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Loading up on downloadable security

The cable industry dodged a huge bullet in March when the Federal Communications Commission maintained a ban on cable set-tops with integrated security, but extended the deadline from July 2006 to July 2007.

But more important than the extra time is how the FCC expects the cable industry to use it. The one-year reprieve is to allow cable operators the opportunity to investigate and develop downloadable security technology that essentially replicates the security functions of today's embedded conditional access (CA) systems, as well as removable CableCARDS.

There's a fount of evidence that we're already well down this road. In addition to being a key goal of the industry's Next Generation Network Architecture (NGNA) initiative, downloadable security is a component of the recent CA deal between Comcast and Motorola. Scientific-Atlanta, meanwhile, is developing a soft CA platform. And Charter Communications

is planning to use Sony Passage to strip out existing CA technology and replace it with a system likely to be based in software.

So what's driving this trend? For one, the cable industry has maintained that a soft encryption scheme will be required for inexpensive (read: \$50) all-digital set-tops.

The good news for cable

is that the FCC appears to be growing ever more comfortable with the notion that a software-based encryption system can be defined as "removable" in much the same way the CableCARD is today.

And the cable industry should be delighted about that. In addition to the straight up bill-of-materials cost savings, a soft system could help the cable industry avoid what could become a massively expensive situation, if security was somehow compromised.

Embedded security systems for digital cable have been uncrackable so far, but, for argument's sake, what would happen if some evil genius figured out how to break them? Talk about a train wreck. The set-top replacement costs would be astronomical.

A compromised CableCARD-based system, though less costly to replace than the set-top itself, is a physical device, and, like smart cards, can create a logistical nightmare if operators have to send out thousands (or millions) of replacements.

So one of the beauties of a software-based system is this: If it is cracked, the operator can simply download a new version and become sufficiently protected again.

And that capability can only improve cable's bottom line. The National Cable & Telecommunications Association just reported that digital technology had contributed to an amazing 50 percent drop in cable service theft over the last four years. As cable migrates to an all-digital platform, coupled with a soft CA, there's no reason why that number can't plummet further and even more rapidly.

Although the industry can't abandon the CableCARD, the "soft" CA appears to be more than another answer, but *the* answer to cable's long-term security.



The 'soft' CA appears to be...the answer to cable's long-term security question

JEFF BAUMGARTNER,
EDITOR

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CED MAGAZINE Volume 31, number 5

features

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VIDEO MESSAGING

Seeing is communicating

Cable operators are taking a long-time friend video—and using it to spice up their e-mail services. Will video telephony be next? And is this the edge MSOs have been looking for in their competitive battle with the telcos?

By Karen Brown

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THE NATIONAL SHOW

Cable's San Francisco Meet

The promise of the quadruple play of services, better content protection, enhanced interactive program guides and the all-digital migration gave last month's National Show a golden glow.

By CED staff

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42 THINKING OUTSIDE THE SET-TOP BOX

If the telcos choose to take an innovative path to video, via a flexible telecom network, they could gain a huge strategic advantage over cable companies.

46 TAKE YOUR TV WITH YOU

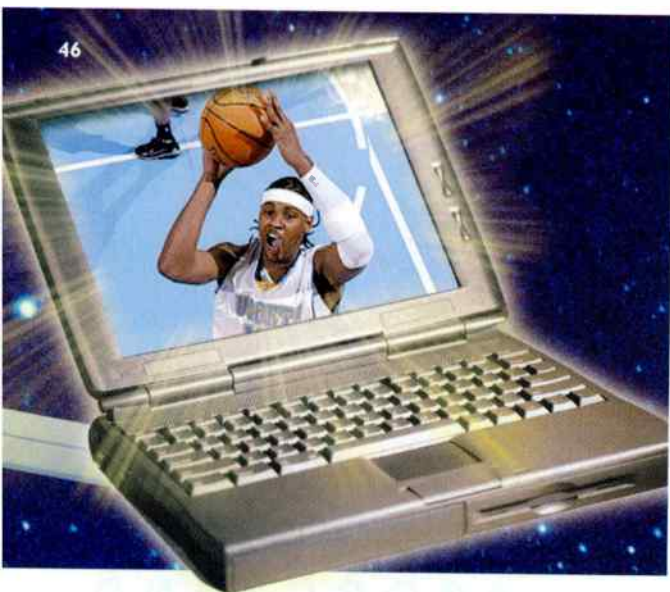
This Q&A with Sling Media CEO Blake Krikorian reveals the genesis of "place-shifting" technology, which will give consumers the power to take their TVs anywhere, and how it might affect broadband services.

COLUMNS

3 IN PERSPECTIVE A software-based conditional access system may be the answer to the cable industry's security prayers and the \$50 set-top.



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20 MEMORY LANE Do handheld phones pose a threat to cable's historical subscription-television domain?

44 IN THE LOOP One is *not* the loneliest number, as long as broadband providers can deliver enough bandwidth to facilitate person-to-person communication.

54 CAPITAL CURRENTS Although the FCC made a final decision in the digital must-carry proceeding a few months ago, there are still a number of loose ends that need to be tied.

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LATEST NEWS AND INSIGHT

FCC extends set-top security deadline

The Federal Communications Commission recently maintained a ban on cable set-tops with integrated security, but extended the effective date by a year.

Under the FCC's Second Report and

Show in San Francisco. Adding soft CAs to the regulatory mix could also be a boon for downloadable security specialists such as Widevine Technologies and Latens Systems.

Before the ban comes into effect, the order also holds that the cable industry must keep the FCC abreast of its progress. By Dec. 1, 2005, the cable industry must report several items to the Agency, including the feasibility of downloadable security, potential deployment timelines, and draft licensing terms.

Additionally, the National Cable & Telecommunications Association (NCTA) and the Consumer Electronics Association

(CEA) must file joint status reports on two-way "Plug & Play" negotiations by Aug. 1, 2005, and every 60 days thereafter.

Under the order, the FCC is also calling on the six biggest U.S. MSOs (Comcast, Time Warner Cable, Cox Communications, Charter Communications, Adelphia Communications and Cablevision Systems Corp.) to file regular status reports on CableCARD deployments, including the number of modules in service, the monthly price for the cards, problems with the technology that have surfaced and how they have been resolved, and to provide a timetable for multi-stream CableCARDs. The first report is due Aug. 1, 2005. The MSOs must produce updates every 90 days thereafter.

Order, the ban, originally scheduled for July 2006, has been moved to July 2007. The FCC said the extension is intended to give cable operators time to investigate and develop a downloadable security platform that performs the same security functions as the more expensive CableCARD platform.

The CEA has pushed the FCC to retain the ban on integrated security boxes, arguing that only uniform support by operators will ensure the success (and eventual price reduction) of CableCARD technology. The cable industry, in turn, has maintained it would support the CableCARD, but has maintained that it would like the option to use software-based CA systems in inexpensive all-digital set-tops.

Software-based security is a key component of the Next Generation Network Architecture (NGNA) initiative, a project now under the auspices of CableLabs. Comcast Cable and Motorola are also working on a next generation conditional access (CA) system with downloadable capabilities. Scientific-Atlanta also began talking up the concept at last month's National



S-A bows network monitoring system

Scientific-Atlanta has launched a Web-based platform designed to help cable operators keep tabs on the health of their HFC networks.

The platform, dubbed Pointer, offers real-time network monitoring and status reports, able to identify network ailments and give technicians the data required to tackle an outage or other network problems.

Developed by S-A's SciCare Broadband Services division, the Pointer software resides at the cable head end, where it monitors routine network traffic that verifies two-way connections between set-tops and the S-A Digital Network Control System (DNCS).

S-A has the product deployed at three undisclosed sites, according to Tony Palermo, SciCare's VP of business development and emerging technologies. Although the platform is not complex, "it has a huge impact on operators that are managing thousands and hundreds of thousands of assets," he said.

S-A also is developing a version that monitors the connection between cable modems and the cable modem termination system (CMTS).



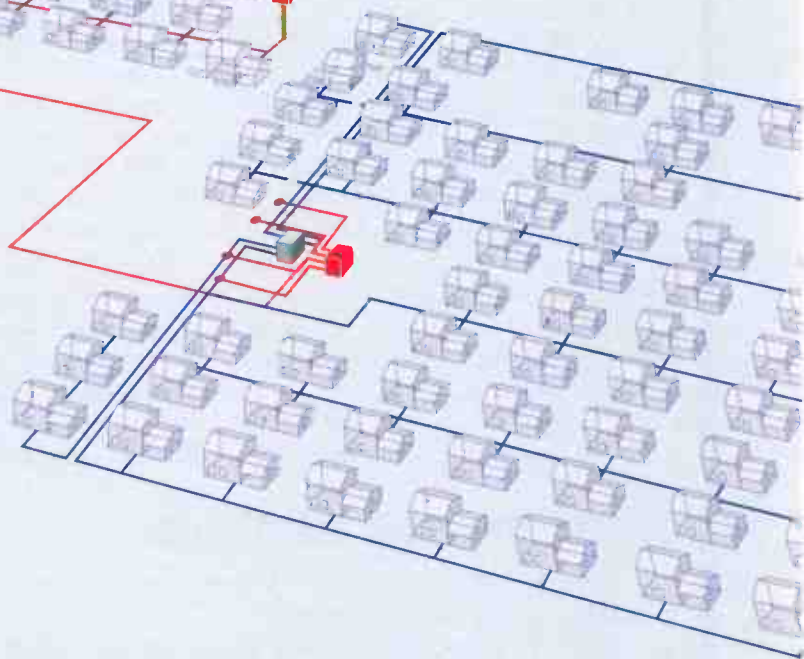
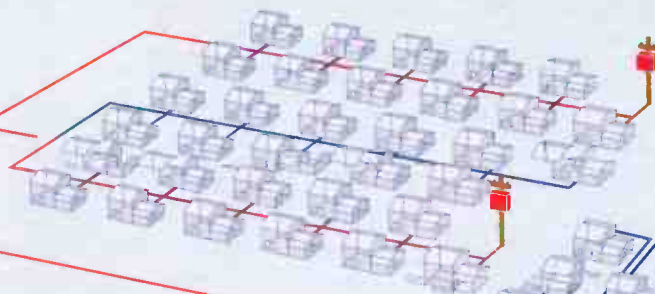
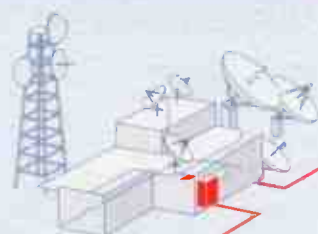
'Pointer' keeps tabs on network health.

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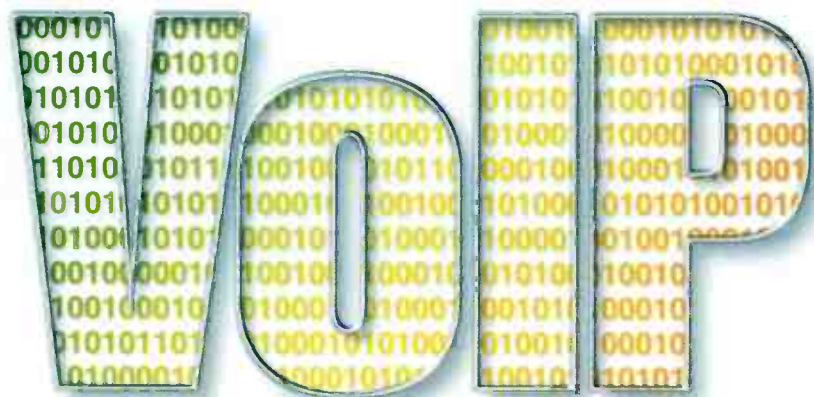


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Insight calls up voice vendors



Insight Communications has added two key names to its VoIP vendor lineup: ARRIS and Cedar Point Communications.

Insight has yet to reveal how quickly it will roll out VoIP, or which markets it will target first. The MSO presently offers telephone service using traditional circuit-switched technology to about 60,000 customers in parts of Louisville and Lexington, Ky.; Evansville, Ind.; and Columbus, Ohio.

The MSO has selected ARRIS' PacketCable 1.1-qualified C4 cable modem termination system (CMTS) to support the service, as well as Cedar Point's flagship packet switching platform.

The deal marks another big win for Cedar Point, which already has deals or de-

ployments in place with MSOs such as Comcast Cable, Charter Communications, Cablemas of Mexico, Bresnan Communications, Cable Pacifico of Columbia, Omnivision of Argentina, Grupo TVCable of Ecuador, and Liberty Cablevision of Puerto Rico (through a partnership with Net2Phone).

CedarPoint's claim to fame is the SAFARI C³, an IP platform that combines several PacketCable network elements—including the call management server, signaling gateway, record keeping server and announcement server—into one device. Though the all-in-one package aims for VoIP simplicity, several cable operators are also opting for a more distributed PacketCable architecture.

Digeo picks up the phone

Digeo Inc. has added a telephony application to its flagship Moxi Media Center software platform.

Digeo has added the app, called Moxi Telephone, via technology partnerships with Nortel Networks, Cedar Point Communications and Net2Phone Inc.

Digeo, which has software deals with set-top makers such as Motorola and Scientific-Atlanta, said the new capability, which includes TV-based caller ID, message waiting notification and call logging, will be offered to "select" cable customers later this year. Digeo did not mention any MSOs by name, but Charter Communications and Adelphia Communications are among those that have Digeo software deployed in the field.

SeaChange International has launched a new "open" set of backoffice video-on-demand software and a hybrid server platform.

On the software end, SeaChange has unveiled the "Axiom" video operations services software (VOSS) platform. Although Axiom is pre-

SeaChange bolsters VOD platform

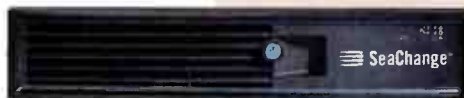
integrated to support SeaChange hardware, the company insists that it can be made

to work with hardware from other server vendors. SeaChange, however, has yet to announce integration deals with third-party VOD server suppliers such as Arroyo Video Solutions and Broadbus Technologies, for example.

On the server front, SeaChange has begun shipping a hybrid MediaCluster server that houses both disk- and memory-based technology. The servers use memory caching to store popular VOD content, with the balance stored on solid-state disks.

Each 2 RU-high hybrid server can pump out 12 Gbps of stream throughput, and store up to 60,000 hours of content. Although some "next-gen" server vendors use memory

rather than disks, that approach remains relatively expensive, said



SeaChange's hybrid MediaCluster server

SeaChange Director of Broadband Systems Joseph Ambeault, referencing one of the reasons why SeaChange opted for a hybrid design. Broadbus officials counter that their DRAM-based system makes it up in increased functionality and reliability.

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Comcast, TiVo press play on DVR deal

Following a long string of fits and starts, TiVo Inc. has finally lassoed its first big cable deal.

Comcast Corp. and the digital video recording (DVR) pioneer have inked a non-exclusive, multi-year deal to make a customized version of the TiVo service and a DVR-based advertising platform available to most of the MSO's 21.5 million customers.

Financial terms were not disclosed, but one analyst believes TiVo and Comcast will split incremental DVR fees and share any ad dollars derived from the TiVo platform.

Comcast presently charges \$9.95 per month for its generic DVR, but the operator will likely charge a premium—perhaps \$2 to \$4 more per month—for the jazzier TiVo version, Fulcrum Global Partners Analyst Richard Greenfield said, in a research note.

A deal between Comcast and TiVo has

been long in the making. TiVo's past President, Marty Yudkovitz, reportedly chose to step down earlier this year in part because company Chairman and CEO



Mike Ramsey nixed a deal with Comcast because Ramsey believed the agreement handed over too much control to the MSO.

Under the deal, Comcast and TiVo will collaborate on a version of the TiVo service that runs on the MSO's current primary DVR, the dual-tuner, HDTV-capable DCT6412 from Motorola. They expect the product to become available in mid-to-late 2006.

The agreement with the nation's largest cable operator puts to bed at least one nagging issue with TiVo: its reliance on DirecTV to drive new DVR subscriptions. TiVo's picture grew bleaker when DirecTV announced plans to roll out DVRs that use software from corporate sibling NDS Group.

It also marked TiVo's latest (and greatest, so far) entre into the cable arena. At the Consumer Electronics Show in January, TiVo announced plans to offer an HD-DVR that supports the CableCARD.

Comcast has relationships with other DVR software makers. The MSO recently announced it would trial Digeo Inc.'s Moxi platform in Huntsville, Ala. and a second undisclosed market. Comcast also has a deal in place to deploy Microsoft TV's Foundation Edition software, which supports a variety of applications, including an interactive program guide and DVR navigation.

Television search and personalization software firm MyDTV Inc. has changed its name to MeeVee. In concert, the company will spend less time and effort on direct cable relationships and instead turn most of its attention toward the consumer arena.

Under its earlier strategy, the company attempted to find a home for its TV search and suggestion applications inside digital set-tops. Its new strategy calls for it to extend its technology to other devices and platforms, including PCs and the World Wide Web, where it will take on Yahoo!, Google and other Web properties that have launched or are launching similar products.

MyDTV changes name, strategy

The first phase of MeeVee's new strategy will come in the form of an ad-supported Web portal and search tool for TV listings, said company Chief Marketing Officer Michael Raneri. MeeVee expects a beta version to be up and running by May.

He noted that TV personalization will continue to grow in importance as consumer choices grow to overwhelming proportions.

"There's an increasing need to sort through and filter content for [consumer] profiles that can present the things they are interested in," Raneri said.

Although MeeVee will have difficulty competing with consumer brands like Google, the company believes its own marketing efforts and intellectual property will help it cut through the clutter.

Narad nets new CEO

John Petrillo, the chairman of Narad Networks, has added chief executive officer to his title.

Petrillo, who became Narad's chairman in January, replaces James Norrod, who was named CEO in June 2004. Norrod left the company to pursue other interests.

Petrillo is a veteran of AT&T Corp., where he handled strategy and business development for the company's commercial and residential markets.

Founded in mid-2000, Narad specializes in equipment that pipes services to cable business customers. Its overlay platform runs on legacy HFC, but lives in spectrum above 860 MHz and below 1.1 GHz.

THE REVIEWS Are In!!

We asked the attendees of the live, online Cable Television and Broadband Expo what they thought, and they told us...

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BANDWIDTH

C-COR joins the bandwidth expansion game

C-COR Inc. has unveiled a line of products that enable cable operators to expand their available spectrum to 1 GHz.

MSOs are enlisting a range of tools and techniques to help them deal with the bandwidth pressures caused by advanced services such as high definition television (HDTV) and video-on-demand (VOD). Digital simulcast—an all-digital transition technique that replicates an operator's analog tier in the digital domain—also costs additional bandwidth on the front end of the project.

Among the tools available (others include node subdivision, a migration to ad-

vanced video codecs, and switched broadcast, et al), bandwidth expansion is by far the most controversial due to the negative perception it could cause on Wall Street.

A C-COR official said residential services, and HDTV in particular, are the driving factors behind the company's 1 GHz product line. She noted that the platform

could also be used to serve commercial customers.

C-COR's 1 GHz product portfolio is comprised of the CHP Max5000 Converged Headend Platform, the Opti Max4100 segmentable node, the Flex Max901-series trunk and bridger amps, and the Flex Max331 line extender.

OpenTV to integrate Gemstar IPG

OpenTV Corp. has struck a deal to integrate Gemstar-TV Guide International's new i-Guide IPG with OpenTV's Core middleware.

When the integration is completed, Gemstar will market i-Guide worldwide to operators that use Core-enabled set-top boxes. In addition to general navigation, Gemstar's i-Guide supports applications such as video-on-demand, HDTV and dual-tuner digital video recording.

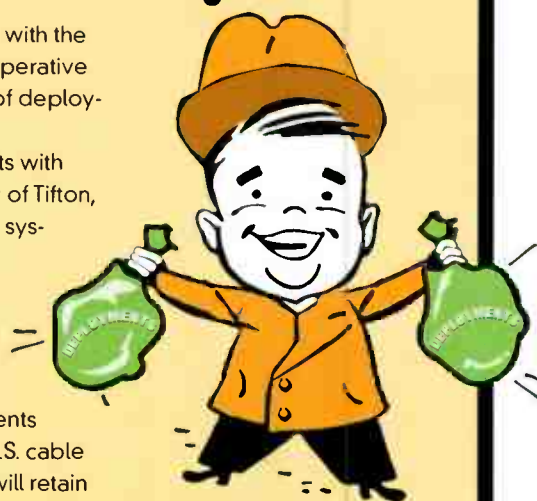
Net2Phone scores NCTC carriage

Net2Phone Inc.'s hunting license with the National Cable Television Cooperative (NCTC) has yielded a couple of deployments for the VoIP service outsourcer.

Net2Phone has scored deployments with Communications Services and the City of Tifton, Ga., which operates a municipal cable system called CityNet. Those operators plan to deploy Net2Phone's SIP-based VoiceLine service across the board.

Net2Phone is a Platinum Vendor of NCTC, a purchasing group that represents more than 1,100 small- and mid-sized U.S. cable operators. Although NCTC members will retain ownership of their VoIP subs and the brand of the service, Net2Phone will handle the service's provisioning and billing integration, the switching platform, operator/directory assistance, and connectivity with the PSTN.

"Cable operators big and small can benefit from adding telephony to their suite of services," said Michael Pastor, president of Net2Phone's cable telephony division.



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LATEST NEWS AND INSIGHT

Panasonic signs two-way cable agreement

CONTRACT

Panasonic has inked a deal to incorporate the CableLabs-specified OpenCable Application Platform (OCAP) into its line of cable-ready digital TVs, set-tops and other two-way cable devices.

Panasonic marks the second consumer electronics company to sign the two-way accord, dubbed the CableCARD Host Interface Licensing Agreement (CHILA). Samsung and LG Electronics are the other two. Panasonic was the first major CE manufacturer to sign the original one-way agreement.

The latest agreement gives Panasonic access to certain intellectual property rights needed to build interactive devices based on the OpenCable specification. A key component to the spec is an interface that supports removable security modules called CableCARDS. The CableCARD is also a key to the one-way "Plug & Play" agreement between the cable and CE industries for set-top-free digital televisions. A more complex version

of that deal has yet to be finalized, though OCAP support is almost a given.

The absence of a two-way Plug & Play agreement has not stopped operators and TV manufacturers from making deals on their own. At this year's Consumer Electronics Show, Time Warner Cable, Bright House Networks, and Charter Communications signed two-way agreements with Samsung.

Power & Telephone Supply Company has signed on as the first distribution partner for Coaxsys Inc., a provider of home networking technology that uses legacy home coax wires.

Under the deal, P&T will market Coaxsys' TVnet gear to telco customers, starting with the IPTV 7000, a product currently in use by more than 20 telcos. Eliminating the need for in-home Cat-5 networks, the Coaxsys platform is designed to offer a 104 Mbps transfer rate up to 250 feet.

"We are pleased to have been selected as Coaxsys' first distribution partner, and we are excited to offer our customers the opportunity to deploy IPTV without having to rewire their customers' homes," said Jim Drain, vice president of P&T's telephony group.

P&T to resell Coaxsys gear

Cable and satellite vet Daniel O'Brien has been named chairman and CEO of Gotuit Media Corp., a provider of video-on-demand services and software.

O'Brien most recently served as CEO of Brief Original Broadcasts (BOB), a short-form content provider.

He will remain on the BOB board.

Before that, O'Brien was president and CEO of High Speed Access Corp., a so-called "turnkey" cable modem service provider, and was president and COO of Primestar Inc., a cable-backed satellite TV service provider that eventually was sold to DirecTV. O'Brien has also held executive slots at operators such as Time Warner Cable and Jones Intercable.

Gotuit's flagship product is a personalized VOD navigation platform that combines segment metadata with content.



O'Brien

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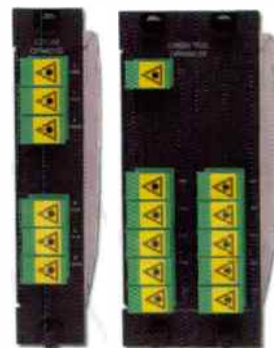
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LATEST NEWS AND INSIGHT

HSN, GoldPocket click on interactivity

HSN has seen the future of home shopping, and it appears that interactive television (iTV) will play a big role in it.

HSN has paired up with GoldPocket Interactive to build a 24/7 iTV service that runs on a wide range of cable and DBS platforms.

As part of a "click & buy" iTV initiative between the companies, HSN will enable viewers to purchase products via the remote control.

When the service becomes available later this year, iTV viewers with an existing HSN account will be able to order products—including the one being sold live as well as the two items immediately preceding it. Those users will also have access to HSN's "Today's Special" throughout each day.

Although HSN has yet to announce any iTV carriage deals, the network hopes to have it available in "a couple hundred thou-

sand homes" by Q3, according to Peter Ruben, HSN's executive vice president of affiliate relations.

As for the business model, which will likely include revenue sharing, "we're in those talks right now," Ruben said.

HSN showed off its new iTV capabilities at last month's National Show in San Francisco.

HSN, available in more than 86 million homes, also enables users to buy products off a Web site, but the deal with GoldPocket marks its first foray into same-screen iTV applications.

The HSN partnership opens up a whole new revenue segment for iTV. Shopping "is probably one of the most interesting and perfect applications" for in-



teractive television, said Scott Newnam, GoldPocket's CEO.

Vidiom formalizes big OCAP deal

It's been a long time in coming, but Vidiom Systems Corp. has cemented a licensing deal with OCAP Development LLC, a joint venture of Comcast Cable and Time Warner Cable.

The agreement gives Vidiom the rights to distribute the OCAP middleware implementation from the Comcast-Time Warner joint venture. Vidiom also has the green light to license the OCAP stack to other operators, silicon vendors and consumer electronics manufacturers. Financial terms of the deal were not disclosed.

Broomfield, Colo.-based Vidiom is one of a host of OCAP stack developers. Though several TV manufacturers are creating their own OCAP stacks, companies such as Vidiom and Osmosys have created licensable versions.

"This is an exciting next step in the progression of OCAP becoming a widely available software platform for cable operators and application developers," said Steve Heeb, vice president, product and business development for Comcast.

Vision Inc. has formed a new media division that will ensure that users of its videophones have more to look at than just talking heads.

The subsidiary, dubbed Viseon-Media, will seek out "sponsored, TV-quality content," including personal-

Viseon to offer video-phone fare

ized news and entertainment, for the VisiFone broadband videophone.

Viseon plans to pilot the concept in late 2005, and roll it out commercially in 2006. The company expects the service to be offered as part of a monthly VoIP subscription fee, though it did leave the door open for premium content. Fox News Channel and Discovery Networks are the first programmers to announce participation in the trial.

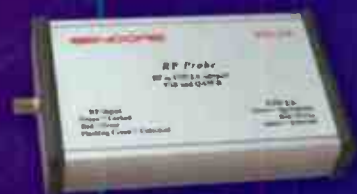
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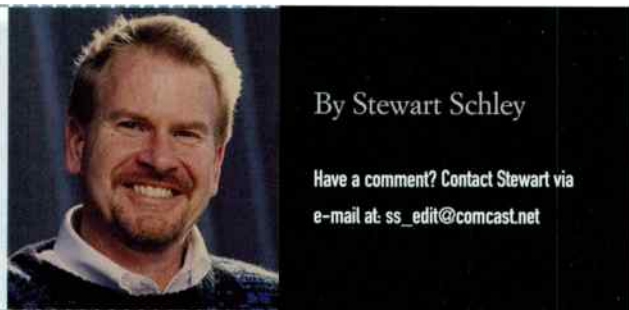
World Radio History

The third screen

Why wireless means war

In addition to its usual collection of literary fiction, lifestyle features and advertisements from the likes of Wheaties breakfast cereal, the issue of the *Saturday Evening Post* magazine dated July 28, 1945, featured an article titled "Phone Me by Air." In it, FCC Commissioner E.K. Jett described an idea for dicing selected electromagnetic frequencies into small geographic zones so that the same frequency could be re-used from zone to zone.

In the pages of what was then the nation's dominant magazine, the FCC commissioner was introducing the public to a novel and even unthinkable concept: that telephone conversations could be conducted out of thin air, with no wires connecting callers on either end.



Historians believe the article was inspired by a secretive demonstration Jett and his fellow FCC commissioners had seen in the winter of 1944. At a classified meeting staged by the U.S. Office of Secret Services, a predecessor to today's Central Intelligence Agency, scientists had demonstrated a type of two-way radio system that had been used by OSS operatives in occupied territories during World War II. OSS agents behind enemy lines had used the walkie-talkie-style radios to communicate with allied aircraft. To avoid detection by German spies, the system made use of previously unexplored spectrum above 200 MHz. The creator of the system, a Cleveland inventor named Al Gross, was an ahead-of-his-time wireless communications pioneer who died in late 2000.

The OSS demonstration apparently impressed the FCC and Jett, who endeavored to explain—in the pages of a magazine that ritually featured Norman Rockwell illustrations—how a two-way wireless phone system might work for the everyday Joe: "The same wavelengths may be employed simultaneously in thousands of zones in this country. Citizens in two towns only 15 miles apart—or even less if the terrain is especially flat—will be able to send messages on the same lanes at the same time without getting in one another's way."

Today's wireless phone business is far more prodigious than Jett could possibly have imagined in 1945. According to the wireless phone industry's U.S. trade association, there are now 182 million wireless phone subscribers in the country who spend an average of \$50.64 per month for service. The \$102 billion in annual revenues produced by the wireless industry tops the cable industry's estimated annual revenue by \$40 billion.

But it is a strategic imperative, more so than purely an economic lust, that has compelled a serious attempt by the cable industry to find a suitable wireless mate 50 years after Jett wrote about cellular communications.

The *prima facie* reasoning for a cable-wireless marriage is to produce a quadruple-play service the cable industry can use to match similar offerings from rivals like SBC and Verizon Communications. A combination of video services, high-speed data, wireline and wireless telephony is deemed to be essential in the new bundled services era of telecommunications. Yet for the most part, cable still lacks a deep presence in the wireless phone sector.

But a secondary pressure ultimately may prove to be more important. While cable pursues a role in connecting callers over wireless phones, the companies that are in the wireless phone business are quickly making corresponding inroads into cable's bedrock business of subscription television. It is the emergence of this so-called "third screen" that both compels and worries the modern-day cable strategist. The idea that people are paying \$15 and more each month to subscribe to a package of television channels delivered to wireless handheld phones hits awfully close to home for the cable industry—especially considering that the quality of telecasts and the screens embedded into phones are only apt to improve over time.

If it sounds absurd to think that handheld phones pose a threat to cable's historical subscription-television domain, remember that in 1981, when the FCC began to allot a pair of cellular phone licenses across U.S. cities, the idea was that a relatively thin slice of the market might want to use "car phones" to make occasional emergency calls. Today, millions of mobile phone users have untethered themselves altogether, substituting handheld portable devices for traditional household phones connected to traditional household phone wires. That's reason enough for the cable industry to pursue a wireless play with conviction. The last thing the cable industry wants to see is a successor to Norman Rockwell portraying the iconic American consumer who gathers 'round the TV set, with nary a cable in sight. ■

Stewart Schley writes about media and technology from Englewood, Colo.

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SEEING

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*Cable operators
delve into
video e-mail,
telephony*

By Karen Brown, Senior Editor

In the world of cable's ever-evolving broadband communications services, the most appropriate slogan may soon be, "Can you see me now?"

In a bid to separate themselves from other broadband competitors, cable operators are adding a medium they know well—video—to their e-mail services. And a small group of technology providers are also hoping to convince these MSOs to extend that visual to telephony as well.

One of the first MSOs to get the picture for video e-mail was Comcast Corp., which debuted its video e-mail service last summer, and, to boost that introduction, offered new users a free Webcam. That fell within a record subscriber quarter for Comcast, which added 549,000 new customers—and

Comcast is not alone in choosing Vibe's application as a first step into video messaging. The Clayton, Mo.-based broadband video communications provider has also landed deals with Time Warner Cable, RCN Corp., and most recently, with Charter Communications Inc. With its latest batch of MSOs, it has claimed about 70 percent of the cable data market share, according to Brad Herrick, vice president of Vibe Solutions Group's marketing and product strategy.

"We're getting partner interest every day in terms of new partners that want to roll out with video mail," he says. "Essentially what we've seen is video mail is kind of an onramp to video communications for a lot of our partners."

e-mail is just what Vibe wants to see from its MSO partners. To encourage that trend, it has retooled its product to be based on SIP (session initiation protocol), and, at last month's National Show in San Francisco, it announced a partnership with applications management supplier Xinnia Technologies whereby Xinnia integrated Vibe's SIP product with its PacketCable Multimedia-based technology.

"The PacketCable Multimedia component allows us to really take advantage of the quality of service and the bandwidth infusion that technology can provide to give a much richer experience to the user," Herrick says. In a side-by-side demo of its original scheme and the full-screen version using Xinnia's PacketCable

COMMUNICATING

a "strong percentage" of those customers did opt to receive the free Webcam, according to Comcast.

On its Web site, Comcast also offers existing users Web cameras with major discounts, putting them in the \$30 to \$60 price range with shipping.

The video e-mail service, using technology provided by Vibe Solutions Group, lets subscribers record 45-second video messages and post them to a central server. Recipients are then notified by e-mail of the clip and can access it from a Web site.

That server-based approach relieves users of the storage burden for the clips. But some users did want to save the messages, so a few months ago Comcast also added the ability to download the clips and store them on a computer hard drive. Another feature allows users to create video introductions to attached photographs they send to friends and family.

For Comcast, there is indeed an advantage to starting video communications with an e-mail product.

"When you talk about video chat, the biggest hurdle you have to get over—which is one of the reasons we rolled out video mail—is you've got to get users on line at the same time that want to talk and have cameras," says Charlie Herrin, Comcast's vice president of business development. "The network issues can be solved. It's the aspirational issue and the availability issue that you need to attack, and that's why we decided to do video e-mail first versus [rolling out] video chat, which we've had in our labs for some time now."

Comcast is in fact planning to roll out a video instant messaging/chat product. Specifics of that rollout haven't been worked out "but definitely we will have it in front of customers this year," Herrin says.

That evolution from simple video

Multimedia platform, "you can definitely tell the difference. It really increases the bandwidth that is getting to the computer."

Introducing video e-mail not only reinforced the value of Comcast's broadband service by giving subscribers a feature that can use the high-speed throughput, but it also positions the MSO to expand video capabilities in the future, according to Herrin.

"It sets a foundation for later on, when we do introduce real-time video communications, which you would expect from a broadband company," Herrin says. "People are familiar with cameras—they have them, they are familiar with video communications, and we think it just sets the groundwork for our future products and services."

Video telephony

That next evolution could include



SEEING is COMMUNICATING

bringing live images to your phone. At least that's what companies such as WorldGate Communications Inc. and Vison Inc. are hoping.

Both outfits are hitting the marketplace with new lines of SIP-based video telephony devices they say will truly bring broadband to voice services.

WorldGate has struck a deal with Motorola Inc. to build and market the broadband-powered Ojo. As of press time, delivery of the first Ojo phones to retail outlets was set to start in April.

"Everything is on schedule, and we're excited," says WorldGate Chairman and CEO Hal Krisbergh. "So in a sense we are there."

Other key features are a cordless handset, full duplex speaker, video messaging, picture caller ID and phonebook picture ID. Tapping the H.264 video codec, the Ojo delivers images to a 7-inch diagonal screen.

For cable operators, video could be the key to competing with the established telco voice providers.

"What's so nice about video is it really offers for the first time not only differenti-

ation, where you are really offering a new service, but more importantly, you are offering something where cable is strong," Krisbergh says. "Cable is video, and that is their strength. And what you are really playing to now is the ability of cable to integrate into telephony and bring not just voice."

Vison also has been an active player in the space, having nailed down a deal with Time Warner Cable to provide its first-generation videophone to the MSO's Northeast Ohio system for use with small to medium business customers. That phone uses the old-



Comcast's video mail service debuted last summer, offering video messages stored on a central server.

er H.232 videoconferencing protocol, while Vison's next two videophones will make the jump to newer codecs and SIP.

Protocols dictate picture for videophones

For the video telephony players, the twin schemes of Session Initiation Protocol (SIP) and PacketCable have to be a focus if they want to court cable business.

Both protocols will literally come into play if future cable telephony services expand to include video elements. It's something that video telephony technology provider Vison Inc. has seen in its initial talks with MSOs, according to CEO John Harris.

"Certainly they are, for the most part, PacketCable-compliant networks that are being built by the cable companies, but it is interesting how some are looking at different methods for managing an endpoint such as ours," he says. "And SIP is weighing heavily into their thought process. I definitely think that you are going to see some more work in that area, where you are going to see more of SIP in PacketCable than maybe you would have seen a couple of years ago."

Vison's plan to sell to telco, wireless carrier, cable and independent voice providers means not all of its products will need to carry PacketCable support. But these variations can be handled in software versions tailored to the

operator, Harris says.

"There is a flavor for every MSO; there is a flavor for every wireless carrier," he notes. "We expect to have a flavor for our SIP implementation for each one of the VoIP carriers that we work with."

Similarly, the rival Ojo videophone from WorldGate Communications Inc. will dip into SIP, with variances in schemes required by operators handled through software versions, says WorldGate Chairman and CEO Hal Krisbergh.

"Clearly the phone points to a SIP server—well, whose SIP server does it point to? And the answer is that [it] is all downloadable, and depending upon who is selling it—Verizon or Comcast—it will point to their server. That is how you deal with the interoperability and, at the same time, different standards," Krisbergh says.

As with others, Krisbergh has seen the rise of SIP in the broadband telephony world.

"I haven't talked to anyone in the past year that has talked about anything but SIP. So I think everyone has settled on SIP, and agreed that SIP is the way to go," he says.

—KB

Viscon also is working with Vonage Inc. to develop a videophone for the broadband voice provider.

"We consider Vonage our launch customer for our product, so we're working closely with them and ensuring that our product will operate on their network," says John Harris, Viscon's CEO.

Viscon's initial product, due out this summer, will feature a 5.6-inch screen with a corded handset. It also adds wideband audio for better quality sound and the ability to play other content on the screen, be it MPEG-4 or MPEG-2, H.264 and H.263 or a variety of audio formats.

A USB port and auxiliary video input and output allows the phone to link to digital cameras or video recorders.

"Those are the things that are going to continue to set apart broadband voice service over plain-old telephone service," Harris says. "Voice is just a commodity. You are going to have to bring features to a phone that are only available for broadband phone service to really get the penetration that these carriers are going to want to see."

Despite that confidence, videophones have essentially been around since the 1964

essarily a competitive foe.

"That also helps us to defeat that chicken-and-the-egg problem, because there are millions of Web cams. And there also several soft IP phone vendors, and we are currently working on interoperability with two of the most popular [models]," he says.

Krisbergh, too, sees volume as a key to

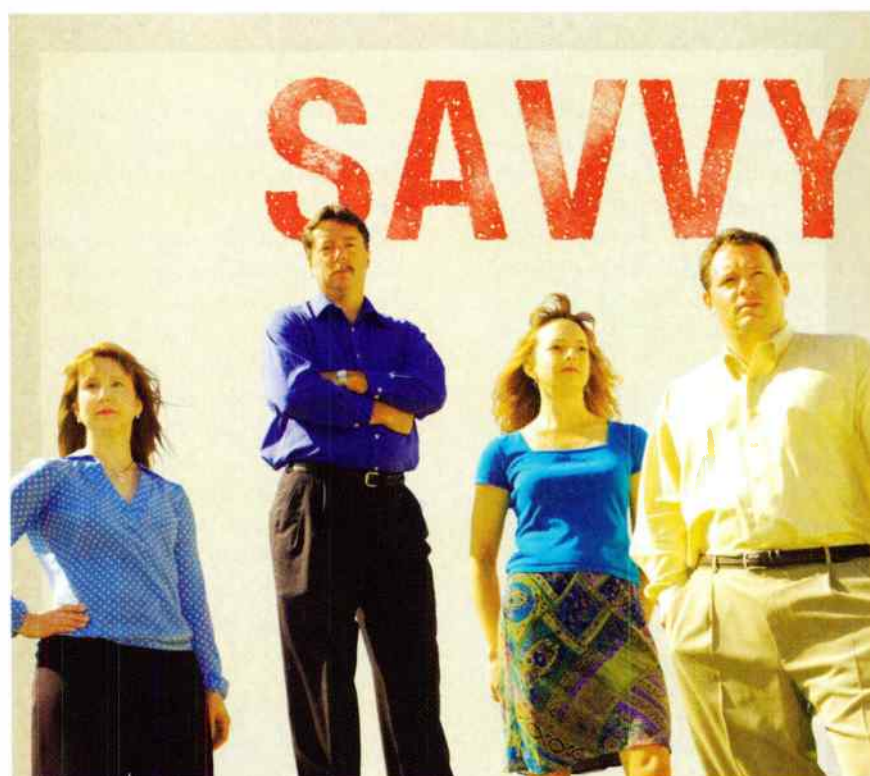
gaining market traction, noting that Ojos may well be sold in pairs to provide an instant connection between two users.

But he also points out WorldGate research, which indicates 60 to 70 percent of a household's calls are made to four or five phone numbers. So it isn't entirely necessary to supply Ojos to every person

Many critics point to that past as reason to doubt whether even the new breed of broadband-enabled videophones will stand a chance...

World's Fair, when AT&T Corp. demo'd an early concept. Since then, it hasn't exactly taken off like a shot, and many critics point to that past as reason to doubt whether even the new breed of broadband-enabled videophones will stand a chance in the fickle consumer marketplace.

Videophones also will have to compete with the widely available, sub-\$100 Web cameras mounted to computers—many of which include audio capabilities. Harris counters by saying that the VisiFone can link to such products, so they are not nec-



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SEEING is COMMUNICATING

SCOTTY beams up cable know-how

It appears that WorldGate, Motorola and Vison will have to cross swords with at least one more competitor when it comes to driving videophones into the cable sector.

SCOTTY Group of the Americas has tapped two cable vets to help the company tap the industry and find homes for its line of videophones. Joining the SCOTTY team are Bill Riker, the former SVP of operations and CTO of The Cable Center, and a past president of the Society of Cable Telecommunications Engineers (SCTE); and Rick Jubeck, a veteran of General Cable, Trilogy Communications and Lemco Tool Corp.

Riker and Jubeck have been closely tied to videophone efforts in recent years, most recently with the Freedom Calls Foundation, an organization that uses the technology to connect U.S. soldiers serving in Iraq and Afghanistan with their families back home.

Formed in 2004, SCOTTY is the product of a merger of SCOTTY Tele-Transport Corp. and Motion Media PLC. The company has sold about 4,000 videophones so far, most of them overseas.

Riker, who still advises for Freedom Calls, said he is in the process of conducting demos with MSOs and putting units out for cable lab evaluations.

Although SCOTTY already has a line of videophones, the company recently has hired the Porsche Design Group to create jazzier videophone designs for SCOTTY's mm156 and mm225 videophone series.

Porsche, known for its sleek cars, also designs other high-end consumer products and operates 200 retail stores worldwide.

—Jeff Baumgartner, Editor

in the phonebook, but rather a relatively small group of friends and family.

"Therefore, friends and family-type marketing works, and you don't need to sell to every person a person knows or calls," Krisbergh says. "You could get a very substantial market and a very valuable market with a friends and family type of marketing."

Even if that proves correct, price will be a hurdle. Motorola hasn't made the wholesale price of the Ojo public as yet but the retail price has been estimated at about \$799. Much of that is because of the expected retail markups, but Krisbergh notes the Ojo will likely go the way of cellular phones, which are heavily subsidized by the carriers.

"We've actually talked—and I won't give a specific name here—but we've talked to several service providers who have talked about selling the product to consumers for as low as \$200, with the idea that, yeah, they're subsidizing it, but again it gets them



Vibe's video mail software offers customers a way to see messages as well as read them.

that long-term revenue stream," Krisbergh says. "Our full intention is [for] this product to go through service provider infrastructure, just like modems do. So the price could range [from] \$200 if you are getting it subsidized, to \$800 if you don't."

Vison also is counting on the carriers to subsidize the price of the phones. While he wouldn't pinpoint the cost for the initial consumer VisiFone model with the 5.6-inch screen, Harris noted it was in the sub-\$300 range, depending on volume.

"The end user pricing for this product could be as low as \$99," Harris says. "Assuming a reasonable subsidy by the carrier, it could easily be offered to the consumer for \$99."

Despite all of the obstacles, WorldGate's Krisbergh says the timing is right to introduce the broadband world to the idea of voice and video in a single phone.

"We know that there is an ample base to go out and sell video telephony. It's very clear that operators and people who are selling high-speed infrastructure—telcos—are looking for what is the next thing to do with this infrastructure," Krisbergh says. "Certainly telephony with voice-over-IP and now video telephony offers the operator a whole other way of leveraging that infrastructure, and the timing just couldn't be better." ■



In volume, the VisiFone sells for sub-\$300.



The Motorola-WorldGate Ojo phone will retail for \$799.

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Cable's *San Francisco* Meet

Wireless voice, new IPGs and the all-digital migration are helping the industry connect to convergence

By CED Staff



San Francisco's most famous landmark is the Golden Gate Bridge, and that proved a fitting backdrop for a 2005 National Show that bridged cable into a larger technological world, from SIP evolving play in voice and multimedia technology to new integrations with cellular and digital simulcasting.

This year's show featured several significant changes—apart from the weekend start—and National Show Chairman Steve Burke made that clear at the opening panel session. The Comcast chief operating officer told the crowd that this year's show—with the slogan "Cable Puts You in Control"—focused less on deal-making and more on issues facing cable's future. With a pared-down agenda covering just two-and-a-half days, Burke said it also focused less on the industry talking about itself and more on listening to input from other sectors—such as electronic gaming and consumer electronics—that were increasingly intersecting with cable.

Nowhere was that more evident than in the closing general session that featured Sprint Corp. President and COO Len Lauer—marking the first time a telco executive took a seat on a National Show stage.

The opening general session also was a first for NCTA's new President, Kyle McSillarow. He noted with just five weeks under his belt, he has already learned, "Brand X is not just a product in a taste test, a la carte has nothing to do with dinner, and Alaska is a great state that I now plan to visit."

That produced a laugh from the audience, but McSillarow continued in a more serious vein by noting that "now more than ever, cable's digital broadband technology is the platform for the future."

To get to that future, the industry will

need to work to ensure, among other things, that regulations for new services do not follow the inflexible patterns of the past, particularly regarding Voice-over-IP services, he said.

The show also literally displayed growth, with 190,000 square feet of exhibitor space. That is a 19 percent increase compared to 2004.

The fantastic four

A big focus at the show was cable's move toward the "quadruple play" and the service that will help operators achieve it: wireless voice.

Sprint Corp. continued its active courting of cable customers at the show. Not only did company President & COO Len Lauer participate in the closing panel session, but the Overland Park, Kan.-based telco announced it had added three new MSOs to the list, signing up Massillon Cable TV Inc., Wave Broadband and Blue Ridge Communications.

Sprint is indeed continuing its hunt to add more new cable partners, but it also is moving into the second phase of its cable business strategy—moving from just offering VoIP to wireless Sprint-branded services to cable customers as well, according to Jim Patterson, vice president of Sprint's carrier, cable and wholesale markets.

Down the road, the strategy will also expand to embedding Sprint applications in cable hardware including set-top boxes, he said. Evidence of this could be seen at the Scientific-Atlanta booth, where a Sprint cell phone could be used to remotely program an S-A Explorer 8000 digital video recorder.

Sprint and S-A weren't alone in wedding cellular and DVR functions. Gemstar-TV Guide International also unveiled its new Java-based mobile interactive programming guide, which also allows users to

program DVRs running Gemstar's I-Guide IPG with wireless handsets. Motorola demonstrated the capability at its booth.

Patterson said he could not comment on whether Sprint is talking to Gemstar about also integrating that capability on its cell phones, "but we are talking to many companies."

Sprint also came to the show with news that it is rolling out cellular phone service in a trial with Time Warner Cable in Kansas City. Sprint already provides the MSO with VoIP connectivity services, and the trial in many ways will determine whether that should expand to include wireless services—and how it should be fielded. In the trial, Time Warner will promote Sprint's Fair and Flexible service with three plan levels and three handsets. In addition, all calls made from the cellular handsets to the customer's home are free.

Time Warner is supplying the billing, as well as the Level 1 technical support.

All in all, Sprint has made good progress in the technical issues surrounding its integration with cable providers and their services, "but we've got to develop the business case," Patterson noted. "We think there's a lot of promise for this business."

Nor is the relationship one-way, with Sprint providing the service additions to cable. Sprint also is forging deals with cable operators to use cable-based fiber and Ethernet network connections as alternatives to traditional phone lines and T-1 connections in some markets. It is active with Cox Communications in this field as well as with Charter Communications, Patterson said.

"We like to use them. We have that equation to solve, and we are working with them to find out how to make that modem fit a T-1," he added.

In the future, Sprint's deals to provide MSOs with voice and wireless service may

be reciprocated with cable deals to provide Sprint with co-marketed video service offered to the telco's customer base. That could take the form of cable service marketing placed in Sprint PCS stores.

"I think there will be a very good co-operation book to be written there," Patterson said.

Sprint wasn't the only company that was waxing wireless. An emerging group of vendors graced the floor with capabilities designed to get cable into the mobile voice game.

Among them, LongBoard Inc. offers a SIP-based mobility platform, and has already teamed with two traditional cable voice vendors: ARRIS and Cedar Point Communications. In those agreements, LongBoard has matched its Mobility Application Platform (LMAP) with Cedar Point's SAFARI C³ Media Switching System and ARRIS Touchstone Telephony Modem.



The GuideWorks VRN can be made to promote a range of programming genres.

In the LongBoard scenario, customers use a dual-mode handset that enables cable operators to handoff calls across both Wi-Fi and public cellular networks. The handset determines which mode in which to operate based on the signal strength. All things being equal, the handset will opt for the Wi-Fi connection.

The idea, explained company Director of Marketing David Schwartz, is to keep the customer on Wi-Fi networks as much as possible, as to avoid cellular fees. That model also ensures that cable operators keep more of the revenue compared to a mobile

virtual network operator (MVNO), which might keep 80 percent or more, Schwartz said, noting that LongBoard allows operators to keep up to 35 percent of revenue generated from the mobile service. LongBoard offers mobile voice services to more than 300,000 subscribers, Schwartz said.

Another company with similar aims is BridgePort Networks, which also demonstrated a solution that handed off calls from mobile and broadband networks.

In BridgePort's "roaming model," the cable operator and mobile carrier each provide their own phone numbers and bill their own subscribers. The operator may have roaming agreements with mobile carriers.

In the "wholesale purchase" or MVNO model, the cable MSO resells mobile phone service over the mobile carrier's network.

New "guiding" lights

Operators also showed off a batch of in-

Content protection takes spotlight

Protecting the rush of new content needed to fill the digital pipeline, securing home networks, and addressing the deepening problem of cable service theft highlighted the "What's Mine is Mine: New Approaches in Individual Consumption Enablers" session.

With predicted annual losses to industry wide cable service theft topping a staggering \$6.5 billion annually (but down to \$4.76 billion, according to a recently-released NCTA survey), and with 11.5 million households suspected of having illegal access to various cable services, the need for strict content protection and signal security has never been as pressing, panelists insisted.

"Today, security is not just technology. It must also be designed with operational aspects and scalability and for prevention, detection and countermeasures. Now, it's about process and experience," said Robin Wilson, vice president of business development for NagraVision SA.

Industries representing consumer electronics and motion pictures are joining cable in pushing for tighter, intelligent content protection and security. "Last year, cable and [the] CEA (Consumer Electronics Association) invited the Motion Picture Association to join in meetings about digital content protection technologies and other considerations, because cable must protect all forms of content," said Brad Hunt, senior vice president and CTO of the Motion Picture Association of America.

He added that a growing concern among content owners is protecting high-definition content on digital

recorders. "Content owners have a vital interest in defining content protection," he said.

One answer to the security issue may be downloadable security, which, according to Jim Fahrny, a Fellow for Comcast Corp's engineering group, provides a low-cost, high level of security.

"It enables the \$50 set-top vision, a path to future transition to new generation CA (conditional access) systems and better consumer experience at retail. It's now moving into the implementation phase," Fahrny said.

A set-top, he explained, can be downloaded with a set of keys and an encrypted image, creating its own "personality" for security, and can enable "higher levels of security at lower costs."

Another method, RF fingerprinting, is being explored as well, said Lee Pedlow, director of systems engineering for Sony Electronics.

"It's a powerful scheme to detect relocation of devices attached to digital cable networks, and can reduce operational costs. It's very complementary to other security initiatives," he said.

The panelists concurred that more teamwork is needed among the growing number of content and service providers to address serious issues of content protection, secured home networking and digital rights management.

"Content owners need to assume a meaningful role in protecting new content and securing home networks," concluded Hunt.

—Craig Kuhl

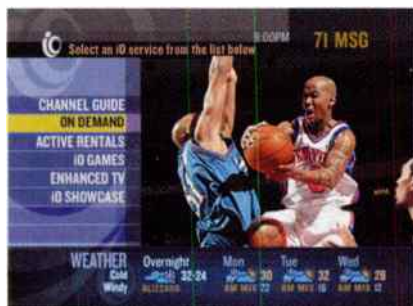
novations tied to interactive program guides.

The Comcast Media Center (CMC) and GuideWorks LLC, the Comcast Corp./Gemstar-TV Guide International joint venture, showed off "video-rich" navigation enhancements that hook into the flagship iGuide interactive program guide (IPG).

Using a mosaic approach, the new Video-Rich Navigation (VRN) platform creates hyperlinks between linear TV, video-on-demand, and local content. Further, it can create video-based "genre portals" for everything from news to kids, sports and entertainment programming. It is also capable of creating genre portals around specific events or being changed-out during particular times of the day.

The VRN platform integrates real-time video with a real-time data stream that instructs the user-interface to provide navigation choices based on what the video displays.

Comcast plans to make the enhancement available alongside the "A-24" release from GuideWorks, which is slated to enter pilots following its emergence from Acadia testing in the late summer, according to CMC Senior Vice President and Chief Operating Officer Gary Traver. The



Cablevision hopes its new guide will drive application usage and VOD sales.

VRN is designed to run on digital set-tops as technologically thin as the widely-deployed Motorola DCT-2000.

The VRN capability also gives operators like Comcast the ability to compete with mosaic apps already in use by U.S. DBS service providers.

Traver noted that the VRN goes beyond traditional mosaic guides because it is also built into and can extract information from the underlying program guide.

The CMC hopes to market the VRN to

New services mean new customer demands

The familiar mantra of creating a valuable customer experience for video-on-demand and a host of new services and technologies, while creating viable business models to advance the experience to a level of profitability, dominated the discussion at the "Attack of the Empowered Consumer: Understanding New Media Markets" panel session at the National Show in San Francisco.

Dramatic changes in TV are coming, and those who execute the best, not who has the best technology, will win, insisted John Chambers, president and CEO of Cisco Systems Inc.

"We're moving from interaction to transaction, and barriers are breaking down among age groups. The vision of appliances is coming together, so the key is to build agility into network architectures."

Simplicity and ease-of-use will dictate just how successful many of the emerging technologies and services will be, noted Brian Roberts, chairman and CEO of Comcast Corp. "The simplicity and elegance of Google was in its interface. The question is, can we enable cable customers' experiences to be integrated and ubiquitous and give them what they want? We can't lose our aggressiveness or innovation and must continually invest."

Google co-founder Larry Page conceded the cable industry's on-demand technology has a ways to go in the user experience area. "There's not much experience in this part of the industry," he said.

Google, Page continued, is tinkering with a search service outfitted specifically to sift for TV channels and shows. "We're just starting to have the technology to transport the information to devices and will begin taking video submissions."

Knowing your market and what it wants are two crucial requirements, said Jonathan Miller, chairman and CEO of America Online Inc. "Once you get your head around what consumers want, and you have a business model to support it, it's pretty sweeping, and very different than the old walled garden approach. At the heart is a program environment and search experience."

Delivering a quality experience to the consumer is the thread that is binding service providers and content creators alike. Building a viable business model to complement that experience will be a top priority for both.

"We try to build our business model to balance risk and creativity, and we're seeing business value in delivering quality experiences to customers—both VOD and in theaters. We see an opportunity for both and a future full of promise," said Jeffrey Katzenberg, co-founder of DreamWorks.

A case-in-point, Katzenberg said, was "Shrek 2," which pulled down \$1 billion in movie theaters worldwide, and a like amount in VOD, DVD and cable sales.

Video conferencing in HD is also expected to take off, panelists agreed, and a looming challenge for the cable industry will be its transition to advertising.

At the end of the day, however, panelists agreed that simplicity and ease of use for advancing technology will drive more customer demand for on-demand services.

—CK

MSOs other than Comcast, offering it as a centralized platform capable of customizing portals with local video content, including promotions, that is relevant to the operator's market. Partnering MSOs, Traver explained, can customize their own genre portals centrally in partnership with the CMC, rather than at multiple headend sites.

The VRN is the first of many products to come out of the Comcast-Gemstar partnership, said Gerard Kunkel, the president of GuideWorks and a vice president of business development at Comcast. Kunkel, the former president of WorldGate Communications, joined the GuideWorks organization about a year ago.

Not to be left out of the IPG mix was Cablevision Systems Corp., which took the wraps off a new proprietary interface for its iO: Interactive Optimum digital cable service.

The new menu-driven system features horizontal and vertical categories that show a viewer's current location within the interface, and offers directional indicators

forward or back to the main menu. The main menu lists horizontal options of traditional features and services, including the channel guide, video-on-demand, games, enhanced TV and the "iO Showcase." Cablevision has also color-coded each category: Purple, for example, indicates on-demand, while blue rep-

resents iTV, and orange denotes games.

Cablevision initially will offer the new system on Scientific-Atlanta boxes, but hopes to have it available everywhere, including on deployed Sony-made boxes, by this spring, explained Patrick Donoghue, the MSO's vice president of interactive television and operations.

Cablevision hopes the snazzier, easier to use interface will drive application usage and video-on-demand sales. The new platform also incorporates an "active rentals" bookmarking element that enables customers to start and stop VOD titles on different TVs in the households. Traditionally, VOD titles are shackled to a specific set-top and progress of a program can't be transferred to other TVs.



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One of our own: Leslie Ellis, a regular contributor to *CED* and *Multichannel News* who also serves as *CTAM*'s technology advisor, received the "Associates & Affiliates" Vanguard Award. She dedicated the award to Roger Brown, *CED*'s publisher and editorial director.

Cablevision's internal engineering and technology group developed the new interface in partnership with DevelopOnBox LLC, an application developer, and Schematic, an agency that specializes in television interface designs.

Cablevision initially will use banners on the new system to highlight content on the service rather than to pursue opportunities with potential advertisers,



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Donoghue explained.

MSO-led activities aside, probably the most buzz related to navigation involved Hillcrest Communications—a Rockville, Md.-based startup that still is in relative stealth mode but did conduct demonstrations in its executive suite. Much more about Hillcrest and its unique approach to navigation will appear in the June issue of *CED*.

Simulcast and the road to all-digital

The floor was also full of gear that will help operators migrate to an all-digital network.

On the set-top front, Pace Micro Technology introduced the DC 501 "Chicago" all-digital set-top. An answer to boxes such as Motorola's DCT700, Chicago will be offered with options for OCAP (OpenCable Application Platform) and the DOCSIS Set-top Gateway (DSG), a CableLabs signaling spec for IPG information and other data delivered to the set-top box. Pace did not disclose pricing.

A standard-definition device, Chicago is designed to stand vertically or lay horizontally. Pace has licenses for both the Scientific-Atlanta PowerKEY and Motorola MediaCipher conditional access systems. The set-top maker said the DC 501 is the first in a series of all-digital boxes Pace will deploy this year.

Although Scientific-Atlanta did not make any formal announcements about all-digital boxes, the vendor had plenty of them to demonstrate on the floor, including the Explorer 8240 HD, 3240 HD, and 1800.

Outside of the home, RGB Networks formally unveiled the Simulcast Edge Processor (SEP), the first product based on the startup's Video Intelligence Architecture.

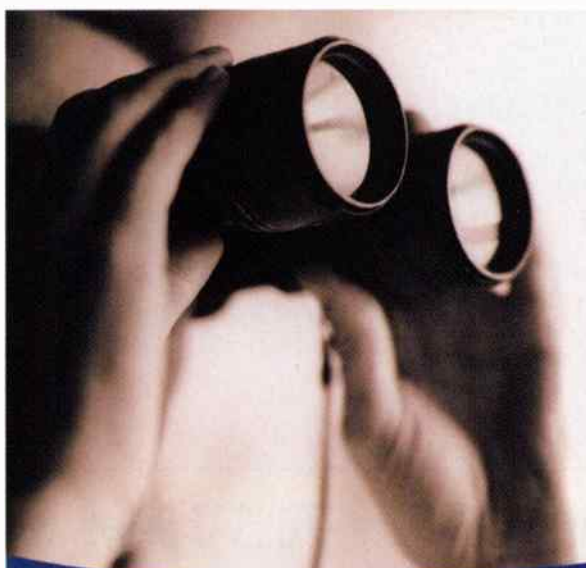
Designed to simplify cable digital simulcast architectures, the SEP, when deployed



Pace's all-digital "Chicago" set-top will support Motorola's and S-A's conditional access systems.

at the edge of the broadband network, can simultaneously receive multiple MPEG-2 digital video streams, decode each stream, and modulate and up-convert them for delivery to subscribers as NTSC analog video. BigBand Networks Inc. announced an integrated digital simulcast platform the week prior to the show that consists of its BRD210 GigE decoding chassis and a GFM103 card for BigBand's Broadband Multimedia-Service Router.

Separately, RGB will beef up its sales potential via a deal with Motorola Inc., which has agreed to market and support the vendor's video processing gear to its broadband service customers. Under the agreement, Motorola will also provide system integration support for RGB's digital migration products, starting with the 1-rack unit SEP edge device. ■





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On-demand's new pitch

New CableLabs specs aim to simplify the content game

By Rick Qualters, Senior Vice President of Technology, IMAKE Software & Services, and a contributor to the CableLabs VOD metadata working group

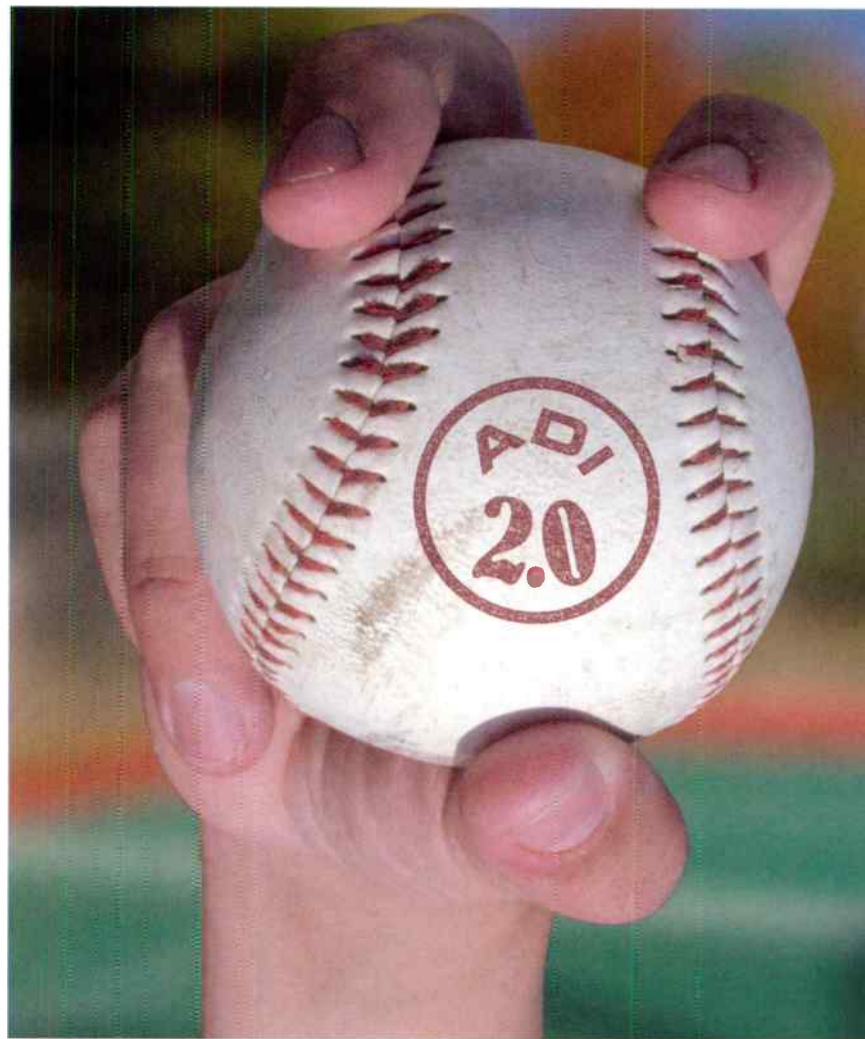
Providers and purveyors of on-demand content are continually looking to improve their ability to maximize the use and profitability of their assets. The upcoming release of CableLabs Asset Delivery Interface (ADI) 2.0 specifications is designed to take existing practices and new trends into account to help on-demand content providers and MSOs begin to realize new levels of efficiency and flexibility in the delivery, storage and pricing of this content.

But what do the new specifications cover? And what will they mean to both newer and established players in the on-demand scene, including content providers, MSOs, and hardware and software vendors? Before we take a look forward, we'll first take a step back with a look at how the specifications got their start.

A brief look back

CableLabs first sought to create specifications more than 10 years ago as a way to help cable operators integrate new technology into their systems and to promote interoperability among products. The specifications also provide guidance to content providers for the distribution of content/assets to cable operators and include the metadata specifications, which CableLabs began working on three years ago.

The initial CableLabs VOD 1.0 specification had its origins in Time Warner Cable's Pegasus Project, which was the first commercial thrust into video-on-demand. Released in early 2002 to accommodate cable industry-wide needs, 1.0 covered content files and metadata—essentially the descriptive information about each



file. It also included specifications on VOD delivery, encoding and metadata.

As on-demand began to evolve in the marketplace, so did the specifications. When CableLabs released the 1.1 specifications in September of 2002, they were built to enable increased flexibility by covering "partials"—or the partial release of assets—as well as providing trackability through unique identifiers. Specifically, 1.1 enabled the ability to deliver a partial pack-

age, so that the various content types could be pitched and used separately as they became available.

The idea was that partial packages would help MSOs construct previews and advance content, and that content

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providers would be able to send content as it became available, but implementation of this functionality has still to gain widespread implementation. CableLabs 1.1 also addressed certain "trick" files that enabled functions such as fast-forward and rewind capability, which, while not widely adopted, could serve as precedent for things to come.

New trends, new specifications

As on-demand applications continue to gain ground with consumers, providers and purveyors of on-demand content are continually looking to improve their abil-

ity of ways. Currently, in the 1.0 and 1.1 world, a content file is part of a CableLabs package that includes offering, navigational and descriptive metadata. The 2.0 specifications separate this metadata from the content files so that content files can be more readily used in different ways. The content files can then be packaged and sold in different ways to the consumer/subscriber.

For example, an MSO could take a single asset—in this case a popular movie such as "Men in Black"—and make it available as a separate movie, as a package deal with the sequel, "Men in Black 2," and as an entire science-fiction film festival—at different

video server until the package is no longer needed is redundant and inefficient.

More efficient and flexible use of assets

The 2.0 spec is designed to help MSOs and content providers operate more efficiently from a business, technical and operations standpoint by allowing more efficient and flexible use of assets.

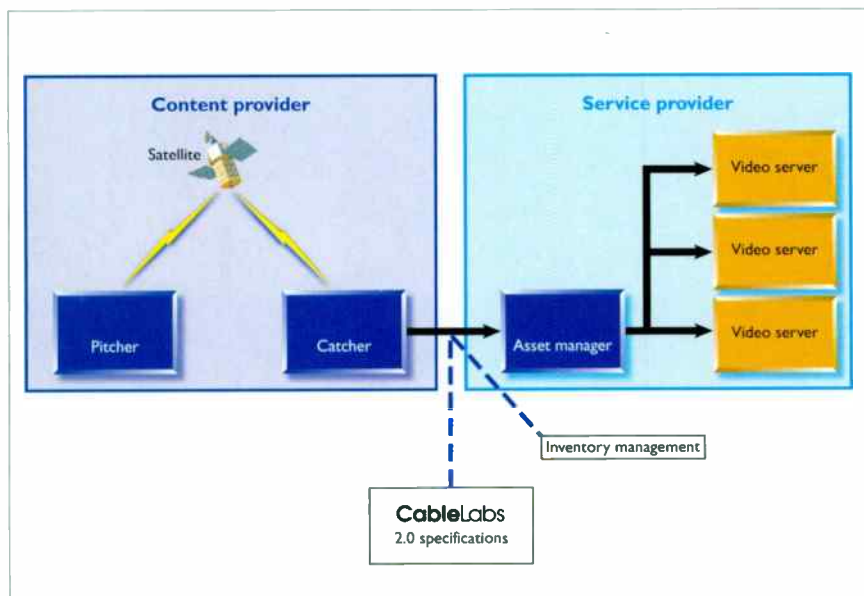
Currently, MSOs use a great deal of bandwidth to re-receive content, because assets must be re-pitched each time they are used in a new way. Assets are also deleted on their expiration date.

For example, with the current 1.0 and 1.1 specifications, there is no way to tell the downstream systems to keep a content file resident over specified periods. In other words, it is not possible to make an asset available to subscribers from August through September and then make it available again in November without a complete re-pitch. Again, this raises the issues of transmission bandwidth and storage capacity.

With 2.0, assets can become resident, but inactive, before becoming available again—without the need to re-pitch the same asset. Currently, only about 10 percent of all assets fit into this category. However, as this flexibility becomes available with 2.0, it's very likely that MSOs will be more likely to use their assets in new ways.

From a business perspective, the 2.0 specifications allow for assets to be priced and run in more ways than previously possible. For example, because the content file is decoupled from the offer, a content file could be first offered at a particular price, such as \$5.99, offered again as a new "week-end special" at a special reduced price of \$1, then offered at the original price of \$5.99 after the end of the promotion.

The 2.0 specifications also likely will benefit content providers, because they will not have to re-pitch identical assets for re-use. For example, content providers now pitch the content for the preview and separate "barker" files for preview channels, which show a series of movie previews. Under 1.0 and 1.1 specifications, the content provider must first encode and pitch a set of previews as one file, then construct a new file for the barker channel.



An example of content hand-off from a content provider to an MSO.

ity to maximize the use and profitability of their assets.

As with earlier releases, CableLabs ADI 2.0 specifications are adapted to meet the changing needs and emerging on-demand trends in the industry. With the release of the entire specification package later this year, on-demand content providers will begin to realize new levels of efficiency and flexibility in the delivery, storage and pricing of this content.

Multiple uses of the same assets

The ADI 2.0 specifications address the need to use a single asset/content file in a va-

riety of ways. Currently, in the 1.0 and 1.1 world, a content file is part of a CableLabs package that includes offering, navigational and descriptive metadata. The 2.0 specifications separate this metadata from the content files so that content files can be more readily used in different ways. The content files can then be packaged and sold in different ways to the consumer/subscriber.

For example, an MSO could take a single asset—in this case a popular movie such as "Men in Black"—and make it available as a separate movie, as a package deal with the sequel, "Men in Black 2," and as an entire science-fiction film festival—at different

prices and for different time windows without having to re-pitch the content. Using current 1.1 specifications, an MSO would have to pitch "Men in Black" once for the solo offering, then again with "Men in Black 2" for the sequel pairing, and a third time as yet another package that contains all of the film content files concatenated together.

This is inefficient for several reasons. From a pitching perspective, it is an inefficient use of bandwidth because the same large content files must be pitched multiple times. From a storage perspective, having multiple copies of the same movie on the

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With 2.0, it is possible to package and deliver each movie preview asset separately and only once, then instruct the downstream system to construct the barker channel video by concatenating the separate previews into a single barker video.

Other forms of content, such as the posters—the graphic that accompanies each asset—must be continuously re-sent as a new asset for each use under the current specifications. The new 2.0 specifications make it possible to re-use the same poster without resending it.

Inventory management

From an operational standpoint, CableLabs ADI 2.0 will help facilitate communications and content delivery between the content provider and the MSO. Today, when a content provider sends assets to an MSO, the sender does not know when and if the content arrived properly and if it is available to the subscribers. And MSOs don't know when content is on the way. All confirmation and follow-up is done person-to-person, by phone. This can be a time-consuming, and sometimes confusing, process.

In a nod to content providers, the 2.0 specifications should help them gain downstream visibility. The new specifications essentially provide a backchannel by which content providers can be assured that content reached its destination. For example, previously there was no automated method in place for content providers to tell whether MSOs received the content. The 2.0 specifications enable automated reports that can provide content providers the status of particular packages. MSOs will also benefit, because the specifications help enable delivery pitch lists, which gives MSOs the ability to plan the utilization of bandwidth to receive content.

New services

CableLabs VOD metadata 1.0 and 1.1 specifications focused on video. Now, the 2.0 specifications are putting mechanisms in place for delivering to cable operators new on-demand services, such as games, music and enhanced television options.

The need to address these services is already apparent. For example, today a game

vendor needs to create special-purpose delivery for each service provider. Once 2.0 specifications are adopted, the cost of entry will be lower because they have a set way to deliver assets similar with established VOD delivery mechanisms. For the MSO, this could mean that they could potentially create a link between a popular movie and a new game.

For emerging content providers, the standards will help to lower the cost of entry. This will help bring new content providers to the market, increase competition and the options available to subscribers.

Looking ahead

Using past implementations of 1.0 and 1.1 as a guide to what's in store, the VOD metadata 2.0 specifications will be used but it will take some time before they can make full use of the functionality enabled by it. Until everyone downstream can utilize 2.0, they will have to down-convert to 1.1. And until everyone implements 2.0, it likely won't be possible to fully realize the benefits of the upcoming specifications.

The full implementation of the functionality of 2.0 will require a technology investment by both the content providers and the MSOs. Because all packages in 1.0 and 1.1 are treated as a single unit (even though they can be delivered separately), many implementations of the specifications do not allow individual content assets to be shared among various offers.

Content providers' pitching systems must be enhanced to perform more rigorous tracking functions so that they can be aware of the individual asset states at the receiving sites. For example, a new pitch could involve a piece of content already resident on a system, and the pitching system must be able to identify which receiving systems have the content resident and which do not. Since the content provider will receive "inventory reports," they now have the ability to track this data. More efficient use of satellite bandwidth will require that the data be incorporated into the pitch scheduling.

Among content providers, the early adopters of metadata 2.0 will likely be the newer content providers, such as those supplying games, music, and enhanced TV options because they that have the most to

gain right away. They are just starting to build their infrastructure, so they have a lower cost of entry. And the newer content providers usually have the need to be perceived as leading edge.

Regarding MSOs, navigation systems must be able to implement "offer resolution" functions, so that consumers can order an offer composed of multiple pieces of content. Navigation paradigms must be changed so that upsell opportunities to the consumer can be created.

Billing systems will have to support multiple prices for the same piece of content, such as special weekend pricing, for example. Settlement also will have to be modified to track the new settlement types. For example if a movie is offered in multiple ways, billing systems need to know what the rules are for governing the settlement: Is it the number of views, regardless of the offer, or is the settlement based on the offer?

The vendors of hardware and software will have to be ready to transition as their clients' needs change, as well. Asset Management System (AMS) vendors will have to implement more advanced asset tracking systems capable of dealing with more complicated assets. They will need to keep inventory reports on all asset lifetimes, from pitch schedules through pitch arrival, through content availability to the consumers, to deletion from storage. They also may be required to construct content libraries, if contractually allowed to keep content that is not currently being offered.

Video server vendors must ensure that content can be made available via multiple offers. For example, they may need to implement functionality that supports multiple availability dates, so that content can be made available only during specific times—such as weekends.

Again, looking to past implementations, it will really be up to the MSOs to roll out metadata 2.0. And as with any major implementation, there will be a few kinks to work out along the way. A few influential MSOs will likely be the first to adopt 2.0. Current vendors of video-on-demand content—those with infrastructure in place—will look to implement 2.0 as required by the MSOs. ■



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Thinking outside the (set-top) box

If they take a new path to video, telcos could dial-up big problems for cable

By Dean Daniel, independent
strategic consultant for the
telecom industry

Telephone companies such as Verizon and SBC Communications are deploying fiber deep into neighborhoods in order to expand their service capabilities and compete against cable. If they think out of the "box"—something uncommon for companies with 100-year histories—big cable could be in big trouble.

The VoIP threat

New technologies create new opportunities, and cable companies have learned how to take advantage of them to increase revenues. Cable's latest initiative is residential and small office telephone service via the Internet. This company service, called Voice-over-Internet-Protocol, or VoIP for short, is stealing telephone customers. At the end of 2004, over 500,000 telephone customers had switched to VoIP service on cable's high-speed, VoIP enabled networks.

A half million cable VoIP subscribers, though, is just the start. By the end of 2007, the number of cable VoIP customers in the U.S. could easily reach 5 million as cable continues to invest over \$100 million a year in VoIP service upgrades. Comcast alone is predicting 8 million VoIP subscribers in 2009. Even more conservative estimates like the one charted below suggest telephone companies will be losing one out of eight households to just cable companies by 2010.

The telcos respond

Telephone companies are not standing still. Companies like Verizon and SBC are aggressively investing billions of dollars to push fiber networks deep into neighborhoods. In fact, Verizon alone has announced a plan for passing 18 million households by 2007 with fiber-to-the-premise (FTTP) technology. These fiber networks are anticipated to bring the fastest possible connections to homes and provide the triple-play of residential telecom services: video, voice and data. But deploying fiber just to duplicate cable's video service will not be enough. Competitors entering mature markets with copycat services rarely take more than five percent of market share. Telephone companies need to leapfrog cable services, which they can do by avoiding the primary weakness of cable networks: expensive, special purpose set-top boxes.

The Achilles Heel of cable

And these expensive, special purpose set-top boxes represent a nasty drawback to the cable network architecture.

In the early '90s, these set-top boxes did one thing; they selected and decoded one of several dozen television signals being simultaneously sent to all households for TV display. These simple boxes could be bought for as little as \$40. But telecom services and technologies quickly evolve. So next came the addressable boxes, which enabled pay-per-view programming. Then came the two-way boxes so people could buy pay-per-view program-

ming through the TV instead of the telephone. Next, boxes with interactive programs guides, video-on-demand, HDTV, personal video recorders (PVRs), et al. Every time a cable company wanted to expand its revenues, it had to upgrade to another box. The latest set-top box with all the bells and whistles costs \$550—more than a lot of PCs.

These upgrades are not just expensive, they are time-consuming in an industry that moves at light speed. For example, PVRs have been around for more than four years but some cable operators just introduced the service last year. Why? First, cable companies have to wait for set-top box manufacturers to recognize the need, determine that development of a new set-top box can be profitable, develop the box and sell it. Unless you operate like Echostar Communications, which manufactures its own set-top boxes, or have the clout of Comcast, the set-top box manufacturers have ultimate control over the deployment date and types of services cable TV companies can offer. Second, the proprietary nature of most set-top boxes, which can tie a cable company to one vendor, also impedes progress. Third, no cable company can afford to replace its set-top box inventory just because it is missing a few functions. The stranded costs are too high.

If cable companies or telephone companies could deploy a network that did not require upgrading every time a new telecom service was invented, they could save billions and gain a permanent advantage in the race to provide telecom services to homes and small business. Fortunately, such a network is possible. In fact, one already exists. And since the telephone companies are at the start of a rev-

Cable company VoIP customers

	2005	2006	2007	2008	2009	2010
Homes passed (millions)	40	70	78	85	88	90
Homes penetrated (millions)	1.6	3.0	5.1	7.9	11.0	14.1

Source: Est. as of Feb. 2005, Dean Daniel

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olutionary upgrade of their network, they can be the first to have their own.

Dumber set-top-boxes, smarter headends

The essential problem with cable set-top boxes is that they receive raw data streams and use fixed, internal programming on chipsets to decide what to do with the data. These special purpose set-top boxes are not flexible enough for an industry with rapidly changing technologies and service offerings. The solution is to send both raw data AND instructions that inform a simpler, general-purpose set-top box what to do with the data. A network already exists which does this: the Internet.

When an Internet user goes to a Web address, text, pictures, video and sound are sent to the user along with instructions describing how to present the text, pictures, video and sound. As a result, a simple MSN WebTV box, which costs a fraction of what a new cable set-top costs, can play music, show Bloomberg TV, sell books, display sports scores and do anything else a Web site programmer can imagine. If a telephone or cable company were to start sending their video, voice and data to the home in IP packets, like the Internet, along with instructions telling a set-top box browser how to present them, several benefits would occur.

1) The kinds of services that could be offered would be limited only by the imagination and a Web programmer's skills.

2) Service offerings could be developed, tested and launched in weeks instead of years.

3) Capital expenditures would drop significantly over the long run because centralizing a network's functionality at the headend instead of the set-top box significantly future-proofs the network.

The first to adopt such a flexible telecom network will gain a huge strategic advantage.

Flexible telecom networks in practice

Here's an example of a flexible telecom network in practice. A customer turns on his TV, presses a program guide button on his remote, and a program guide comes

CSI (2005) Grissom solves another crime using bugs while Stokes and Cidal track a jealous showgirl killer. HDTV Dolby				
003	9:00	9:30	10:00	10:30
0	Video Phone			
0.1	Call History			
3	CBS	CSI	Judging Amy	
5	NBC	Law & Order: CI	Channel 5 News	Tonight Show>
7	ABC	Duke @ Maryland>		
12	FOX	>American Idol	Channel 10 News	
201	A&E	Biography: Stalin	Outdoor Landscapes	
202	Weather Channel	Hemispheres Weather>		
202.1	Local Radar	Local Radar 20165		
202.2	Local Forecast	Local Forecast 20165		
203	Nickleodeon	Rugrats	Hey Arnold!	SpongeBob
204	Bloomberg	Bloomberg Television		
204.1	Personal Finance	Personal Finance		
205	ESPN	<Nicks @ Spurs	Sportscenter	
205.1	My Sports	My Sports		
300	PPVOnDemand	New: Spiderman 2, I Robot, The Forgotten, Calendar Girls		
400	HBO Library	New: Gattaca, X2, Carnivale:#32, Dirty War, American Wedding		
999	DVR	>		

Figure 1: A program guide that uses IP to link back to the video headend and multicast the listed information.

up (see Figure 1).

This looks like the usual interactive program guide whose software resides on the set-top box. Actually, this is a Web page, and its programming resides on a server at a video headend. The listed programs are links to IP addresses at the video headend that are multicasting the programming listed.

The viewer uses the remote to cursor to Channel 3, for example, and presses Enter. The set-top box, which operates like an Internet browser, sends a request to the appropriate IP address at the video headend. The server at that IP address checks a Billing and Authorization database to ensure the viewer is paying for the channel requested. Then the video headend server begins streaming IP packets containing the

selected program to the viewer's set-top box. The set-top box browser reassembles the packets and sends them to a decoder which displays the program on the TV.

The functionality of this architecture does not stop with displaying video. If it did, no advantage would exist over existing cable networks with their functionality programmed in the set-top box. In this new flexible network architecture, because the set-top box is receiving data and instructions, the network can perform any service that can be scripted by a Web programmer at the video headend.

For example, many television channels like the Weather Channel, Bloomberg or ESPN, can be improved with a companion information channel. In the program guide

In the loop

Have a comment? Contact Tom by e-mail at: robinson@cbgcommunications.com



A world of ones

BY THOMAS G. ROBINSON, EXECUTIVE VICE PRESIDENT,
CBG COMMUNICATIONS INC.

Some of us will remember (those of us who are younger may have heard this through our parents or grandparents) when many phone calls went through a live operator and were placed "person-to-person" to ensure that we got directly to the right recipient on the other end. Today, person-to-person communication has become an outgrowth of peer-to-peer (P2P) technology and has come to mean far more than direct, real-time voice contact. In fact, with the continued evolution and acceptance by the public of increasingly powerful handheld and desktop multimedia devices, P2P is now solidly involved in news gathering and dissemination; civic activism on a wide range of issues; education; information sharing; and entertainment. The last category, of course, includes both legal and illegal file sharing, as well as a gigantic increase in the electronic rumor mill. What this means for providers of broadband is that the old adage that you can never have too much capacity will continue to hold true into the foreseeable future. To paraphrase another old adage, today's unused fiber will probably seem the darkest just before the dawn of a multitude of new applications.

For the services that broadband providers deliver, the person-to-person phenomenon will probably cause a number of twists and turns. For example, the current trend in home networking is likely to extend to neighborhood networking in the future, especially for highly communal and communicative teenagers. High schoolers, for example, now work on team science projects the way that anima-

tors in Hollywood work on major motion pictures: collaboratively working in real-time on huge graphics files from various sites that are miles apart. With increasing high-capacity connections, these types of remote, person-to-person collaborations will continue to grow to the point that local or neighborhood networks may be needed. At some point, keeping high-capacity but clearly localized traffic off of the backbone, especially if high-capacity optical or HFC connections are available at each of the affected user's premises, will make significant sense from a capacity management point-of-view.

As another example, there are now personal broadcasters who at this time create crude videomails and send them to their peers, but have the capability to become much more sophisticated P2P journalists over time. As the number of these P2P newshounds around the country and around the world grows, they will be close enough to events that are occurring that they could be first on the scene and file reports before major news organizations may even be aware of what's happening. Then as viewers become aware of where the information is being disseminated, people may begin to get more of their news from such P2P sources.

This would especially be true if one of the primary outlets were local access channels on a cable system. Recent studies show that an overwhelming majority of viewers continue to get most of their news and information from television, even when they actively utilize the

on page 43, Channel 202.1 Local Radar is a link to the National Weather Service's local radar Web pages. The viewer can set the channel/Web page so that his local radar always shows when the channel is selected. Channel 204.1 Personal Finance is a link to a financial Web page. The viewer can set this channel/Web page to always display the viewer's stock portfolio and relevant business headlines. Channel 205.1 My Sports is a link to a Web page that the viewer can set to always display scores and news about his favorite teams and athletes. Buy rates for premium channels can be increased by including a link to a Web server at the video headend that has the HBO On Demand library (Channel 400). Add a voice or video modem to the set-top box along with a base station, and now the house is equipped with Voice-over-IP service or even a premium, high-margin videophone-over-IP service (Channel 0). DVR functionality can be provided without the expense of a local hard drive (Channel 999). The telecom that owns this network can develop any programming service or content that can be imagined—online music libraries, telemedicine, home schooling, horse race gaming, etc.—because the network's functionality is programmed at the headend instead of hardwired into the set-top box.

Quicker to market

The advantage of this flexible network goes beyond being flexible. The network allows a telco to be quick to market and to always have the lead over competitors. The following illustrates how this is done.

A business developer comes up with the idea of partnering with a racetrack to provide video coverage and gaming services. Next, a programmer quickly writes Web-based programs and scripts at the video headend for delivering that new channel. This new channel is included on an alternate programming guide home page. A small sample of customer set-top boxes are then reset to access this alternate home page of the guide. Consequently, customers in the sample group will see the alternate programming guide when the customer presses the guide button on the remote. After testing the response of the

continued on page 45

sampled customers, the service can then be adopted by simply resetting the programming guide homepage for the rest of the homes served to the alternate programming guide home page.

Thanks to flexible networking, new services can be developed from concept to launch in weeks instead of years.

Netting the flexible network's advantages and costs

While a set-top box with a browser, decoder, phone/video port and base station will be somewhat cheaper to manufacture than the current top-of-the-line cable set-top box solutions, this savings will be offset by higher costs at the headend for additional routers, servers, switches and facilities. However, a flexible network that distributes data and instructions has the potential for many additional revenue streams and will be significantly more future-proof. Furthermore, if telephone companies were to adopt this new architecture, they would gain a competitive advantage over their cable competitors and obtain a substantially higher market share than can be expected from current plans being discussed between telephone companies and local franchise authorities. The net effect is higher overall profits and long-term dominance for the companies that adopt this flexible network architecture.

What's a cable company to do?

Cable facilities (headends) are far more consolidated than telco facilities (local exchange offices). Consequently cable would have to multicast video to household groups so large that servers and switches may not be fast enough to serve them. So what's a cable company to do? Cable can come half-way. Cable can broadcast its video in its legacy RF protocols and handle all other services like VOD, IPG, gaming, voice, PVR, data channels, etc. using IP. This leaves just two "silos" in the set-top box instead of five or more. Though the two-protocol solution is not as elegant as an all IP system, it is nearly as flexible and as adjustable as one.

Conclusion

To have an IP-based flexible network

requires lots of bandwidth and distributed facilities. Companies like Verizon and SBC will have exactly that by implementing their fiber-to-the-premise network plans. But for now, it looks like these old tele-

phone companies have decided not to look outside the set-top box. Instead, it appears they are looking to use their new capacity to just mimic cable services and technologies, not leap-frog them. ■

In the loop

Have a comment? Contact Tom by e-mail at: robinson@cbgcommunications.com

continued from page 44

Internet. In fact, many, especially those who are younger, are often accessing the Internet and television at the same time. These "viewers" or "telewebers" will skip from item to item on the Web, while getting more in-depth news and information from television.

Further, current viewers of access channels and those who would watch more, are extremely interested in neighborhood and truly local news. This appears to be related, at least in part, to a larger societal problem. Whereas people generally were once extremely invested

Any activity with a common theme or objective could benefit from a person-to-person multimedia network

in their neighborhood (e.g., knew everyone, engaged in a lot of activities with their neighbors, transmitted news and information [and rumors] "over the fence"), because of the busy lives of commuting, dual income families, people feel less knowledgeable concerning what's occurring in their neighborhood, but still have the same deep desire to know.

Consequently, this is an area where an already local resource, the access channel, can make use of the increasing development of person-to-person video and multimedia content and channel it into a programmatic element that would not only increase access channel viewership, but, as studies indicate, increase overall satisfaction with cable service and serve as a significant competitive advantage over alternatives without such local

information, like direct satellite service.

Essentially, because in a person-to-person content development environment, the power, similar to a P2P network, is at the edge, the access channel would provide the aggregation mechanism for consolidated distribution, making it easy for a viewer to find. Of course, content dissemination can occur over the Internet or neighborhood Intranets as well, and such multiple outlets would provide significant viewer coverage and access.

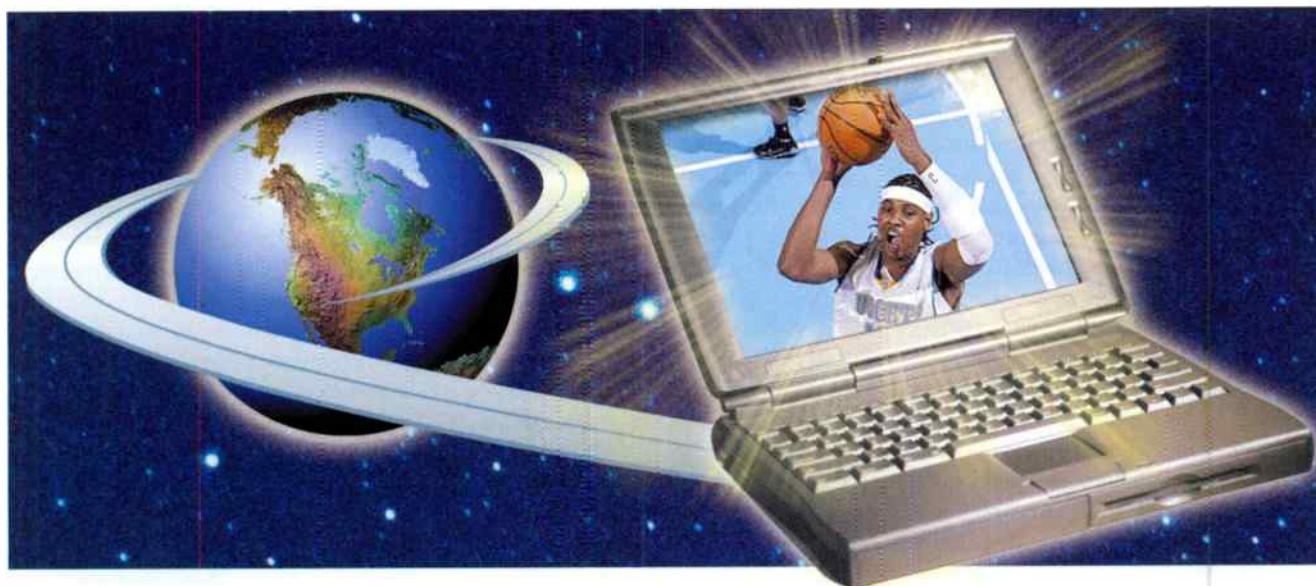
The access channel would also provide an organizational structure for promoting awareness of the availability of the content and, where the user does not have necessary media resources or multimedia training, would fill that need as well. The access channel then helps stimulate development of more personal broadcasters that ultimately could provide news and information from every corner of a region. True to its name, access organizations such as the Manhattan Neighborhood Network are already focusing on such initiatives.

These types of P2P content sharing mechanisms hold great possibilities for commercial applications as well. For example, collaborative telemedicine efforts, especially related to localized illnesses, such as an E.coli outbreak in a daycare center, can work on two levels, such as allowing pediatricians to access each others' findings, as well as allowing parents to share information and provide support. Literally, any activity with a common theme or objective could benefit from a person-to-person multimedia network.

At the heart of all this is another old adage. One person really can change the world—they just have to be connected to each other.

Take your TV with you

Can 'place-shifting' drive the upstream and premium broadband services?



Thank baseball for the inspiration behind Sling Media and the concept of "place-shifting"—the distribution of video from the primary television to any broadband-connected device. For Blake Krikorian, the CEO of Sling Media, the idea was hatched after he and his brother—both big San Francisco Giants fans—wondered about the possibility of watching their favorite team in action, despite heavy travel schedules.

After making a big entrance in January at the Consumer Electronics Show, Sling Media is nearing the launch of the Slingbox, a \$249 device that will enable consumers to virtually bring their living room televisions with them. CED Editor Jeff Baumgartner recently caught up with Krikorian to find out more about his plans for Sling Media's products and technology. An edited transcript follows.

CED: Why place-shifting, and why now?

Krikorian: The reason we created the Slingbox was to satisfy some of our indi-

vidual needs. There are people who love television, and people who are more mobile, and also people who are looking at displays that are not traditional televisions—whether that's spending more time in front of a notebook or desktop computer in and around the house, or being increasingly mobile outside of the house with a variety of other displays like PDAs and the phone.

In addition to the different displays, broadband infrastructure is now in place and wireless networking in the home has reached a critical mass. The time is now right to deliver a product at a consumer price point that can deliver that living room TV experience wherever you are on whatever device you have.

The desire or need hasn't really changed. It's actually always been there, but the technology has not been mature enough or ubiquitous enough to enable it. Now, we're there.

CED: How does this technology work?

Krikorian: The Slingbox Personal Broadcaster, which will be available in the first half of this year, is a \$249 device. You put this device in your home and it enables you to enjoy that living room TV experience from wherever you happen to be. It turns

your notebook PC, as an example, into a wireless LCD TV. You can be in another room in the house or in the back yard controlling and watching your living room TV programming. Or wherever you happen to be in the world with a broadband 'Net connection, you can also view and control that living room TV programming,

whether you're at work or on the road.

You plug in your existing TV signal. We don't discriminate between what different TV signals that might be. It might be analog cable; it might be a digital cable set-top box; it could be a satellite receiver; or it could be any form of DVR, as well.



Krikorian

You also put the Slingbox into your home network. Think of it as a box that takes TV in and spits IP video out.

CED: How do you deal with changing or non-guaranteed bit rates?

Krikorian: Streaming that video over IP is a very key technical challenge. This is where we had to innovate quite a bit...to deliver a satisfying user experience. First off, we had to make sure that this product could work in the existing infrastructure.

We essentially work down to the sub-100 kbps speeds. I would say that for real full-motion video, you realistically need 120 kbps, and at anything higher than that, the quality levels increase quite significantly. Talking about just that speed in terms of one number, is not how it works. There is no such thing as QoS in the existing infrastructure. It's best effort. When we look at what the user experience had to be with live television programming, people were not going to accept the rebuffering and freeze frames that are typically associated with streaming over IP. We had to ensure that we could deliver over all of these networks a smooth TV viewing experience. What we did is create some key technologies, which we've code-named "Lebowski."

CED: As in, "The Big Lebowski"?

Krikorian: Like "The Big Lebowski," one of my favorite movies. Like they say in the movie, "The dude abides"—our TV stream abides to whatever available bandwidth there is at any given time. The SlingBox itself will optimize that video stream for whatever given device and whatever given network it is streaming to. Not only that, but it will automatically adjust that video stream to work within the available bandwidth that is available at any given time. It will absolutely fluctuate. While you're watching the stream, the technology in the SlingBox and the technology on the client application are talking to each other in real time and dynamically adjusting the bit rate, the frame rate, the resolution and a variety of other parameters based on what type of content it is encoding.

CED: How much testing have you done to show that the ability to keep video and

audio coming in different bit rate environments actually works?

Krikorian: We've been out developing and testing this for 18 months. We're now doing a field trial with a couple of hundred consumers. We're continuing to evolve a lot of those Lebowski algorithms.

For example, a 3G network, which we've been testing quite a bit recently, behaves much differently than a T-1 line coming into my office, so Lebowski has an algorithm that varies depending on what type of transport or what type of physical network it's coming over.

One of the interesting things that's happening now is high-speed data network upgrades, and people are getting higher and higher speeds. But what are the applications that will drive up the need and the desire for this higher speed service? The Slingbox is a perfect application. A case in point is myself. I was an eight-year DSL user

in the Bay Area. I had the standard package of 384 kbps downstream and 128 kbps up. Even being a very advanced user, I had no need for 1 Mbps down or 3 Mbps down. As soon as we started developing the Slingbox, that was finally the application that made me say, "I need faster upload speeds." I actually changed...to Comcast high-speed data. The quality difference between the 128 and 256 was quite noticeable.

When consumers see it, [this] gets that craving for high-speed data really rolling. That's where some of the conversations we've been having with high-speed data providers have been incredibly positive, because this is an app that could potentially drive those new premium services.

CED: At the CES show, it was mentioned that Sling Media would be interested in cable partnerships. What's the status on those discussions?

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Krikorian: Both on the cable and on the DSL side we've seen quite a bit of traction and interest. You should expect to see us starting to bundle our consumer offer with the ability to get higher speed service or convert them from one service provider to another that's providing a better quality experience for the Slingbox.

As one cable executive told me, "Basically what you're doing at Sling is you're adding another room to every home in America." I didn't really understand what he meant at first, but now I fully understand it. We basically have added another room—a virtual room—that's another socket for digital cable, as an example. For a cable MSO, this increases the number of outlets they can try to sell their digital cable or premium services [to].

CED: What's your business plan? Are you simply in the business of selling

boxes, or is there more to it than that?

Krikorian: The old adage of "keep it simple, stupid" is exactly what we follow here. Sling Media is first and foremost a consumer products company. We view ourselves as a new kind of consumer electronics company that really understands the digital consumer. We're going to be selling this product at retail...in the big outlets and online. There's no monthly service fee. The consumer is already paying \$80 a month to the cable provider; they're already paying \$49 for their high-speed service; they're already paying for these PCs and PDAs that they have. What convergence should really mean is that all of that stuff I'm already paying for starts to work together, much better. We felt that we needed to be able to hit this price point and give people the programming and services that they already get, but give them the experience elsewhere—and try as hard as we possibly can to

not charge them additional service fees because there's so much subscription fatigue out there. It's really holding back a lot of solutions and a lot of technology.

CED: So you're comfortable with a \$249 price point? I would think some people would balk at that. Are you also going to subsidize it to get into the consumer electronics food chain?

Krikorian: First off, the \$249 price is really a breakthrough price. As you try to get to a \$199 or \$99 price point, then it's a step function of the volumes you can hit. But just looking at that \$249 price point, let's look at past history. In 1996 the Palm Pilot came out and they were, I think, at a \$349 or \$399 price point. They moved more than 1 million units in the first 12 months. Then look at the iPod. The lowest price point besides the new Shuffle product is \$299, and there are anywhere between 10

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and 20 million of those products out there. You can hit a pretty large market at that price point. Does subsidizing the product and adding some services...open up an even larger market? Absolutely. Could selling the product at \$49 and charging a \$10 a month service move more units and increase uptake? Perhaps. It's something that

point in time. If I have a PDA and laptop and I'm watching my TV on the laptop, if I try to connect with the PDA, it won't let me until I log off the laptop. It's more of the one-to-one relationship. People say we're doing a P-to-P. I say absolutely not. It's more of a me-to-me rather than P-to-P.

Also, we are not circumventing encryption schemes or anything of that nature. Once you do something like that, obviously that's not a legal thing to do. There's the Digital Millennium Copyright Act, which

clearly states that you cannot circumvent encryption schemes, and we're not. We're actually taking that analog content that's in the free and clear and...redirecting it to your personal device.

CED: Do you have the capacity to expand the restrictions to more than one device?

Krikorian: It has more to do with having those discussions with the content owners and if there's a model that makes sense there. At our house, we have his and hers Slingboxes. Interestingly enough, my wife uses the SlingBox exclusively in the home. While the press has gotten very interested in the out-of-home applications, what we've found [from] talking to consumers is that there are just as many who are interested in streaming their TV in and around the house. I actually went out and got another digital set-top box because I wanted my own discreet session and wanted to get some of my premium stations, and that's a good thing for the cable operators and the broadcasters, as well. You could also plug a live cable into the product, too, because we have a built-in TV tuner in the Slingbox. ■



The Slingbox will sell for \$249 at retail.

we could do, but based on our experience...it appears that our initial premise of charging a modest fee and not charging them an additional service charge is very refreshing to that consumer.

CED: One of the big questions surrounding Sling Media has to do with content rights. How confident are you that your company can do what it plans to do without finding yourself buried in litigation?

Krikorian: The first thing is that the response we've received from content copyright holders to the networks and so forth has been very positive. There's clearly an opportunity that the Slingbox provides in terms of really extending the reach, which is what that whole industry is all about. It always boils down to how they can monetize it, so there are questions that this raises for things to determine and explore for it to be an even larger positive for the industry. But there hasn't been that much negative reaction, but much more speculation about what this means.

We did a lot of homework up front to ensure that what we were doing was respecting the rights of copyright holders. We're not trying to create a product that, for example, could turn a consumer into a mass broadcaster.

CED: What are you doing in the box to avoid that?

Krikorian: The Slingbox itself will only stream to one outside device at any one

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new products

PRODUCT REVIEWS

Premise amplifier system

ENGLISHTOWN, N.J.—Extreme Broadband Engineering has released its new Infinity Premise amplifier/splitter system. The integrated family of components is designed to eliminate

the use of jumper cables between the amplifier and traditional splitters, thus saving installation time and labor costs while improving system reliability, according to the company. By eliminating the jumper interface, fewer connections are necessary, thereby reducing in-home service calls and reducing the chances of common path distortion (CPD).

Extreme Broadband's amplifier/splitter system

The key to the new Infinity Premise System is the external split-

ter module with cable-less F-Port Interface Connector (FIC) technology (patent pending). This approach allows the broadband provider to stock only 1-output amplifiers and external modules. This lowers inventory cost versus stocking 1-, 2- and 4-output amplifiers, according to the company. By changing the splitter module, the number of amplifier outputs can be increased from 1 to 2, 3, or 4 outputs. A 5-42 MHz reverse amplifier module is also available. All modules feature a new FIC port that allows a direct connection to amplifiers without the use of a jumper.

System flexibility extends to subscribers with previously installed traditional splitters. The model IPA1001FIC has a unique FIC output port that allows the amplifier to interface with a previously installed traditional splitter, also without using a jumper.

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Cable/DSL router

IRVINE, Calif.—SMC Networks has unveiled the newest in its Barricade family of networking products for the home and small office. The Barricade Cable/DSL Router (SMCBR14UP) offers broadband

connectivity, a four-port 10/100 switch, both USB and parallel servers and an Internet firewall. The new router offers secure broadband, file and peripheral sharing, as well as print server capability.

The unit combines a broadband router with a 4-port, 10/100 Mbps dual-speed switch with automatic MDI-MDIX ports, Stateful Packet Inspection (SPI) firewall security, network management, parental controls and Virtual Private Network (VPN) passthrough support. NAT support and a built-in DHCP server mean that the router can provide simultaneous Internet access and automatic configuration to up to 253 PCs using a single IP address. And its integrated USB and parallel print servers, which can be used simultaneously, make printers more accessible to network users.

The unit sets-up with its EZ 3-Click Installation Wizard. Its integrated firewall provides protection against hacker invasions, such as Denial of Service (DoS) attacks, by analyzing individual data packets as they pass through the router. Authentication via host name, domain name PPPoE, MAC address cloning and MAC address filtering, prevents unauthorized access.

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TEST EQUIPMENT

Optical Time Domain Reflectometer

HICKORY, N.C.—Corning Cable Systems has introduced the OptiVisor 400 Optical Time Domain Reflectometer (OTDR), which provides full OTDR testing in a rugged, portable unit, according to the company. The OTDR provides testing flexibility with field-interchangeable multimode, singlemode and combination modules, which can be switched out in the field without the use of tools. The unit can provide full test results in as little as 45 seconds. The unit features a 7.7-inch color LCD touch screen which is large enough to view both the trace and the event table. The standard unit provides internal memory for storage of up to 700 traces, eliminating the need for a hard drive. If extra storage is needed, the mainframe contains a floppy drive and PCMCIA port.

The OptiVisor 400 OTDR modules provide a standard continuous wave source, while the mainframe offers an optional power meter. These features can reduce the overall amount of test equipment required for system qualification by integrating power-through testing directly onto the OTDR platform.

The unit has three testing modes. Auto mode allows the user to select the parameters automatically, making it suited for basic OTDR applications. Advanced mode offers more setup and measurement capabilities for the more experienced user. Template trace mode allows the user to create a template for comparison with other traces, suitable for quick testing of multiple fibers.

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nextmonth

ARTICLES

CED's June issue explores IPG developments, IPTV, and digital sound quality. Plus, the latest edition of the Cable Telephony Deployments wallchart and an SCTE Cable-Tec Expo booth guide.

Next-gen IPGs: Finding that needle in the haystack

As cable operators continue to bolster their digital lineups with more networks and an ever expanding array of video-on-demand options, sifting through these seemingly infinite choices can be a daunting task. CED's editors will find out what new capabilities and innovations will power the next-generation of interactive program guides.

The video crossroads—Will IPTV and cable converge?

In the grand scheme of IP convergence, cable has well-defined intentions for data and voice services. But how about video? Where does it fit into cable's IP convergence plan, if at all? Because of cable's massive legacy RF broadcast infrastructure, is IPTV a misfit that is best left to the telcos?

Hi-Fi low-down: Digital sound quality and consistency

Although much of the conversation concerning cable's digital transition has focused on video quality, the sonic potential of digital is certainly worthy of equal attention. Why do some channels bombard one's eardrums while others come through at an almost inaudible whisper? This story will investigate the role of audio codecs, headend and programmer audio levels, and other factors influencing sound quality and consistency.

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Must-carry loose ends

You probably noticed that the FCC, a few months ago, made a final decision in the digital must-carry proceeding. The FCC decided that the law does not require cable operators to carry both a broadcaster's analog and digital programs, but only one or the other. And the law does not require cable operators to carry all the programs in a broadcaster's multi-program multiplex, but only the "primary" program. And this decision only took four years from the FCC's last must-carry ruling.

But the proceeding isn't finished. There were other issues in the proceeding that the FCC did not deal with. These include "program relatedness" and "material degradation." It will probably take another two to four years for the FCC's must-carry appetite to build up again. Meanwhile, here's a refresher course.

The law says that a cable operator's must-carry obligations extend only to material in the Vertical Blanking Interval (VBI) that is "related" to the TV program currently being carried.

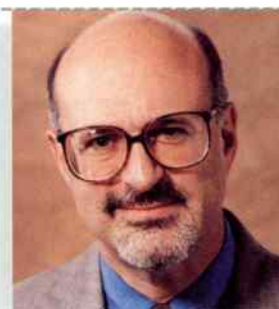
programs is not "program related" because it is not related to the current program. The cable industry, in a February 2000 agreement between the NCTA and the Consumer Electronics Association, had previously agreed to carry a broadcaster's program guide information for a 12-hour period into the future. But cable operators are free to strip out guide data about programs further off in the future. And meanwhile, program guide service vendors like Gemstar-TVGuide International want to make deals with broadcasters to carry enhanced program guides, covering all channels, and they want cable operators to be forced to carry those proprietary services under the guise of being program-related.

The law requires cable operators to carry a broadcaster's programs without "material degradation." In the analog world, this has usually been interpreted to mean that the broadcaster's signal, when delivered to a cable subscriber's home, should not be much noisier than when it was received by the cable operator. But there is no specific FCC rule interpreting precisely what it means. (In contrast, a broadcaster must deliver a good quality signal to the cable operator, and an FCC rule specifies a signal strength of at least -45 dBm for UHF signals and -49 dBm for VHF. And there are analog cable technical standards that apply to all analog channels, in Section 76.605 of the FCC Rules.)

For digital programs, there are some sticky questions here. If a broadcaster devotes a constant bit rate of 19 Mbps to an HD program, but the actual bit rate varies between 12 Mbps and 19 Mbps depending on picture content, can a cable operator strip out the null packets and carry just the variable bit rate picture signal? Or suppose video coding techniques have evolved so that home viewers cannot distinguish between a 19 Mbps picture and a 15 Mbps picture; can a cable operator transcode to a 15 Mbps signal and use the remaining capacity for something else? If a cable operator does a format conversion of an HD program from 1080i to 720p, does that degrade the picture quality?

There is currently no objective way to measure the picture quality of a digital television program. Broadcasters say that this means the only way to prevent material degradation is to pass through all the transmitted bits. The cable industry says that HD programs will be carried in one of the two standard HD formats, and SD programs in one of the many SD formats, and that satisfies the law.

Up until now, the FCC has made digital must-carry decisions that the cable industry has applauded (and the broadcasters have hated). But those decisions did not require a great understanding of the technology. This year we anticipate the appointment of one new Commissioner, for sure (to replace Powell), and possibly another one (to replace Abernathy), and if history is any guide, they will both be lawyers. The remaining must-carry issues are as closely tied to the technology as the law. Does anyone foresee a quick decision on these issues? Not me. ■



By Jeffrey Krauss,
President of
Telecommunications
and Technology Policy
Have a comment? Contact Jeff via
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Digital TV signals don't have a VBI, so the FCC must decide how to interpret that requirement in the context of digital TV. Some cable operators argue that any "program-related" information is not part of the "primary" program, and so no "program-related" information is entitled to carriage. Most, though, are willing to accept a narrow definition so that information that is an integral part of the current program would be carried. This would include closed captioning and video descriptions for the hearing impaired, and foreign language audio tracks. Broadcasters want a broad definition, to include such things as enhanced interactive advertising content, zoned newscasts or emergency information, the interactive purchase of items related to the current program, and sporting events shot with multiple, user-selectable camera angles. In that interpretation, with a standard definition program that takes up, say, 4 Mbps, this other information could take up the entire rest of the 19 Mbps channel!

Electronic program guides are also at issue here. The PSIP standard (ATSC Standard A/65) specifies a way for each broadcaster to carry program guide information about the future programs to be carried on their channel. Information about future



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