

## lala<sup>®</sup>Player Engine

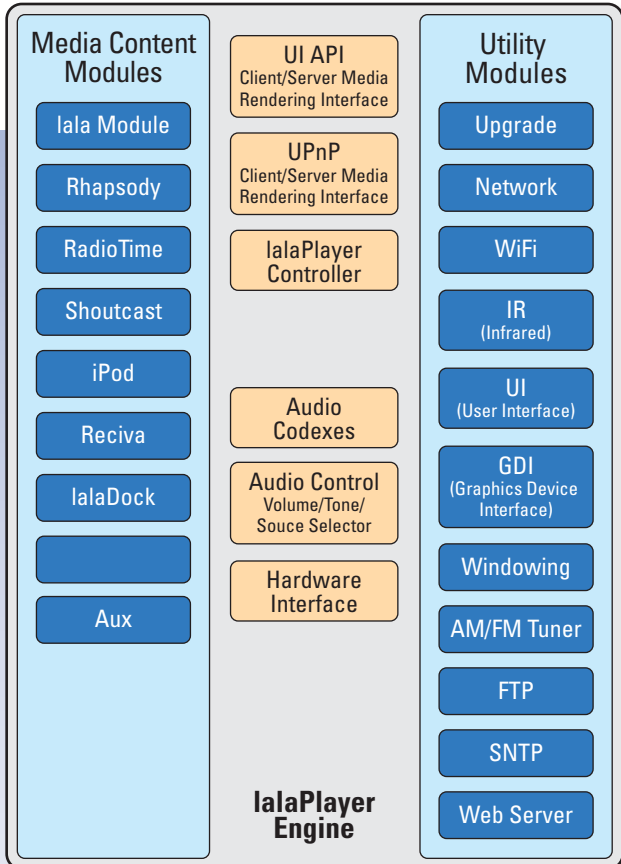
The lalaPlayer Engine connects to digital media sources, manages the media content, plays a variety of digital formats and streams all seamlessly to the user. Consumer products using this engine can operate as stand-alone products without a PC or external devices.

The heart of the lalaPlayer Engine is a UPnP Client/Server, and the software application runs on a variety of embedded small footprint CPU boards as well as on all popular PC platforms.

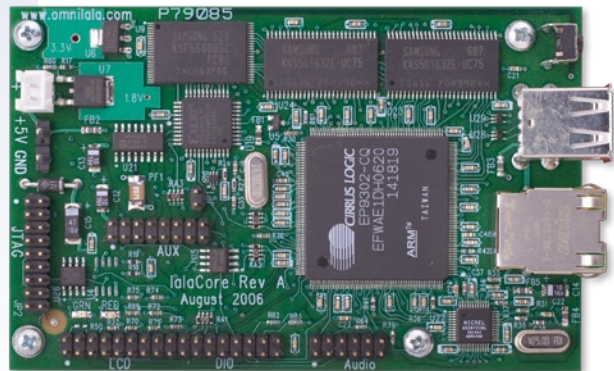
The basic package includes intuitive browsing interfaces for portable digital music (USB MP3 players). Music from the Internet (on-demand and free Internet radio services) without any PC proxy, automatically detects and connects to music on the network (UPnP/DLNA music servers or PCs).

An advanced API layer allows ease of use and remote operation. A rich library of interfaces and drivers allows building a variety of consumer electronics products. All the hardware drivers and interfaces and a complete user interface solution for graphic LCD displays are included in the basic package.

The lalaPlayer incorporates enhanced network functionality, including authentication, security, smart network configuration and wireless operation. It does not require complex set-up and configuration.



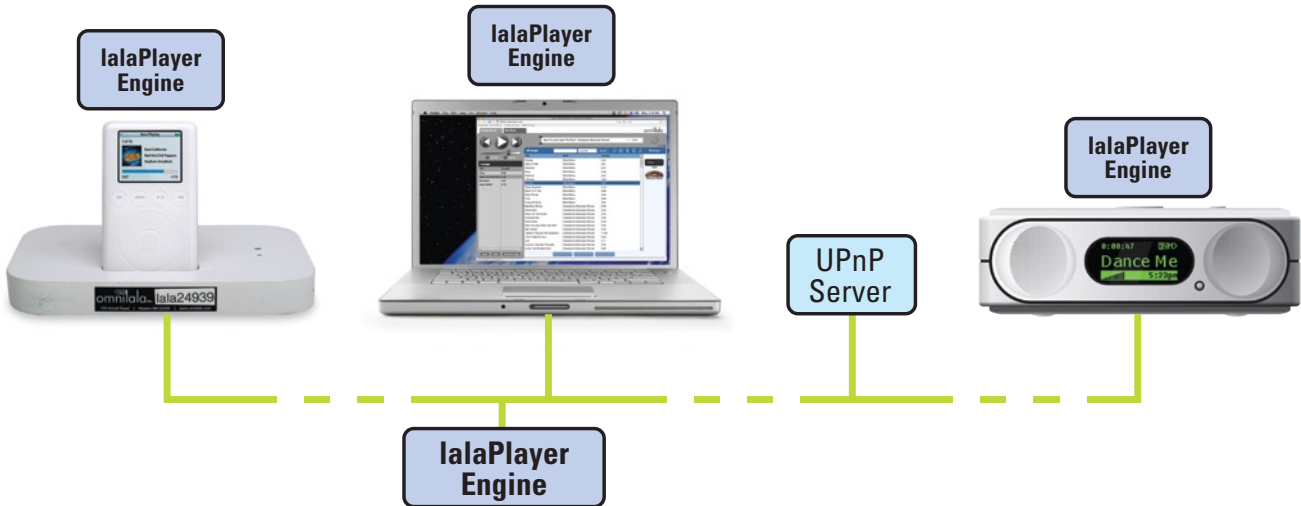
*lalaPlayer Engine internal architecture*



*The lalaPlayer Engine runs on variety of embedded small footprint CPU boards as well as on all popular PC and Linux platforms. The image shows the lalaCore 32bit SBC.*

# lala<sup>®</sup>Player Engine

The lalaPlayer discovers and interfaces with UPnP servers on the network and provides multipoint-to-multipoint distribution with other lalaPlayer Engines



Omnilala can build a custom UI for your product



- \* Trash
- \* Keyboard
- \* Edit
- \* Play
- \* Pause
- \* UP
- \* Down
- \* Next

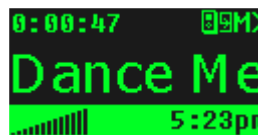
- By choosing the lalaPlayer Engine as the foundation of your next generation music delivery system, you can shorten time to market and free up internal development resources to focus on delivering the user experience that your customers demand.
- The lalaPlayer Engine allows you to build products that combines advanced features like interfacing to portable digital music players, streaming Internet media, and automatic software updates with clear, simple user interfaces using the input methods of a traditional radio or a remote control device.
- Available as a completely integrated solution with the lalaCore hardware or as a customized version on a variety of embedded small footprint CPU boards and customized user interfaces.

Display Control



lalaPlayer Engine

Selected monochrome graphic LCD display screens

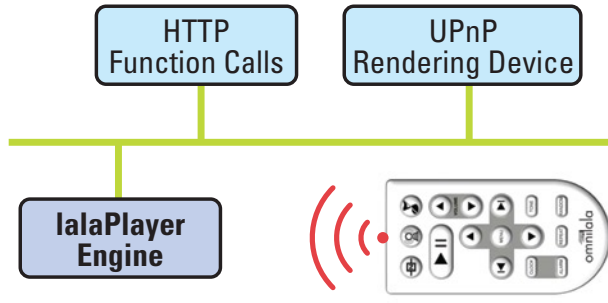


# lala<sup>®</sup>Player Engine

The lalaPlayer offers a variety of control options



WiFi PDA Interface



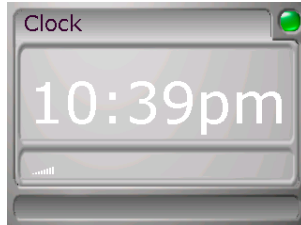
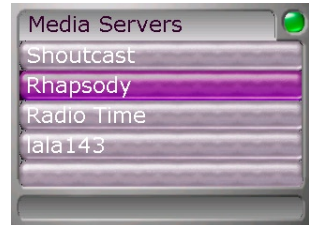
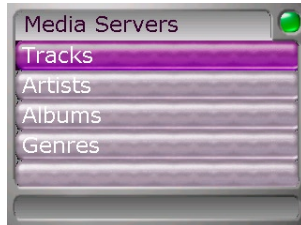
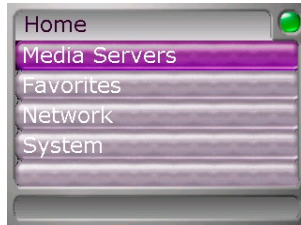
IR Remote Control

## Audio Interface



- At the heart of the lalaPlayer is a multithreaded framework built on a Linux core that supports a UPnP Client and Server, a streaming and decoding component, and user interface functionality. We carefully select open source technologies that allow us to leverage common, base technologies without infringing upon or infecting the IP rights of our customers.
- The lalaPlayer Engine delivers the power of a PC-based media player packed into a consumer electronics package.

## Selected Color LCD screens (a small selection)



## Features

- Digital audio quality
- Intelligent user interface with graphic display
- Friendly navigation of Tracks/Albums/Artist/Genre/Playlists
- Favorite library across all sources
- Multiple control interfaces (IR, Network API, and front panel)
- Automatically detect USB and media content sources
- Multipoint to multipoint distribution
- Direct access to the Internet (no PC needed)
- Wire/WiFi network modes
- Auto network mode detection
- Static/DHCP network configuration
- Authentication
- Security (128 bit key)
- AM/FM tuner control (I2C)
- Volume and tone control
- Clock automatically adjusts from the Internet
- Alarm clock can wake up from any source.

## Content Modules

- lalaPlayer
- lalaServer (lala1000)
- lalaDock
- UPnP and DLNA servers
- Rhapsody on-demand service
- RadioTime Internet Radio
- Shoutcast
- iPod
- Reciva

## Hardware Platforms

- lalaCore (Cirrus Logic EP9302)
- Freescale MX21
- Marvell PXA270
- Intel X86
- Arkados AI-1100 Powerline

## Operating Systems

- ARM-9 Linux 2.4 and 2.6
- Windows
- Linux Fedora and Ubuntu
- uC/OS

## API Commands Summary

Player commands: Play, Pause, Next, Prev., Up, Down, Volup, Voldn, Select, On, Off, Radio, Rhapsody, iPod, USB, Favorite, Clock, Alarm, Tone, Random, Repeat, Sleep,

Network commands: Static IP, DHCP, IP Address, Network Mask, Gateway IP, Ad-hoc, Infrastructure, Channel, ESSID, WEP key

System commands: Restore, Restart, Upgrade, Upload, Help

Advanced commands: Stop, Read/Write to display, Get/Select media servers, sources, library items, contents, metadata and more.

## Hardware Drivers

- Ethernet
- WiFi
- Graphics LCD
- Digital Audio (I2S)
- AM/FM Tuner (I2C)
- IR (Infrared)

## Open Sources Credits

- |            |         |
|------------|---------|
| libusb     | libjpeg |
| samba      | openssl |
| lirc       | ffmpeg  |
| zd1211     | libmad  |
| libsqlite3 |         |

