



# DaVinci dm6467 Digital Video Software Development Kit (DVSDK)

## DVSDK 2.00.00.22

Release Notes Tue May 26 15:05:50 PDT 2009

Document Revision: i30

## Introduction

This DVSDK Software release coupled with the Demonstration Version of Montavista Linux Pro v5.0 for DaVinci gives developers the ability to evaluate the hardware and software capabilities of the DaVinci platform. In conjunction with the demonstration version of Montavista Linux, developers will be able to experience the ARM side Linux programming environment and easily utilize pre-built codec executables for performance capability evaluation of the 64x+ DSP. Developers will be able to evaluate the ARM Linux programming environment and easily utilize the powerful hardware support of the dm6467 SoC for H.264 and MPEG2 codecs.

## Notice

This release of the DVSDK does not install the DM6446 and DM6467 Codec Servers when the DVSDK is installed. This is a change from previous releases and allows the DVSDK to be distributed anonymously. The CODEC Servers may be downloaded from the same site as the corresponding DVSDK.

Before attempting to build this DVSDK, please follow the additional steps listed here for installing this DVSDK.

1. Install DVSDK as described in the Getting Started Guide. The CODECS Servers for your platform must then be installed in the same directory as the DVSDK (Usually \$HOME/2\_00\_00\_22)
2. Download and install the CODEC Servers for your platform (dm6446\_codecs\_setuplinux\_2\_00\_00\_22.bin or dm6467\_codecs\_setuplinux\_2\_00\_00\_22.bin). Remember to install the Servers in the same directory as you installed the DVSDK. If you decide to install them elsewhere, please remember to update the location in Rules.make (CODEC\_INSTALL\_DIR=).
3. Follow the rest of the instructions in the GSG

Example command line setup would be:

```
<Download Location>/dvsdk_setuplinux_2_00_00_22.bin --mode console --prefix $HOME
```

Then either:

```
<Download Location>/dm6446_codecs_setuplinux_2_00_00_22.bin --mode console --prefix $HOME OR  
<Download Location>/dm6467_codecs_setuplinux_2_00_00_22.bin --mode console --prefix $HOME
```

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Please note, since DM355 does not use CODEC Servers, no changes are required for this platform.

This document is divided into the following sections:

- [Documentation](#)
- [What's New](#)
- [Installation and Usage](#)
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## Documentation

- Latest up to the minute DaVinci information and updates may be found on [DaVinci Technology Developers Wiki](#), [TI eXpressDSP Software Wiki](#) or [DVSDK 2.0 Errata](#).
- [DVEVM Getting Started Guide](#) - Hardware and software overview, including how to run demos, install software, and build the demos.
- [Bios Utilities](#).
- [Codec Engine](#).
- [Contiguous Memory Allocator](#).
- [DMAI API](#) Davinci Multimedia Application Interface API.
- [Decode Demo Information](#)
- [Encode Demo Information](#)
- [Encodedecode Information](#)
- [Framework Components](#)
- [XDAIS documentation](#)
- [Linux Kernel documentation](#)
- [RTSC Codec and Server Package Wizards](#)
- [Quilt Installation for MVL 5.0 Demo Version](#)

## Adding Quilt To Montavista Linux 5.0 Demonstration Version

The Quilt software package is used to manage changes to the Linux kernel. Future changes to the kernel will be distributed as "patches" which can be added or removed to the base kernel using Quilt. Please see the instructions on Quilt installation [here](#).

## Adding GDB to Montavista Linux 5.0 Demonstration Version

The GDB Debugger is not provided with this release. Customers wishing to obtain a GDB Debugger have several options:

- Purchase the DVSBP product from TI. This provides access to a fully supported, pre-built GDB (and other tools) for the OMAP-L137 device from Monta Vista.
- Download the appropriate GDB and related component sources from [www.gnu.org](http://www.gnu.org) at no charge and build them.
- Download the G++ tools for ARM GNU/LINUX from [www.codesourcery.com](http://www.codesourcery.com). Both no charge evaluation versions and fully supported versions are available. Please note that developers should only use the GDB from these tools and NOT attempt to replace the gcc compiler version in the DVSDK as this may result in build issues.

Instructions for building GDB server may be found at [http://wiki.davincidsp.com/index.php?title=Debugging\\_Linux\\_Application\\_on\\_OMAP-L\\_137](http://wiki.davincidsp.com/index.php?title=Debugging_Linux_Application_on_OMAP-L_137).

## What's New

Following have been updated since the last release

- LSP 2.00 (2.6.18 kernel)
- Separation of Servers and DVSDK
- Unified DVTB
- Demo Updates
- MFP Components v2.23.01
- Demo MontaVista Tools v5.0

The DVSDK contains the following components.  
mapdmaq-hdA utility that sets the DMA priority of the arm side drivers higher than the DSP

|                          |  |
|--------------------------|--|
| biosutils_1_01_00        | Bios Utilities.  |
| cg_xml 2_12_00           | Perl scripts used to process the XML files that come from the TI code generation tools   |
| linuxutils_2_23_01       | Contiguous memory allocator for Linux  |
| clips                    | Demo A/V clips. Please note, A/V clips are not populated until after performing the steps under "Installing the A/V Demo Files" of the GSG |
| ceutils 1_06             | CE utils is a collection of utilities that aid CodecEngine usability.  |
| codec_engine_2_23_01     | The Codec Engine provides a framework for creating and interacting with multimedia codecs  |
| dm6467_dvSDK_combos_2_05 | Codecs for both encoding and decoding H.264 and decoding MPEG2.  |

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|                                |   |
|--------------------------------|---|
| dv sdk_demos_2_00_00_07/dm6467 | Demo applications that illustrate usage of Linux drivers and codecs   |
| dmai_1_20_00_06                | Davinci Multimedia Application Interface  |
| dsplink_1_61_03                | Foundation software for the inter-processor communication across the GPP-DSP boundary.  |
| dvtb_4_00_08                   | Digital Video Test Bench (DVTB) an interactive application for evaluating codec performance   |
| edma3_ild_1_05_00              | Drivers for submitting and synchronizing with EDMA3 based DMA transfers.  |
| framework_components_2_23_01   | Framework Components, a collection of framework-independent utility libraries which other software frameworks can build upon.                             |
| kernel_binaries                | Platform/LSP specific prebuilt .ko files  |
| xdais_6_23                     | xDAIS product contains the DSP Algorithm Interface Standard specification and related documentation and examples.   |
| PSP_02_00_00_140               | Linux Kernel Files Device and Board boot support: a low-level initial bootloader (UBL) and u-boot 1.2.0, with support for booting from NAND and Ethernet. |

In addition, a complete Linux development and runtime environment is provided. Each of the components listed below is packaged in a separate installer, described in the Getting Started Guide (GSG).

- Montavista Linux Tools: cross-compiler tools for ARM
- Montavista Linux Target File system: a complete bootable file system with extensive Linux tools and runtimes.
- Linux 2.6.18 kernel or Linux Support Package (LSP) for dm6467: complete ARM Linux kernel with device drivers for peripherals on the dm6467 SoC device and the dm6467 EVM board.

## Installation and Usage

You should follow the [DVEVM Getting Started Guide \(GSG\) spruf88e.pdf](#) for installation and usage instructions.

### U-Boot and Linux Kernel

Please note that the kernel associated with this release is not pre-built for a particular platform. Please refer to the [kernel documentation](#) for information. You must insure that you are running the versions of U-Boot and Linux kernel supplied with this release in the `mv1_5_0_demo_lsp_setuplinux_xx_xx_xx_xxx.bin` installer. Consult the Release Notes under `dv sdk_2_00_00_22/PSP_02_00_00_140` for directions on working with U-Boot and the Linux kernel, including how to flash the board.

You should see the following version string or later for U-Boot when the board is first turned on:

- U-Boot 1.2.0 (May 20 2009 - 01:04:07)

This is a combined LSP so the uImage must be configured and built for each platform. An exact LSP string is not possible, but running `"uname -srvm"` should produce a date equal to or greater than 3 December, 2008:

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- Linux 192.168.1.92 2.6.18\_pro500-davinci\_evm-arm\_v5t\_le #1 PREEMPT Wed Dec 3 09:10:43 PST 2008 armv5tej1 GNU/Linux

After re-compiling U-Boot or the Linux kernel, the version string will remain the same but the date/time string will change to when the kernel was recompiled.

## Host Support

This release supports installation and development on Linux Redhat 4 and 5 workstations.

## Dependencies

The only dependency known at this time is for Code Composer Studio (CCS) 3.3. CCS 3.3 and a compatible emulator is needed for initial (or recovery) flashing of the initial bootloader (UBL) and U-Boot. As long as these components remain functional, CCS 3.3 will not be needed.

## Device Support

This release supports the Texas Instruments dm6467 SoC as well as the Spectrum Digital dm6467 Evaluation Module (EVM). For Spectrum Digital dm6467 Evaluation Module drivers and firmware, please visit the Spectrum Digital dm6467 site at <http://support.spectrumdigital.com/boards/evmdm6467/revf/>.

## Validation Information

This release has been through a complete test cycle.

## Upgrade and Compatibility Information

This is an update release of the dm6467 DVSDK. If upgrading from DVSDK 1.40, the Demonstration MontaVista Tools and Target File System have been updated to MVL 5.0 and new version of MVL as well as the DVSDK software will need to be installed. After downloading this release, please refer to the GSG instructions in section A.7 for installing the new binaries on the dm6467.

For users migrating or porting from the DM644x DVSDK. In general, the Linux support for dm6467 is the same as for DM644x, with the exception of video output, which is now supported using V4L2 rather than fbdev. The biggest difference between dm6467 and DM644x DVSDK support is in the area of codecs.

- DM6467 decode supports H.264, MPEG2, aac, and g711.
- DM6467 encode supports H.264, aac, and g711.
- DM6467 codecs are based on XDM 1.0, while 1.30 DM644x codecs are based on XDM 0.9 For more information on the differences between XDM 0.9 and 1.0, please review the XDAIS and Codec Engine documentation.

## Related Products Information

- Image Analyzer

Image Analyzer can display YUV, Bayer, RGB and bitonal images. It is highly flexible making it capable of supporting a large variety of image formats including semi-planar DaVinci HD formats. Image data can either be read from memory of a connected target or from a file. To get started refer to Help->Image Analyzer.

## Known Issues

- Customers who are using EVM boards prior to Rev F may see video artifacts such as horizontal line distortion. The interference may be picked up and amplified by the encoders. The resulting video will have horizontal distortions during playback.
- When running the demo applications using variable bit rate (which varies depending on the video content), the bit rate may be so low that visual artifacts may appear. The user may elect to select a constant bit rate (e.g., "-b 4000000", 4 MBits/sec) for improved video quality.

## Outstanding Defects

|               |  |
|---------------|--|
| SDOCM00052209 | DM355-dvtb. Board during Video+Speech Decode operations  |
| SDOCM00052462 | DM6467 Demo. Ctrl+C during demo operations causes the board to crash                                       |
| SDOCM00053390 | DM6446, dvtb demo decode, the video test files play back with poor quality (jumpy, jerkey)                 |
| SDOCM00053399 | DM355 DVTB Goes into infinite loop during jpeg encode operation  |
| SDOCM00053504 | DM6467, dvtb, aac encode ext params, I have some test showing cmem error I am using default loadmodules.sh |
| SDOCM00053526 | DM6467, dvtb, aac-ext, encode most test create files that play back too slow or too fast see test example  |
| SDOCM00054294 | Using CTRL+C on DM6446 decode demo causes kernel oops  |
| SDOCM00054322 | Codec Engine example applications fail to build  |
| SDOCM00054325 | DVTB Dm6446 System crashes   |

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|               |  |
|---------------|--|
|               | if an audio decode request is made before a previous request has finished                        |
| SDOCM00054393 | dsplinkk buildmodules script not in unix format  |
| SDOCM00054406 | Demos do not display block diagram   |
| SDOCM00054460 | DM6446: Updated u-boot from u-boot in NAND instructions fail                                     |
| SDOCM00054508 | u-boot build has interworking compiler warnings  |
| SDOCM00054554 | Section on building drivers as modules is incorrect is LSP User's Guide                          |
| SDOCM00054556 | DM6467, DVTB-aac-extparms setp aacheenc1 crcFlag 0 causes "Audio Encode Control failed (-1)"     |
| SDOCM00054559 | PSP examples for DM6446 do not compile without warnings  |
| SDOCM00054560 | PSP Example apps need usage documentation  |
| SDOCM00054617 | DVTB DM355. Area decode does not work for Image decode operations using JPEG extended parameters |
| SDOCM00054638 | DM6467: stop button does not return to demo setup screen   |
| SDOCM00054662 | DM6467: codec engine example applications fail to build  |
| SDOCM00054734 | DM6467: instructions for upgrading u-boot from u-boot do not work without errors                 |
| SDOCM00054774 | DM6467: DMAI fails to rebuild  |
| SDOCM00054907 | DMAI Video Decode io2 does not not flush the decoded video frames completely                     |
| SDOCM00055344 | Dm355, DM6446, DM6467 demo encode speech with mic creates a file with very low levels.           |
| SDOCM00057384 | AAC files result in noisy output   |
| SDOCM00057491 | ARM CPU utilization values might not be accurate - large values above 200% are seen in           |

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|               |   |
|---------------|---|
|               | few cases   |
| SDOCM00057986 | DM6467, AACEXT encode failed with error in shell  |
| SDOCM00058026 | DVSDK_200 LSP 200 when using boot from nand and nfs FS boot up hangs can not get IP address |

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## Versioning

This is build 2.00.00.22 of DVSDK 2.0.

## Technical Support and Product Updates

### General Support

- For questions and support on the 2.00 DVSDK, please visit [support.ti.com](http://support.ti.com).
- Please be sure to read the DVSDK Read Me 1st guide, printed documentation and [Getting Started Guide](#) for general DVSDK information.

### Custom Support

Third-Party Developer Support for DaVinci (c) technology: Valued members of the TI DSP Developer Network provide integral components and tools that complement DaVinci technology. Third-party developers offer various levels of video system integration, optimization and system expertise on products based on DaVinci Technology worldwide. Visit [www.ti.com/davinci3p](http://www.ti.com/davinci3p) for a list of third-party developers who support DaVinci technology and information on their application.

### Additional Resources

For more information, visit [www.ti.com](http://www.ti.com).