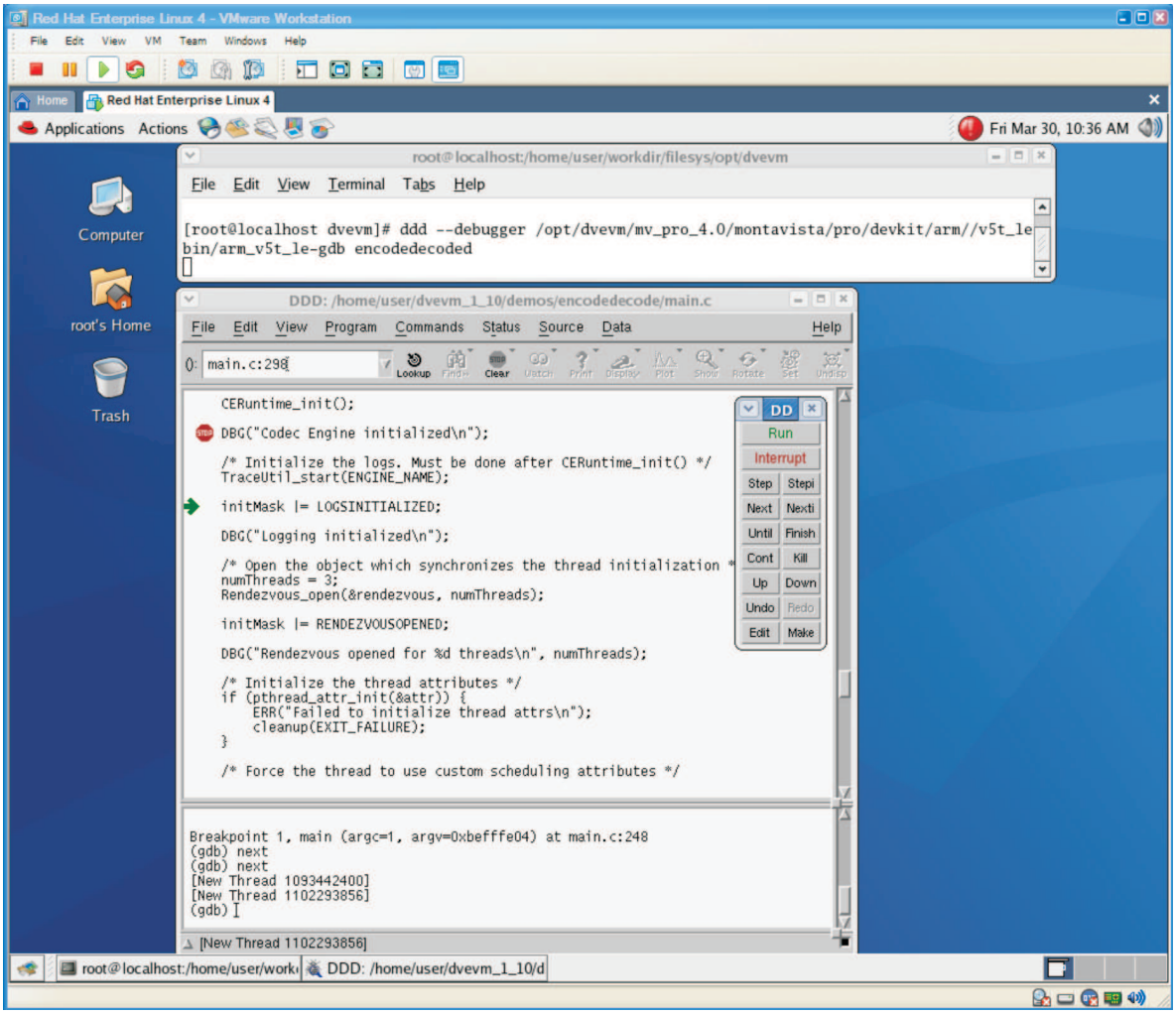

Figure 5. Breakpoints (stop sign) and Stepping Through Code (green arrow)

2 Conclusion

This application report covers the basic steps on how to connect the host ddd graphical application to the host gdb server and step through the source code. More detailed information on the ddd can be downloaded from the following URL: http://www.gnu.org/manual/ddd/

Note: The ddd has more extensive capabilities; however, the scope is beyond this application report.

3 References

- *DVEVM Getting Started Guide* (SPRUE66)

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