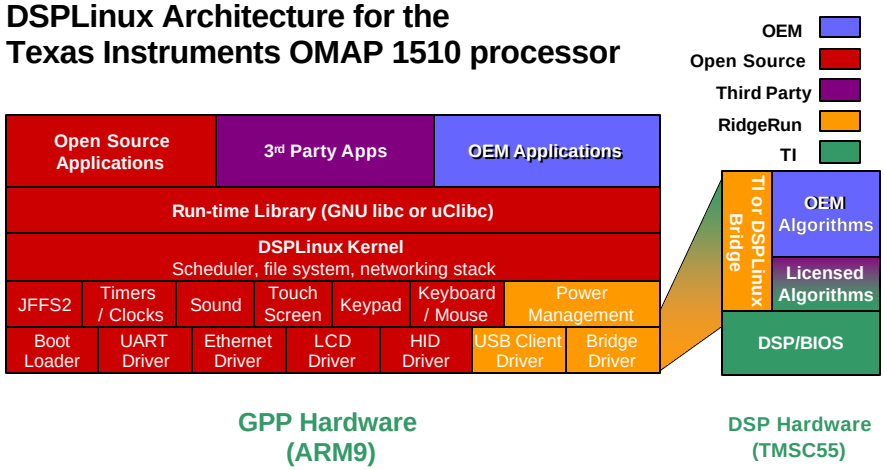
Board Support Package (BSP) v1.5 for Texas Instruments OMAP1510™

DSPLinux Architecture for the Texas Instruments OMAP 1510 processor



The DSPLinux™ OMAP1510 Board Support Package (BSP) is the industry's first complete, open operating system development package available for developers creating applications for the TI OMAP1510 chip. The software in this package provides support for developers creating multimedia applications, including digital audio, streaming media, speech recognition and m-commerce. DSPLinux developers will benefit from the real-time functionality of TI's digital signal processors (DSPs), which provide unsurpassed performance and low power consumption, particularly for higher end applications. In addition, the OMAP DSP/BIOS Bridge provides standard application programming interfaces (APIs) for quick and easy access to DSP multimedia algorithms.

DSPLinux from RidgeRun is the industry's first embedded Linux distribution targeted exclusively toward wireless networking, broadband and multimedia devices built on DSPs. The proven Linux® kernel runs on a general purpose processor (GPP), such as the ARM RISC processor on the Texas Instruments OMAP1510 processor, while the DSPLinux TaskBridge and MicroBridge provide interfaces to code running on a DSP.

Linux developers can now program applications in a familiar Linux environment with quick porting to the OMAP architecture, which allows seamless access to the low power and high performance of TI's market-leading digital signals processors. Linux developers also will benefit from fast upstart, with TI's robust silicon design environment and DSPLinux. TI selected RidgeRun, the software developer of the DSPLinux operating system, to provide direct customer support of the Linux operating system with specific enhancements to take advantage of the OMAP platform's real-time multimedia capabilities.

DSPLinux for TI's OMAP1510 processor, which includes TI's TMS320C5000™ digital signal processor (DSP) and an ARM® RISC processor, offers a comprehensive development environment, which includes an optimized Linux kernel, reference product implementations, appliance simulators, and GNU-based ARM tools.

• Compiler (gcc)	• Linker (ld)
• Assembler (as)	• Standard C library (shared glibc)
• Debugger (gdb)	• Utility programs for software development

Appliance Simulator

The RidgeRun Appliance Simulator allows the complete simulation of an appliance on a desktop PC running Linux and can be used by a wide variety of Linux developers for early application development, independent of specific hardware target platforms. Developers can create, debug, and fully simulate a host of embedded appliances, all before target hardware development systems are required. Once the hardware target has been selected, cross compile tools simplify the conversion from the simulation environment to the actual appliance.

- Run DSPLinux on a desktop PC within a simulated embedded device.
- Create and debug applications before running on actual hardware.
- Use the same cross-compile tools as needed for the actual target.
- Deploy full on-screen industrial design simulation of the embedded device.
- Simulate constrained memory conditions with a configurable kernel.
- Develop for connected devices with built-in network support.

Multimedia Phone in the Appliance Simulator

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Open Source Software Components
Tapping into the large pool of publicly available Open Source code is among the benefits of building your device using embedded Linux. We included several useful Open Source packages for Internet-connected devices with these BSPs. Look for more useful Open Source packages on the DSPLinux.net website in the future.

Boot loader	Load code for the ARM9 and set boot options
Linux kernel	Linux v2.4.15, the core of the Linux operating system for ARM9 RISC processor
JFFS2 file system	A compressed file system designed for flash parts
NFS root-mount	Root-mount file system allows the file system to reside on the network
Serial port driver	Controls the serial port
Ethernet driver	HW specific control of the EVM's 10/100 Base-T Ethernet component
Timer driver	HW specific functionality of the full range of on-chip timers
Watchdog timer driver	Support of watchdog timer functionality
Clock control drivers	HW specific functionality of the full range of on-chip clocks and functions used for basic power management functions.
Keypad driver	Allows keypad functionality into embedded device
PS/2 mouse driver	Allows mouse capability
PS/2 keyboard driver	Allows keyboard capability
Touch screen driver	Support for touch screen functionality
LCD frame buffer driver	Controls images sent to the monitor
OSS sound driver	Support for OSS sound
Shared glibc	Standard C library
Busybox	Combines tiny versions of common utilities and a shell into a single small executable
Tinylogin	Small footprint user authentication
Web server	Allows embedded device to serve web pages and supports CGI scripting
FTP server	Allows file transfer protocol connections into the embedded device
Telnet server	Allows telnet connections into the embedded device

RidgeRun Value Added Components
In addition to the above Open Source packages, RidgeRun has developed many valuable software components to access the hardware supported by the TI OMAP1510, thus bringing your multimedia devices to market quickly. Run-time licenses for these proprietary components will vary, depending upon production unit volumes.

MicroBridge	Load and control code on the DSP
TaskBridge	Allows a DSP task to access Linux file system, sockets, and devices
USB client driver framework	Provides an interface to the USB client hardware for writing USB device classes
Power Management driver	Allows optimization for power consumption and clock management modes

About the TI OMAP1510
As the industry leader in DSPs, TI has brought its high-performance, low-power processing technology to wireless multimedia applications. By leveraging its TMS320C5000 DSP-based OMAP 1510 solution, TI provides enhanced multimedia and streaming video functionality with support for a wide range of formats, programming languages and standards. Industry leaders have already selected TI's OMAP platform as the de facto standard for 2.5G and 3G wireless networks.

Pricing And Availability
DSPLinux BSPs include full installation and configuration support, private access to DSPLinux.net, and 90 days of BSP updates. RidgeRun offers a flexible run-time licensing program for the value added components of DSPLinux. The RidgeRun team has years of experience and expertise in embedded system design and development and is available for professional services or consulting. Contact one of our offices listed below, or e-mail sales@ridgerun.com for more details.

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