

## Simplay CEC Technology Software

### Simplified CEC implementation

Consumer Electronics Control (CEC) is one of the more powerful feature sets associated with HDMI™, and it is one of the most challenging to implement effectively. While CEC offers manufacturers a great opportunity to differentiate their products through ease of use by enabling “one-touch” commands that make life a lot simpler for the consumer, there is also a high degree of complexity involved and the risk that products will not be fully interoperable particularly in mixed vendor home theater systems. The CEC Technology Software is part of a comprehensive CEC Solution Suite from Simplay Labs that includes other CEC products and services, such as our CEC Explorer R&D Development System. Now manufacturers can go to market quicker with easy and cost-effective implementations.

### Simplay CEC Technology Software

The Simplay CEC Technology Software stack is a complete and standardized implementation of all CEC commands and operands, enabling maximum interoperability among products. At the same time, manufacturers can add their own proprietary commands. The software can be integrated with your system firmware and provides a quick and worry-free way to incorporate CEC functionality into your products.

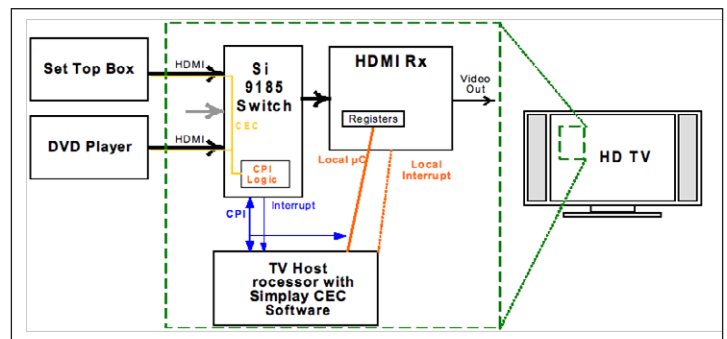
### Benefits

- Ready-made, complete, drop-in CEC solution
- Savings in development resources
- Faster time-to-market
- Enables high degree of CEC interoperability
- Integrates seamlessly into product system firmware
- Allows vendor-specific commands to be added
- Allows support of legacy CEC devices
- Standard ANSI C compliant library that can be integrated into embedded applications
- HDMI-ATC and Simplay HD™ compliant

### Information & Ordering

For more information about this and other Simplay CEC Solutions, please visit our website at <http://www.simplaylabs.com/cec>.

To order the Simplay CEC Technology Software or the Simplay CEC Evaluation Platform, please email with request to: [admin@simplaylabs.com](mailto:admin@simplaylabs.com), or call **1-888-436-4411**.



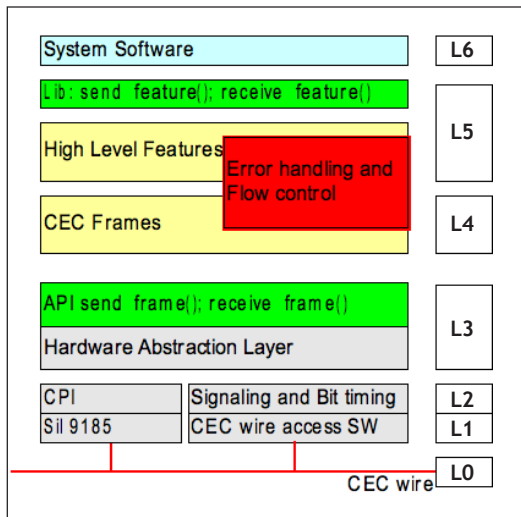
A typical CEC application/system example using the Simplay CEC Software Technology and Silicon Image HDMI Switch and Receiver IC

## Simplay CEC Technology Software

The Simplay CEC Technology stack provides a high-level Application Programming Interface (API) for every CEC function defined in the HDMI™ v1.3 specification, with full support for all commands, opcodes, and operands. This standardized implementation of CEC enables the highest levels of interoperability with other products.

### Architecture

The software architecture for CEC functionality in a product can be conceptualized according to the diagram below.



The Simplay CEC Software library comprises of Layers 3 - 5. Layer 6 represents the product or system level software that implements the end action of a CEC command, e.g. power on/off, volume control, etc. Fully defined and documented APIs for both the physical layer (L0 - L2), and the system software layer (L6) are included.

Two types of physical layer interfaces are supported by the Simplay CEC Technology Software:

- (i) Silicon Image HDMI ICs employ a high level interface called CPI (CEC Programming Interface). With CPI, all the low-level functions such as signal timings, bus arbitration, retries, etc. are implemented in hardware, which greatly simplifies the CEC software complexity.
- (ii) For implementations where the physical layer interface is via the I/O pin of a microcontroller, all the low-level functions (timings, bus arbitration, retries, etc.) are handled in software.

### Vendor-Specific Commands

The HDMI CEC specification includes a class of commands called Vendor-Specific Commands. Within this class, any arbitrary command function can be defined. This allows manufacturers to add differentiating features in their products by implementing proprietary functions. The customizable nature of the Simplay CEC Software library allows for easy implementation of vendor proprietary commands and functions.

### Legacy Commands Support

Manufacturers may have implemented certain preferred commands, or proprietary commands in their legacy products and often there is a requirement to maintain compatibility with those legacy products. The Simplay CEC Technology Software library is completely flexible and customizable allowing preferred and proprietary commands to be easily implemented, while still retaining maximum interoperability with other products.

### Memory Footprint

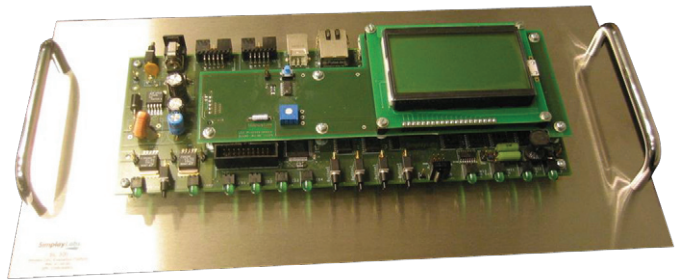
The approximate memory requirements for the software sections represented by Layers 3 - 5 are:

ROM: 100KBytes

Stack: 20KBytes

RAM: 5.5KBytes

### Evaluation/Development Platform



Included with the Simplay CEC software is an embedded hardware evaluation platform. The evaluation platform can emulate any CEC device such as a TV, playback device, recording device, tuner, or audio system. This platform is available separately on a "try-before-you-buy" basis to enable customers to evaluate the Simplay CEC Software Technology. The evaluation platform is based on the ARM-9 microprocessor and could also serve as a software development platform for ARM9 based systems.

- Sample integration of Simplay CEC Technology Software
- Real-time environment, including RTOS
- Includes sample system level software application (L6) with source code and IR remote
- Complete tool chain included allowing application modifications and development
- Allows performance and interrupt load measurement
- ARM9 96 MHz processor

**SimplayLabs™**

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