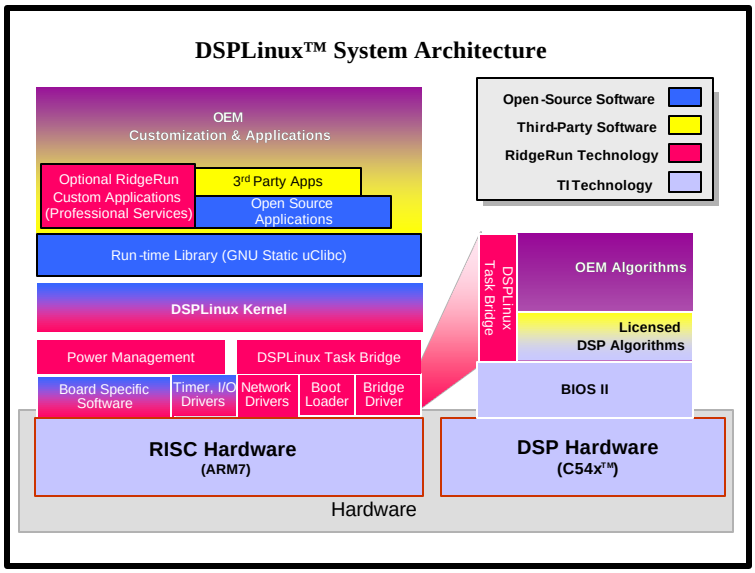
Board Support Package (BSP) v1.1 for Texas Instruments TMS320VC5471

DSPLinux™ from RidgeRun is the industry's first embedded Linux distribution targeted exclusively toward wireless networking, broadband and multimedia devices built on digital signal processors (DSPs). The proven Linux® kernel runs on a general purpose processor (GPP), such as the ARM7 on the TMS320VC5471™, while the DSPLinux TaskBridge and MicroBridge provide interfaces to code running on a DSP.



The DSPLinux TMS320VC5471 Board Support Package (BSP) is the industry's first complete operating system development package available for developers creating applications for the TI C5471 chip. The software in this package provides support for developers who are creating applications to utilize the multicore architecture that features an integrated on-chip Ethernet 10/100 MAC.

The DSPLinux BSP provides a complete out-of-the-box Linux development package and contains the DSPLinux operating system, drivers, utilities, the DSPLinux Appliance Simulator and a complete ARM + DSP code generation tool chain that enable developers to more quickly create and debug applications for new products that incorporate TI's C5471 processor.

Build your embedded product quickly!

- Out-Of-The-Box - Development begins with a full Linux OS, rich set of device drivers, and full TCP/IP support.
- Add Open Source –Jump-start your development with royalty-free Open Source code.
- Harness DSPs – Access the power of DSPs even if DSP algorithm development isn't your primary expertise.
- Appliance Simulator – Start writing applications without requiring development hardware.

ARM7 and C54x™ Linux Code Generation Tools with GDB Debugger Support

The DSPLinux BSP for the TI C5471 includes a full code generation tool chain for development and debug from a Linux desktop development environment. The industry standard GNU software development tool suite is part of each BSP and is used for ARM side development. These tools are configured for cross-compilation, allowing you to develop ARM7 code for targets supported by DSPLinux.

Additionally, Linux-based TI command line tools for code generation on the C54x, compatible with TI's popular Code Composer Studio™, assure consistency for DSP software development. The complete tool chain includes a boot loader and the open source GNU gdb debugger built to support full JTAG debug capabilities for both the ARM and DSP. DSPLinux delivers the industry's first and leading development tool chain available for embedded Linux applications on TI's dual-core processor architectures.

• Compiler (gcc)	• Linker (ld)
• Assembler (as)	• Optimized C library (dynamic uClib)
• Debugger (gdb)	• TI C54x Linux command line code generation tools
• Utility programs for software development	• Full JTAG support for the C5471 on-board emulator

Shared Library Support

With the industry's first shared library support for the ARM7 MMU-less environment, RidgeRun further enables the broad usage of embedded Linux for commercial products. Embedded Linux developers traditionally held to GNU public license considerations due to static library support can now tap into the C5471 BSP dynamic link support using uClinux and uClibc. Shared library support provides developers a way of protecting their intellectual property in their embedded products via compliance with both items #5 and #6b of the LGPL - http://www.gnu.org/copyleft/lesser.html.

Appliance Simulator
Each BSP includes the powerful Appliance Simulator to aid in development and implementation of your product while access to hardware may be limited.

- 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.

Keypad/Display Device in the Appliance Simulator

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 to flash, set boot options
uCLinux Kernel	The core of the Linux operating system, including networking. V2.0.38
TCP/IP Networking	Standard TCP/IP network protocol stack
NFS Root-Mount	Allows file system to reside on the network, useful during development
C5471 EVM Specific Device Drivers	
UART Serial	Controls the serial port
Watchdog Timer	Controls the watchdog timers and functionality
Utilities and Applications	
Shared uClibc	Minimized C library (shared uClibc) optimized for ARM7 architecture
TCP/IP Support	Standard support stack for TCP/IP networking
Busybox	Combines tiny versions of common utilities and a shell into a single small exec
Tinylogin	Small footprint user authentication
Gkermit	File transfer utility using Kermit protocol
Web Server	Allows embedded device to serve web pages, and supports user authentication
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 TMS320C5471, thus bringing your embedded product 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 DSP tasks to access Linux file system, sockets, devices
Ethernet Driver	Ethernet driver for Lucent LU3X31T-T64 LAN chipset
Timer Driver	HW specific functionality of the full range of on-chip timers
Clock Control Driver	HW specific functionality of the full range of on-chip clocks and functions
Power Management Driver	Optimization for power consumption and clock management modes

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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