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International markets

Lessons to learn

Over the top?
Let's be friends

The Cable Show:
What happened?

Wallchart:
PON architectures



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Too clever by half

By The Cable Show, Time Warner Cable was already coming under fire for its intent to expand its usage billing tests. CEO Glenn Britt explained that bandwidth is not free, and so it's reasonable for cable to charge for usage.

Cellular companies have been practicing usage billing from the get-go. Rogers is demonstrating in Canada that usage billing can be made acceptable in cable.

But U.S. consumers revolted, and TWC is halting its tests.

Rogers was operating in a vacuum, but TWC was operating in an environment in which Comcast had set a 250 GB consumption cap, so capacious that only someone stealing movies would complain. Surprise! Pirates aren't that stupid.

In contrast, TWC's caps seemed so penurious that the public blew right past what the appropriate caps might be and straight to no caps at all.

"But it's only a test!" "But we keep increasing your speeds!" "But we gave you PowerBoost/Start Over/whatever!"

Exactly when did you forget that this is a "what have you done for me lately" society? When did you forget that cable is loved less than the airlines?

One hundred Mbps for \$250 per month is a joke (hi, Shaw). Is there a point to offering excellent speeds at a price that maybe 10 customers might pay? TWC's tiers weren't that ridiculous, but they were close enough.

If J:Com can provide 160 Mbps for about \$65 per month (see "Cable spanning the globe" on page 16), you'd have to be on drugs to think consumers in the U.S. won't notice. Not to mention U.S. regulators.

That was TWC's enormous mistake: Offering choices is pointless if all of the choices appear bad. Assuming TWC's screw-up (on the heels of Comcast's net neutrality stumble – also a usage issue) hasn't utterly blown consumption billing for the cable industry forever, the next company to try will have to offer vastly better perceived value.



By Brian Santo

Editor

**Is there a
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16 Cable spanning the globe

While cable operators in North America are gearing up for interactive TV, addressable advertising and the move to all digital, their counterparts abroad are tinkering away on their own respective projects. Whether for technology or business, there is intelligence to be gleaned from the activities of cable's international cousins.

By Mike Robuck, Senior Editor

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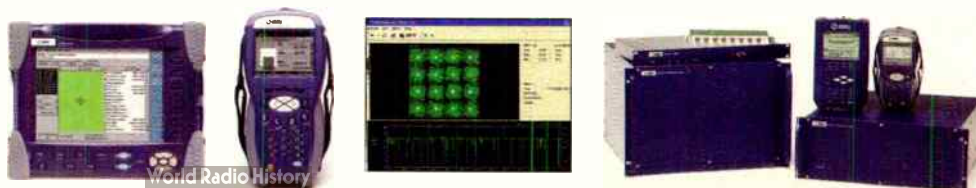
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Time Warner Cable shelves bandwidth caps

Time Warner Cable, in response to customers and other critics angered by what they consider the penuriousness of the MSO's bandwidth caps, has shelved plans to charge its customers – in four markets – based on the amount of Internet traffic they generate.

But tests of metered billing are still on in Beaumont, Texas, and TWC still plans to roll out software in all of its markets to tell customers how much bandwidth they're using.

"It is clear from the public response over the last two weeks that there is a great deal of misunderstanding about our plans to roll out addi-

tional tests on consumption-based billing," TWC CEO Glenn Britt said. "As a result, we will not proceed with implementation of additional tests until further consultation with our customers and other interested parties, ensuring that community needs are being met. While we continue to believe that consumption-based billing may be the best pricing plan for consumers, we want to do

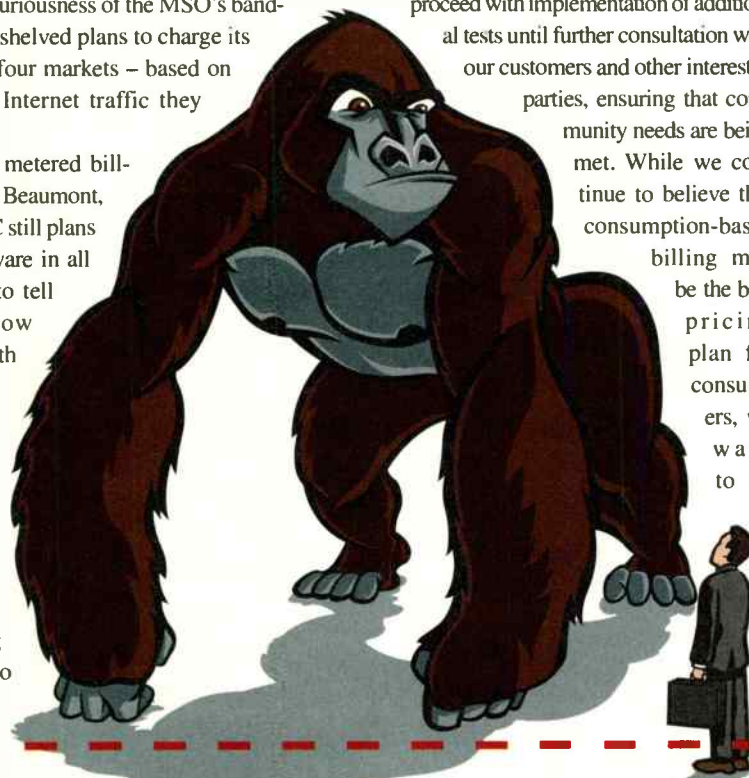
everything we can to inform our customers of our plans and have the benefit of their views as part of our testing process."

Consumer groups – including Free Press, a consumer advocacy organization – reacted with delight, as well as with a warning to other ISPs.

"We're glad to see Time Warner Cable's price-gouging scheme collapse in the face of consumer opposition," said Timothy Karr, campaign director for Free Press. "Let this be a lesson to other Internet service providers looking to head down a similar path: Consumers are not going to stand idly by as companies try to squeeze their use of the Internet. This is a major victory, but the fight for a fast, open and affordable Internet is far from over."

TWC's proposed pricing plans differ, but they generally include a certain monthly traffic allotment, with fees of \$1 or \$2 for every gigabyte over the cap. One GB is roughly three hours of online video. At the low end, a \$15-a-month plan includes 1 GB of traffic before overage fees kick in.

According to Time Warner Cable, about 30 percent of its customers use less than 1 GB per month.



Cox reveals multi-room DVR plan

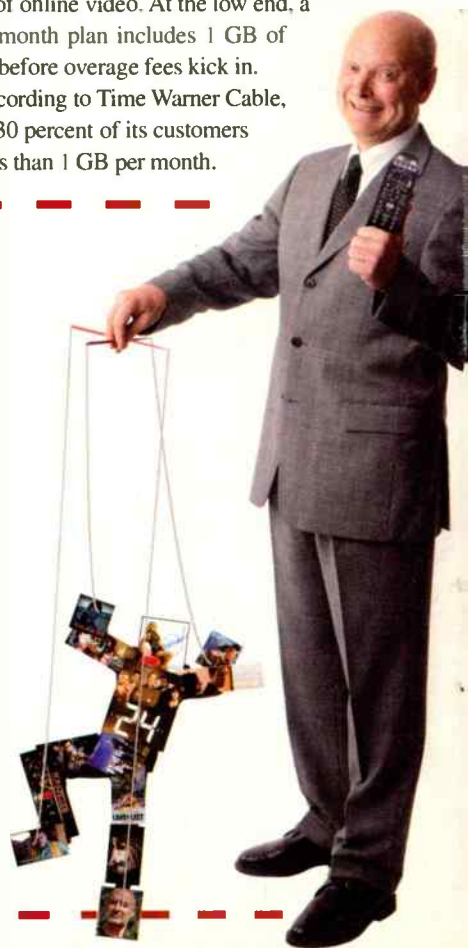
Cox Communications is preparing to introduce its own multi-room DVR capability, launching in a yet-to-be-named market. Cox's introduction of multi-room DVR is associated with Cox's activation of tru2way STBs and DVRs and the associated rollout of a variety of new applications, as well as the introduction of a new user interface. Cox and other major MSOs plan to start providing tru2way-based features in July.

Cox will initially rely on MoCA home networking technology; the company has previously made clear that it will be operating in a multi-protocol environment, so other networking standards are likely to be supported. MoCA technology allows Cox to transform current in-home wiring into the equivalent of an Ethernet network so that receivers can connect to one another.

Cox said that the DVR unit will contain a higher-capacity hard drive than previously available from the company.

Cox engaged NDS to build the UI, port Cox's existing applications to tru2way and develop several new applications.

"The go-to-market plan is to deploy the interface on set-tops running tru2way middleware," Lisa Pickelsimer, executive director of video product development for Cox, told CED. "Then we'll port it over to boxes in the field. We have more technical work to do there, but that's the ultimate goal."





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Advertising and time-shifted video present important revenue growth opportunities for operators. ARRIS offers converged video and advertising solutions that enable delivery of content to any device, regardless of where the content is stored and whether the business model is based on subscription, usage, or advertising revenues.

PacketCable 2.0 OKs augur new services

The first products to be certified compliant with PacketCable 2.0 are embedded digital voice adapters (E-DVAs) from Ambit and Thomson. (Since submitting its E-DVA for testing, Ambit has renamed itself Ubee Interactive.)

E-DVAs are devices that integrate a DOCSIS cable modem and a SIP-based phone client. The availability of certified E-DVAs will become useful as cable operators begin to exploit the capabilities of PacketCable 2.0 to provide services that cross platforms (voice, video, data) and transport networks (HFC, PSTN, wireline, wireless).

Thus, the certifications are important first steps toward the development of innovative, cable-based services.

CableLabs certified the E-DVAs from Ubee and Thomson during the organization's recently completed Certification Wave 65. The

PacketCable 2.0 core service architecture is based on common standards technologies such as IMS and SIP.

In addition to the two E-DVAs, Ubee and Thomson each achieved certification for a PacketCable 1.5 E-MTA that implements DOCSIS 3.0. There also were seven DOCSIS 3.0 cable modems certified from the

following manufacturers: two from Ubee, two from Cisco and one each from Netgear, SMC Networks and Thomson. Two DOCSIS 2.0 cable modems were certified, one each from Cisco and Motorola.

Additionally, Excentis recently announced the list of the first products to gain EuroDOCSIS 3.0 certification.

In its 34th testing wave, Cable Europe Labs certified three E-MTAs and a cable modem. They were Thomson's TCM470 cable modem and THG570 E-MTA, Ubee's EVM3200 E-MTA and Cisco's EPC3212 E-MTA. Excentis said the three E-MTAs were also certified against the EuroPacketCable 1.5 standard.

In addition to the 3.0 products, the Certification Board also granted EuroDOCSIS 2.0 certification status to cable modems from Motorola (SB5101NE) and STMicroelectronics (ST0498REF).



Ubee Interactive's DVM2210 E-DVA

Digeo revamps Moxi HD DVR

Digeo is reaching across the Internet for more video content with the latest enhancements to its Moxi HD DVR, which now has new services available directly from the on-screen menu, including Internet video content from YouTube, Netflix and Hulu, as well as more content that streams directly to TVs via MediaMall Technologies' PlayOn media server software. Rhapsody's streaming music service is also available.

The new Moxi HD DVR includes "eControls," which is a home automation feature that allows users to customize the home theater experience by adjusting lighting and other Z-Wave-supported products, including IP cameras and AV products. The Z-Wave Alliance is a consortium of manufacturers that have agreed to build wireless home control products based on the Zensys Z-Wave open standard.



Digeo's Moxi HD DVR

The Flickr online photo service and MoxiNet Internet browser were also enhanced, and Moxi is now certified to support the Digital Living Network Alliance (DLNA) home networking standard.

In February, Digeo CEO Greg Gudorf, while speaking about the Moxi HD DVR's home networking and home automation capabilities, told *CED* that a multi-room announcement will drop later this year.

SCTE '09 board candidates

Region 1 director (representing CA, HI, NV)

- Rey Cole, Arris
- Ed Marchetti, Comcast
- Bob Weaver, Cox Communications (incumbent)

Region 2 director (representing AZ, CO, NM, UT, WY)

- Frank Eichenlaub, Cisco (incumbent)

- David Krook, Technetix Inc.
- Nick Segura, Charter Communications

Region 6 director (representing MN, ND, SD, WI)

- Jim Chartre, CCI Systems Inc.
- David Haight, Midcontinent Communications

Region 9 director (representing FL, GA, SC, PR)

- Aaron Johnson, Bevcomm
- Bob Grann, Bright House Networks
- Ken Williams, Cox (incumbent)
- Edward "Chip" Winchell, CableServ Inc.

Region 11 director (representing DE, MD, NJ, PA)

- Paul Clar, Comcast
- Roger Hughes, Armstrong Group of Companies
- Peter Odell, Cablevision
- Tom Gorman, Charter (incumbent)
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World Radio History

LiquidStream, Arris upgrade their QAM platforms

Continuing to push out the edge of QAM density, LiquidStream Systems has expanded its universal edge QAM (UEQ) capacity to 36 QAMs per RF port, while Arris has introduced a module for its D5 UEQ designed to make the device capable of supporting more channels more flexibly.

LiquidStream's expansion ups the company's QAM capacity from 512 to 576 QAMs per chassis, which the company claims is more than quadruple the density of competitive offerings. The advance is based on the company's LiquidQAM digital technology.

Using the company's LxS-3616 QAM, the company said, leads to reduced hub wiring and cabling costs and complexities. With the high-availability LxS-3616 platform, all digital services can be provided by one RF port per service group, with no time-consuming and complex rewiring accompanied by the typical customer interruptions.

Higher port density also means lower power consumption and lower upfront capital expenditures for headend powering infrastructure.

"The LxS-3616 demonstrates our commitment to continually improve upon important industry metrics such as QAM density, power consumption and solution-level economics," said LiquidStream President and CEO Francois Laflamme. "The economic advantages of higher port density are significant."

And Arris' new Quad Port Module (QPM) 8DX4, a high-density QAM-RF module, is designed to make the D5 UEQ capable of supporting more channels more flexibly.

One of the keys in QAM technology is driving greater density to make QAMs ever-more efficient and economical in VOD, SDV and DOCSIS M-CMTS applications.

The QPM has 4 RF ports, each capable of outputting up to 8 QAM channels that meet the DOCSIS DRFI specification.

The configuration of each RF output is highly flexible, Arris said, allowing support for multiple services on a single QAM channel, on multiple QAM channels within a bonded serving group, or on different QAM modules in the D5 UEQ.

Even greater port density is accommodated by virtue of the architecture of the card, which allows for future expansion to a higher number of QAM channels via software.

As it is, the D5 UEQ with QPM 8DX4 installed will support up to 192 Annex B QAM 256 channels and 144 Annex A QAM 256 channels with software release 3.0, Arris said.

Arris also claimed several innovations for the QPM 8DX4, one of which is demodulation of downstream channels to monitor and analyze the performance of the QAM channel.

Coupled with the D5, Arris claims the QPM 8DX4 offers the lowest channel power per QAM of any device in this class, with less than 3 W per channel in deployed configurations.

"More services are moving to narrowcast and unicast. This requires massive growth in bandwidth supported at the edge of the network, without requiring additional rack space and power consumption," said Charles Cheevers, Arris' vice president of product line management and multimedia and CTO for Europe. "The new QPM 8DX4 module gives operators scope to wire once and increase the number of QAM channels to meet the demand for additional capacity to the service group."



LiquidStream's LxS-3616 QAM



Arris' D5 UEQ

Zodiac names Brown CEO

Zodiac Interactive has hired Brandon Brown as its new CEO, replacing Zodiac's co-founder Michael Rivkin, who will become the company's CTO.

Brown's new role will be to identify business opportunities as the company moves into a new growth stage, Zodiac said.



Brown

Brown has held executive management positions at several start-ups, including Sigaba, a provider of secure messaging solutions, and Persistence

Software, a database middleware company acquired by Progress Software.

Entone marries IPTV, OTT

IPTV providers are enthusiastic about embracing over-the-top video as a competitive differentiator against cable, and that's why Entone arranged to incorporate in its own IPTV set-top boxes access to Vudu's content library.

The Vudu library, particularly rich in HD film titles, was previously accessible only through Vudu's own box, sold at retail.

The deal relieves IPTV providers from having to conduct their own rights negotiations with a variety of content owners; instead, they leverage the rights Vudu has already secured.

Entone CEO Steve McKay said the move was customer pull, not vendor push. "This is driven by the operators asking us to help them solve this problem," he said.

Viewers access the content through the Entone box, and they neither know nor care that the library was built by Vudu, not their IPTV provider. "Vudu becomes my VOD," McKay said.

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Reversal of fiber

With its Victorian-style houses and quiet, tree-lined streets, the city of Alameda, Calif., exudes little of the urban hurriedness of nearby cities Oakland or San Francisco. Alameda, which is located on a small island, looks and feels like small-town America. Among its few notable creations are the Popsicle and the snow cone. The flavored-ice treats were introduced at a local amusement park, Neptune Beach, which was popular in the 1920s and 1930s.

In the annals of cable telecommunications, though, Alameda owns a unique status: It was the site of the first large-scale deployment of a cable network using fiber-optic lines to transmit video signals.

But that's only part of the story. Equally absorbing is the fact that the cable system serving Alameda got the fiber part backwards.

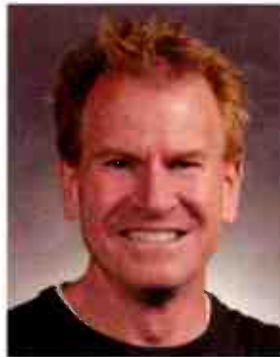
Flash forward: Today's hybrid fiber/coax cable networks rely on laser-infused optical networks to do their heavy lifting. Hundreds of video channels and a sea of data packets representing Internet content and phone calls flow outward from transmitters through high-capacity fiber lines. They end up at neighborhood-serving nodes, where the signals hop from fiber over to shielded coaxial cables that carry them to a few hundred nearby homes.

The idea is to get signals out to the neighborhood using highly reliable fiber strands, and then to hand off signals to existing coax for their final ride to the home. By parsing an entire regional cable network into neighborhood nodes, providers effectively create thousands of miniature cable systems, each fed by their own discrete swath of fiber-fed bandwidth. It's the architecture that makes video-on-demand and high-speed Internet services over cable possible.

But VOD and broadband data services were faint and futuristic dreams when Denver-based United Cable Television began wiring Alameda for cable service in 1983. There was no Internet to be harnessed and no engineering model in the works that envisioned replacing cable's amplified trunk lines with nimble, high-capacity fiber.

Even so, Alameda offered United Cable a proving ground for a new technology the company was willing to explore. A Connecticut company, Times Fiber Communications, was promoting fiber optics as a medium for improving signal quality. That idea was attractive to Alameda, which owned its own power utility and had progressive ideas about how its citizens should be served.

Times Fiber's "Mini-Hub" technology was a reflective opposite of the HFC architecture.



By Stewart Schley

*Media & technology
writer, Denver, Colo.*

stewart@stewartschley.com

**Today's HFC
cable
networks
rely on laser-
infused
optical net-
works to do
their heavy
lifting**

Instead of using fiber to deliver signals from a headend deep into the network, the Mini-Hub employed fiber only at the network edge. United's tree-and-branch system used heavy coaxial "trunk" cable to get signals to the neighborhood, and then transferred them to fiber lines that served groups of 24 homes. In a way, it was sort of a truncated version of a fiber-to-the-home network. Fiber lines ran directly to home-mounted interface boxes, and channels were switched not at the set-top, but at the intersection of the trunk lines and the fiber – the meeting ground Times Fiber called its Mini-Hub.

As with many early-stage technology deployments, there was an unforeseen complication. Because channel tuning occurred in the network, not in the home, the electricity cost associated with tuners was borne by United Cable, not the customer. The powering costs were far higher than what United had anticipated, recalls John Holobinko, a BigBand Networks vice president who worked for Times Fiber in the 1980s. And there was no apparent way to recapture the costs. Superior signals or not, United Cable was strictly rate-regulated by the city of Alameda, which was not about to approve a surcharge for the privilege of changing the channel.

Since United Cable began its fiber-optic experimentation in Alameda in the early 1980s, the city continued to elude the norm for cable telecommunications. In 2001, Alameda's municipally owned utility, Alameda Power & Telecom, issued a \$40 million bond to build its own cable system in direct competition with Comcast, the successor to United Cable. For several years, the two companies battled in an unusual public vs. private competition, with each proclaiming roughly a 40 percent share of the market. Their rivalry ended last November, when Comcast acquired the Alameda Power system, making Comcast the city's dominant provider. Today, Comcast, like most U.S. cable operators, uses fiber-optic lines to transmit signals to Alameda neighborhood nodes, HFC style. That choice continues a technology heritage that began more than 25 years ago in the quaint island city. Except now, architecturally speaking, it's the other way around.



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Fiber Nodes



**Digital Content
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D9900, D9901

Taps & Passives



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What's good for business

Sometime next year, a new inflection point will get marked down in cable's books: A cable company will top the \$1 billion mark for business services revenue.

The company is Cox Communications, which expects to surpass \$1 billion in sales from a growing roster of small-, medium- and enterprise-size businesses that Cox has won over since trailblazing the business services space 15 years ago.

Within the cable industry, Cox will achieve the significant economic milestone first, but it's certainly not alone in generating strong numbers from the non-residential side of cable's ledger. Business services operations are generating double-digit percentage growth as they defy a recession that has stifled some other aspects of the telecommunications sector.

Comcast, for example, reported that revenue from business services rose 41 percent in 2008. Bresnan Communications' business services revenue rose 24.8 percent last year and is expected to climb by 33 percent in 2009, fueled in part by a near doubling of business phone lines. Time Warner Cable reported 283,000 high-speed Internet business customers at the end of last year, versus 245,000 two years before, and counted 30,000 business phone customers at the end of 2008 after launching the product in 2007.

Momentum is building on two levels. First, cable companies continue to gain market share within the SoHo and SMB segments that cable originally targeted with broadband IP connectivity and, later, small office phone services. Second, cable is experiencing good traction with a new cadre of services that appeal to large enterprises, including scalable phone services, fiber-to-the-enterprise connections, hosted phone and data services, and Ethernet connectivity.

Ethernet, in particular, offers an excellent growth opportunity for cable business services, driving strategies to move up-market and putting cable on a level playing field with incumbents. According to industry research from Vertical Systems Group that was shared during a CTAM-produced panel at The Cable Show, Cox and Time Warner Cable together account for about 16 percent of the total business carrier Ethernet market in the U.S. No other single MSO registers a meaningful share yet. But that's apt to change as Comcast, Cablevision and others bring certified Ethernet capability to their business offerings.

One reason: Cable companies are beginning to reap rewards as they couple Ethernet services with underlying fiber-optic and HFC networks that enjoy broad reach beyond the downtown business sectors, where incumbents' networks generally are concentrated. The ability to provide Ethernet over HFC architecture, in particular, is driving cable's product footprint further into business markets.

Cable's embrace of Ethernet is helping to propel new capabilities that appeal to medium and large commercial enterprises. Also, operators across the U.S. are adding hosted services such as offsite security, storage, monitoring and Web site hosting. For many businesses, those are welcome alternatives to buying and maintaining equipment internally.

Beyond technology adoption, the cable industry is also demonstrating newfound prowess



By Char Beales

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of CTAM*

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in another important aspect of business services: marketing.

In the same way that a young cable industry gained confidence in branding and marketing its residential video and telecom services decades ago, cable is now becoming more facile in communicating and promoting to business owners and IT decision-makers. Figuring out what resonates in the marketplace is important, because as Comcast Business regional vice president Jason Welz observed at another CTAM Cable Show panel, recognition of cable's growing role in business telecommunications is sometimes limited. "There's a huge lack of awareness," he said.

Partly, that's because cable companies have been reserved about staging wide-ranging marketing campaigns around business services operations, for fear of inciting demand among businesses they weren't ready to serve. That's no longer the case in many markets, and cable operators are no longer so hesitant to proclaim their arrival. "We've learned to communicate early and often," said Denisse Goldbarg, vice president of marketing and training for Time Warner Cable Business Class.

By developing awareness of their rising business services capabilities, cable companies have racked up impressive wins within key commercial sectors – including health care, education and government – alongside private businesses. In turn, business services operations are emerging as one of the hot-spots for employment growth in cable for the next several years. And inside the industry, business services are no longer considered a stepchild of the bigger residential business.

That's a point that Cox, poised to become cable's first billion-dollar business services provider, makes frequently at internal meetings, said CTAM panel contributor Janet Barnard, senior vice president and general manager of Cox Northern Virginia. "We talk a lot in every all-employee meeting and every leadership meeting that Cox Business is the growth engine of the industry," she said, "and that Cox Business' success defines our success."

—
Next month, BigBand Networks' co-founder, executive vice president and CTO Ran Oz will write about virtual zoning.



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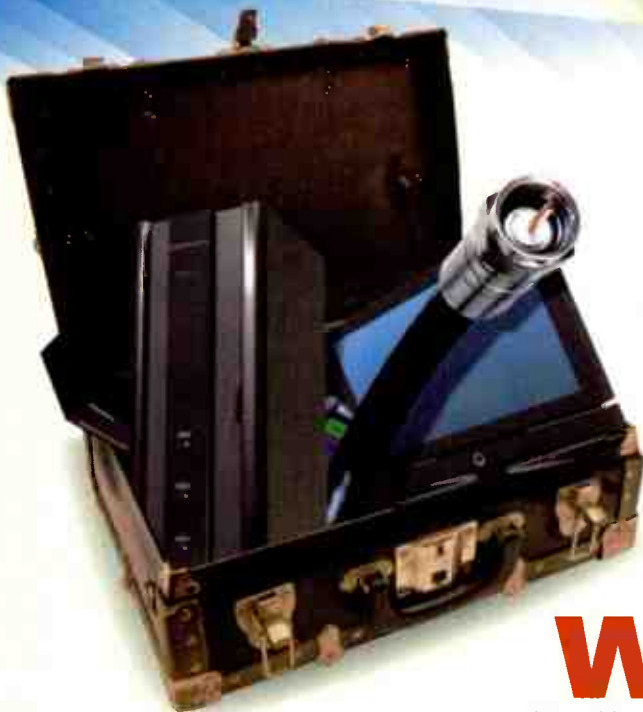
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Cable has long been an international phenomenon, and innovation can happen just about anywhere

While cable operators in North America are gearing up for interactive TV, addressable advertising and the move to all digital, their counterparts abroad are tinkering away on their own respective projects.

To be sure, reclaiming or adding bandwidth is a universal mandate, occasionally necessitated at several points during every cable operator's lifespan, but competition and consumer appetites can vary from country to country or region to region.

Because the competitive pressures differ from market to market, cable operators elsewhere in the world are sometimes more eager

to try and deploy new technologies (some of the first implementations of DOCSIS 3.0, for example, were in Asia).

And where cable dominates video and broadband in North America, phone companies hold the lead in many other regions; MSOs outside of the U.S. naturally must be a little more experimental with business models. Whether for technology or business, there is intelligence to be gleaned from the activities of cable's international cousins.

Japan: A need for speed

Most Japanese data subscribers are steeped in the use of technology and have an almost insatiable craving for faster data speeds. When you layer in intense competition from fiber-to-the-home service providers such as NTT, it's clear that Japanese



ning the Globe

By Mike Robuck, Senior Editor

cable operators have to be on top of their game to win and keep their customers.

In order to meet the above demands, Jupiter Telecommunications (J:Com) launched a 160 Mbps data service using pre-DOCSIS 3.0 gear from Arris more than a year ago. The channel-bonded 160 Mbps speed was a shot across the bow of the FTTH service providers.

"Japan leads the world in bandwidth at 160 Mbps, and I would say it also leads the world in the demand for bandwidth," said George Fletcher, Arris' senior vice president of Asian sales operations. "The fact that one operator was smart enough to launch, with our product, pre-DOCSIS 3.0 set a de facto standard of 160 Mbps. That's something that most of the other operators felt they

had to shoot for – and they have."

While Comcast and Vidéotron both kicked off the DOCSIS 3.0 party last year in North America, albeit with top downstream speeds of 50 Mbps, there are more than 30 service providers in Japan that are offering 160 Mbps services.



Fletcher

For J:Com, which is operated by Liberty Global, the investment in the faster speeds has not only kept subscribers from wandering into the arms of another operator, but has also helped increase its number of data subscribers. In March, J:Com said it had just over 1.5 million high-speed data customers, which was a 21.1 percent year-over-year net increase.

"In Japan, we have been aggressively deploying DOCSIS 3.0, as well as pricing it competitively," said Liberty Global senior vice president and CTO Balan Nair. "This has

resulted in 28 percent of our new subscribers opting for our 160 Mbps product. The pricing for it is at 6000 yen, or approximately \$65."

The increased competition means that Japanese service providers have different pricing structures for the faster data speeds. While Comcast's Extreme 50 tier – with download speeds of up to 50 Mbps and upstream speeds of 10 Mbps – costs \$139.95 per month, Japanese operators aren't charging a lot more for their faster tiers compared with the slower ones.

"If you look at companies like J:Com, which is a customer of ours, they're only charging around \$5 more for the highest tier, and that's because of the competition," said Floyd Wagoner, Motorola's director of global product marketing. "With all of the telcos con-



Cable spanning the globe

nected via fiber-to-the-home, it's more about attracting and maintaining your customer base than anything else for the cable operators. They probably look at it more as the ability to retain their customer base versus revenue."

In March, Japan CableNet Ltd. (JCN), the country's second-largest cable operator, started wide-scale deployment of its 160 Mbps high-speed data service across its cable system footprint. Using Arris' equipment, JCN also laid claim to being the first cable operator to use DOCSIS 3.0's upstream channel bonding for increased throughput rates.

"Upstream channel bonding is going to be a popular tool, I believe, for cable operators in Japan," Arris' Fletcher said. "Upstream channel bonding can have a big role in serving MDUs, and when you consider that probably 70 percent of Japan's population is vertical, the ability to bond channels upstream is a real advantage for them. It will allow them to use different modulation schemes that will give them enough speed."

According to Arris' Junichi Kato, partner account, senior manager of business development, Japanese cable operators are just starting to look at switched digital video as a precursor to that country's mandated move to digital in 2011. Kato also said that there hasn't been much interest to date in moving to 1 GHz plants in Japan.

In Korea, tru2way is old hat

While tru2way is marching forward like a tired foot soldier in the United States, the technology has been deployed for some time in Korea.

Jeff Bonin, Alticast's general manager and vice president, said cable operators in Korea have been toying with tru2way, or OCAP, since 2005 when they moved from analog to digital.

"As they transitioned from analog to digital, they transitioned right into tru2way, right into full DOCSIS and into DSG (DOCSIS

set-top gateway) for the back channel, so they have a lot more capability in their environment than we do here in the United States," Bonin said. "Because of that environment, they launched a lot of interactive services immediately, in addition to just the basic guide and services."

CJ CableNet's tru2way platform from Alticast, which provides middleware and builds applications for service providers, includes interactive weather, real estate information, t-commerce, travel info and reservations, movie information and tickets, and karaoke. Bonin said the karaoke service is very popular in Korea, and it's a service that cable operators can charge an extra monthly premium for.

"They are in the process of rolling out some HD DVR services, some higher-end

set-top boxes and transitioning to the latest version of the tru2way specification," Bonin said of Korean cable operators. "The market there is definitely more technology-savvy than your typical U.S. household. There was a lot of competition from a digital satellite provider there who was providing a lot of interactive applications, so rolling out the tru2way platform was one of the things cable operators needed to do to stay competitive."

Bonin said the tru2way platform has started to pick up speed in Korea now that satellite providers have started offering HD services and more interactive applications.

"The telcos have also launched their own digital and HD services to compete with cable and satellite, so now there's a renewed interest in making sure that all of those digital interactive services get launched much more rapidly on all of the platforms," Bonin said.

Liberty Global boosts data speeds

Liberty Global cuts a wide swath through Europe. Through its UPC Broadband division, Liberty Global is active in 10 countries in Europe, offering video, broadband Internet and telephony services to more than 9.4 million customers. UPC Broadband operates cable networks in Western Europe (the Netherlands, Switzerland, Austria, Ireland) and Central and Eastern Europe (Poland, Hungary,



Bonin

Cable operators abroad: A look at some of the numbers

Japan: Jupiter Communications (J:Com) is Japan's largest MSO. As of March 31, J:Com serves 3.2 million households through 24 consolidated franchises and 48 systems. For the year, J:Com added 466,500 subscriber households, which was a 17 percent increase since March 21, 2008. On the high-speed data side, 28 percent of its subscribers have opted for its DOCSIS 3.0-enabled 160 Mbps service since it was rolled out more than a year ago. J:Com added 261,600 high-speed data customers for a year-over-year increase of 21 percent.

Korea: In 2005, Alticast completed the world's first OCAP/tru2way platform-based commercial deployment with CJ CableNet, a major Korean MSO that has 1.2 million subscribers. CJ CableNet has seven system operator (SO) affiliates, including Yangcheon Broadcasting, Kyungnam Broadcasting, Masan Broadcasting, Kaya Broadcasting, Jung-Busan Broadcasting, Buk Incheon Broadcasting and Haewoondae Broadcasting.

Europe: Telenet, which is controlled by Liberty Global, is the largest cable operator in Belgium, with operations in Flanders and the cities of Leuven and Brussels, the capital city. Telenet ended last year with more than 4 million subscribers for its digital TV, broadband and fixed telephony services, compared with more than 3 million customers in 2007. Aside from acquisitions, Telenet added 401,000 subscribers across its three service offerings. Telenet attributed the increase in its total subscriber numbers to the introduction of new bundled offerings, which it calls "Shakes," in September of last year.

Latin America: Net Serviços de Comunicação is the largest cable television operator in Latin America. The company's Net service had roughly 3.1 million subscribers as of December. Net also operates the broadband Internet service Net Virtua, with 2.2 million subscribers, and telephone over cable (under the Net Fone via Embratel name), with 1.8 million subscribers.

Romania, Czech Republic, Slovakia and Slovenia).

And if that's not enough, Liberty Global also owns a controlling interest in Telenet in Belgium. In most of the countries Liberty Global serves, it's the largest cable operator in terms of subscribers.

While European data subscribers aren't clamoring for speeds as fast as the ones already deployed in Japan and Korea, Liberty is pushing the pedal down for accelerated speeds.

"We have also deployed DOCSIS 3.0 in the Netherlands with a 60 Mbps and 120 Mbps product," Liberty Global's Nair said. "We are expanding that across Europe this year. While

there are no applications that would tax such bandwidths, it does provide a better experience for certain applications, such as video downloads – especially HD.

"The other big effort we have going is to deploy a next-generation application on our set-top box that provides for a seamless experience across VOD, linear, DVR and Web content. All this wrapped around



Nair

a residential gateway-type configuration, supporting DLNA and appropriate link protections."

Nair wouldn't say what the next-generation application was in the works for deployment on the company's set-top boxes.

Karl Tempest-Mitchell, Advanced Digital Broadcast's senior vice president of cable business development and sales, said Telenet was the first cable operator in the world to deploy the Globally Executable Multimedia Home Platform (GEM/MHP) standard, which is similar to OCAP, as a middleware platform. Tempest-Mitchell said Telenet deployed ADB's MHP offering in order to gain an advantage over its competitors, and to "give them access to application developments."

"They are moving toward the people who are doing VOD services and gaming, and they're just about to launch a new user-friendly interface," Tempest-Mitchell said of Telenet.

In the United States, cable operators such as Time Warner Cable have worked on getting their electronic program guides up and running in a tru2way environment before embarking on other tru2way applications and technologies.

"I think that's one of the prime differences between the Europe and the U.S. markets," said Jim Lomax, ADB's executive vice president of worldwide sales and marketing. "The U.S. market seems to be driven by what the operator's guide is, and that's the thing that is downloaded first. In Europe, a lot of operators will start with a fairly simple EPG and develop from there. It's more about the services, content and other applications they're launching, and then the EPG."

Lomax said cable operators in Europe, such as BSkyB, are fully engaged in deploying PVRs, particularly HD PVRs, into customers' homes. Those who aren't deploying PVRs are looking at "catch-up TV," which allows customers to view shows that are stored on a cable operator's network.

While Cablevision has been locked in a battle to let its subscribers store their selected content on its network, catch-up TV stores all of the shows and programs for up to 14 days.

"Catch-up TV is a free service because it's more for customer

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retention to reduce churn," Lomax said, "but they see it as vital to their businesses where they don't have PVRs yet."

Latin America still emerging

Latin America is such a diverse area of countries, regulations, technologies and cultures, especially with the Caribbean islands thrown into the mix, but there are a few generalizations that ring true.

Alejandro Couce, Sigma Systems' director for the Caribbean and Latin American region, said there has been a lot of consolidation in Latin America over the past few years. On that note, Sigma has been working with cable operators to pull together a common OSS/BSS platform as smaller cable operators are bought up by larger ones.

"With all of the mergers and acquisitions, we're working with companies on breaking down the silos of voice, video and data, because a lot of times that information is dispersed," Couce said.

Increased data speeds are also top of mind for some cable operators in Latin America. Earlier this year, Motorola announced that Net in Sao Paulo, Brazil, would be deploying its DOCSIS 3.0 cable modem and CMTS. While Net could hit the 160 Mbps speed mark, for now the data service is topping out at 60 Mbps on the downstream.

"In Latin America, the average broadband environment is around 1 megabit," Motorola's Wagoner said. "There hasn't been that Asian-like experience like in Japan, Hong Kong and Korea, where they have those ultra-fast broadband rates. Latin America is 1 megabit for a reason; there's not an advanced broadband environment down there.

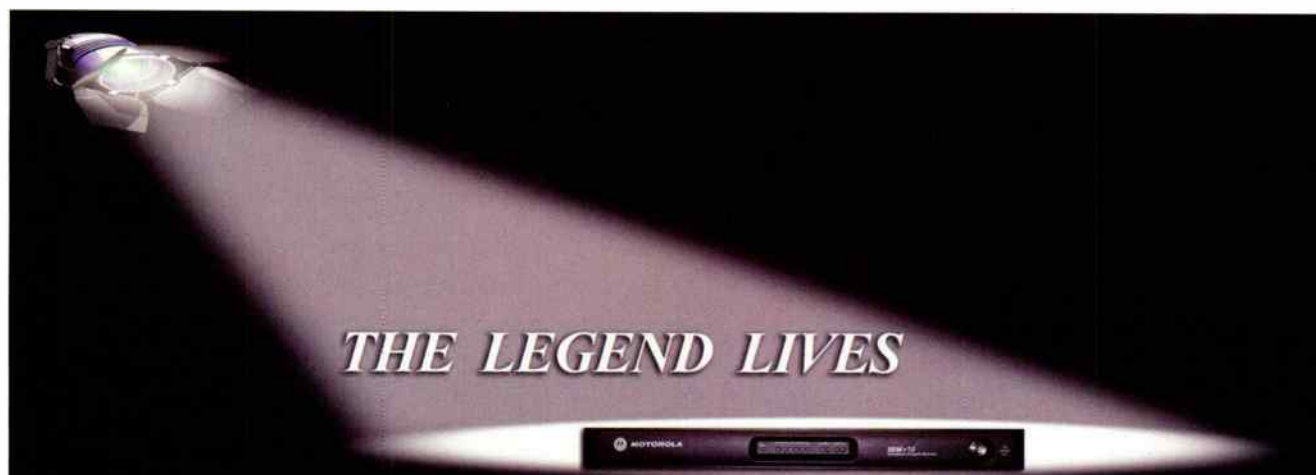
"With our [BSR 6400] TX32 card, the downstream capacity is more affordable, and they position themselves so they can eventually bond channels, but right now there's no consumer demand for faster speeds given the average broadband environment is 1 megabit."

John Dahlquist, Aurora Networks' vice president of marketing, said a lot of the RF plant that was removed during HFC upgrades in the '90s in North America found a new life in Latin America.

"A lot of the systems in Latin America were built with 450, 550, 750 MHz RF," he said. "We're finding that a lot of them are upgrading those networks and going immediately to a fiber-deeper architecture. One of the reasons for going fiber deeper is that your service areas are about 100, 150 homes per node, so you have a lot of bandwidth per subscriber.

"Fiber deeper is really HFC without all of the RF amplifiers, so you not only save on the cost of RF amplifiers, you also cut down on your power bills. You have fewer places to power, and power stability is always an issue down there."

Dahlquist said another benefit for fiber deeper is that without the RF amplifiers, cable operators don't need to sweep or balance, which means the number of highly trained technicians can be reduced. ■



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Cable's online video opportunity

Cable can take the threat and turn it into an asset

By Buddy Snow, senior director of solutions marketing, Motorola Home & Networks Mobility

There is a great deal of controversy around cable's new role in delivering video over the Web. While the increasing appeal of online video makes high-speed Internet service invaluable, video on the Web is also perceived to threaten the cable industry's traditional TV revenue streams.

Where online video once meant YouTube, 2008 marked the year when professionally produced TV arrived on the Web in a big way. The major networks all have a significant online presence, and traffic at Hulu (owned by Fox and NBC) has soared, with more than 241 million videos viewed on the site in December 2008 alone. In addition, online movie viewing is growing more common. Consumers can stream movies directly from a number of sites or pick up one of a plethora of new retail boxes designed to stream licensed movie content to the TV.

If you go by the numbers, or better yet the dollars, Internet video is still a small-time business compared with its broadcast television counterpart. Companies spend close to \$70 billion a year in TV advertising, while online video advertising still gets less than \$1 billion annually, according to industry analysts.

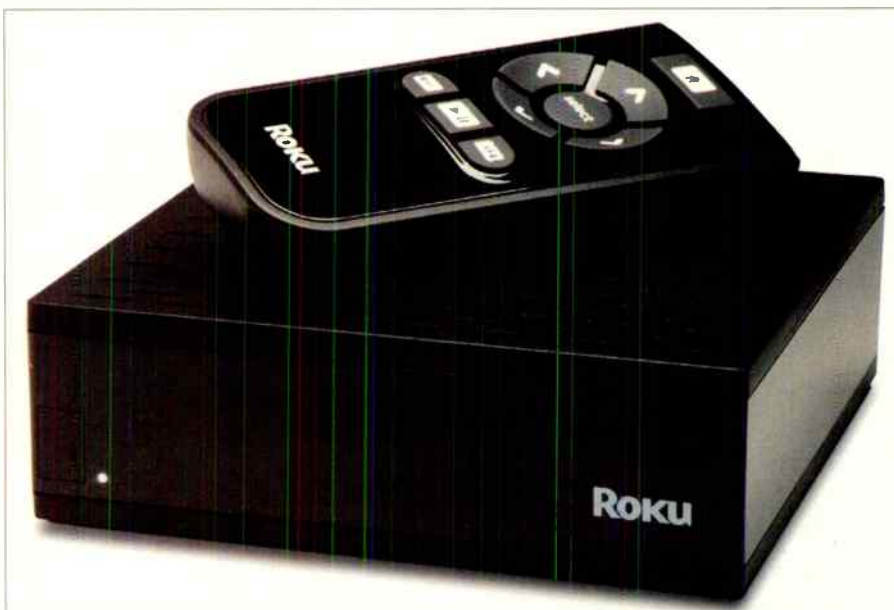
However, the growth rate of online video and the emotional chord it strikes with consumers – who love to control what video they watch, as well as when and where they watch it – makes Internet video an uncomfortable, lurking presence for many TV service providers. Add to that the fact that online video eats up a

lot of bandwidth, and you have a serious thorn in cable's side.

The problem for the cable industry, however, is really one of perspective. While the concerns surrounding Internet video are valid, the opportunity is greater than the threat. Who is better positioned than existing television service providers to deliver any kind of video into the consumer home? Cable operators already own the broadband pipes, enjoy an extensive customer base,

Show me the money

Cable operators sit on a huge amount of spectrum in their existing wired broadband networks. There is, and always will be, demand for more bandwidth, but that doesn't negate the fact that cable companies already have broad pipes into the home. And yet the percentage of cable bandwidth used for Internet or data services is miniscule. On average, cable operators dedicate only 2 percent of their spectrum for data delivery, and, out of that 2 percent, they bring in 30 percent of subscriber revenue.



Consumers have access to more and more devices that allow them to tap video content from non-traditional providers. This Roku box, for example, allows Netflix subscribers to stream films directly to their TVs and to download movies on-demand from Amazon.

know how to monetize both live and time-shifted content, and understand how television technology is evolving. By capitalizing on these strengths, cable providers can make Internet video a complementary asset to their existing television content and profit from the ability to deliver media seamlessly from different sources. Internet video opens the door for cable operators to enable the new networked home.

The huge disparity comes from the fact that traditional video delivery takes up a great deal of bandwidth, while broadband Internet service takes up relatively little for what it delivers. Add more spectrum for data and you get a better return ratio than you could by adding bandwidth purely for new video services.

The return benefits for investing in data delivery are twofold. First, more interest in online video equates to more Internet dependence, and that translates into consistent,

E-mail: buddy.snow@motorola.com



Cable operators are looking for ways to work with over-the-top video. Comcast, for example, is private-labeling the Hulu service, renaming it Fancast.

reliable revenue. Consumers are less likely to cut a monthly service bill if it's for a service they use many times a day for multiple purposes. Second, premium Internet users have the potential to provide new revenue streams with new Internet speed tiers at higher prices. As more valuable applications like online video require more bandwidth – and as bit rates continue to increase and new multi-window applications are appearing – more consumers will be willing to pay higher prices for faster Internet access. While it's true that cable operators must invest money to support the increased throughput, demand for higher speeds also feeds their business in important ways.

Allocating more spectrum for data services doesn't mean cable operators should take bandwidth away from traditional video services, particularly given consumers' endless appetite for HDTV. DOCSIS 3.0 channel bonding, reclamation of analog spectrum, switched digital video techniques, 1 gigahertz upgrades and deeper fiber extensions in the HFC network all offer ways to increase bandwidth utilization. Some operators have also begun to look at ways of migrating portions of their networks to all-fiber through intermediate rollouts of RF over glass (RfOG).

No matter what method is used, the reality is that bandwidth-expansion techniques can offer significant return on investment. Greater bandwidth and more efficient use of bandwidth enhance cable operators'

ability to deliver all kinds of video services, from more HD content through the traditional broadcast medium to more online video via high-margin data services.

Finding a business model

Because online video is an emerging market, content producers and distributors are still looking to find the most lucrative business models – something which works to cable's advantage. Companies are experimenting widely with online targeted and interactive advertising, sponsorships, paid downloads and subscription fees. But while the experiments are out there, no one has laid claim to a magic formula. This is partly because online video sites are still spending a great deal of time trying to attract large audiences. Even successful sites draw in far fewer viewers than those brought in by traditional television.

The early nature of the Internet video market creates a huge opportunity for the cable industry. Cable operators that get in the game now, like Comcast with its Fancast site, can establish a position with their pay-TV subscribers as online video purveyors. For cable providers, the customer footprint that new online video companies crave already exists. They have set-tops installed on millions of TVs. The trick is to transfer that audience to the Internet through cross-promotions and service bundling while the online video market is still in its early stages.

Because cable operators have already invested in DVRs and VOD, they have bridged the gap in the eyes of consumers from being simply transmitters of TV signals to service providers that can deliver a more complete and personalized entertainment experience – an important step along the road to entertainment convergence. Cable subscribers can record their own hit television lineups through their DVRs and access a range of VOD selections – from popular TV shows to fitness routines. It's a much different experience than cable a decade ago, and consumers have bought into it. Cable's strength means that Internet video is still something of a digital island. Since most of what consumers watch is still on TV, it makes a great deal of sense to join Internet video to the TV mainland, and that's something only existing TV service providers can do.

Finally, operators have the distribution clout to make new types of licensing deals work. They don't want to pay huge amounts of money for content that consumers can access for free on the Web, but while they still have the advantage of large audience sizes, they also have the leverage to work out with content providers a way to make TV and online video complementary. It may require bundling content across both mediums for a single price, or emphasizing a value-add for cable delivery, such as higher picture resolution, longer content availability, or perhaps some new type of interactive TV application. Whatever the final scenario looks like, now is the time to figure those new licensing models out. Cable can create the convergence roadmap.

IP to the living room

The crossover between traditional TV and online video is where the Holy Grail of television lies. Even as both mediums develop along their own roadmaps, the paths are converging. It's not just the content, either. The first major gold mine for cable operators is convergent advertising and promotions. Three-screen video delivery means opportunities for greater engagement with consumers, more interactivity and a more measurable response to advertising investments. Consumers don't

get all of their content from one screen, so the ability to follow them across different domains becomes increasingly valuable.

For example, imagine a fan of the hit show "Lost." While a cable operator can hold that viewer captive one hour a week with a new episode, the other six days and twenty-three hours are generally beyond cable's reach. However, if an operator aggregates and offers behind-the-scenes clips, trailers, interviews, reviews, polls, contests, entertainment news and other content online, that would translate into greater overall viewing time across multiple screens. Advertisers, in turn, would be able to coordinate campaigns and promotions to that engaged "Lost" fan (and many others) in a number of different places, taking advantage of the full "Lost" experience and not just a weekly, one-hour window of TV viewing. Having an online presence opens

up greater access to consumers and reinforces traditional television outreach.

Near-term, cross-platform advertising opportunities represent a major step forward for cable operators looking to close the gap between their TV and Internet delivery systems. Ultimately, however, there should be no gap at all. Set-tops with embedded cable modems, new home media gateway devices and Internet-associated applications delivered over the tru2way platform all offer a glimpse of how well-integrated television and the Internet will be in the not-too-distant future. There are a lot of ways to approach that integration, but there is no doubt that it will come.

Online video: From threat to asset

Cable has rarely had to react quickly to competition, which makes online video a new challenge for the industry. However, to

sustain their market position and continue to grow, cable operators need to view the challenge in terms of the opportunities it presents. Online video is a threat to cable operators when it comes to new content providers and aggregators springing up on the Web, but the content itself, and the Internet medium, is an asset. The cable industry has broadband networks with room for growth, a huge installed base, the ability to determine new content licensing models, and the technology at hand to promote the convergence of online video and traditional TV. The concept of online video as cable's next big opportunity may seem counterintuitive, but if cable plays its cards right, leadership in the online video space will soon seem as natural a progression for the industry as the development of digital voice and DVRs. The revolution is in cable's hands. ■




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THE CABLE SHOW

Finding direction in D.C.

Cable marshals its resources in the nation's capital

By Mike Robuck, Senior Editor;
Jim Barthold and Jeffrey Krauss,
Contributing Editors;
and Brian Santo, Editor

Though the cherry blossoms were in bloom in Washington, D.C., the reason for plunking Cable Connection Spring down in the nation's capital was something short of aesthetic: The show was a big lobbying tool. By the count of one

NCTA mole, well over 200 members of Congress had accepted invitations to tour the show and learn about the cable industry first-hand – many for the first time ever.

That's face time that can be gained in no other way, in no other place, and is of no little import when the government's plan to spend \$7.2 billion on broadband infrastructure is warranted by the current administration to be just a start on communications policy.

Politics aside, there was plenty of busi-

ness conducted during the show – the mash-up of The Cable Show, the withered remnant of the SCTE Emerging Technologies show, CableLabs' Law & Technology Seminars and the WICT Leadership Conference (along with a small handful of other cable industry events). Canoe Ventures debuted, and if tru2way were hardware instead of software, attendees would have been constantly tripping over the stuff.

Aside from advertising and interactivity, the other big theme was "cutting the cord" – customers ditching video subscriptions in favor of online video. As a phenomenon, cutting the cord is only barely less theoretical than superstrings, but the industry was still compelled to discuss the incipient menace. Session after session got drawn off topic to address the issue.

Observations from Time Warner Cable CEO Glenn Britt pithily represented the cable industry consensus on the subject: He repeated his observation that "free wins," but also noted that there's very little free video out there now that wasn't free before – mostly from broadcast television stations, and even that doesn't linger long before it is no longer available for streaming.

Yes, Netflix and Amazon and other companies are making content available, but it's not free and, Britt noted, it still has to go over someone's pipe, and that someone more often than not is a cable operator.

Over the top

Still, \$45 a month for broadband is less than \$90 a month for broadband and video.

It's an irony of broad(band) proportions that the cable industry, whose cable modem business herded consumers to the broadband Internet space, has to guard against online content availability adversely affecting its bread-and-butter programming business.

"We can't stop people from consuming content on other platforms," said David Zaslav, president and CEO of



Discovery Communications, during a last-day general session.

While the session primarily looked at Canoe Ventures' interactive advertising effort, the topic inevitably wandered to the Internet and its impact on cable. Some have said that content piracy is the biggest concern because much of the available programming is not authorized, but Zaslav said that's not the case.

"I don't think piracy is a big issue," he said. "There's just an overwhelming amount of not-pirated content, free content, out there."

Discovery is disinclined to put its long-form content on the Web for free consumption, Zaslav said, but other programmers are less queasy about moving on-air material to on-IP.

"On the broadcast side, we've been a little more aggressive in getting our content online; on the cable side, we've been a little more conservative," said Jeff Gaspin, president and COO of Universal Television Group. It makes sense to do it that way, he said, because broadcast content is already free, and when placed on the Web, it actually draws viewers back to the television.

Cable programming, meanwhile, is a subscription service, so there should be more caution about offering up for free what others pay to see on TV, especially since advertising dollars don't match what's available on television.

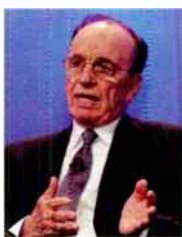
Rupert Murdoch, chairman and CEO of News Corp., has fingers in both sides of the content pie – broadcast and cable – as well as in a third piece: print. He's not a big supporter of the Internet as a viewing platform, he said in a keynote, during which he observed that newspapers are currently struggling with an analogous problem of maintaining profitable business models while simultaneously offering up their content for free on the Internet.

"It's sad," Murdoch said. "People are getting used to getting everything on the 'Net for nothing. That's got to change."

News Corp. sells online subscriptions to its *Wall Street Journal* property and

blocks content search aggregators from grabbing material and disseminating it for free. Cable MSOs, meanwhile, could do something similar – not by charging for online content, but by making sure that those accessing it are already paid subscribers.

In fact, Comcast is launching a national authentication test this summer to make certain that those who view its programming online are authorized Comcast subscribers. The trial will use a form of subscriber authentication to determine the viability of the viewer and the source on which the content will be viewed.



Murdoch

Stephen Burke, COO of Comcast and president of Comcast Cable Communications, said the process requires a form of authentication – and that might require a new set of software and/or back office technology.

In a different session, Comcast vice president of strategic BSS Jim Anthony explained, "We have to start turning our systems inside-out almost ... by looking at the broader view of customers."

Jeffrey Bewkes, chairman and CEO of Time Warner Inc., said it's not enough to play defense against over-the-top video; cable has to go on offense, leverage the brand awareness it's built and put its content on the Web now.

"We've been trying to nurture these brands so we have a viable business," Bewkes said. "All of these cable channels are important to viewers and artists, [and] this industry can now deliver that on broadband and on your mobile device. We're all too slow to take all these networks and put them on [the] PC."

Bewkes, too, supported the subscription model for offering content only to consumers who are also subscribers.

Murdoch agreed that should work. "Nobody can make any money with free content on the Web except search," he said. "The American people are still in love with television ... and broadband only adds to that."

It may be appropriate to have this discussion before the subject becomes a true problem. The problem of online content

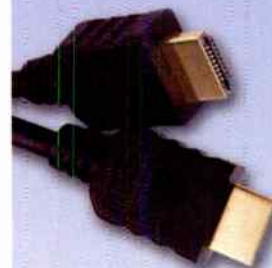


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drawing away viewers – authenticated or not – probably isn't that serious right now, said Michael Fries, president and CEO of Liberty Global, during the "Prime Time in the Global Village" session.

"Online video is having a very minimal impact on TV viewership," he said. Viewers, Fries insisted, want "high-quality" content displayed on big screens with high-definition, not computer or mobile screens.

A big constituent of the pile of money to be made will still be advertising, and that's where Canoe Ventures comes in.

Canoe raises its flag

The "Techniques and Technologies for Targeted Advertising" session was notable as the "coming out" party for Canoe Ventures and was spearheaded by Canoe Ventures CTO Arthur Orduña. For the first time in public, Orduña spoke spe-

cifically about the Canoe Ventures architecture, but his "eye chart" of Canoe's Common Advanced Advertising System (CAAS) was difficult for most of the casual observers to comprehend due to its complexity and small display size.

In a nutshell, the purpose of the CAAS is to steward advanced advertising campaigns and interactive programming between programmers, broadcasters and agencies to MSOs and service operators.

The CAAS comprises three main components:

- Advertising stewardship – enables national organizations to manage sales cycles, and it includes building a cam-



Orduña

paign manager.

- Subscriber information service – a primary data warehouse and platform aggregate from all of the CAAS and Canoe intelligence that interconnects with third-party intelligence.

- Distribution services – simplifies the process of digital ads across multiple MSOs, complementary to existing delivery and service fulfillment services.

Orduña said that the CAAS will be operational this year and that Canoe Ventures' first interactive campaign is also slated for this year. During another panel, Canoe Ventures CEO David Verklin said a community addressable advertising offering will be released by

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Canoe Ventures in the next four- to six weeks.

In another advertising-related session, "Advertising's Great Enabler: Unleashing the Power of the Set-Top Box," moderator Dennis Kneale, from CNBC, probed the panel about the value of Canoe Ventures and interactive TV technologies such as EBIF and tru2way.

With cable companies raking in only about 10 percent of the \$182 billion North American advertising market, Mike Eason, Canoe Ventures' chief data officer, said addressable ads will increase revenues for broadcasters, programmers and cable operators while serving up targeted ads that consumers want to watch.

"We're going to start to have advertising based on demography instead of geography, which is going to be pretty neat," Eason said in reference to the upcoming launch of Canoe Ventures' community addressable advertising offering. "We're actually going to be able to look at a national footprint and split up ad copy across that national footprint."

Bill Harvey, TRA president and co-founder, said that while the Internet does provide accountability in terms of the number of clicks on an ad, it doesn't show whether a consumer followed through on a purchase. Canoe Ventures will be able to show whether a viewer followed through on a purchase after viewing an addressable advertisement, providing a metric on ROI that the Internet can't match.

Sean Bratches, executive vice president of sales and marketing for ESPN, said his company has been behind iTV for years because its brand and consumers align well with interactivity.

ESPN is currently working on three iTV applications, which are slated to launch sometime this year, that will utilize advertising overlays. ESPN will use EBIF for a voting and polling application that will let viewers interact with ESPN shows such as "SportsCenter" and "College GameDay."

A second ESPN EBIF application is called "ESPN In Game," which will enable viewers to get more information and statistics on players and games during live events.

ESPN is also working on a TV version of its "My Bottom Line" feature from its Web site, which will let viewers create their own bottom line, or customized content, for shows they're watching. Bratches said My Bottom Line will rely on the more advanced tru2way technology, which means it will need newer digital set-top boxes and a wide base of tru2way deployments before it can become readily available to viewers.

As for Kneale's question about whether customers want interactive applications, TRA's Harvey pointed out that there were more votes for "American Idol" via cell phones than in the last presidential election.

Kneale also brought up the question of how Canoe Ventures' participants, which include the nation's top-six cable operators, will divide up the revenue pie. Bratches voiced his concern over third-party advertising that causes viewers to leave the ESPN brand and said the "big details" of how the revenue is going to be split need to be worked out, but that it was in everyone's best interest to do so.

Joan Gillman, Time Warner Cable's executive vice president of media sales, said people should think about what the cost would have been if each cable operator had put its own interactive infra-

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Secretary of Commerce Gary Locke, wielding the scissors – joined, from left, by Craig McCaw (Clearwire), Pat Esser (Cox Communications), Johnathan Rodgers (TV One), Brian Roberts (Comcast), Tom Rutledge (Cablevision) and Michael Willner (Insight) – opens Broadband Nation at The Cable Show. The ribbon-cutting ceremony took place on April 1.

structure in place versus the one-stop shop of Canoe Ventures. Gillman said Canoe Ventures is more than just advertising – it's a service bureau with a lot of operations

mixed into applications.

"Canoe is more than just the app that launches on the platform," she said. "It's solving pretty serious operational issues, so it's cost effective."

Speaking on the targeted advertising panel, Mitch Weinraub, Comcast Media Center's executive director of products and services, said companies such as eBay, Facebook and YouTube are successful because of the "massive connections" with their audiences. In order for cable advertising to be successful, it needs the same type of reach

and connections and not the walled garden approach of early Internet service providers such as AOL and Prodigy.

In addition to working with broadcast-

ers and ad agencies, Weinraub said the cable industry needs to increase its connections from cable operator to cable operator, as well as with competitors, in order to reach a mass audience.

The session also was the forum of one of the more amusing presentations during The Cable Show. The Comcast Media Center's Dan Holden, a Comcast Fellow and chief scientist, outlined a strategy for enabling trick file advertising.

During fast-forward on a DVR, Holden showed how to overlay advertisements while the original ads were speeding by in the background. The trick file ads can be generic in nature, or even better, specific to an event that the consumer is watching at the moment, such as a sports-related ad during a basketball game. The ads can also come across in a picture-in-picture format.

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to see ads while they're fast-forwarding through the original ads, Holden said, with tongue firmly in cheek, they are requesting alternative ads when fast-forwarding.

"Most importantly, you don't have to train consumers because they already know how to fast-forward on their DVRs," Holden said. Moderator Yvette Kanouff, SeaChange International's chief strategy officer, called Holden's paper, "You can run but you can't hide."

Quality matters

The discussion about over-the-top video had an adjunct: Most of the free content, and much of the streamed stuff, is of limited quality. Cable operators still have the advantage that video quality is one of the most important factors to cable subscribers.

During the session "Quality Matters: Assuring Performance Across Multiple Platforms," Comcast Media Center senior vice president, COO and panel moderator Gary Traver cited a CTAM Pulse study that found that 82 percent of those surveyed for the report, titled "Future Shapers and Makers: An Examination of Consumer Segments," listed quality of service as the most important factor.

Asha Kalyur, Cisco's marketing manager, said during her presentation on video assurance that 83 percent of problem costs are related to poor video experiences. Truck rolls for unhappy video customers not only eat into a cable operator's revenues, but they can also potentially drive customers into the arms of a competitor.

Dave Higgins, Comcast Media Center's vice president of quality assurance, cited a study by MRG Research that said 40 percent of customer churn was related to video quality issues.

Higgins said there were eight critical touch points that can lead to video impairments, any one of which can cause ripples farther down the video chain into customers' homes.

"In the old days, we could measure quality of service with bits and BERs," Higgins said. "Now we need different metrics."

The CMC tracks QoS metrics across markets and by channels, and it also uses

subjective analysis.

Kalyur said cable operators need an end-to-end video assurance platform to reduce truck rolls and isolate domain problems quickly. By using a unified dashboard instead of six separate screens, cable operator employees can isolate video impairments faster, and potentially stop them before they reach a viewer.

Cisco's S.V. Vasudevan, director of cable video architectures, spoke about how the cable industry can "steal" the work that has already been done by the enterprise market on data centers. Data centers can handle chores such as authentication of users, where the content is going, and to which devices.

Michael Adams, Tandberg's vice president of application software strategy, took Vasudevan's concept a step farther by recommending that content management systems work in conjunction with content delivery

networks to deliver video across the various platforms – such as mobile, PCs and TVs.

Bringing up the subject of quality, of course, begs the question of how to support high-quality video and still squeeze more down the HFC pipes. The SCTE Emerging Technologies conference is always ready to visit the issue of bandwidth management.

Emerging technologies

Arris director of intellectual property engineering Carol Ansley reported that streaming media (YouTube, NBC.com) packets are now coming in short, sharp bursts rather than (as was the case a year ago) continuously – possibly to take advantage of big buffers in client devices. Comcast's "PowerBoost," which bumps transmission speeds to initiate the transfer of very large files, is a product that compounds the issue.

Comcast senior vice president Richard

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Woundy talked about delay-sensitive applications (VoIP, games) and delay-insensitive applications (P2P) and reported on delay management protocols under development at IETF, including Low Extra Delay Background Transport (LEDBAT), which measures one-way delay and slows down transmissions when delays occur.

Accedian Networks vice president of marketing Scott Sumner talked about a variety of methods for load shaping and hierarchical QoS for business applications, including classifying packets (transactional

packets get higher priority), filtering out "pollution" packets, rate limiting and traffic shaping to increase average link utilization and minimize needs to add new capacity.

Robert Howald, director of systems engineering at Motorola, talked about increasing high-end frequency on coaxial cable to 1.5 GHz. He noted that the high frequency cutoff on coax is determined by amplifiers and taps, not by the cable itself. He observed that there is increased distortion above 1 GHz, but asserted that modems can handle it.

As for finding additional bandwidth, he reminded operators that they can still imple-

ment 1024 QAM to create a total capacity of about 10 Gbps – comparable to GPON.

Cisco principal engineer Alon Bernstein talked about bandwidth management techniques: scheduling, admission control, load balancing, bandwidth reservation, deep packet inspection, bandwidth throttling.

In a separate session, representatives from Time Warner Cable and Cablevision talked about their plans to increase capacity.

TWC said it intends to go all digital and supply low-cost boxes for all analog TVs for free. Further, by ending ana-

log and going from 16 QAMs to 24 QAMs, TWC expects to buy enough capacity for full simulcast of SD and HD.

Cablevision prefers digital simulcast for improving the QoE for all viewers. It eliminates delay and display glitches when tuning from an analog channel to digital, and vice versa. Other technology thrusts included server-based time-shifting, including MoCA in all new set-tops for home networking.

Cablevision also said it is planning on expanding its Wi-Fi build-out into downtown areas. It expects to allow cable customers to use Wi-Fi smartphones after authentication.

Of course, data flows in two directions.



Iger of Disney greeted conventioners.

Upstream capacity

John Ulm, fellow of the technical staff for Motorola Connected Home Solutions, talked about upstream use of S-CDMA (defined in DOCSIS 3.0). Motorola expects user-generated content to keep growing, to the point where upstream bandwidth requirements could range from 20- to 100 Mbps. Ulm explained that S-CDMA is more robust for dealing with impulse noise and ingress noise than A-TDMA, though he allowed that it is possible to use A-TDMA with legacy cable modems in the 24-42 MHz range and S-CDMA in the 8-24 MHz range.

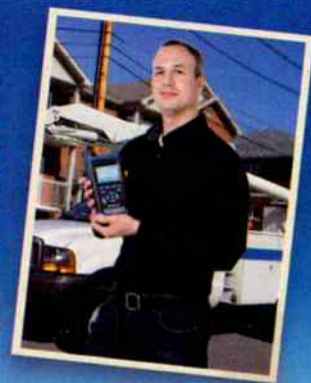
Arris chief strategy officer Tom Cloonan discussed the use of upstream channel bonding as a way to respond to noise, including random noise, narrowband ingress noise and short duration wideband impulse noise. He said the use of bonded 1.6 MHz channels and 16 QAM modulation can provide higher upstream capacity compared with 6.4 MHz channels and QPSK modulation in the case of random noise or ingress, though the opposite is true in the case of impulse noise.

Arris (Ayham Al-Banna) talked about capacity increases that are possible using multi-carrier techniques such as OFDM for upstream. And Cisco's Bernstein described the advantages of a less complex upstream scheduler than is now required by DOCSIS. ■

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RF Connectors, a division of RF Industries, has released UHF male and UHF female connectors for LDF4-50A ½ inch Andrew Helix cable.

Availability of UHF connectors for Helix cable was limited to the secondary



RF Connectors' UHF connectors

market when manufacturing ceased several years ago. But RF Connectors' UHF connectors use the same installation process and tooling required for the discontinued

connectors.

Manufactured with white-bronze-plated, machined brass bodies, the new connectors feature silver-plated phosphor bronze contacts and PTFE dielectric. White bronze is resistant to tarnish and has high conductivity and low intermodulation.

The male connector, RFU-502-H1, and the female connector,

RFU-520-H1, also work with Andrew LDF4-50A cable. Andrew LDF4RN-50A cable, RFS 810918-001 cable, RFS LCF12-50J cable and Eupen 5128 cable.

RF Industries offers connecting solutions through its operating divisions: RF Connectors, RF Cable Assembly, Aviel Electronics, RF Neulink, Radio Mobile and Worswick/OddCables.

Ripley Co. releases Fiber Drop Stripper

The Ripley Co. has introduced a compact FDS Fiber Drop Stripper from its Miller product line.

The product offers a new design for stripping flat drop fiber cable used in FTTH applications, and it boasts a lightweight polymer body.

The one-step stripping action removes the jacket in two locations to expose the dielectric strength members and to allow the quick removal of the jacket.

The tool can easily strip flat drop lengths of 2 feet to 15 feet, and the FDS will strip flat drop fiber cable on the cables.

The Ripley Co. has three product lines: Miller, Cablematic and Utility Tool.

The Miller line, which contains the FDS Fiber Drop Stripper, comprises tools for the fiber-optic and telecom industries, including wire cutters; hand and thermal strippers and slitters for all types of small wire, cable and fiber-optic cable; as well as manual and hand wrapping and unwrapping tools.



Ripley's FDS

IRDs



Motorola's DSR-6300 IRD

Moto IRD performs bit rate optimization

Motorola announced what it expects will be the first commercial integrated receiver/decoder to deliver three-channel MPEG-4 to MPEG-2 HD transcoding.

With that capability, the new DSR-6300 IRD will enable cable operators to increase HD throughput by up to 50 percent, Motorola said, while offering satellite operators greater flexibility in packaging HD services to their affiliates.

The DSR-6300 employs Motorola's closed-loop statistical multiplexing. The IRD analyzes video complexity and then dynamically allocates the optimal bandwidth to each program. This process provides bit rate adjustments to services as video becomes more or less difficult to encode.

As a result, Motorola explains, up to three HD services can be efficiently delivered to the home, significantly increasing the number of services that can be delivered over a standard cable 256-QAM feed.

The DSR-6300 simultaneously uses the in-band active format descriptor (AFD) to translate input HD services to an appropriate SD service with proper aspect ratio and resolution. This will allow programmers to migrate to HD-only distribution strategies, further freeing up valuable satellite bandwidth for delivering even more HD services.

"The increasing demand for high-quality video requires bandwidth optimization through innovative technologies that deliver efficiencies and smart integration," said Bob Wilson, general manager for networked video solutions at Motorola. "As we move toward digitization of all content, timely solutions like the DSR-6300 will help our customers directly meet the video explosion with more HD services."

Field trials for the DSR-6300 are planned with programmers, with general availability in North America and South America beginning in the third quarter of this year.

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FEATURES

Case study: Suddenlink and SeaChange pull off a coup in VOD technology.

Suddenlink Communications launched VOD service in nearly two dozen markets recently, using open-standards software from one equipment vendor in a centralized location to control the remote video servers of a different equipment vendor.

Suddenlink is using SeaChange's Axiom On Demand VOD management software at the MSO's media operations center in Bryan-College Station, Texas, to direct nine of Motorola's Broadbus B-1 video servers scattered across a rugged, sprawling region of several-thousand square miles.

This article explains how Suddenlink and SeaChange worked together to pull off what they believe to be an industry first.

Who are these people?

The December 1984 cover of *CED* con-

tains the cartoon caricatures of dozens of industry luminaries. Can you help us identify them all?

WEBINARS

We have several Webinars archived, with complete audio and PowerPoint presentations. The most recent are:

Critical Impact: Delivering Comprehensive Business Services to Advanced SMBs.

To satisfy the needs of the increasingly sophisticated SMB market, service providers can offer advanced business services and complex features to unify and manage communications services.

The panel includes: Charles Scarborough, director of product development, Cox Business; Barry Rogers, director of telephony product development, Rogers Cable; Brian Cappellani, chief technology officer, Sigma Systems; Gerry Kaufhold, principal analyst,

In-Stat, and Paul Adams, director of product management, BroadSoft.

Time-Shifting: Optimizing Bandwidth for New On-Demand TV Applications.

This Webinar touched on several methods of delivering content on-demand, including classic VOD, network PVR and Internet video. No matter how content is served on-demand, network operators are going to have to handle more traffic; this Webinar goes over methods for managing bandwidth resources in an on-demand environment. Panelists included Yoav Schreiber of Current Analysis; Nabil Kanaan, director of product marketing, RGB Networks; and Alan Hoff, vice president of product marketing, SeaChange International.

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Mobile Satellite Service: Back from the dead?

I've written occasionally about the Broadcasting Satellite Service (BSS) and the Fixed Satellite Service (FSS), but seldom about the Mobile Satellite Service (MSS). BSS and FSS have allocated spectrum that is above 3 GHz, while MSS spectrum is below 3 GHz. BSS and FSS business models have been characterized by high demand and plenty of capital, while MSS business models have been characterized by bankruptcies and FCC applications that were never constructed.

But maybe that is changing. Iridium and Globalstar both emerged from bankruptcy and are now in the process of procuring a second generation of satellites. SkyTerra (formerly called American Mobile Satellite Corp., then Motient, and then Mobile Satellite Ventures) has settled on yet another name and is building its next-generation satellites. TerreStar and ICO (actually "New ICO," since the original design was abandoned) are soon to launch their first generation.

These companies hope to flourish by focusing on niche markets. Inmarsat, the only successful MSS operator in the past 20 years, initially focused its efforts on the high seas shipping market. But as terminal technology improved, television news operations began to use Inmarsat capacity to send back live news spots from remote areas. Maybe not high-quality video, but live video, nonetheless.

Technically, there are two kinds of MSS systems: those that operate one or two satellites from fixed geostationary locations, and those that operate a fleet of non-geostationary satellites.

The non-geo satellites orbit at a lower altitude than the geo satellites, so less power is needed.

The older MSS systems with geo satellites (Inmarsat and SkyTerra) use Earth terminals with antennas the size of pizza boxes, or bigger. Some of these antennas have to be used in temporarily fixed locations and must be pointed at the satellite, while others have tracking capability and can be used while a vehicle is in motion. Newer geo satellites (ICO and TerreStar) and the non-geo systems (Iridium and Globalstar) can use small, handheld terminals a little bigger than some cell phones with omni-directional antennas. (The newest Iridium terminal is 6 inches long and weighs 9 ounces.)

Because these MSS systems operate between about 1600 MHz and about 2500 MHz, it's possible to make a chipset that operates both on the MSS frequencies and on 1900 MHz cell phone frequencies. And Qualcomm is doing just that. TerreStar is showing a tiny prototype terminal that operates on the AT&T GSM network when available, and on the MSS satellite system otherwise.

For many of their customers – the military, public safety agencies, boaters and ships, pilots, hikers, snowmobilers, etc. – MSS is not the primary communications service, it is the backup. When cell phone service is unreliable or unavailable, satellite service is there.

So, for example, a marketing brochure shows terminals used with Inmarsat satellites to make up a "Broadband Global Area Network" for the battlefield.



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**When cell
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Globalstar has developed a handheld product it calls "Spot" with four buttons: On/Off, OK, Help and 911. It includes a GPS receiver. If you push the OK button, it sends your location to an Internet site that uses Google Maps to show your current location and track your movements. If you push Help, in the event of a non-life-threatening emergency, you can notify your friends and family that you need assistance. If you push the 911 button, it sends your location to a rescue center that dispatches emergency responders (by helicopter, if necessary) to your location. According to Globalstar, "Spot" has helped initiate close to 145 rescues, many of which resulted in lives saved. You can buy the Spot device for \$125, and the service costs \$99 per year – much less than cell phone service.

Public safety agencies and rural hospitals are also target markets. If the landlines go down, if the cell phones go down, the satellites keep working. With all of the recent funding of homeland security projects and pressure for interoperability among agencies, a number of public safety agencies have signed on for satellite service.

Suppose you want to travel through China or Tajikistan on business and don't want to trust your business conversations to the local phone system. No problem if you have an MSS phone. With satellite phones, only the NSA can monitor your conversation!

While these MSS operators can partner with cell phone operators, the FCC gave them another choice. They can construct an Ancillary Terrestrial Component – basically a terrestrial cellular network that shares spectrum with their satellites. Whether this makes sense for them remains to be seen, since they generally don't have much spectrum to begin with. But during the FCC proceeding, the cell phone carriers were worried enough about potential competition that they opposed the FCC's proposal.

It's been a long haul since Inmarsat began operations in the 1980s, the American Mobile Satellite Corp. started up in the early 1990s, the Iridium bankruptcy in 1999 and the Globalstar bankruptcy in 2002. But now, with the latest technology, we'll be watching newcomers TerreStar and ICO, as well as the military and first responders that make up part of the target market, to see if this market really takes off.

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