

CBpak

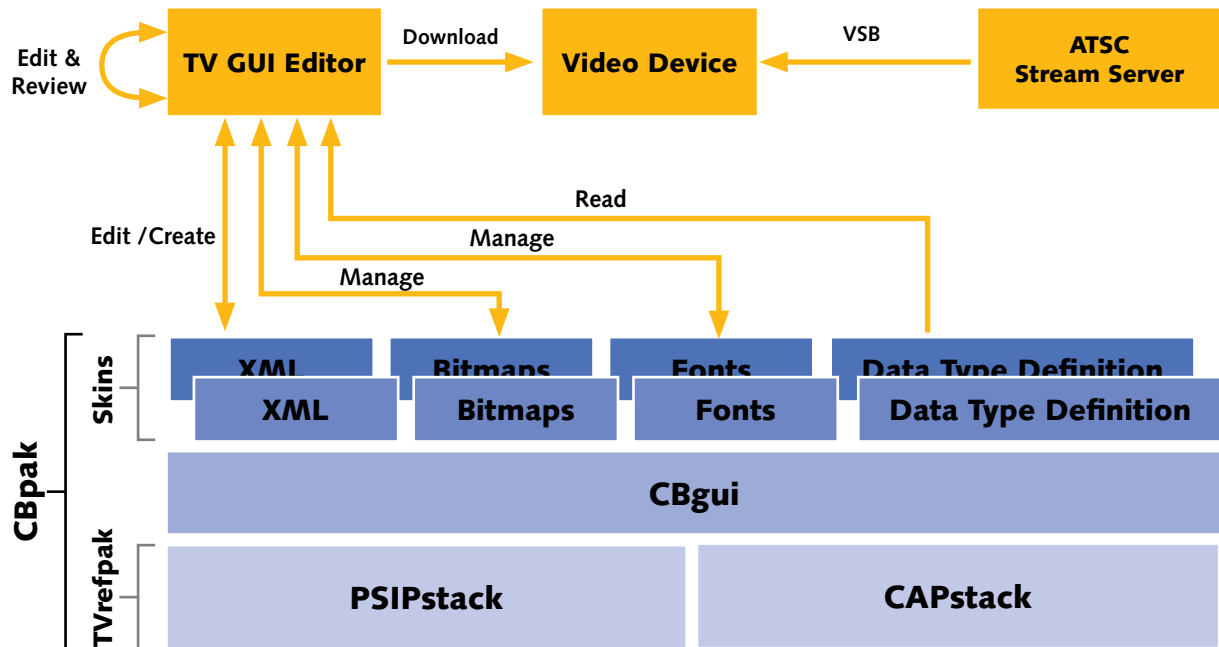
ATSC Converter Box Software

INTRODUCTION

The US Government has mandated that all analog terrestrial TV broadcasts will cease on February 17, 2009. After this date all broadcasters are required to switch from NTSC to ATSC transmission. Existing analog TV sets will need to use a converter box with an ATSC tuner that would convert digital over-the-air signals to analog; the National Telecommunications and Information Administration (NTIA) has issued final "Rules to Implement and Administer a Coupon Program for Digital-to-Analog Converter Boxes" [47 CFR Part 301](#) which will be eligible for a \$40 US Government subsidy. The converter boxes are known as ATSC Converter Boxes or NTIA Coupon Eligible Converter Boxes (CECB)

TECHNOLOGY

CBpak provides complete ATSC converter box software which complies with all the software requirements of 47 CFR Part 301. Using BitRouter's, patent-pending, XML State Machine (XSM) technology, CBpak can define the complete user interface for an ATSC converter box in around 2,000 lines of XML. That is all it takes to customize the look and feel of an ATSC converter box. CBpak includes all required protocols, customizable user interface, font engine and fonts. BitRouter also provides a graphical environment for editing and simulating the user interface. The complete CBpak environment looks as follows:



PSIPstack

BitRouter's implementation of the ATSC T358 A/65B PSIP (Program and System Information Protocol for Terrestrial Broadcast and Cable, Rev. B) and ANSI/SCTE 65 2002 (formerly DVS 234, Service Information Delivered Out-of-Band for Digital Cable Television) protocols. It includes support for the optional ATSC Directed Channel Change table and full support for processing of SCTE 18 2002 (formerly DVS 208, Emergency Alert Message for Cable, approved as a joint standard with CEA as ANSI-J-STD-042-2002). Over fifty API calls are provided to support frequency scan, channel navigation, retrieval of EPG information and retrieval of private data. PSIPstack supports both analog and digital tuners and stores both analog and digital channels in its channel map. More details on PSIPstack can be found at www.bitrouter.com/products/psipstack.htm.

CAPstack

CAPstack implements the digital TV closed captioning standard specified by EIA-708-B and CEA-608-B as mandated by the FCC order number "FCC 00-259." It is a complete implementation of the standard. The implementation provides a font engine interface to allow any commercial font engine to be used. An API is provided to allow applications to change font and display settings as per the FCC mandate. More details on CAPstack can be found at www.bitrouter.com/products/capstack.htm.

CBgui

The ATSC Converter Box GUI is based on BitRouter's, patent pending, [XML State Machine \(XSM\) technology](#). Using XSM, pre-defined state machines implement the core logic and menu tree for the product. This core can be skinned using XML and bitmaps. One complete skin is included with CBgui and additional skins are available. CBgui skins can be modified by manually editing the XML source code or using the PC based TV GUI Editor or using third party XML editing tools. CBgui implements all the user interface features required by the National Telecommunications and Information Administration (NTIA) "Rules to Implement and Administer a Coupon Program for Digital-to-Analog Converter Boxes" [47 CFR Part 301](#). More details on CBgui can be found at www.bitrouter.com/products/cbgui.htm.

TV GUI Editor (TGE)

TV GUI Editor is a graphical utility which allows a GUI designer to modify the XML skins provided with CBpak. TGE runs on a standard PC and includes a CBpak simulator. This simulator is the exact same code which runs on the final target, however, it has been ported to run on Win32 and OpenGL on a PC. This allows the entire video device to be simulated on a PC. TGE includes a virtual remote control so that the GUI designer can simulate the complete user experience with the modified skin. TGE creates an embeddable skin which includes a binary version of the XML, image and font files.