Linux-Based Network Media Player

Benefits

• Reduce development time, cost and risk with a field upgradeable solution that supports multiple media formats

• Simplify design with easy access to DSP-optimized Linux tool chain and utilities

• Differentiate product with real-time execution of fully programmable media, user processes and a rich set of networking and storage peripherals

• Quickly implement advanced user interface and device functionality with feature-rich Linux foundation

Softier Inc.
Where DSP Meets Linux

Target Applications

• **In-home digital entertainment**
  - **Media centers**
  - **Set-top boxes**
  - **Wireless distribution**

• **Wireless/Mobile media access**
  - **Media centers on wheels**
  - **Rich-media access points, etc.**

• **Video security & surveillance**
  - **DVRs, VMD, network cameras**

• **Medical, defense, etc.**
  - **Embedded communications and processing**

Solutions for video/imaging products based on TI DSPs provide developers the flexibility to design a wide range of products. By leveraging the DSP programmability, processing performance, video specific peripherals and support for all major multimedia codecs, developers can design differentiated products with customized features to meet changing market needs.

While PCs increasingly store consumer digital multimedia, the living room or family room is still the preferred choice when it comes to watching video and listening to music. As a result, there is an emerging need for networked media players that convert PC content to support the home entertainment living room experience, using either a wired or wireless home network. Softier's Linux technology (MediaLinux), running on TI's TMS320DM64x™ multimedia DSP processors, allows rapid development of such devices using standard Linux software components and the latest TI Third Party decoders –MPEG-2, MPEG-4 and WMV9.
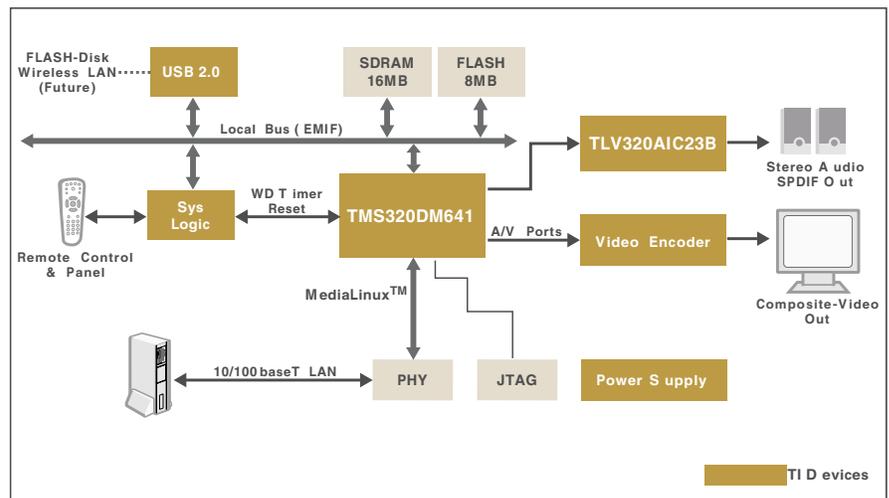
The Linux-based network media player solution is based on the embedded Linux operating system and development tools available for TI's DM64x™ Media DSPs. This solution offers full compatibility with existing media processing algorithms as well as the ability to use the rich Linux open-source application software and peripheral device drivers.

System Example: Network Media Player

Linux-Based Network Media Player

Functional Description

Hardware

- TMS320DM641 DSP Processor (600 MHz)
- Memory
  - 16Mbytes SDRAM
  - 8Mbytes Flash
- TLVAIC23B Audio Codec
  - Enables headset and micro-phone inputs/outputs
- Video Encoder
- PHY for 10/100base T LAN
- System logic for remote control and panel
  - MSP430 may be utilized in place of system logic

Software

Codecs

- D1-resolution full motion MPEG-2 decoder, MPEG-4 decoder, or WM9 decoder
- Operating System: Softier's Media Linux Linux IP stack, supporting RTP/ RTSP, DHCP, HTTP, SMB, and more
- File System: Linux RAM and Flash File Systems
- Utilities: Linux shell, BusyBox, etc.

Estimated Resource Allocation

- Footprint in FLASH: 4MB to 8MB
- Operating System @ 5% processor utilization
- Networking @10% processor utilization
- MPEG-2 @25% processor utilization
- Decoders (D1 resolution, audio playback)

Component Selection

- DSP - TMS320DM64x™, 600 MHz
- Memory - 32 Mbytes SDRAM, 12 Mbytes FLASH (via daughter card)
- Peripherals - 2 x RS232, 10/100baseT LAN
- Audio/Video - 2 Video Inputs, 1 Out. Stereo Audio I/O
- Expansion - EMIF32 and audio-video ports routed to daughter card
- Mechanical - 2/3 PCI form-factor
- MediaLinux - Based on the ucLinux Kernel 2.4.20
- Network - Complete Linux IP stack, support for FTP, HTTP, DHCP, NFS and SMB protocols
- File System - Linux System, RAM & Flash File Systems, EXT2 Disk File System
- Utilities - BusyBox utilities, the m-shell, HTTP Client & Server
- Demo Codecs - MPEG2, M-JPEG, PCM Audio

Getting Started – Development Tools

Tools

Softier's LDDK (Linux-DSP Development Kit), provides a complete ready-to-run hardware and software development environment and demo code that allows rapid implementation of the player application software. JTAG-based debugging and hardware integration guidelines enable easy retargeting to custom hardware.

Documentation

Complete technical documentation and LDDK available from Softier.

Contact Information for Questions/Support

To purchase this solution or for more information: info-softier@softier.com

TEXAS INSTRUMENTS

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments

Post Office Box 655303 Dallas, Texas 75265

Copyright © 2004, Texas Instruments Incorporated