
RELEASE NOTES

DSP/BIOS™ LINK

OMAP5912 Starter Kit (OSK)

Montavista Linux Professional Edition 3.1

LNK 056 REL

Version 1.10.01

APR 23, 2004

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Mailing Address:
Texas Instruments
Post Office Box 655303
Dallas, Texas 75265

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1 Introduction

DSP/BIOS™ LINK is foundation software for the inter-processor communication across the GPP-DSP boundary. It provides a generic API that abstracts the characteristics of the physical link connecting GPP and DSP from the applications. It eliminates the need for customers to develop such link from scratch and allows them to focus more on application development¹.

This document provides information on version 1.10.01 of DSP/BIOS™ LINK based on TI's OMAP5912 Starter Kit (OSK) using Montavista Linux Professional Edition 3.1

1.1 Text Conventions

○	This bullet indicates important information. Please read such text carefully.
q	This bullet indicates additional information.

¹ Applications differentiate the products. The application developers would prefer to focus on the application rather than the IPC mechanism.

2 Out-of-Box Contents

This release of DSP/BIOS™ LINK contains following:

1. Installer package for DSP/BIOS™ LINK containing:
 - Complete source package of DSP/BIOS™ LINK.
 - Scripts, tools etc., to use on the debug and development host machines.
2. Release Notes (this document) providing an overview of this release.
3. Installation Guide, User Guide, and other technical documents.
Complete list of the documents is available in the User Guide.
4. A ZIP of the complete sources for ease of transferring the sources to the development host running Linux.

3 Minimum System Requirements

3.1 Hardware

3.1.1 Development Host Machine

- § IBM compatible PC (using Intel Pentium Processor) running Redhat Linux 9.0 with 2Gb free disk space

3.1.2 Debug Host Machine

- § IBM compatible PC (using Intel Pentium Processor) running Microsoft Windows NT 4.0 (service pack 4 or later) or Microsoft Windows 2000 with 2Gb free disk space
- § 1 free COM port

3.1.3 Development Target

- § OMAP5912 Starter Kit (OSK)
- § Serial cable
- § XDS510/ XDS560 Emulator with JTAG connector
- § Ethernet cable
- § 9-pin null modem serial cable

3.2 Software

3.2.1 Development Host Machine

- § Redhat Linux 9.0
- § MontaVista Linux Professional Edition 3.1
- § Network services such as telnetd, ftpd, nfsd configured
- § User must have a login account on this machine
- § A fixed IP address assigned to this workstation

3.2.2 Debug Host Machine

- § Code Composer Studio for OMAP v2.21 IDE, Debugger for DSP algorithm development
- § DSP/BIOS 4.90.270 for OMAP
- § PERL Installation
- § TeraTerm (or any other terminal emulation program)
- § User must have administrative privileges on this machine.
- The software listed above is not part of the DSP/BIOS™ LINK release. For all the TI products listed above, please contact your TI representative.
- ActivePerl - a distribution of PERL from Active State - can be obtained from the URL <http://www.activestate.com/Products/ActivePerl/>

4 Changes since the previous release

4.1 Defect Fixes

4.1.1 Generic

Identifier	Headline
SDSsq35078	There is no method for user to get profiling data from DSP component.

Release Note:

Two new APIs have been added: `DSP_Instrument ()` and `DSP_Debug ()`. Both of these APIs have been added to the interface table exposed by the DSP component.

Users can now obtain the instrumentation information using the `DSP_Instrument ()` API. This API is available when profiling is enabled.

The `DSP_Debug ()` API prints current state of the DSP object for debugging purposes. This API is available in the debug build configuration.

Identifier	Headline
SDSsq36404	Remove <code>DBC_Require</code> from functions called in ISR context

Release Note:

The functions being invoked from ISR context should not make calls to `DBC_Require` and `DBC_Assert` as these macros translate to print functions, which are not interrupt safe.

The calls to `DBC_Require` and `DBC_Assert` were removed from `SHM_ISR ()`, `SHM_ClearDspInterrupt ()`, `HAL_HpiClearInterrupt ()`, `DSP_ClearInterrupt ()` and `HAL_MailboxIntClear ()` functions as these functions are being invoked in ISR context.

Identifier	Headline
SDSsq36405	Remove direct calls to <code>printk</code> from OSAL testsuite

Release Note:

The testsuite should use `TST_PrnError ()` and `TST_PrnInfo ()` functions for printing errors and generic information.

Direct calls to 'printk' have been removed from OSAL testsuite (`OsalDriver.c`).

Identifier	Headline
SDSsq36501	Status flag being overwritten in <code>STS_SingleThread</code> test

Release Note:

The status of the `STS_SingleThread` test was incorrectly being overwritten by the status of `PROC_Destroy ()` function call.

The test case was corrected to ensure that the test status is set to the status of `PROC_Destroy ()` only if the test had passed and `PROC_Destroy ()` failed.

Identifier	Headline
SDSsq36606	BVR_MsgqGetTimeout test case fails on the OMAP 5912 OSK

Release Note:

The `BVR_MsgqGetTimeout` test was failing on the OMAP5912 OSK. The first `MSGQ_Get ()` always times out, irrespective of the delay specified through the data file.

The test was corrected to ensure that its DSP and GPP sides are synchronized at the start of the test. Also, the DSP side has been modified to wait for a period before calling the next `MSGQ_locate ()` function after a call to this function fails once.

Identifier	Headline
SDSsq36643	GPP-side samples do not build when profiling is enabled

Release Note:

The three samples were corrected to ensure that they build successfully when profiling is enabled.

Identifier	Headline
SDSsq36662	Build fails when only PROC component is selected while building LINK.

Release Note:

The failure was occurring because a few types were not defined in PROC only configuration and were defined when CHNL component was enabled.

The header files have been modified to make these types available in the PROC only configuration as well.

4.2 Other changes

1. The default settings of the make system used for building DSP/BIOS™ LINK support the tool-chain from MontaVista Linux Professional Edition 3.1. For an earlier version appropriate distribution file should be used.
2. The OSAL port in this release supports Linux kernel version 2.4.20. For working with a different version appropriate modifications to the OSAL will be required.

E.g. for working with 2.4.18 kernel `prcs.c` file will need to be modified to refer to `current->nice` instead of `current->prio`.
3. The documents have been organized based on their categories.

The file 'index.html' in the 'docs' directory provides linkage to browse all the documents shipped with this release. The following directories have been

created – design, port.

4. The GPP side samples now build through the make system used to build the base sources and the test suite.

The executables for samples are generated in `gpp/export` directory structure at the same location where the kernel module is built.

5. The DSP side base `.tci` file has been modified to explicitly specify the 'GBL.clkout' setting to 192Mhz.
6. The DSP side shared memory driver has been optimized. In the release configuration, this has resulted in approx 20% reduction in code-size in the shared memory driver.
7. All the behavior, stress and analysis tests are now configured to run with all configurations of `.bios` and `.text` sections in internal and external memory.
8. The `LDRV_CHNL_AddIORequest ()` function has been modified to optimize the number of times DPC is scheduled.

5 Known issues

5.1 Generic Issues

Though the sources have been validated against the test suite (included in the source release), a few issues have been noticed. The generic behavior of these known issues is listed below:

1. Linux supports multiple schemes for creating processes e.g. `fork ()`, `clone`, `exec`, `execv`. Each scheme has a different behavior with respect to the user address space. It is not possible to test the behavior of LINK with all these schemes and the combination of one or more. The overall behavior of multi-processing may not be very stable.

Following diagram shows a preferred approach for multi-processing scenario:

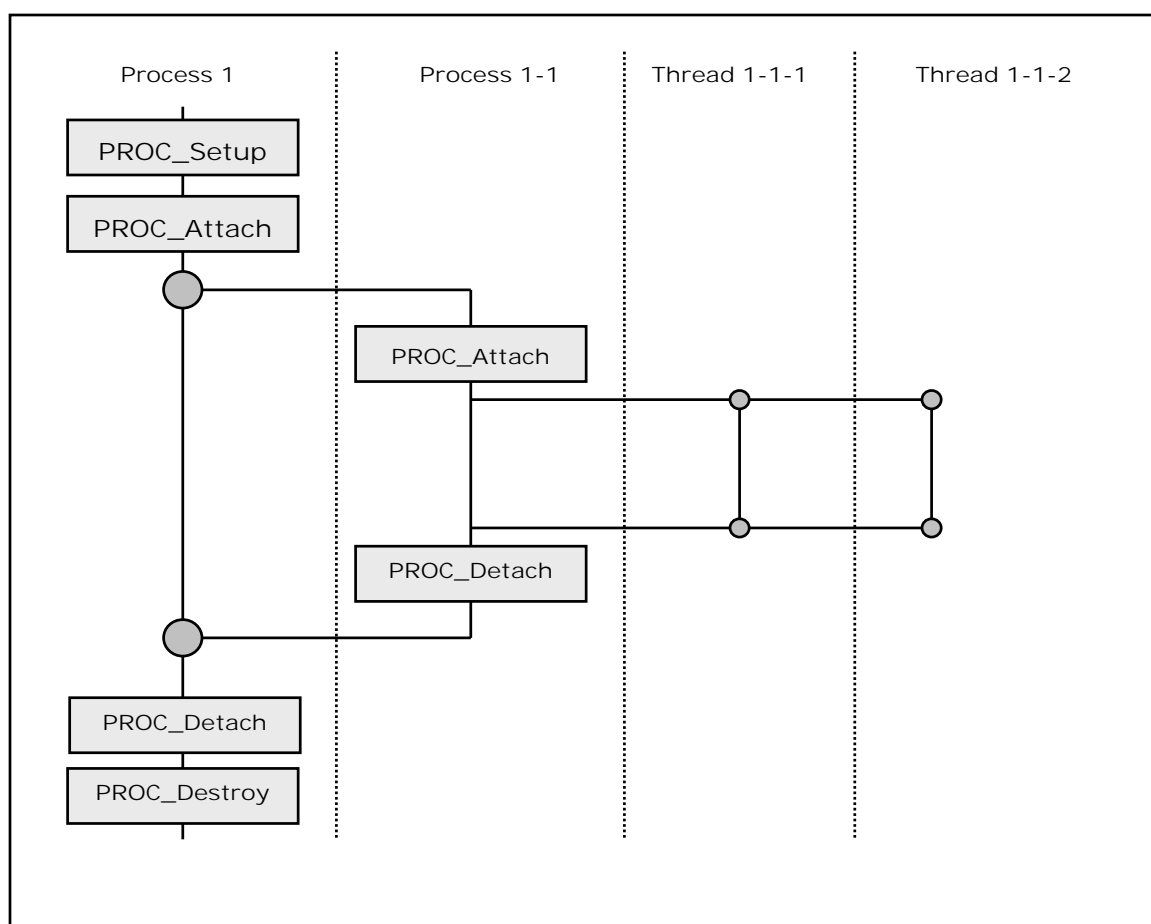


Figure 1. Suggested method for using multiple tasks with LINK.

Here, Process 1 calls `PROC_Setup ()`. This process creates a child process - Process 1-1 - using `fork ()` and `execve ()`. Each child process can then attach to the processor by calling `PROC_Attach ()`. All the threads in the child process space will share the file descriptor to the device driver & hence they gain access to channel objects. A child process can detach from the processor by calling `PROC_Detach ()` after all threads have exited successfully.

Any other process (not necessarily created by `fork ()`) can also attach to the processor by directly calling `PROC_Attach ()`.

5.2 Platform Specific Issues

None

6 Performance & Size Information

6.1 Performance statistics

The information regarding the performance is collected from the execution of the test suite included in the release. The results of test suite execution along with the performance statistics are provided in the following document:

1. dsplink-5912osk-teststatus.xls

This document shows the test status of this release.

It also provides the throughput rates for data transfer between GPP and DSP.

The sheets corresponding to the analysis test-suite result show this statistics for different configurations.

6.2 Size information

Currently the size is measured only for the DSP side of DSP/BIOS™ LINK.

1. dsplink-5912osk-footprint.xls

This document provides information on the footprint of DSP side component of DSP/BIOS™ LINK with different compiler switch settings.

7 Technical Support

7.1 Support for DSP/BIOS™ LINK

A specific mailing list dsplink@list.ti.com is created to support DSP/BIOS™ LINK. You can use this list to submit defects and make enhancement requests.

The list - dsplink@list.ti.com - is not a discussion board.

After an issue is reported into this list, one of the following actions is initiated:

- § Gather more information on the issue, in an attempt to reproduce it.
- § Acknowledge the issue, and report a DDTS bug-tracking entry ID.
- § Explain how to workaround the issue, if possible.

7.1.1 Guidelines for email support

In order to provide relevant information while reporting a defect/ enhancement into the mailing list, following format is suggested:

n Subject field must be in the format:

SEVERITY : COMPONENT : VERSION : SHORT DESCRIPTION

§ SEVERITY field can be indicated by any of the values defined below:

- L: Low
- M: Medium
- H: High
- C: Critical

§ COMPONENT field can be indicated by any of the values defined below:

- GPP: GPP side of DSP/BIOS™ Link
- DSP: DSP side of DSP/BIOS™ Link
- BOTH: Both sides of DSP/BIOS™ Link

§ VERSION must be specified in the format n.mm.

For example,

M : GPP : Version 1.02 : Return value of SomeApi () seems incorrect.
--

n Contents of the mail

Describe the problem/issue in sufficient detail. Provide as much additional information.

For example,

- Code snippets to get a better understanding of the problem.
- Any logs from the terminal window.

7.2 Support for other TI products

Procedure to report problems/issues for other TI products is available in their respective release notes.

Send support queries for OMAP CCS and DSP/BIOS™ to support@micro.ti.com.

