

The Home Depot and Broadband HDTV Digital Signage

A Contemporary Research White Paper

The HDTV Initiative

Our country will move to the ATSC digital broadcasting standard in 2009. When the changeover was announced several years ago, Contemporary Research began analyzing the impact and opportunities of that change. The first fruit of that research was our IP-HDTV HD tuner, the first (and still only) US-made digital TV tuner – now in its third generation as the 232-ATSC.

New innovations in on-site HDTV origination offers a simple, cost-effective alternative to IP-based digital signage. ROI is difficult when a site must budget and expensive signage player for every displays. With HDTV origination, only one signage player is required, converting the output to a digital cable channel, distributed over the existing broadband RF system, and tuned in by displays that have built-in HDTV tuners. Combine that with our Display Express system that can interactively control displays over the same RF network and you have a cost-effective digital signage solution.

The key to the solution is that many makes and models of flat-panel displays include a built-in HDTV tuner. The term “HDTV tuner” is a misnomer – it is really a high-performance MPEG-2 video player, capable of high-definition resolution beyond the typical PC or small-format dedicated digital signage media player. And it’s free. The RF cable is simply another delivery pathway, one that can carry a hundred HDTV channels without affecting the performance of a site’s Ethernet network. A small, inexpensive controller manages display power, volume, and channels through the same RF connection.

In short, if you have a common message to send to many displays, broadband HDTV origination can be a cost-effective alternative to Ethernet-delivered content solutions. In the digital age, TV isn’t just TV anymore.

The Home Depot Retools Employee Communication

Over the past two years, The Home Depot’s Television manager, Bruce Covey, was following a similar train of thought. The company was effectively using e-mail, web pages, and bulletin board reminders to its Atlanta Store Support Center’s 5,000 employees to attend events and take advantage of HR resources. However, e-mails are sometimes forgotten, bulletin boards overlooked, and handbills posted around the campus are time-consuming to maintain. The clear need was for a better way to get their attention, a sharper tool to reinforce the other messages.

Digital signage was an obvious alternative, but the high cost of running new Ethernet cable and adding servers for each display put the conventional solution out of reach.

The three-building campus had an existing RF backbone that carries a number of business, news, and weather channels throughout the facility. In addition, all the elevator bays had built-in cabinets for future TV installation. As an in-house employee communication channel would require a common message to the entire facility, broadcasting the content as a digital RF channel was the obvious conclusion. In this digital age, the components needed were already available off the shelf.

This led to the country’s first digital RF broadcasting system for employee communication, a solution that rests on three elements; collaborative content creation, digital processing, and RF display control.

As Bruce Covey explains, “We knew how to broadcast digital MPEG streams with mixed-media content for other applications. We knew that displays include MPEG players called tuners. The key was to harness the two together, so we partnered with X20 Media and Contemporary Research to create the solution.

Collaborative Content Creation

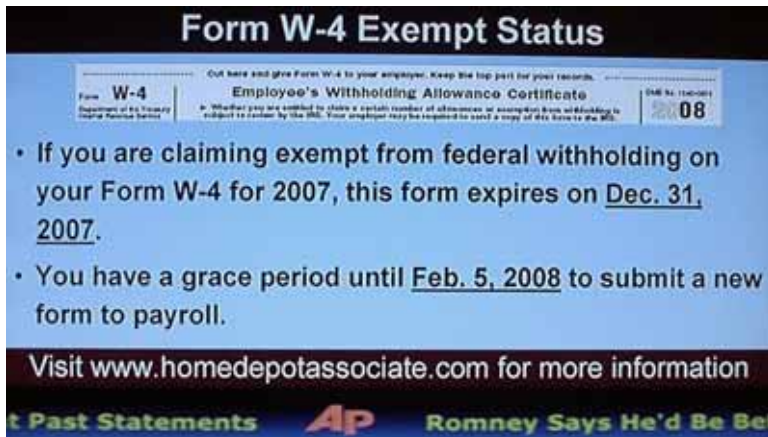
Home Depot's team also knew that, whatever the delivery technology, content is 95% of the ongoing cost and maintenance of the system. If it is too expensive or complex to deliver fresh content all the time, people stop watching and the system will fail to meet its objective.

The team chose a collaborative approach to content, using the X2O Media XPresenter media player and software as the vehicle. This was a natural selection, as the existing HD-TV system uses the Vertigo X Media signage PC, which is the forerunner to the XPresenter.

The XPresenter was shipped with a custom template created for Home Depot. The multi-media engine incorporates several elements, including:

- Motion background
- AP Crawl automatically displays current news
- Video insertion window shows recorded content or live Weather Channel feed
- Graphics insertion window provided content derived from a PowerPoint files

Department managers throughout the corporate facility create PowerPoint messages using a standard Home Depot template. These are e-mailed to a few HD-TV staffers who do minor clean-up, inserting the content into a master presentation. Every hour, the XPresenter software imports the file from a network folder, converting the presentation to Targa-format images.



Actual Screen Image

By inviting managers to collaborate on content, the HD-TV department is able to generate fresh, relevant information with only minor effort on everyone's part. The multi-media transitions follow a daily schedule – the player itself sits in an equipment rack, and requires no intervention for day-in, day-out operation.

Digital Processing

The XPresenter includes an onboard card that outputs the video as a digital SDI video stream. The SDI output flows to an EGT Prelude video processor that converts the stream to an ATSC MPEG-2 Transport Stream. The stream is then sent to a Blonder-Tongue digital RF modulator, and the digital TV channel is then combined with the other in-house cable channels.

A key decision was made that this point to use an SD (Standard Definition) video processor, instead of an HD processor. Present-day HD processors can cost upwards of \$20,000 to \$30,000, while the SD units average \$8,000 or less. Bruce Covey notes that the pure digital-to-digital process results in a perfect, clear, noise-free image, superb even on a 50" plasma display. When HD processors inevitably come down to commercial price levels, they will consider a change. The XPresenter and Blonder equipment can already output full HDTV. For now, everyone is completely pleased with the solution.

RF Display Control

Contemporary Research invented the concept of open-architecture RF TV and display control technology. Their system is in use in large and small applications, from the AT&T Center in San Antonio and Wachovia Center in Philadelphia to factory floors and worship centers.

Their Display Express system delivers control data as a micro-channel between channels 4 and 5, so display control travels wherever the RF cable goes. A small controller at each display receives the micro-channel and manages display power, volume, channels, and the ability to lock out local front-panel display control from casual button-pushers.

PC-based Display Express software defines the system by filling in a few forms, creates one-click control presets, and runs the system via a daily schedule.

The HD-TV team notes that integration is simplicity itself. They can add new displays anywhere on the RF network by just setting a few switches on the controller, and connecting the displays to the RF coax. One Ethernet address drives the whole system, so the IT department is required for setup or maintenance.

Broadcasting Success



Elevator Bay Installation

Home Depot's employee communication channel extends out to 52 23"- 25" LG displays mounted in elevator bays in the site's three buildings, plus a 50" display in a large cafeteria area. Two displays have been recently added to the new Home Dept Museum.

In full operation for over six months, the new channel has been a successful tool for connecting staff to vital information and HR resources. Often, the presentations supplement Home Depot's Web resources, calling attention to key hyperlinks, or upcoming Web conferences. Weather and news are always popular, as both can dramatically affect store sales.

In addition, Home Depot gains a versatile emergency alert system. Through Display Express, all displays can switch to a news or weather channel for moment-by-moment updates. Live broadcasts and custom "crawl" text can broadcast through the XPresenter player as well, so the HD-TV team has a variety of options at their disposal.

The Home Depot Television Manager Bruce Covey states, "The system works amazingly well. Our annual free Flu Shot event normally attracts several hundred people. With the new signage channel, we served over 3,000."

Typical System Components and Budgets

There are only a few components to a SignStream/X2O Media HDTV Digital Signage system.

Initial Head End Origination – MSRP, does not include installation, other RF components for distribution that may be existing.

X2O Media XPresenter with SDI Card	\$25,000
<i>Check with X2O on price, there are several solutions above and below the stated MSRP</i>	
Display Express PC with Software	\$ 3,000
Rack-Mount PC with software	
ICC-HE Control Head End, sends control commands via RF	\$ 1,650
EGT Quartet Single-Channel SD Encoder	\$ 7,300
Adtec MediaHUB HD (Alternate HD Encoder)	\$ 9,999
Drake TMQAMasi modulator	\$ 600
Drake DUC860 Digital Upconverter	\$ 450
Drake Rack Kit and power supply	\$ 400
<i>Similar technology available from Blonder-Tongue (AQM)</i>	
Total Head End:	\$38,400

Today's Head End Origination – Since the initial installation, new technology is available that dramatically reduces head-end costs. Options for signage tools range from \$3000 to \$15000. As new HDTV modulators can accept VGA, even PowerPoint itself can be a signage solution.

X2O Media XPresenter, VGA or HDMI output	\$15,000
Display Express PC	\$ 3,000
Rack-Mount PC with software	
ICC-HE Control Head End, sends control commands via RF	\$ 1,650
VGA To QAM Modulator	\$ 2,500
Total Head End:	\$22,150

Display Control Components - MSRP, does not include installation or control cable

ICC1-232 RS-232 Display Controller	\$ 350
ICC1-IR IR Display Controller	\$ 350

Displays

Many makes and models can be integrated. Many sites use LG or Westinghouse ProAV sets (almost all feature onboard RS-232 control). In addition, specific Sharp models feature RS-232 control, and Philip Smart Displays employ plug-in control cards.

Other sets offer IR control, select models that provide discrete power on and off control. For those interested, Contemporary Research can prepare estimates for solutions at your site.

Contact sales@crwww.com or call 888-972-2728