

It's a Full House for Digital TV Links

February 1, 2008

EE Times Asia

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http://www.eetasia.com/ART_8800500300_499488_NT_0d84417b.HTM



By Rick Merritt

[Consumer electronics](#) companies are asking the U.S. Federal Communications Commission ([FCC](#)) to mandate that their products be given access to applications and services running on the headend systems of cable TV providers. Their so-called Digital Cable Ready-Plus proposal forms an alternative to the Open Cable Application Platform (OCAP), a Java-based software environment for STBs now being fielded by cable companies.

The debate comes at a time when application software delivered over networks into and inside the [digital home](#) is taking on greater significance for both service and systems companies. "This will be the next big industry wave, and I think you will see a bit of a land grab as people try to figure out where the revenue is in this model," said Jed Johnson, a director of systems engineering in the STB group of Motorola Inc.

The engineering work on the OCAP STBs, now completed, had required OEMs to bolster their software skills. For its part, Motorola acquired three software companies to gear up for OCAP, said Johnson.

As cable TV companies start deploying those STBs, the Consumer Electronics Association (CEA) has asked the FCC to allow them to use a signaling protocol to access capabilities running at cable TV central offices. The Digital Living Network Alliance (DLNA), a broad group of digital home vendors, has piggybacked on the CEA request, saying that the DLNA could set standards that would let home gateways handle such protocols.

At issue is whether next-generation cable services and applications should run only on an STB—the approach assumed for OCAP, developed by the CableLabs consortium of cable providers. Consumer companies want to let a broader group of their systems, including lower-performance products, access the services directly.

"You might not want to have all the complexity of running applications on your device if, for example, you just want to run a music player," said Glen Stone, VP of the networking and system architecture division of Sony Electronics.

Straight to cable

While the issue is debated at the FCC, another group of vendors, including the 1394 Trade Association, is taking the case directly to CableLabs. They are asking the consortium to create a network version of its Open Cable specification so OCAP software can run across various systems in the home.

TV and computer makers are also concerned about the OCAP requirement to certify every model using the software at a cost of as much as \$100,000 each, said Bill Rose, a consultant who heads up marketing for the 1394 group. "That's OK for STBs,

where you only have a few models, but TV makers may have 10 to 20 models that change frequently, so it becomes onerous," Rose said.

Many companies are also concerned about the relatively slow pace of innovation for standards such as OCAP. Johnson noted that IPTV carriers, such as Verizon, already offer networked video recorders on the multimedia over coax network, a capability CableLabs does not yet support.

An inside debate

The debate about links into the home comes at a time when multiple wired and wireless interconnects on systems within the home are vying to plug into the digital TV. [HDMI](#) is becoming a de facto standard on DTVs, but advocates of FireWire and the USB, along with a handful of wireless contenders, are gearing up to play broader roles.

Silicon Image Inc., the pioneer of HDMI, is developing mobile and networking technologies to extend the interface beyond TV. Meanwhile, the USB Implementers Forum is working on a variant to link DTVs with mobile devices. And FireWire backers have developed software to get their link into a wider set of systems and uses.

Waiting in the wings is a host of wireless options, including 802.11n Wi-Fi, UWB and 60GHz radios, including several proprietary variants of each.

Sept. 10, 2003	FCC issues second report and order mandating April 1, 2004, as the deadline for cable operators to begin supplying 1394 interfaces upon request
April 1, 2004	Cable operators must supply HD set-top boxes with functional 1394/FireWire connectors to customers upon request
July 1, 2004	Half of all DTV receiver models in sets 36 inches and larger that are labeled 'Digital Cable Ready' must have DVI or HDMI interfaces using high-bandwidth digital content protection (HDCP) technology
July 1, 2005	All HD set-top boxes must have DVI or HDMI; all DTV receivers in sets 36 inches and larger (and 50 percent in 25 to 35-inch sets) that are labeled 'Digital Cable Ready' must have DVI or HDMI interfaces using HDCP; any set labeled 'Digital Cable Ready' must include an integrated over-the-air digital tuner
July 1, 2006	All DTV receivers in 25- and 35-inch sets that are labeled 'Digital Cable Ready' must have DVI or HDMI interfaces using HDCP

Source: IP Action Partners

A mandate that never mattered: FCC required FireWire, but many cable TV operators did not enable it, in part because it would have raised the ire of their content providers in Hollywood.

"It's a complex scenario, because every home is different and every technology has a different set of trade-offs," said Bhupen Shah, chief technology officer and co-founder of Sling Media Inc.

The FCC is on the cusp of a decision about how it regulates the cable TV industry that could influence which interfaces appear on tomorrow's digital home devices.

The Commission mandated use of FireWire on STBs a decade ago as part of a wave of regulations aimed at opening up cable systems. However, the mandate had little real impact because the interfaces initially lacked the software to be useful, and cable operators often disabled them.

An open interface "didn't fit their business model of controlling the experience of the interface and program guide," said Rose. "In addition, they had problems with contractual agreements with content providers," who didn't want to see their programs available in compressed form on an open network.

The 1394 Trade Association lobbied the FCC recently to maintain the requirement for FireWire, in part because the software now exists to make it more useful. Members of the DLNA, meanwhile, asked the FCC to require Ethernet ports and DLNA software as a better alternative. There's no word on when or if the FCC will rule on the issue, one of more than 100 pending before the commission.

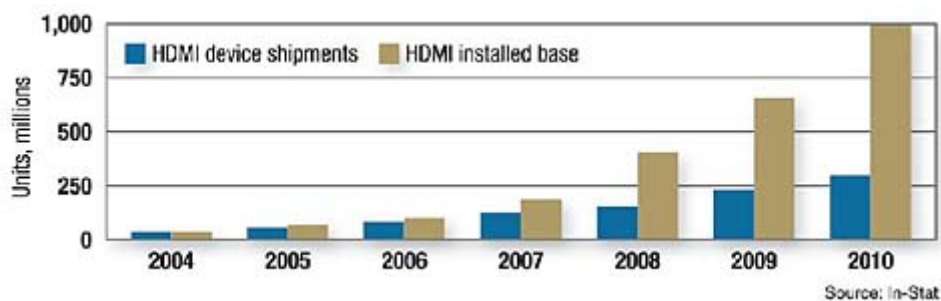
HDMI rising

Several industry players said HDMI, not 1394, is becoming the interface of choice for DTVs and STBs. "What we are seeing is that 1394 has sort of had its day," said Stone.

Brian O'Rourke, a principal analyst for market watcher In-Stat, agreed. "HDMI has already won," he said. "They are on the TVs, STBs and HD DVD systems. They have a fairly full ecosystem."

Startup Ambarella is supporting HDMI along with USB 2.0, analog video and flash cards on a next-generation HD encoder chip for HD cameras. "In general, HDMI is the way to go," said Didier LeGall, executive VP of the company. "USB is never likely to be mainstream for HD cameras, because it is a compressed link, but HDMI can be taken for granted."

By contrast, said O'Rourke, "USB is working its way into some consumer applications, like MP3 players and cameras, but I don't know if it will ever be in a majority of TVs."



HDMI use is on the rise in TVs, STBs.

FireWire is even further behind; "1394 is a story of being the second-choice interconnect in every market, so it hasn't been able to get economies of scale," O'Rourke said.

The 1394 crowd shot back with ver 2.0 of 1394 networking software from the High-Definition Audio-Video Network Alliance (HANA) running premium content from NBC

Universal and three cable providers over five media types, including coax. HANA is holding plugfests to prepare the code to appear in products, probably in late 2008.

The 1394 group also announced in December that it had completed the spec for its 3.2Gbit/s version. Most chips have been using the 800Mbit/s version today, although some are expected to roll out 1.6Gbit/s products this year.

O'Rourke said he was skeptical whether the new networking software and higher speeds would help 1394 regain momentum.

Wireless wild cards

Wireless options are the big wild cards in linking the digital living room. The DLNA proponents want to drive devices to Ethernet, Internet Protocol and, typically, 802.11n Wi-Fi. O'Rourke said he sees the wireless USB flavor of UWB taking off starting in 2009.

The first chips for 60GHz radios may not be far behind. Backers of the so-called Wireless HD version of the technology are promoting their technology, which aims to deliver as much as 4Gbit/s over 10m.

Initial silicon is expected to aim only at AC-powered devices, and it may take much of 2008 for the group to complete compatibility tests. Nevertheless, the technology has broad aims as a "unifying link for CE and PC devices connecting to displays," said John LeMoncheck, a former Silicon Image executive who is now helping to drive the wireless technology as CEO of chip startup SiBeam.