

PODstack

CableCARD™ Interface

PODstack is BitRouter's implementation of the CableCARD™ interface as specified by ANSI/SCTE 28 2004 and SCTE 41 2004. PODstack provides a robust and portable solution for implementing the CableCARD™ software stack needed by a Digital Cable Ready TV. The implementation meets the following high level goals:

- The complete implementation is provided in full source code form.
- PODstack uses BitRouter's kernel abstraction layer which contains approximately thirty-five OS calls and can be ported to a new OS with minimal effort. A hardware abstraction layer is used to port to any target silicon. PODstack works with Linux and most major real-time operating systems.
- OEM Specific functionality is isolated in a TV System Interface for easy adaptability to individual models.
- The CableCARD™ interface implementation is backed by our years of experience designing software for commercial DTV sets. All implementations are tested using a unique software simulator. Full source code and test cases for the simulator are also provided.
- An API is provided for the TV System and a "dummy" CableCARD™ controller driver is provided for easy customization. Device drivers are available for the Sony CXD2099AR and SCM CIMAX POD controllers.
- The implementation is complete for uni-directional DCR receivers.
- A next generation product called mCARDstack is under development which implements bi-directional and multi-stream CableCARD™ (M-CARD) interface as per the CableLabs' multi-stream CableCARD™ Interface 2.0 Specifications OC-SP-CCIF2.0-I07-060803 and OC-SP-CCCP2.0-I04-060803.

FEATURES

The CableCARD™ interface implementation implements the following resources:

PROTOCOL	FUNCTIONS
Resource Manager	Manages all resources on the Host
Extended Channel Support	Manages flows for OOB data
Man Machine Interface	Allows POD to open MMI dialog
Application Information	Allows the POD to expose its applications and deliver HTML pages to the Host. And the Host to expose its display characteristics to the POD.
Conditional Access	Supports CA applications in the POD
Copy Protection	Implements copy protection per SCTE 41
Host Control	Allows the POD to control the Host's RF tuners
Low Speed Communication	Allows POD to send limited upstream data via the Host
Impulse PPV	Allows the host to receive information on and purchase IPPV events.
Specific Application Support	Allows a vendor specific application in the Host or POD to communicate private objects.
Generic Feature Control	Allows the POD to control generic Host features.
Firmware Upgrade	Allows the POD to upgrade its firmware
Homing	Allows the POD to request services, especially firmware upgrade, when the Host is in standby mode.
Generic Diagnostic	Allows the POD to request the Host to perform a diagnostic and report the result.
System Time	Allows the POD to access system time

FEATURES (cont.)

PODstack provides a TV system API that allows it and the TV system to access each other's functionality. The following protocol layers are provided:

LAYER	FUNCTIONS
Session layer	Allows applications on a POD to use a single transport layer connection to access several different resources on the Host.
Transport layer	A command-response protocol that allows creation, maintenance and teardown of connections between the Host and the POD.
Data channel link layer	Provides fragmentation and reassembly services on the command interface
Application Information	Allows the POD to expose its applications and deliver HTML pages to the Host. And the Host to expose its display characteristics to the POD.
Ext. channel link layer	Provides fragmentation and reassembly services for OOB data
PC card dummy device driver	This dummy driver provides a sample source code to start from in order to build a driver for a specific PC card controller.

Resources colored with a light green background below are optional and are not included. PODstack is a component of BitRouter's TVrefpak. Information about TVrefpak and its other components can be found at www.bitrouter.com/products/tvrefpak.htm. PODstack and all other stacks included in TVrefpak are standalone individual products.

