

Summary

BridgeCo's Embedded Digital Media Player (eDMP) system enhances traditional audio playback devices by adding the ability to play audio from networked digital sources, such as PC files, internet radio, premium audio internet sites and USB storage devices. This allows audio playback of protected and unprotected content in any room of your house. JPEG picture and cover art playback is also supported for audio systems which include a picture capable display.

The latest Digital Rights Management (DRM) schemes are included, as well as DLNA and PlaysForSure™ compatibility. A powerful, easy to use navigation and display UI is included, transported over a simple SPI slave interface. Commands and display information are sent via the device host controller, allowing easy integration of the eDMP into the device's existing remote control and display layout.

System Overview

The eDMP system offers a choice of network connections, including wired Ethernet, wireless 802.11 and Powerline. In addition, a USB2.0 port is provided, allowing USB MP3 players, memory devices and hard disk drives to be connected directly to the eDMP. Audio and picture files may be browsed and played via the eDMP menu browser system. Audio output is via SPDIF or I²S signals.

Pictures are output via a 656 digital video signal. The core eDMP consists only of 3 ICs, the BridgeCo DM850 network processor, a FLASH memory device and an SDRAM device. Network connectivity is achieved with the appropriate interface silicon, ranging from an inexpensive Ethernet PHY device, to a WiFi or Powerline module.

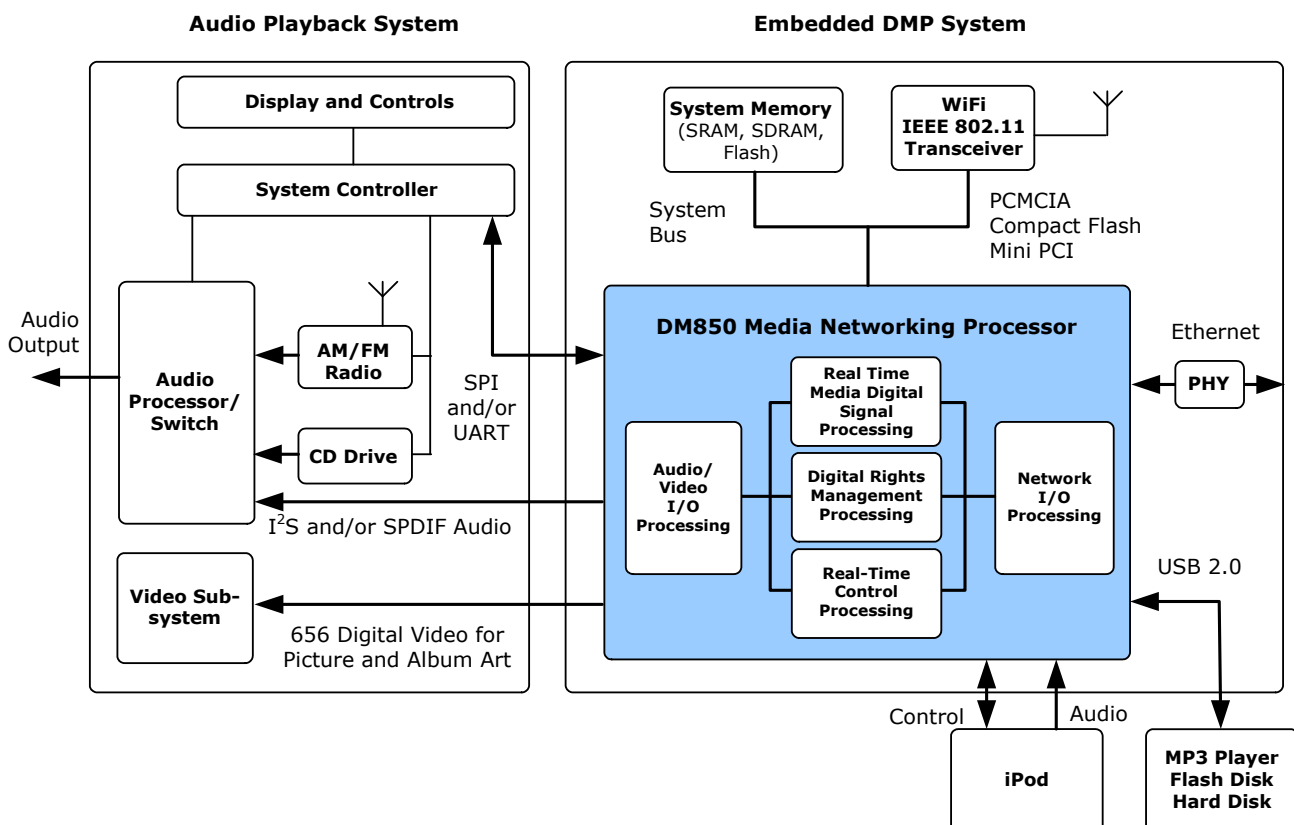


Figure 1

Software Overview

A comprehensive set of software modules is used in the eDMP. At the lowest level, the Hardware Abstraction Layer (HAL) is customisable for specific connections. The software is based on BridgeCo’s Kernel and Operating System (KnOS), which is a powerful real-time, multithreaded processing kernel, optimised for data streaming and processing. Various protocols, decoders and DRM schemes are included. The eDMP core

includes the content menu system and browser, and a multi format capable media player. At the top of the stack, webpage material may be included to present device status information and also allow remote control and display. Included here is the SPI register set which allows the device host controller to send commands and receive status and display information from the eDMP.

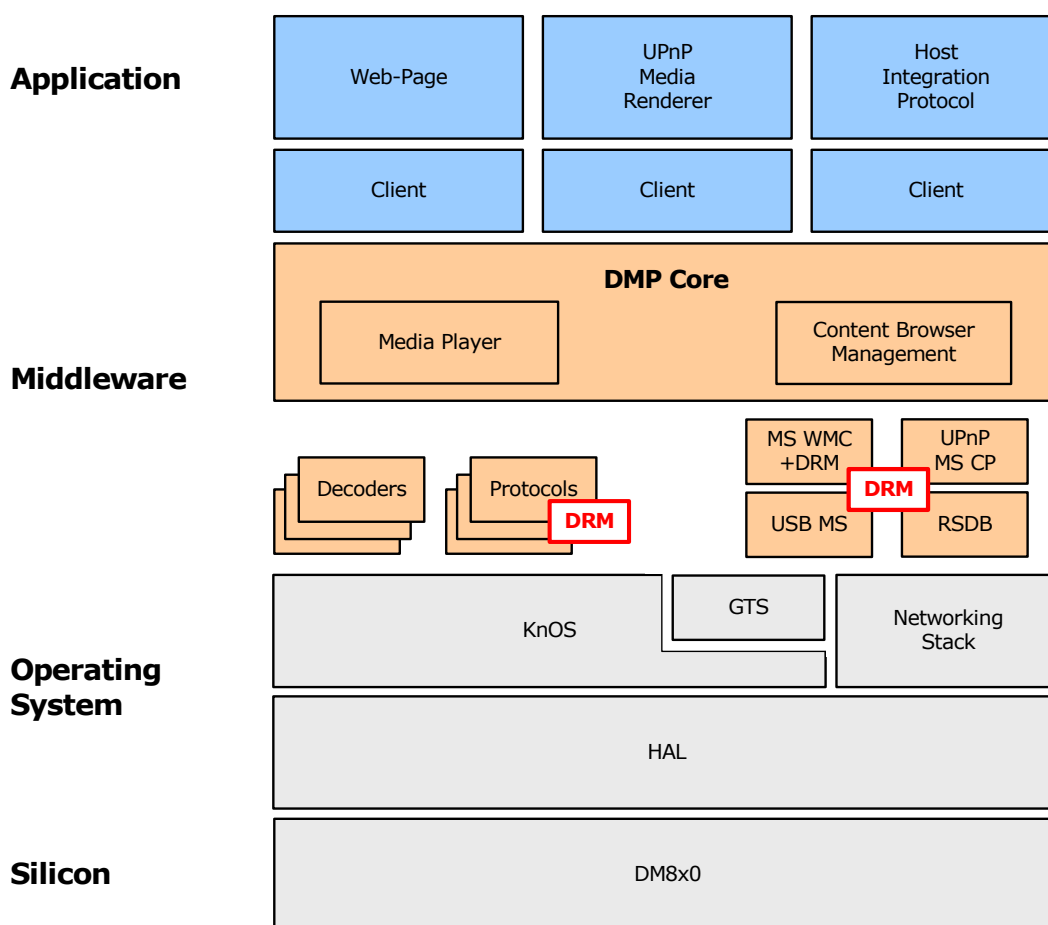


Figure 2
eDMP Software Stack

Target Applications

Target products include all audio playback equipment, ranging from small FM radios to high-end home theatre amplifiers.

- Audio Video Receivers for home theatres
- Mini component audio systems
- Integrated audio playback systems
- DVD Receiver, Home Theatre in a Box systems
- Digital Radios (including kitchen radio, clock radio, DAB radio)
- Televisions with sophisticated audio sub-systems

Features

The BridgeCo eDMP platform is a sub-system that communicates with a consumer electronics (CE) host processor using an XML-based proprietary protocol via an SPI interface. The BridgeCo eDMP receives commands from the host controller. The eDMP transmits menu navigation, operating information and other data via the same interface to the host controller, which formats the data for display on the CE system. Low component count allows the creation of a small, add-in, circuit board.

Networking and Content Discovery

- UPnP AV 1.1
- Content Directory Services, Control Point and Renderer
- Wireless 802.11 b/g networking with WEP/WPA2
- Ethernet 10/100 networking
- Powerline networking
- Network site survey and selection
- Multiple user-defined network profiles
- Includes USB 2.0 host connection for MP3 players, memory devices and HDD
- iPod connection, including audio, control and display
- Telnet and TFTP server
- NTP network time is available
- SSL secure connections are supported
- Tunnelling network data to SPI or UART

Audio & decoder play-list Support

- MP3, AAC, LPCM, WAV, WMA, FLAC, Ogg Vorbis
- WMA Pro, WMA Lossless (via PC transcoding)
- PLS, M3U, ASX
- JPEG picture and cover art

Server and Internet Radio

Interoperability

- Microsoft Windows Media Connect server (MS DRM10)
- DLNA compatible servers
- Real Rhapsody internet music service
- Music Choice streaming music service

- vTuner Internet Radio Service, including podcast
- Any customer unique server designed according UPnP 1.1 and UPnP AV

International Language Support

- Input and display technology for US, European and Asian languages

Intuitive User Interface

- Top level menu automatically shows available sources
- Jump search
- Pre-sets
- Dynamic Favorites list

Host Controller Interface

- Controlled via slave SPI port
- Commands are byte codes which map to standard remote control command
- Display information is sent as XML strings
- Display update rate is adjustable
- Programmable number of lines in the display data

System Management

- Controlled via SPI interface using simple register based commands
- Software upgrade over network connection or SPI to host or UART port
- Web server included for remote PC web browser access
- Auto network configuration discovery
- Built-in radio station database, with automatic updates over the internet
- Secure platform, firmware and keys are protected

Industry Standards

- DLNA (Digital Living Network Alliance) Certified
- UPnP (Universal Plug and Play) compatible
- Plays MS-DRM10 protected files over the network connection
- Designed to PlaysForSure™ Guidelines

Development Options

Evaluation board eDMP

An eDMP evaluation board is available. The board includes wired Ethernet, wireless 802.11, USB 2.0 type A connector and iPod docking connector interfaces. Installed is a fully functional eDMP firmware build, controllable via the slave SPI port or over the network interface.

Software License

All software delivered and used in conjunction with the eDMP requires a license from BridgeCo. Some elements of the eDMP system require licensing 3rd party software, which can be executed directly with the software owner, or via BridgeCo.

DM850E Media Networking Processor is a highly flexible interface processor optimized for secure, real-time encoding/decoding and processing of multi-channel media content. It features an on-chip Ethernet MAC, USB 2.0 OTG Controller and PHY, and a direct, glueless interface to 802.11 PHY/MAC chipsets.

For further details about the DM850E Media Network Processor, please see the DM850E Product Brief.

Ordering Information

The following order codes should be used to specify DM850 Wireless Audio DMP products from BridgeCo.

Product Description	Ordering Code
DM850E IC and Embedded DMP firmware	Embedded DMP System BCO IC-DM850-EDMP
eDMP evaluation board and firmware	Development Options EVM EDMP 2.0
Allows control of eDMP over SPI from a PC. Very helpful for development of customer's host controller firmware.	USB to SPI Interface unit and PC firmware ZP ThePod

For information on additional software modules, integrated software application packages, or pricing and order enquiries, please contact BridgeCo directly:

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