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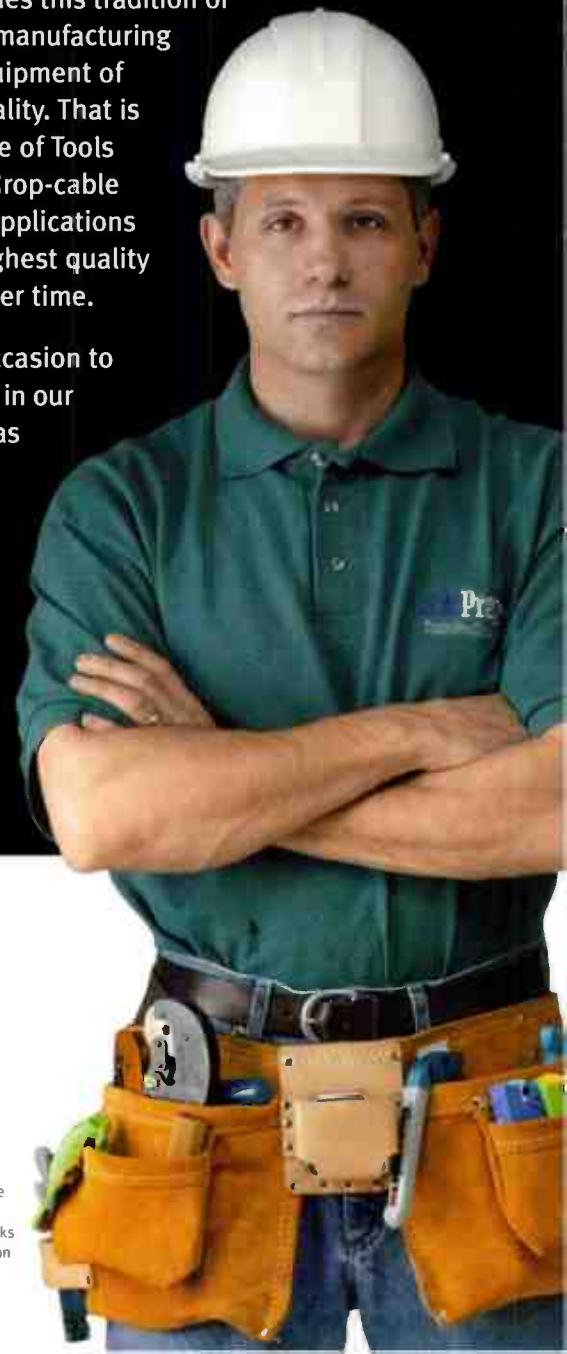


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World Radio History

Welcome to *Transmit*

Covering the business of cable communications and how it impacts your bottom line

WE'D LIKE TO WELCOME all of you to the premiere issue of *Transmit* magazine, which covers the business of cable communications.

Each month, *Transmit* will explore how technology impacts every phase of sophisticated cable TV systems, from design, construction and maintenance to marketing, advertising, programming, customer service and IT – all the places where key purchasing and operational decisions are made daily by the front office, middle-management executives, and people in the field.

Cable TV has built a platform for multichannel and high-speed Internet access into 65 million U.S. households. But even as it generates some \$50 billion in annual revenue, the industry can hold its competitive advantage only by tapping fiber optics, hybrid fiber coaxial cable, wireless, and broadband technologies to deliver voice, video and data products and services to demanding customers.

Indeed, engineers, CTOs, purchasing directors, middle managers, CEOs, field people and CIOs understand that their jobs hinge on putting complex technology and engineering developments to their best business-case use to boost operating efficiencies, slash costs, and widen margins in an increasingly competitive marketplace.

The cable industry is awash in news and information, thanks to a multitude of dailies, weeklies and monthlies, as well as the Internet. But making sense from that flood of data – putting it to work in the real-world pressure cooker that's today's cable TV/broadband operation – is quite another matter.

Enter *Transmit*, whose roster of seasoned writers and editors will demystify technology and engineering issues, and then show you how to use those applications to grow your business at every turn. Among the issues this premier edition explores:

- Can cable operators turn a profit delivering telephony service?
- Where the race to deliver broadband services is headed, and whether content will make a difference in who wins.

- What will advertising look like in the digital age? And how can it grow into a major moneymaker?
- How can cable operators use the Internet and other resources to gain a competitive intelligence edge?
- How the once-arcanic practice of billing has evolved into a powerful engine to pull revenue out of new services.
- How technology is making it easier to identify and then woo a cable operator's most valuable customers.
- How ease-of-use issues could spell the difference between success and failure for many of cable's new services and technologies.
- Can online learning really reduce a system's employee-training costs?

As 2003 draws to a close, the U.S. continues to untangle itself from a nasty recession that has taken its toll in jobs, investment activity, and R&D spending. But while the economy has slowed, the pace of technological change and innovation hasn't. It continues to advance at Moore's Law speeds – a comet that the cable TV industry hangs on to thanks to its stake in broadband, digital technology, programming and entertainment.

Now, as the economy begins to show a pulse, cable's key to continued success lies in taking advantage of today's and tomorrow's hardware, software and other technological developments that will launch the industry more deeply into the 21st century. And *Transmit* will be there to guide, translate and make sense of it all so that cable operators aren't caught flat-footed.

In short, *Transmit* means business. We hope you agree.



Paul R. Levine, Publisher



Bob Diddlebock, Editor



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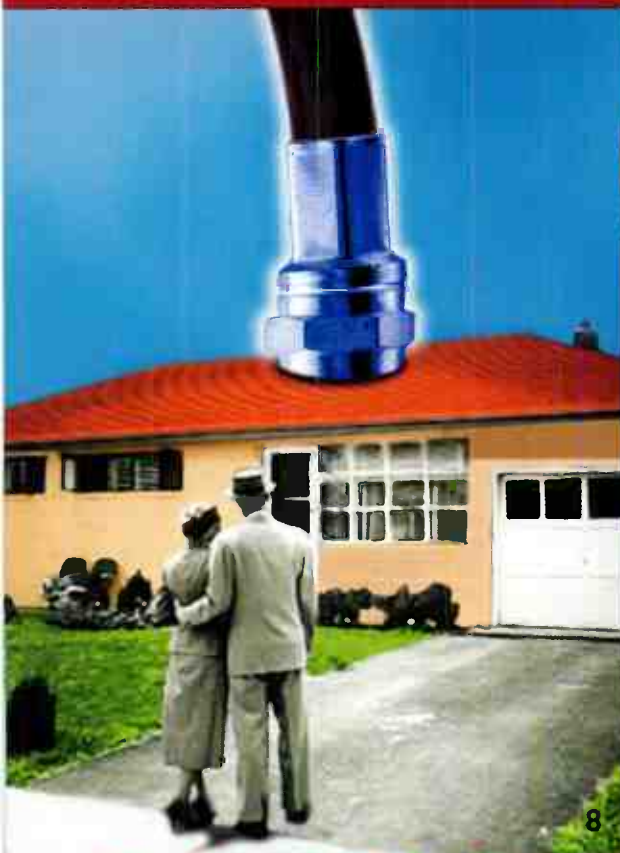
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What's Going On

QUOTABLE

"During this decade and the next, the baby boom generation will retire. The largest generation in American history now constitutes about 60% of what both employers and economists call the prime-age workforce – that is, workers between the ages of 25 and 54. The cohorts that follow are just too small to take the boomers' place. The shortage will be most acute among two key groups: managers, who tend to be older and closer to retirement, and skilled workers in high-demand, high-tech jobs."

— From "The Coming Job Boom," *Business 2.0* magazine | September, 2003

QUOTABLE

"Don't try reinventing the wheel. Don't try revolutionizing the entire cable industry. Instead, you need to be evolutionary. Focus on working with one or more of the top five MSOs, which are as large as small governments. If you have a compelling product and business model for them, the rest will work itself out."

— Tyrone Lam,

President/COO, Buzztime Entertainment, Inc.,
an interactive TV games producer

Broadband Boom

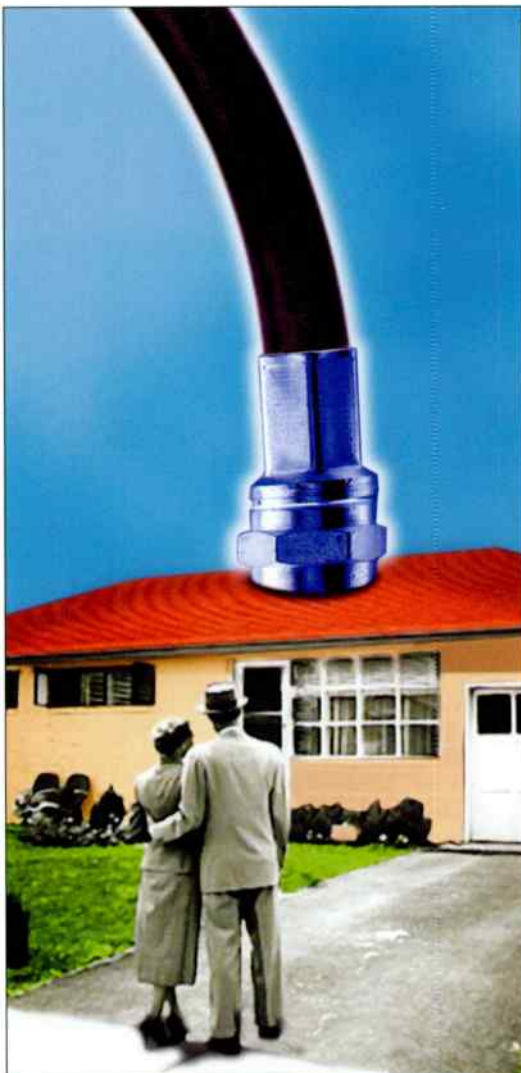
Broadband penetration rates continue to catch fire worldwide, according to the International Telecommunications Union, which estimates that one in every 10 Internet subscribers now gets high-speed data-access service. The ITU says that broadband subscribership rose an astounding 72% in 2002 with DSL-heavy South Korea leading the pack with 21 broadband customers for every 100 people. Not far behind: Hong Kong and Canada. The top broadband connection is DSL with 57% of the world's current hookups, according to the ITU.

QUOTABLE

"Some parents are afraid of letting their children have access to high-speed Internet services. There's some very scary crap out there that parents may not want to bring into their households."

— Gary Arlen,

cable market researcher and President of
Arlen Communications in Bethesda, Md.



Internet, v. 8

A just-launched five-year project that will try to figure out what it would cost to furnish ultra-fast broadband service to almost every U.S. household and business is being funded by a \$7.5-million grant from the National Science Foundation.

The project steered by Carnegie Mellon University (CMU) and titled "100 Megabits to 100 Million Homes" will study the flow of information and its impact when it's delivered at speeds 100 times faster than DSL. It also will look at developing stronger, more flexible networks – first using small prototypes and then determining whether they'd be helpful in building nationwide architectures.

"There has been a misconception that with the success of the Internet [that] all the research into networking architecture has been done," Hui Zhang, a CMU associate professor of computer science and the project's chief investigator, told *The Chronicle of Higher Education*. "But we really need to make the network much more robust and dependable [and at] higher speed."



QUOTABLE

"The health effects of radiation from wireless devices is a real concern. I recently bought a Wi-Fi laptop that has a notice on the bottom not to put the computer within six inches of your body. But the device is meant to sit on your lap, right on your reproductive organs. So, what's the real price of all this wireless convenience if you end up zapping yourself? I have to wonder why there's so little public knowledge about this hazard, and what will happen legally to the promoters of wireless technology when the public wakes up."

— Dr. Diana Gagnon Hawkins,
President of Interactive Associates, an interactive TV
design consultant based in Redwood City, Calif.



A Commanding Display of Candor

Candor took center stage at the recent Electronic Product Code Executive Symposium in Chicago, where several manufacturers said wide acceptance of radio frequency identification tagging – or RFID, the next-generation replacement for bar codes – may be farther out than many would like to believe. Indeed, it may be another five to 10 years before this tiny tracking technology expected to revolutionize supply-chain management and shipping goes mainstream. As Pat Rizotto, the VP of global consumer initiatives at Johnson & Johnson, which is testing RFID tagging at some of its warehouses, told *Computer World*: "We'd find huge savings if all we did was better understand what comes in through the front doors, where it is in the distribution center, and what was shipped out the back door."

Counting Heads, TV Style

The economy may stall and the popularity of reality TV may come and go, but one thing remains constant in an ever-changing world: TV's proliferation doesn't flag. Nielsen Media Research reports that the number of U.S. television households stood at 108.4 million as of Sept. 1 vs. the 2001-02 figure of 105.5 million.

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Leaving Money on the Table

Are operators missing a golden opportunity to deliver commercial services?

I ONCE SAW A \$100 BILL floating across a golf course fairway. Proving that I am not a cable guy, I ran over and picked it up.

A cable guy would've seen that bill and wondered if it was worth the effort to chase it. The cable guy would've asked himself: What if somebody else comes along and wants it worse? What if somebody else claims it and I have to fight over it? And then the cable guy would've let it float away.

I stashed the bill in my shirt.

The cable industry is approaching its commercial customers much as it would approach that \$100 bill: It keeps letting them float away.

Some MSOs — Cablevision Systems Corp., Time Warner and Cox Communications, Inc., in particular — are doing bang-up commercial business. Those efforts, though, are partly tempered, because those companies' commercial units are separate from operations. And so when they approach commercial customers, they're not really cable guys. That's a viable way to approach the issue, but in the long run, the cable industry must commit its whole to the effort.

Cable's commercial opportunity is probably just as attractive — if not more so — as video entertainment. The telephone companies, suffering through an economic nuclear winter, are slowly investing in new ideas like Internet Protocol. But they've retrenched, trying to maintain the status quo. Wireless providers — always a nuisance, never a threat — are breathing new air thanks to Wi-Fi, which, while admittedly not a lucrative commercial opportunity, opens up some chances to feed "hot spot" networks with broadband delivery to coffee shops and bookstores. It's an opportunity cable should consider.

Cable's big broadband pipes sit tantalizingly close to commercial customers. It requires an effort, to be sure, to aim the necessary bandwidth at business services. But the reward could be 10, 20, maybe 50 times greater than a \$50-a-month video entertainment take. If they're not already paying it to a telco provider, commercial customers would pay that just for broadband.

But cable, perhaps sensing a greater threat from satellite's video entertainment offering, is moving about as offensively as the Brits' Gen. William Howe did against George Washington and his Continental Army. And we all know how that ended.

All of that said, here's a true story of how one cable operator approached what seems a plum commercial opportunity. Hopefully, it's not a harbinger of how the cable industry will treat commercial opportunities.

My friend is a big player in the small New Jersey resort county where he lives and works. He's so connected that the road leading to his warehouse bears his name. A home cable modem subscriber, he decided it was time to throw away dial-up Internet access and get broadband connectivity for the warehouse on the road named after him.

So he called Comcast.

Not only was this a missed opportunity, a chance to put high-speed cable in the hands of a local mover and shaker, but it was a humongous public relations faux pas.

"You know where my warehouse is, Jim?" he asked me. I did and do. It's on the road that bears his name.

"And do you know where Comcast has its ...?" he asked, stumbling over what the operator's facility would be called.

"Headend," I filled in helpfully. "Yeah, somewhere down that road."

"Our properties abut," he said. "Our buildings are about 100 yards apart."

The buildings, for reference purposes, aren't on Comcast Boulevard.

"So I called Comcast and said I wanted cable-modem service for the warehouse," he said. "We do a lot of work on the computers, and it was a pain using dial-up. So I figured let's go for it. Do you know how much they wanted to do the hook-up?"

"\$5,000," I said, guessing as wildly as I hit a golf ball.

"Try \$10,000," he said. "To run a wire about 100 yards between two buildings."

Not only was this a missed technology opportunity, a chance to put high-speed cable in the hands of a local mover and shaker, but it was a humongous public relations faux pas. The cable company had just ticked off a major player in the local business community whose word carries a lot of weight.

"Why don't you just get DSL?" I asked.

"Because Verizon doesn't go out there," he said. "Comcast is right next door. They're my neighbors. But I don't want to pay \$10,000."

That's kind of like letting a \$100 bill float away. I'm not sure what my friend would've paid to get connected — he didn't say — but it certainly would've seemed enough to run the wire. And the recurring monthly fee would have been worth Comcast's while to connect him.

It's the kind of offer cable can't afford to ignore. The telcos may be slow, but they're steady. And broadband is so tantalizing that somewhere down the line, my friend and the local phone company will probably link up via a wire that runs farther than just across neighboring properties — an opportunity that could pay off handsomely for the company that seizes it. ■■■



Jim Barthold

is a former senior editor at *Telephony* magazine and technology editor of *CableWorld* magazine who frequently writes about new technology issues. He can be reached at jimbarthold@comcast.net.



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So Where Does Cable's Broadband Service Grow From Here?

WITH DSL CATCHING UP, OPERATORS LOOK AT MORE SPEED, BETTER PACKAGING AND CONTENT BY KEN FREED

WHEN IT COMES DOWN TO WHO'S ZOOMIN' WHO in the race for broadband Internet customers, cable's modems continue to outpace telephone's digital subscriber line (DSL) technology.

But if cable stands a chance maintaining and then solidifying its gains, industry experts agree that operators will have to push the data-access speed issue, as well as bundle Internet services with digital video and other service to reduce churn, introduce tiered pricing schemes based on usage, and offer exclusive content.

"Cable's business model based on high speed and always-on service may play out soon," says Howard Horowitz, the president of the media analysis firm Horowitz Associates based in Larchmont, N.Y.

According to the National Cable & Telecommunications Association (NCTA), cable operators may count from 13 million to 15 million high-speed-access subscribers by the end of 2003 vs. their end-of-2002 figure of 12 million. DSL service providers may serve 7.5 million to 10 million households by the end of 2003 compared to 5.5 million at the end of 2002.

Despite the numbers, though, cable should be looking over its shoulder for several reasons.

Up to now, operators have mostly been exempt from Federal Communications Commission rules requiring that telecommunications companies lease their digital lines to third-party vendors in the best interest of local competition. But if an October decision by the 9th U.S. Circuit Court of Appeals in San Francisco is upheld, cable will be forced to open its digital plant to competing Internet service providers. That includes the large DSL operators - many of whom are Baby Bells like BellSouth, Qwest, SBC Communications and Verizon - that also have been dropping the price of service to \$25 or \$35 a month vs. cable's \$40 to \$60.

Right now, cable modems can claim faster speeds than DSL thanks to its coaxial and fiber lines, which are more advanced than the telcos' twisted pairs of copper wire.

What's more, larger cable operators like Comcast Corp., Adelphia Communications, Inc. and Time Warner are boosting download speeds from 1.5 megabits per second to 3 mbps. But on the same token, many telcos are deploying asynchronous digital subscriber

lines (ADSL) and video subscriber lines (VDSL) that can approach cable-modem speeds.

Cable modems were an easy sell to early adopters who recognized the value of accessing the Web at high speeds, says Paul Kagan, the Chairman/CEO of Kagan Capital Management in Carmel, Calif. "But after creaming off the top of the market, the problem now is reaching the general public."

That said, cable counts a major advantage over other service providers that can't deliver broadband digital video, voice and data over the same platform. In turn, notes Horowitz, "Bundling services is a great way to go."

MSOs that bundle digital video and voice-over-IP service with broadband Internet say consumers stay longer because they like those packages. "They get so used to broadband that it's

hard to imagine living without it," says Char Beales, the president/CEO of the Cable & Telecommunications Association for Marketing (CTAM).

She adds that bundling also reduces churn, because customers are reluctant to pay higher prices for a la carte cable services.

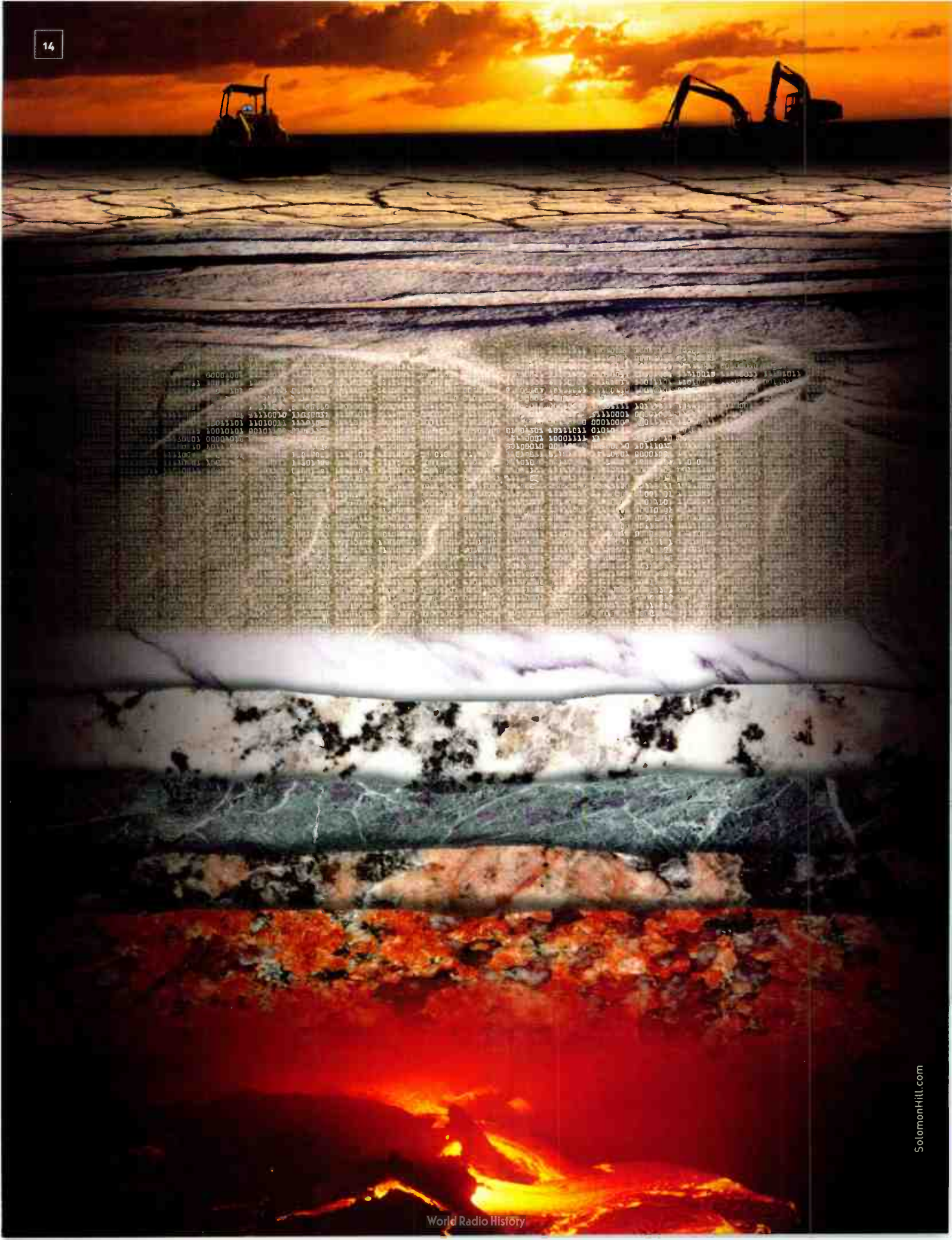
Another competitive option for cable, Kagan says, is establishing tiered price levels tied to different speeds. Dropping, say, to \$25 a month for 1.5-mbps service bests DSL pricing of \$25 for 560-kbps service, he notes.

Horowitz agrees with offering different pricing tiers for different speeds and service bundles, but cautions that "bad money does not drive out good money. One or two heavy users on a node can ruin it for everyone else on that node. So it's important for operators to come up with technology to control usage so that nobody's connection fails. Without that, they don't have a legitimate product for the rest of their customers."

Several cable operators began to phase in usage limits over the last year. Cox Communications, Inc. subscribers, for example, are limited to 2 gigabytes a day, which equals two MPEG movies or about 400 MP3 tunes. Time Warner's Road Runner service caps usage at 40 gigabytes a month. And while Comcast hasn't set a hard cap, it does send letters to the heaviest 1% of its users warning them that violating their subscriber agreements



In the race against DSL, speed, packaging and content might help Cable win the day.



How Billing Can Mine Profits for Your System

THE ONCE-OBSCURE SERVICE IS NOW KEY TO PULLING REVENUE OUT OF CABLE'S NEW SERVICES BY DAVID ILER

LET'S BE HONEST: Cable TV billing systems don't generate a lot of buzz in an industry consumed by dynamic technologies like video-on-demand, personal digital recording, HDTV and 3-megabit-per-second Internet access.

But billing has grown into the engine that elevates and smooths the effort of pulling the revenue out of all those new and evolving services. And as the cable industry moves more broadly into telephony, the importance of billing-system platforms will only continue to rise.

Indeed, as the heart of any back-office platform, billing systems have moved far beyond producing bills for recurring-charge video systems. Leveraging a slew of technologies – including customer relationship management (CRM), eXtensible Markup Language (XML) and Enterprise Application Integration (EAI) – billing systems are being referenced by anxious MSOs eager to deliver voice, video and data services.

In a September presentation at Morgan Stanley's Global Media & Communications Conference, Scott Hatfield, the senior VP/CIO of Cox Communications, Inc., placed a major emphasis on the operator's service-management architecture, a key component of which is its billing system.

As the king of cable's triple play, Cox points to its integrated back office's capabilities as a determinant in figuring out new product sets and launches, boosting productivity and efficiency, and keeping customers in the fold.

That said, the term "billing system" as a standalone application has almost become anachronistic. Today, the core subscriber data in the billing system can be shared across business units, including the marketing and finance departments, the workforce-management system, Web self-care applications, and customer-service rep (CSR) interfaces.

Little wonder, then, that each of the three major billing-system vendors – DST Innovis, Inc., CSG Systems, Inc. and Convergys Corp. – preaches that a tightly woven, integrated platform can be a key tool in delivering triple-play services.

Exhibit A: Cox's success in attracting the bundled voice, video and data subscriber is directly tied to its billing system's sophistication.

Of Cox's 6.5 million-plus customers, some 1.5 million are considered two-product,

bundled subscribers, and 415,000 take all three services. Bundled penetration in Cox's Orange County, Calif., and Omaha, Neb., systems is particularly dramatic, with more than 55% of the two operations' subscribers opting for two or more services. Through 2003's second quarter, Cox added 267,000 bundled customers – a figure that has captured Wall Street's attention and lent credence to converged services' cheerleaders.

"The key for us is to have a single billing platform that enables us to provision, service and bill the customer out of one system," says Roberta Christopher, the executive director of video operational support systems at Cox.

Cox's system – Convergys' ICOMS platform – forms the core back-office architecture where customer data, pricing information, the product catalog, and financial information are stored and accessed.

That platform embraces open application programming interfaces (APIs) to work with and extract information from one data set to another, according to Chris Champion, the

senior director of product and industry marketing at Convergys. The platform also takes that raw data and formats it for databases, such as third-party provisioning systems.

In Convergys' case, that leads to a reliance on XML, the data-formatting technology that more easily supports data portability between applications, while easing backwards compatibility between new and legacy applications and platforms.

XML is also a big part of the CSG platform, which, according to Dwayne Ruffin, the vendor's executive director of product management, includes a feature called Event Trigger. When a change is made in a billing-system record, that change is sent through an XML feed to external applications that reference the file.

To a large degree, the CSG and Convergys platforms are priced on a pay-for-what's-used model, although neither company will disclose specific prices.

The price of Convergys' ICOMS is calculated on a per-subscriber basis, determined by which services subscribers receive – voice, video and/or data. That price can vary from operator to operator based on subscriber and transaction volumes; operating environment, such as license or service bureau; length of contract; and other factors. The base ICOMS platform features 18 modules, including customer service, order management, network-inventory management, rating, billing, and statement presentation, with optional modules such as Web self-care and mediation.

The CSG outsourced billing platform's pricing is done on a per-subscriber, per-month basis for the core billing engine. Features such as a customer-care front-end graphical user interface and self-care applications are priced as options.

Critical to success in today's marketplace is keeping current subscribers from churning out to DBS. The more a cable operator can use accumulated data to gauge a customer's service preferences and buying behavior, and then offer packages to satisfy that subscriber,

is key, according to Ruffin. "The more proven way to reduce churn is to offer more products," he says.

Because the highest churn rates are tied to customers who subscribe to only one service, billing systems with built-in computer-logic capabilities can help CSRs offer subscribers the best service packages when they call.

One example, courtesy of Ruffin: If an operator is seeing high data take rates in a specific Zip code, marketing campaigns filtered through a data-rich billing-system platform can target current and prospective customers with the same demographics using statement messaging, CSR interaction and direct mail.

Significantly, Cox has discovered and then communicated to the investment community that bundled service is a churn-beater.

"We saw churn among customers who take all three [voice, video and data] products reduced by 50%," says Cox spokesman Bobby Amirshahi.

Adds Cox's Christopher: "Our customers tell us through research that they enjoy the ability to choose how they get their services from us. And the bundled bill is just a key component of that," demonstrating the savings customers receive from bundled packages.

For example, a Cox phone or video customer pays \$39.95 for data service instead of \$49.95. Subscribers who take voice, video and data services are offered a free premium video channel – a \$10-per-month value – or 100 free long-distance minutes.

From a pure convenience perspective, a single bill and single point of contact means that the customer subscribing to more than one service is more entrenched with the provider, Champion argues.

Giving a CSR the tools to access key billing-engine data so that he or she can better market customers is another billing-vendor focus.

Through streamlined computer screens and prompts that CSRs can easily reference while pulling up customer files, they can take orders more quickly and reduce talk time, according to Ruffin. Creating a "single view of the customer," as Cox's Christopher puts it, also offers the operator the flexibility to discount across products.

In line with that, customized CSR graphical user interfaces are a big part of a new billing-system architecture developed by DST Innovis, which is planning a 2004 release. Among the issues the system's components whose pricing

the vendor declines to divulge will address: customer care, billing-statement generation, and marketing campaign management.

For example, the screens a CSR calls up on a computer can be configured in line with an operator's preferences to reflect product and service offerings, discounts and promotions.

"Essentially, [CSRs] are presented with a dashboard of information for a customer" to give them upsell and cross-sell capabilities, says Michelle Nowak, the VP of product management at DST Innovis.



The company's new architecture also will be able to project if a customer could churn out based on the number of support or trouble calls he or she has made, the number of complaints registered, the subscriber's disposition, how much he or she spends per month, demographics, and other data – information mined from a data warehouse using a business-intelligence tool.

The architecture that draws heavily on EAI is a set of technologies that nurtures the flow and exchange of data among different applications and business processes within an organization. That architecture, according to Nowak, lets cable operators offer bundled services with creative and complex pricing, including loyalty awards. The info that the architecture gleans and massages is designed to ripple back and forth "from the front office, back office and post office," he notes.

Reiterating the importance of building a common companywide platform, Cox's Christopher notes that the standard CSR interface set lets reps support commercial business customers in regions of the country where there isn't enough commercial business to bankroll a separate support staff. In those areas, the same, familiar CSR interface set is used whether the rep is accessing a residential or commercial customer.

Leveraging the familiar Web-browser interface for subscriber self-care is another essential billing-platform component. To that end, Champion says Convergys' goal is to

let subscribers accessing a Web interface perform 80% of the tasks they would usually call a live agent to perform

Convergys, according to Champion, is working with several clients who use the Web self-care module to identify real-world metrics and cost savings, as well as develop case studies based on a 12- to 18-month usage period. The studies are expected to be released in 2004's first half.

Last May, Cox announced that it had gained the capability to dramatically shift subscriber "contact channels" to its Web site, where visits by current and prospective customers have begun to exceed care-center telephone calls.

In a Web self-care case study conducted in late 2001 with one unidentified North American customer, CSG determined that 30% of the 5.5 million phone calls the operator received were tied to billing. By reducing the number of incoming calls by 21%, CSG found that the operator could save more than \$2.5 million in call-center operations, based on an average cost of \$7 per call. The operator also could save \$2 million in postage costs by offering its customers online bill-payment options.

Another CSG customer that used the vendor's Care Express electronic bill and presentment application found that more than 4% of its total subscriber base opted to electronically receive and pay bills, according to the company. Hand in glove, the operator notched a 20% falloff in outstanding payments and month-to-month collections.

Embracing newer interactive technologies, CSG is working on an interactive TV version of its Web self-care application, while Cox has developed an Internet chat e-care app that it says could shorten average customer handle time by some 23%.

In a brave new world forged by super-competitive players like QBS and the telcos, cable operators must be able to rapidly set up new pricing and discount plans, as well as support new Internet protocol (IP) services, on their networks. Indeed, the day isn't too far off when subscribers will be using personal computers to set up taping schedules on their digital video recorders or access bundled mobile phone and/or Wi-Fi Internet services.

That means billing system providers can't sit on their hands developing platforms to handle that functionality.

David Iler is a Denver-based technology writer who can be reached at editor@denver.net.

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Can Cable

Make Broadband Content Pay?

SPEED IS A KILLER APP, BUT IT MAY TAKE MORE TO SELL INTERNET ACCESS TO DEMANDING CONSUMERS BY DAVID ILER

CAN CONTENT BE A KING IN CABLE BROADBAND?

The value to consumers of always-on, high-speed Internet access is easy to understand: The dial-up alternative is a drag.

But operators are offering more than raw speed to their data subscribers. Most are developing Web portal sites sprinkled with a variety of content, from music to gaming to news. Yet the zillion-dollar question at this point remains: Can broadband content pay?

The short answer is no, not yet, as operators slowly lay the foundation of a subscription-based, premium content future. But based on the success of, say, RealNetworks, Inc.'s broadband subscription services, that future isn't all that far-fetched despite the well-publicized struggles many providers have had selling content on the Internet.

Clearly, discovering the kind of content that broadband users find compelling enough to actually pay for is a challenge. "We're going to have to think far beyond the video stream," says Jody Fennell, the VP/GM for broadband and mobile in The Weather Channel's interactive group.

In other words, no one single type of content or one single business model has unlocked the revenue doors to date. Instead, an array of strategies and partnerships are being crafted to attract high-speed data subscribers to broadband portal sites, entice them to sample content and applications that leverage high-speed connections, and offer incentives for them to subscribe to premium services.

According to Michael Lee, the VP of product management at Rogers Cable, the broadband portal is a "way for us to introduce new services to our subscribers that take advantage of broadband." He adds that the portal eventually becomes an "entry point for music services, or potentially game services, that we provide on a premium pay basis as opposed to a free basis."

Of course, upgrading basic subscribers to premium services isn't a new task for Rogers or any other cable operator. Whether it's online content or traditional premium video services, "We're really in the business of selling intellectual property," Lee says. "We buy wholesale and we sell resale [to subscribers]."

He adds that with high-speed data service, "we essentially see ourselves in the same business again. We're not going to manufacture broadband content. That's not the business we're in."

Cable operators aren't alone in trying to mine revenue from broadband content.

Betting on the viability of premium-service broadband content are heavyweight content aggregators like RealNetworks, Yahoo! and AOL Broadband. Out of the gate, the leader has been RealNetworks, which has sold more than 1 million subscriptions to its paid content services that offer broadband-tailored content.

Agnostic in its choice of broadband delivery, RealNetworks has been aggressively teaming up with cable operators like Comcast Cable, which has created Comcast Arcade, its own branded online game service.

Cablevision Systems Corp. offers its Optimum Online broadband customers a free subscription to RealNetworks' Rhapsody Radio Plus service. Also factored in: enticements to join Rhapsody's all-access premier plan that lets users listen to customized playlists and burn songs onto CDs.

By offering customized, packaged or branded content, cable can differentiate itself from DSL services, and use content to compete on something more than price, which is the telcos' chief weapon, according to Dan Sheeran, the senior VP of marketing at RealNetworks.

But beyond revenue splits from attracting subscribers to RealNetworks' services - the company doesn't release figures - Sheeran says the real reason MSOs should focus on digital music services, PC games and other forms of broadband content "is to establish that role [as a provider of those services] in their customers' minds."

"A Rhapsody digital music subscriber is not going to bother switching to DSL," Sheeran says, because Rhapsody subscribers have invested time and money in building a music library with personalized playlists and preferences on its servers. That customization, he notes, tends to keep customers around.

Cablevision's relationship with Rhapsody is part of a larger strategy "to get really good content at reduced rates for our customers," explains Optimum Online spokeswoman Julie Staska.

In addition to digital music, Cablevision offers a free, three-month subscription to *Grolier's Multimedia Encyclopedia* and a free 30-day trial to *Money.net's* streaming financial market data service. If subscribers eventually buy into the services, Cablevision gets an undisclosed cut.

While music services, games and financial news have been popular content categories on the Internet, Rogers Cable has found that children's fare also can draw subscribers. "Families with young children are a big part of our target audience," Lee says.

Rogers offers its broadband subscribers free content from Disney Blast, and then tries to upsell them to a full-blown multimedia version of the service with music, cartoons and games. New subscribers get their first month free when they sign up for the \$5.95-per-month service.

That monthly fee isn't much to divvy up between Disney and Rogers, which has signed up several thousand subscribers. But Lee says, "I think you'll see prices escalate" as more value is built into services and content developers sink more into making them richer and more compelling.

Essentially, broadband content's development is still in its infancy, he notes. What's more important, Lee adds, "is that we communicate to customers that there are these premium pay services that are much more compelling than what's available for free" and that Rogers is the primary place to get that content.

Cable's programming partners also have been wrestling with the challenges of developing broadband content.



For example, The Weather Channel has devoted a lot of effort to "deliver a service to The Weather Channel viewers that goes above and beyond what the [cable] Weather Channel could deliver," Fennell says.

She notes that broadband users account for about 80% of the visitors to the weather.com site, and those numbers are helping to drive the development of rich content. What's more, broadband content can be more than just offering streaming video of dramatic weather events, according to Fennell.

For example, The Weather Channel has developed a premium, customizable application — Desktop Weather Platinum — that it sells directly to broadband users for \$30 a year. Taking advantage of broadband's always-on capability, the application sends data feeds from The Weather Channel's servers to subscribers' PCs to alert users of storms, updated weather forecasts, and other weather-related events. An elaborate mapping tool also lets users pan or zoom in or out of a map.

Updated radar data is delivered to the PC every five minutes with local and regional video forecasts pushed to the desktop. Users may customize their weather by placing "markers" for their home and/or office locations on maps to gauge how incoming weather will affect them.

The application could theoretically be bundled with a cable operator's high-speed data-service install CD or inserted into the service-activation software download, according to Fennell.

While The Weather Channel provides content information to the broadband portal sites of Comcast, Adelphia Communications Corp. and others, the Desktop Weather Platinum application is a way to move beyond portal

information. It offers opportunities for operators to customize the application for, say, placing map markers on sponsors' locations, such as a music venue or sports arena, and generate revenue from those sponsors.

Relationships that The Weather Channel develops with broadband service providers, says Fennell, would extend the "equity" to

The over-arching message here: Multiple approaches to broadband content are key to revenue generation.

For cable operators, Fennell says "there's really a great opportunity for them to leverage the relationships they have with providers" in a cable video environment and "extend that in the online space."

THE OVER-ARCHING MESSAGE HERE: MULTIPLE APPROACHES TO BROADBAND CONTENT ARE KEY TO REVENUE GENERATION.

providers that the programmer has built as a leading brand on TV and the Internet. While declining to cite dollars-and-cents arrangements that The Weather Channel might forge with operators, Fennell says "we have already established a value to many users of these service providers. Their subscribers are already purchasing our subscription products directly."

Customized, localized applications also can be used as service-retention tools, if they can demonstrate relevance — as an interactive weather app can — to users, Fennell says.

Delivering those features directly to the desktop becomes less expensive than building the same capability into a Web site, according to Fennell.

The Weather Channel has mounted several other broadband initiatives, such as its collaborations with RealNetworks that includes the WeatherPass subscription service — a weather-only version of RealNetworks' SuperPass service — for \$4.95 a month.

Cable broadband services also will benefit quite a bit from the industry's standards-setting efforts — notably DOCSIS. And Lee cites CableLabs' PacketCable multimedia initiative as a technology that will nurture even more enhanced services over broadband. From a technology perspective, that's where cable can differentiate itself even more from DSL and other competitors.

Without going into specifics, Lee says Rogers is in active discussions about broadband services that can take advantage of PacketCable-based real-time multimedia. The first category: sophisticated online games such as multiplayer gaming.

"It's a matter of getting the right product in front of customers so [that] they want to buy it," Lee says. "One thing we understand from cable is that people will pay for content." ■■■

David Iler is a Denver-based technology writer who can be reached at editor@denver.net.

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Using Technology To Sell and Support New Waves of Service

A comprehensive service management framework can nurture all-purpose portals // By Peter Lambert

WHAT DO YOU THINK of transforming an MSO's Web site into an around-the-clock service vending machine? A new-service promotion vehicle? A customer self-help desk?

This high concept is fast evolving from far-fetched to mandatory as pressure to differentiate services mounts.

To meet the challenge, MSOs have begun to act on a significant transformation of business processes, integrating operations support systems (OSS) and initiatives to enable the kind of customer self-service needed to minimize the costs of managing new services.

Along the way, some say, operators also will have to loosen the grip that inflexible, proprietary, costly-to-update billing systems have long held on the back office.

According to operators and OSS vendors, MSOs will inevitably turn to service innovation as the richest source of new-revenue opportunities, perhaps even before broadband-access growth peaks.

At the same time, operators will have to turn to the job of minimizing the time and cost required to bring each service to market in a fully supportable and billable form and at a pace that keeps up with demand.

"We're starting to see the shift from penetration to value-adds," says Veenod Kurup, executive director of data OSS for Cox Communications, Inc.'s cable TV division. "As you approach saturation, and once speed is no longer the defining factor, how do you distinguish yourself? What are the next applications? What can you translate into a business opportunity? It's probably not more than a year to two years away."

Launching new applications won't be enough. Aligning back-office and other processes with each new service will be equally necessary.

"Whatever service is consumed on our network, do we have the capability to detect, monitor and monetize it?" Kurup asks. "I need to know who was on my network doing what, and to understand how to provision that and how you used it, so I can bill you for it. Service fulfillment is the fundamental charge today.

"Then, service assurance will be a real big issue, because in the end, it's going to be about the quality of experience. Those are the capabilities we need to work on."

And fast.

Having earlier reported that U.S. spending for Internet content jumped 23% during 2003's first half from the same year-earlier period, industry researcher In-Stat/MDR forecast in September that worldwide revenue for videostreaming subscription services will grow from 2003's \$991 million to \$4.5 billion in 2007. And that's just one of several service types that could proliferate over broadband Internet Protocol (IP) networks.

In that environment, Kurup says he needs "to be able to manage quite tightly everything that happens on my network. If HBO streams

over IP, do I lose all my revenue? Or is there some other way to capture that? These things are out in the future, but they are things we need to think about."

The opportunities for service innovation are already tantalizing, particularly in IP services, where the customer - not just the premises - is known and can be targeted with personalized offers. Operators have already begun to hang additional price tags on hosted messaging, Web space, backup storage, virus protection, and content filtering. Voice over IP (VoIP) also is racing over the horizon, and IP services built on tiered-quality content and communications aren't far behind.

The nature of IP networks can accelerate innovation like that.

"In the telco world, you often had to go to CPE [customer premises equipment] to activate a service," notes Brion Feinberg, the senior director of product management and marketing for Lemur Networks, Inc., which supplies iFabric, a service-creation and -fulfillment platform. "But in cable, the modem comes alive, and then it gets all its configurations from network servers, and you no longer have to touch the CPE."

He adds: "Provisioning the service is a much easier problem than provisioning the customer premises. With a soft switch, you can give that control to the end-user to actually create a new service."

Indeed, virtually every flavor of IP network server - soft switch, content, application, domain name, messaging, storage, security and authentication servers - fits the remote configuration and activation scenario.

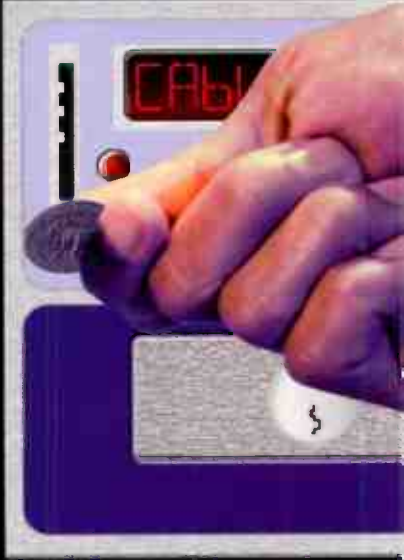
"That translates to an opportunity to introduce a lot more services than before," Feinberg says. "The service provider can shift focus to deciding how to price it and market it up front."

As such personalized services grow in scale, enabling customers to go beyond simple electronic order submission to truly activate and control their own services will become critical to managing costs, as well as to creating customer loyalty.

"The primary benefit is customer empowerment," Kurup says. "If you take it seriously, you're going to make available to them to all the functions that really enable them to control the service."

Exposing back-office controls to customers will require strict admissions and policy enforcement, but the benefits can extend to sales, as well as to customer-care savings. Using Lemur's iFabric framework, for example, Adams Cable Services is already enabling customers in New York and Pennsylvania to order and administer device addresses, domain names, hosting space, e-mail addresses and any of four cable modem services of varying speeds at varied prices.

MSOs like Adams are coming to see the return on investment in rapid service creation and automated support in an opportunity-costs context. That's because much of the return will come in the form of



Atreus says a service provider with 50,000 broadband customers can expect automated provisioning to save \$3.6 million in the first year, and \$6 million by the third year.



new, value-added service opportunity revenues. IDC, Frost & Sullivan, the Yankee Group and other industry analysts peg the aggregate opportunity for unified communications, enterprise, consumer and video/audio services at near \$50 billion by 2008.

Self-service portals provide a single location for each customer to buy, and then to sign on to, all IP services. Portals also open a path to augmenting once-a-month, indiscriminate direct-mail or e-mail promotions with around-the-clock, interactive and targeted promotion and sales efforts.

"You no longer tie new-service sales or changes to limited customer-service hours," Kurup says. "You're now doing business on a 24/7 clock, a significant change that hasn't really been recognized."

"You could really free up a customer to buy a modem and set it up himself after the kids have gone to bed, which may be the only time he's got. There are tools today – FAQs and manuals – that can get him going. But if he has to call the CSR, you're not really achieving a proposition that has very high business value."

If customer empowerment promises an increasingly virtuous circle of spiraling service creation, bundling, and closed sales, then big challenges are hiding beneath the Web page clicks.

Service-innovation business models can be doomed before they start by manual integration of back-office processes – from order-taking, network provisioning, service activation, monitoring and fault management to usage metering, rating and billing issues. Wherever those OSS processes aren't synchronized at a service launch, a cable operator could risk support failures, customer alienation and brand damage.

Consequently, operators must develop some measure of shared OSS processes into which they can plug the requirements of each new service.

"The more you treat a service as unique, the more you put yourself in a hole," says Cox's Kurup. "If we build our back office to take care of all those things needed for any new service, we shouldn't get any surprises. I don't know the particulars of offering an on-demand videoconferencing service yet, but I bet I'll have to build ways to turn it on, monitor it, and make sure what is being consumed shows up against billing records. That's been our approach for four years, and we're slowly building on that."

Cox and other MSOs have adopted this common, automated support-systems framework because the alternative is spending hundreds of thousands – if not millions – of dollars on writing new functions and integrating software code across multiple OSSs for each new service created. It's a scenario that also severely extends time to market.

Pushed by MSOs, telcos and every other IP service provider to enable these capital and operational savings, vendor consensus is building around a similar service introduction framework.

Activation OSS specialists like Atreus Systems, Inc., JacobsRimell, Ltd., Lemur Networks and Liberate Technologies, as well as broad portfolio OSS companies like Telcordia Technologies, Inc. and MetSolv, Inc., seem to agree that this framework can be built upon a library – or directory – of service descriptions and requirements. They can be created or changed centrally, and then automatically propagated across all the network devices and OSSs required to deliver and support each service.

"With iFabric, we've built a service-activation foundation all based on a data model – what data you need to propagate out to the network to make a new service work," notes Lemur's Feinberg. "The system understands what a customer is and what a service is, so now you have a way to model customers, services and interactions between networks and services."

Thanks to this repeatable modeling, he notes, "the real savings appear when you launch your second and third service from this same, common platform."

Similarly, Atreus Systems' xAuthority service-creation and -fulfillment platform is built on a single repository for automated dissemination of all service requirements and attributes outward to the network and business-process applications.

Because IP runs above and independently of cable modem or DSL networks, MSOs can learn from others' experience. That includes telcos like Atreus' customer, Aliant, Inc., Canada's third-largest phone company that's an aggressive player in DSL, interactive digital TV, and enhanced IP services.

Since early 2002, Aliant has used Web hosting, PC backup, virus prevention and other value-added IP services to capture a substantial SMB market share with what Aliant believes are "sticky," value-added services too complex and costly for the average SMB to manage in-house.

Multiplying those services rapidly and cheaply has become a key to Aliant's market strategy. The company will leverage the same rapid service launch and management framework to build enhanced services around a VoIP launch planned for mid-2004.

"You can't have an OSS for every service, so you need an integrated approach. Just the volume requires it," explains Dave Grebenc, Aliant's director of small/medium businesses and advanced business services. "You can't manage that kind of growth through manual intervention all the time."

Upsell revenues can become more than incremental in the small/medium business market, because any one SMB customer can amount to dozens of individual service subscriptions. As TeleChoice reports that Aliant has used interactive digital TV, video-on-demand and Web multimedia to boost its average monthly incremental revenue per residential customer by \$53 (Canadian)/U.S.\$40.28, Atreus says that \$500-per-month broadband access revenue per business customer can nose over \$1,000 among subscribers taking combinations of virtual private network (VPN), firewall, messaging, collaboration and other IP-based services.

On the savings side, an Atreus business case study found an average \$165 savings per 50-user business customer per new service, and \$17 in order-processing savings per business user account, whether for



a new order or an add-move-or-change order. Atreus claims it can reduce administrative time setting up a customer by 70%; technical and configuration time by 25%; and escalations from self-service by 50%. Over a three-year period, the company says it has demonstrated a 55% reduction in operational expenses, while a service provider with 50,000 broadband customers can expect automated provisioning to save \$3.6 million in the first year, and \$6 million by the third year.

Taking combined operational savings and newly enabled revenues into account, Atreus claims the initial investment in its xAuthority platform can be covered in 15 months by a provider serving 10,000 businesses – with three-year ROI of 192% – or in nine months by a provider serving 50,000 businesses, with a three-year ROI of 279%.

Similar analysis by Lemur Networks finds a payback period of less than one year, with first-, second- and third-year ROI of 115%, 194% and 270%, respectively. Depending on customer size, iFabric deployment and integration can cost from tens to hundreds of thousands of dollars, although the larger the customer, the greater the new revenue potential, according to the company.

"If you include the quicker-to-market impacts – getting to revenue five to 15 months faster – the system will almost always pay back with the first additional service," Feinberg says.

He adds that payback can come from one service alone if the activation processes automated by iFabric are particularly complex.

With savings and new revenues like these in mind, Cox also is steering toward a single service-management framework.

"Our digital telephone service, while not IP, uses the same back office we use for IP, at least for provisioning," Kurup says. "Voice was the first thing we did four years ago, then added IP. In VoIP, we'll completely leverage this IP operations space."

Again, by building a common set of processes and OSSs for all categories of circuit, IP and video services, Cox expects to avoid the multi-million-dollar costs of building a separate back office for each category of telephony, IP and video services.

While Cox is sold on developing this framework, Kurup sees a big impediment for most MSOs and vendors like Lemur and Liberate, which is his service-fulfillment software supplier.

Over time, MSO billing systems – the current home for service descriptions – have branched out to handle a lot of customer-care and other functions.

"They are the 600-pound gorilla dominating your back office," Kurup explains. "As you push out more capabilities to customers, how do new systems operate with those gorillas, which are not built with robust APIs [application program interfaces], and so are not easy to integrate with?"

The Lemur iFabric system interfaces with the billing system and key information there. And the information model can act as a proxy for that key info for use by the provisioning and service-management systems or even a third-party management system.

Consequently, "Once we have built a connector to a system for one service, iFabric can reuse those interfaces with very small changes for new services," Feinberg says. "In fact, in many circumstances, the existing connector and data model will handle new services, requiring no changes to the billing system interfaces."

Still, Cox's Kurup says he'd like to see momentum toward billing, order management and other functions become "more standalone, all pulled out with a common API environment. I think that has to happen."

Otherwise, he says, operators will continue to spend tens of thousands of dollars writing new business processes into the billing system's core software code to execute a raft of order-management, activation, rating and billing processes required by each new service.

By migrating, instead, to standalone OSS components, the MSO back office begins to look more like a plug-and-play home-entertainment system, where instead of rebuilding the guts of an everything-to-everybody box, the provider can add a new DVD recorder or frequency equalizer and worry only about building an interface – or reusing a common interface – to the audio amplifier or video monitor.

Until this deconstruction of the MSO back office occurs, Kurup believes the directories proposed by Lemur, Liberate and others may be relegated to managing service catalogs external to the tough-to-integrate-with billing system. That means they'll have limited power to direct other OSSs.

In the meantime, he says, the primary new service challenges will be tied less to technology than to "putting all the people and processes in marketing and customer care and the rest in place, and that's not measured in weeks. All we have to do is stay ahead of where the rest of the company is." ■■■

Peter Lambert (plambert10@comcast.net) has covered cable, Internet, network computing and telecom issues for 17 years at CableWorld, Broadcasting & Cable, Interactive Week, Multichannel News, tele.com and Xchange, among other publications.

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Onward, to the Future

OSS IS NO LONGER AN AFTERTHOUGHT IN THE MAD DASH TO DELIVER NEW SERVICES // BY JUSTIN J. JUNKUS

AS THE CABLE INDUSTRY MOVES MORE DEEPLY into the triple-play service field of voice, video and data, operations support systems (OSS) – the nerve center that keeps networks running smoothly – are no longer an afterthought.

Indeed, OSS going forward will no longer be a set of separate equipment-monitoring and customer-information systems, but a unified network. Just as cable plants have evolved over the last years, OSS is being transformed from a conduit of one-way information flow to a two-way, interactive channel. New design philosophies are giving subscribers the capability to create services unique to their needs, and operators the wherewithal to generate new revenue streams.

To nurture those capabilities, evolving formal and de facto standards are providing interworking definitions of business processes, information models, and interface specifications. Real-world implementations are beginning to appear as vendors scramble to meet cable operators' needs.

The first operations support consisted of proprietary systems created by telecommunications vendors in the 1960s to monitor their own communications network equipment. They looked at what's known today as individual

network elements such as T-1 data circuits for relatively simple fault conditions that could trigger an alarm, a switch to a spare module, or both. In the 1970s, amplifier vendors began to deliver similar capabilities to the cable TV industry, although it was a tough sell in a one-way environment in which non-critical video entertainment was the main product.

As competition began to ramp up in the telecommunications industry, continuity of service grew in importance, and more vendors began to fold monitoring capability into their

products. Service providers also began to co-locate individual monitoring stations in one location, which came to be called a Network Operations Center (NOC).

In the meantime, service providers also were automating order-entry and customer-service processes. As they were for equipment monitoring, the systems and staff were often aggregated in centralized customer-service centers. Information from these business processes was used to provision network elements, but the linkage between the two was mostly paper-based until the late 1990s.

In 1996, the International Telecommunications Union published the telecommunications management network (TMN) layered architecture model, one of the first standards to highlight the need to link business functions and network elements among five functional layers. The bottom three layers – element, element management and network management – are hardware-oriented. The top two layers – business management and service management – are process and strategy-oriented. Although the term "OSS" commonly includes interworking subsystems that bridge all five layers, some literature still reserves that designation for the bottom three layers only, and refers to the top two layers as business support systems (BSS).

In an attempt to clarify process flows, the Telemanagement Forum later refined the TMN model by creating the SMART TMN Telecom Operations Map. This part of the model breaks down business processes into those supporting the separate tasks of fulfillment, assurance and billing.

The cable telecommunications industry used the ITU work on TMN as the foundation for PacketCable Specification PKT-TR-OSSI-V02-991201, which positioned the two previous models and associated processes as guidelines leading to new services and multi-vendor interoperability.

TMN and the SMART TMN map laid the groundwork for a new set of applications that hinge on closely linking customers, billing and hardware. In the data arena, for example, DOCSIS 1.1 delivers service-level agreements down to the individual customer level, allowing operators to market and charge for levels of data bandwidth. Linking BSS and OSS in real time theoretically allows a customer to not



only order specific guaranteed throughputs, but to change the guarantee via a Web connection, and be billed accordingly.

As services converge, the linkage between subsystems within the OSS becomes even more important. For example, click-to-buy video shopping or walled-garden TV Internet services will involve multiple network elements such as CMTS, the set-top box and a multimedia terminal adapter. To make these applications work, the subsystems that monitor and control each network element must have a common view of the managed services' subscriber profile.

XML, the prevailing standard for defining data within a database, provides an initial solution to linking individual OSS databases. Similar to the HTML language that defines a Web page, XML requires programmers to specify data in a hierarchical manner. For example, a customer address would be stored within the context of country, state, county, street and street number. Given that structure, programs called applications program interfaces (APIs) can request specific data from applications outside the system that require the data. Scalability can become a problem with architectures based on APIs, however, because they must be changed whenever new services require additional touchpoints.

Enter new generation operations systems and software standard (NGOSS). Like the SMART TMN operations map, NGOSS includes a business-process model. It also goes on to specify a shared-information and data model,

AN OVERRIDING GOAL OF NGOSS IS TO SOLVE THE PROBLEM OF LEGACY SYSTEMS INTERFACING WITH FAST-CHANGING APPLICATIONS AND TECHNOLOGIES.

as well as a technology-neutral architecture to facilitate interoperability.

As B.J. Taylor, the editor of the NGOSS business-case specification, notes: "An overriding goal of NGOSS is to solve the problem of legacy systems interfacing with fast-changing applications and technologies. APIs are not the solution, because they are specific to one system and one application. With each new service touching multiple systems, without standard interfaces and a plug-and-play mode of operation, communications carriers would be locked out of new business opportunities."

Vendor adherence to NGOSS is only slowly emerging. Although 25 companies displayed a commitment by contributing to the initial requirements description, it will take time to modify products and systems already in the field.

In the meantime, vendors are offering workarounds. Alopa Networks, for example, offers a solution in the form of "adapters" that let operators modify their own APIs. Lemur Networks, which has developed an object-oriented OSS technology based on the NGOSS model, acknowledges the difficulty of changing an entire industry.

"Two-way billing systems interfaces over a messaging bus required for instant activation of customer service are particularly challenging," explains Apollo Guy, the business development director at Lemur Networks.

Systems operators are rapidly acknowledging OSS integration's business value for monitoring and introducing new services.

Sergio Gambro, the director of OSS strategy and architecture at Advance/Newhouse Communications, echoes the view of many cable operators: "It is no good to just offer a service. You need to be able to both understand how the service performs, and give your customer the ability to turn on the service. If subscribers can't do what they want, they will leave."

As for NGOSS implementation, Gambro notes the practical limitation: "We'd love to have one way to manage all the systems, but the solutions are not yet there. In the meantime, we have to meet our customers' needs with what we now have." ■

Justin J. Junkus is president of KnowledgeLink, Inc., an independent consulting firm. He can be reached at jjunkus@knowledgelinkinc.com.

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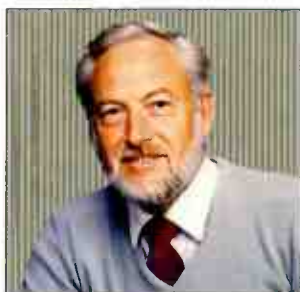
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Industry in Motion

Cable must drive home the message that it is a medium of unlimited promise

CABLE CERTAINLY isn't the industry it was a decade ago.

The pictures, analog and digital, are better. Almost every system, no matter the size, can deliver digital video, high-speed modem and telephony services. Companies are rallying through some of the toughest economic times in history as small, medium and independent cable companies upgrade to deliver enhanced services.



Rex Porter

has spent 40 years in the cable TV industry as an engineer and cable system builder, among other duties. An NCTA Cable Pioneer, he can be reached at tvrex@cox.net.

But while technology has nurtured some wonderful advances, I worry that system operation isn't keeping up with that technology. What's more, competition is growing as the Baby Bells, for example, use some recent wins in the regulatory arena to step up their efforts to deliver bundled services to subscribers. On that front, some suppliers who have always promoted cable TV have forged alliances to help these "babies" do battle with cable.

Elsewhere, cable's engineering departments are adding new computer techs at a time when the industry needs fresh talent. Cable, however, also continues to need older technicians and engineers with a wide range of talent. No matter how complicated the technology becomes, it will always be based on engineering's fundamentals,

and the industry will always need people who understand how cable should be handled in an aerial plant, as well as underground. If someone doesn't understand how a cable system is built, then he or she won't understand the importance of slack in a strand or why less-complicated testing in the network is needed to prove that the system itself is basically sound.

What, for example, happens when storms tear down half of a cable TV system as they have done in the last year and will continue to do going forward? Should an outside construction company be called in to do the repairs? That can be expensive. The Society of Cable Telecommunications

Engineers' list is a great resource with lots of answers to knotty questions. But the cable industry can't afford to lose its seasoned people. Operators can't cut costs and then expect the seasoned people they've let go to hang around just to answer questions posed by the people who replaced them.

On the competition front, cable must continue to find ways to fight back, tapping its strengths and capability to deliver the kinds of products and services that subscribers demand. Indeed, it wasn't the cable TV industry that sold satellite dishes back in the 1970s and 1980s by lying to the American people. Don't remember that? Well, let me refresh your memories.

Satellite dish salespeople assured the public that they would always have unlimited unscrambled pictures if they bought a certain dish. Most of those salespeople made a killing at the public's expense, and then fled the U.S. I don't know of one customer who ever got back his or her money when satellite began to scramble its signals. Now, every time I see an ad for DBS service, I'm reminded of scoundrels with a dish full of lies.

Cable may have service problems from time to time, but at least customers aren't asked to call a toll-free telephone number that's answered in India. If the DBS industry only touts its capability to deliver 500 channels, then perhaps cable should go out of its way to point up how stupid those sales pitches really are. However, don't do it with an inane commercial that shows two satellites crashing into each other. Even the most naive viewer knows that things like that don't happen.

Why not, say, produce a commercial showing some poor slob clicking through 500 channels in an effort to find something worth watching, and then have his thumb fall off in the living room? That couldn't be any more stupid than any of DBS's other sales pitches, would it? ■



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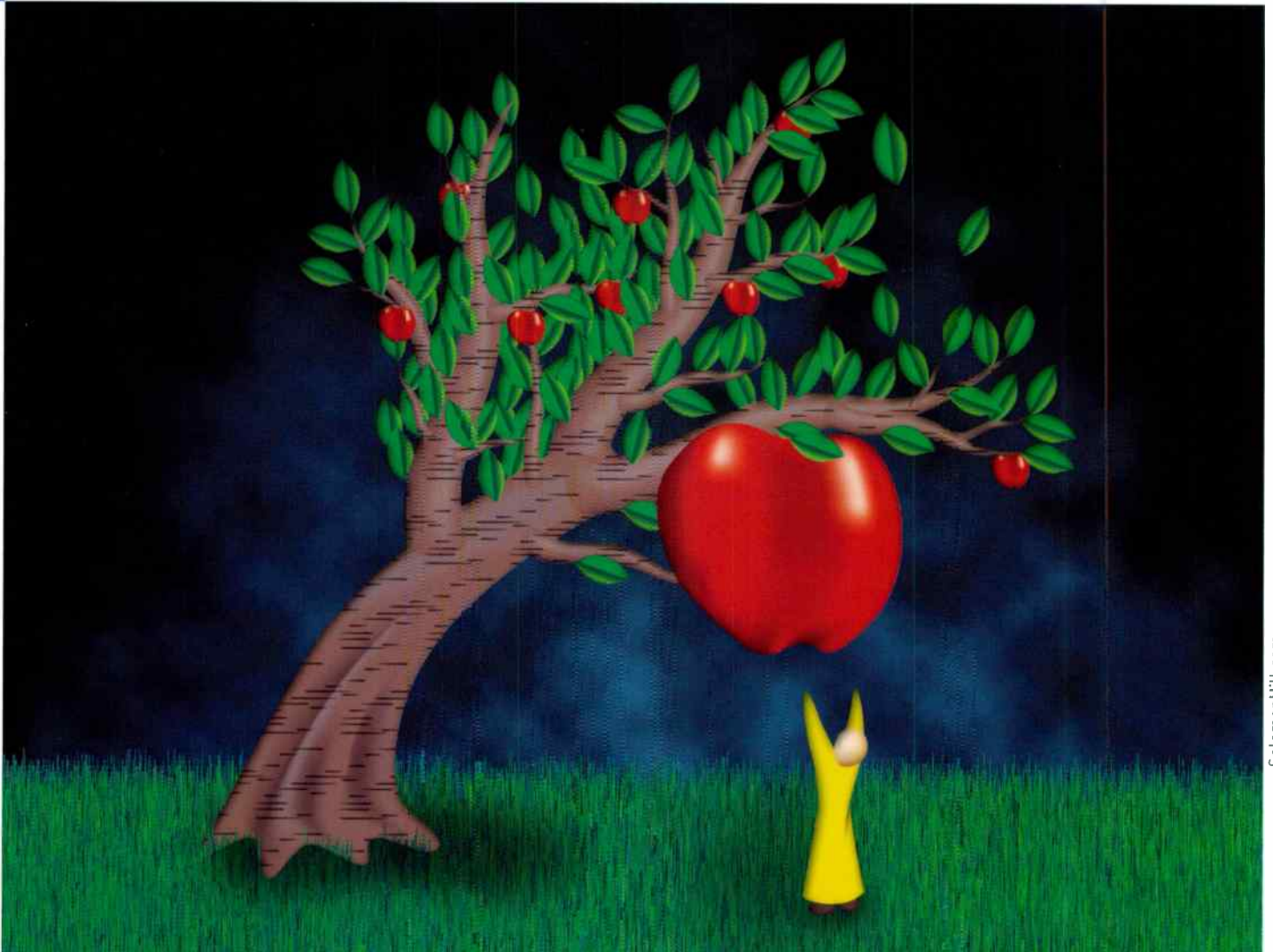
The annual registration fee of \$7,000 provides participation by two vendor executives at the February Forum and one other to be scheduled during 2004.

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Who's Your MVC (Most Valuable Customer)?

Thanks to technology, it's getting easier to figure out who's worth wooing // By Joanne Kelley

SOME CUSTOMERS ARE WORTH WOOLING harder than others. The trick is, knowing who they are – or making informed guesses about which ones they might be.

For years, cash-strapped cable operators were bent mainly on grabbing an ever-bigger share of their respective markets. They didn't pay much attention to who their subscribers were.

But the cable industry now faces what industry types like to call a "saturation" point. In other words, in areas where cable TV is available, an estimated 80% of households already subscribe to it – or they get a rival service such as direct broadcast satellite.

To keep growing, operators need to persuade current customers to spend more. So, they've begun to evaluate some of the more sophisticated approaches to what's known as customer relationship management, or CRM for short.

And that represents a dramatic change in their thinking.

"Cable companies have historically thought of the customer as a house," says Joseph Williams, the chief technology strategist for Sun Microsystems, Inc.'s software services division. "They don't know who sits inside that house, and they haven't cared."

At its most scientific, CRM strategies involve the use of predictive modeling techniques to figure out, say, which customers are most likely to spend more money than they already are. Comcast Corp. and Cox Communications, Inc. are among the cable operators that have started exploring ways that technology can help them differentiate among customers, and adjust marketing and other strategies accordingly, industry sources say.

Keeping close tabs on customer behavior

has been a long-standing practice among consumer marketing giants such as Procter & Gamble and luxury carmakers such as Mercedes-Benz. Harrah's Entertainment, Inc., which operates dozens of casinos, transformed itself into a technology-driven marketing company when it launched a nationwide system that has given it the wherewithal to cater to its potentially most lucrative customers, rather than throwing money at anyone who happens to walk through the door.

In the cable TV world, that sense of needing to know the market is just beginning to surface.

"We're really in a saturated video market," says Bruce Leichtman of the Leichtman Research Group (LRG) in Durham, N.H. "It's a very different industry than it was five years ago. The business was growing by itself. You really didn't have to be that sophisticated."

Competition has played a role, too, now that consumers typically have a choice between a cable TV operator and another broadband service provider like DBS.

And as the market matures, new revenues need to come increasingly from existing customers. According to LRG, mean spending on digital cable stands at \$58.60 a month per household, while mean spending on analog cable comes in at \$41.73 a month.

Sun's Williams predicts that Comcast, the dominant player, will take the lead in deploying CRM technology to delve into customer behavior and preferences. "Comcast is the most forward looking," he says. "Whatever Comcast does, they'll pretty much all do to some extent."

Leichtman says Cox's marketing executives have also talked about using the technology to distinguish among its various groups of customers.

On the upside, cable operators have lots of data to work with as they try to paint a picture of their customers. And they can use the data "to identify who is potentially profitable, what's important to them, when they're likely to leave," says Nelle Schantz, a CRM global strategist at the SAS Institute, which sells software that allows companies to segment their customers into groups, and "model" how they might behave if targeted in certain ways.

The challenge, however, is that "cable companies have data in a lot of different pockets," Schantz says. They need to pull it all together to get what marketing types like to call a "360-degree view of the customer." Only then, can operators start to slice and dice it and uncover patterns and generate leads about who might be willing to spend more money on certain products or who might be thinking about canceling their service and signing on with a competitor.

Some customers are more likely to respond to a sales pitch if they're contacted at a certain time – say, Tuesday morning – so companies need to keep track of lots of details and make them available across various departments.

Deploying CRM software isn't a sure thing. Companies need some sort of over-arching strategy and goals so that employees actually avail themselves of all the technology tools and customer information. Experts say that companies tend to fail at CRM if they haven't established an incentive system, and made the strategy part of the corporate culture. Setting goals and measuring progress are also key to a strategy's success.

A 2003 survey conducted by the consulting firm BearingPoint showed that 82% of respondents thought that CRM projects were

"THE CHALLENGE IS THAT CABLE COMPANIES HAVE DATA IN A LOT OF DIFFERENT POCKETS. THEY NEED TO PULL IT ALL TOGETHER TO GET A 360-DEGREE VIEW OF THE CUSTOMER."

— NELLE SCHANTZ

important, but it also showed that only 37% of the 167 companies surveyed thought they were getting enough of a return on their investment. The firm attributed that in part to the lack of clear goals on the part of those who were using CRM software in their businesses.

Schantz says financial services companies, which also heavily market to consumers, have been early adopters of CRM technologies. In the telecom sector, long-distance and wireless carriers face heavier competition than cable operators, and have long recognized the benefits of understanding their customers better. Schantz likens telecom to financial services in that competitors tend to offer similar products. So there isn't a lot of differentiation from the consumer's standpoint.

But knowing the target market can mean big cost savings.

Morgan Stanley, an SAS customer, recently used a predictive model to pick the right audience for an IRA rollover campaign. Rather than mail a marketing piece to its entire customer base as it had done in the past, the firm targeted a much smaller group. Even though it cost far less than initially expected, the campaign resulted in a 40% increase in the number of accounts opened compared to the number of accounts opened following a much bigger campaign in the previous year.

Determining the so-called "lifetime value" of customers and running profitable campaigns to acquire customers is one of the most effective ways to use technology in marketing.

"You don't want to start advertising to everyone," says Kevin Grieve, a partner with DiamondCluster International, Inc., a Chicago-based consulting firm.

Grieve, who refers to the strategy as "customer value management," says cable companies must analyze their data so that they're marketing to the people who spend the most money, and not focusing on the "churners" who jump ship every time a cheaper deal comes along.

Lots of profit is lost when companies conduct mass advertising campaigns to attract new

customers at low prices. What typically happens is that they blanket the market, and existing customers see the deal and decide to switch to the lower-priced plan, figuring they can get the same service for less money. A carefully targeted customer-acquisition campaign would let cable operators avoid marketing to current subscribers. Grieve notes that any of these campaigns must be tested on small numbers of customers before they're rolled out.

A caveat: The investment involved in big CRM strategies can be steep. And, as several studies have shown, CRM projects don't always deliver as promised.

And that's why many cable companies have focused their efforts on streamlining contact with customers. That means automating billing or shifting some customers to self-service options online. SupportSoft, based in Redwood City, Calif., offers software that automates customer service and which, in some cases — can help drive down the cost of customer service interaction by half.

SupportSoft says most large cable operators are using its products to move more technical support- and customer-service-related tasks online, which, in turn, is reducing the volume of customer-service telephone calls.

"Broadband service providers are under intense pressure to cut operational costs. Reducing their customer-support burden is an important way to realize immediate and long-term savings," says David Hawley, a senior analyst at the Yankee Group. "Operational costs are only one half of the equation, though."

That means being more creative about finding new revenue sources.

"In the beginning, the whole game was about getting market share, and it was the right thing to do," DiamondCluster's Grieve says. "Now that the industry's mature, we're saying you've got to address this." ■■■

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Trying Times

The tough issues facing small operators run from A(ccess) to Z(ettabytes)

IT'S NOT EASY BEING A CABLE OPERATOR these days, especially if you serve only a few thousand subscribers. Rising costs, financing, program access, rampant competition and piracy are constant reminders of how business models have changed since most small to medium-sized operators got into the business.

In a recent study, "The Telecom Future of Independent Cable," from The Carmel Group, more than 1,000 members of the American Cable Association (ACA) were asked about their concerns and opportunities, the risks they tackle every day, the future of their business, and "their ability to compete in a highly competitive market."

The results are eye opening and, hopefully, a call to action.

ACA members, who account for 60% of the nation's 10,000-plus cable systems, say they're most concerned about access issues. That is, access to programming, advanced services, new revenue sources, and funding. How strongly connected they are in those areas determines how successfully they can access the most important measure of their business: consumers.

Far and away the greatest concern for these operators who, on average, serve some 8,000 companywide subscribers, is access to programming. There, the challenges include rising costs, as well as programmers who impose carriage of ancillary networks as a condition for access to their most popular fare. Case in point: Disney's tying carriage of ESPN2 to its core ESPN service. There's also carriage of programming tied to retransmission consent of local channels, which are often owned or controlled by the same programmer, such as ABC, CBS, NBC or Fox. What particularly hurts smaller systems is that

often-confidential programming agreements with cable operators make them pay for and then carry networks that subscribers may not really want. Those viewers, in turn, often accuse the operator of gouging them when, in fact, the local cable system – often with a gun to its head – is only the middleman between the programmer and audience.

Then there's access to advanced services, including digital cable, high-speed Internet service, HDTV, video-on-demand (VOD) and subscription VOD (SVOD). They're key to not only staying competitive with other multichannel-service providers, including DBS, but keeping consumers, particularly in rural America, from falling into the so-called "digital divide" of the have-nots. ACA members, whose individual systems serve an average of 1,000 subscribers, argue that rising operating costs – much of them tied to supposedly greedy programmers – and falling profit margins slim the chances of rolling out new services. That, in turn, could drain off new and prospective subscribers.

Another upshot: An inability to roll out new services in the ongoing effort to reduce subscriber churn and boost average-revenue-per-unit (ARPU) numbers could conceivably slim the ranks of small to medium-sized operators through system shutdowns, bankruptcies or forced sales.

Smaller operators also complain that they encounter more difficulties than their larger brethren when they seek access to capital, which, in turn, stunts system upgrades and new-service deployments. Indeed, 36% of the study's ACA respondents said they haven't invested anything to upgrade to digital, while 35% have spent up to \$250,000. Only 10% have spent from \$250,000 to \$750,000, while another 10% have spent more than \$1 million.

All of this leads to the zillion-dollar question: How do ACA members address these issues? The responses aren't surprising, including loosening the monopolistic power of the so-called "programming cartels"; winning the power to buy programming on an a la carte basis or placing it on specialized tiers; and easing access to funding and financing through, for example, trade association combines that have more bargaining power.

Those solutions would, ideally, give smaller cable operators more leverage in acquiring the best content at reasonable prices, rolling out advanced services, stepping up their marketing and distribution efforts, boosting customer service, improving pricing, and building their management teams.

After all, that's really what the multichannel industry is all about. ■

The 34-page "The Telecom Future of Independent Cable" study can be accessed at The Carmel Group's Web site carmelgroup.com or the ACA's site at americancable.org



Jimmy Schaeffler is a subscription TV analyst at The Carmel Group, a consultancy and publisher of multichannel industry studies, databooks and monthly newsletters based in Carmel-by-the-Sea, Calif. He can be reached at jimmy@carmelgroup.com or (831) 643-2222.



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The Selfish Subscriber

In an automated, do-it-yourself age, cable lets the software dish up a lot more of it // By Stewart Schley

ORDER A VALUE MEAL at your neighborhood McDonald's, and instead of a bubbly soft drink, you get an empty cup with instructions to fill the thing up yourself.

Pull into any suburban gas station and it's up to you to not only pump the fuel, but manage the credit-card transaction, as well.

Need cash? The ATM machine complies as long as you push the right buttons and have money in the bank.

Even supermarkets are getting into the game by funneling shoppers through self-checkout kiosks that speed-read bar codes, talk wary patrons through the process, and even honor two-for-one coupons.

Self-Service America is up and running, powered by technologies and intelligent systems that push the costs of transactions away from expensive labor and toward cheaper, do-it-yourself solutions. Oddly enough, in many

cases it's exactly what customers seem to prefer.

Since introducing self-scan checkout two years ago, home-improvement giant Home Depot says more than 10 million shoppers have taken the automated way out of the store. ATM transactions have nearly doubled in the last decade to some 14 billion a year. And when that sinister MSBlast computer worm dug in last summer, hundreds of thousands of personal computer users downloaded the patches and fixes they needed to nurse their compromised systems back to health.

Lately, cable TV has gotten the message. Operators increasingly are figuring out ways to offload some of the responsibility for customer satisfaction back to the customer. The driving force isn't just wringing another percentage point of margin on a monthly bill - although that's surely welcome - but merely keeping up with the way of the world.

For one thing, MSOs and automation-service providers say customer-support demands have swelled exponentially as cable's mix of digital services has expanded in measure and complexity. Analog-age metrics of one customer service rep (CSR) for every 2,000 cable subscribers were fine in their day.

But high-speed Internet service, alone, has forced cable operators to reckon with a whole new service ethic. MSO service experts say a typical phone call from a high-speed Internet customer lasts seven minutes vs. less than two minutes for a customer calling about video service.

What's more, Internet customers are a needy bunch. Almost 70% call at least once a year for some type of help. Some 40% of those subscribers call more than once to fix the same problem. And 20% of the calls escalate to relatively expensive tier two service departments.

Then there's the cultural factor: A new generation of consumers has been cultivated by machines that do everything from dispensing cappuccino to roaming the Internet for marriage partners. Cable's simply fitting itself into an expectation for immediacy and do-it-yourself service that has been in the making since a pair of enterprising Californians created the first self-serve gas stations in the 1940s.

Notably, nearly half of the 550 broadband Internet users replying to a May, 2003, telephone survey said they'd prefer to use online chat, e-mail or their broadband provider's Web site to get technical support. A thin majority – 52% – prefer the old-fashioned phone call to tech support.

Cable industry executives don't like to characterize new automated service tools as inexpensive fill-ins for live, human support. What they do like to point out are the ways automated software tools help minimize the strain on live support crews. For every cable-Internet customer who turns to a Web site or a PC client diagnostic tool to solve a problem, there's one less call tying up a live customer-care representative.

"It's not as though you're putting the burden of support on the customer," says Tom Buttermore, the VP of data engineering and operations at Adelphia Communications, Inc. "The more important piece is satisfaction with the product. We're in a dog fight with DSL, and we want to make sure that when our customers call us, they can get through to us."

It's more than coincidental that cable customer self-service activity has grown up alongside the high-speed Internet category.

Not only do cable's Internet customers demand more attention, but in a sweet dose of symmetry, they're armed with modern interactive computers that lend themselves to automated provisioning.

Today, thanks to automated service software, a cable subscriber can set up modem service in blissful ignorance of an entire range of provisioning requirements that once required an hour or more of technician tinkering.

"In the early days, a guy would show up with a screwdriver," says Marc Itzkowitz, the director of marketing/broadband and mobile solutions at SupportSoft, a fast-growing supplier of broadband service and support automation software. "Then you'd call and give your billing information, and two weeks later you'd be provisioned."

Today, the same routine happens within minutes. DOCSIS-compliant cable modems are pre-loaded with media access control IDs

% WHO HAVE SOUGHT HELP VIA		
PROBLEM/ISSUE	PHONE	ONLINE
No Internet access	66%	17%
Can't send/receive e-mail	26%	23%
Password problems	10%	17%
Slow Internet connection	17%	18%
Connection drops repeatedly	15%	11%

Source: Zanthus, from May, 2003, survey of 550 U.S. broadband Internet subscribers

that eliminate manual set-up procedures. After a modem is attached to the network, it engages in a "ranging" ritual with the head-end-based cable modem termination system; requests and receives an IP address; and imparts identifying information through the network.

Sensing a newcomer to the flock, the network directs the modem to a Web page that asks the subscriber for an account ID. Upon authentication, the PC downloads an automated support client that roams the computer's innards, configuring mail clients, registry settings and the general connected state of the computer. With the help of automation software, a new high-speed Internet subscriber is born.

After assisting with installation, support automation software helps guard against the type of network failures most likely to spawn trouble calls in the first place. A nationwide survey commissioned by SupportSoft notes that five problems account for a huge majority of technical support calls. (Not surprisingly, the absence of Internet access altogether tops the list; SEE CHART ABOVE.)

Downloaded client software is designed to reduce would-be trouble calls by silently probing for potential problems before they occur. An adventurous teenager who pops a free America Online CD into mom's PC, for example, could unwittingly unravel the computer's prior IP stack settings. Cable's new automation software can restore the correct settings – and the IP connection – without a telephone agent walking a customer through the often-aggravating search-and-repair process. Even if a connection is lost, desktop agents can still help root out the problem's cause, and the suggest fixes.

Automated service and support providers also arm cable and DSL providers with exploratory tools that, even in the event of phone calls to technical support, provide customers in advance with the diagnostic information that can turn what could be a

15-minute phone call into a two-minute fix. Depending on the subscriber's willingness, CSRs can even assume mouse control on a remote machine to correctly set up delicate registry and configuration settings.

SupportSoft's Itzkowitz says part of the appeal of automation software is its ability to solve problems quickly, lessening the likelihood of a subscriber defecting out of sheer frustration.

From a cable operator's standpoint, automation software also helps mitigate the effects of a revolving-door employee pool. It's not uncommon for 60% or more of a cable company's service support staff to turn over in a year. That's one reason why cable operators are encouraging high-speed Internet customers to turn to branded support Web sites to seek answers to problems.

Another is economic. A 2002 Gartner, Inc. study estimated that 40% of the 150,000 monthly visitors to BellSouth's DSL-support Web site resolved their questions without a call to the service desk. Assuming an average expense of \$10 to \$15 per fielded phone call, that's equal to \$600,000 a month in cost reductions.

The early numbers on Web-portal usage by broadband customers are encouraging: The study funded by SupportSoft found that 46% of broadband Internet subscribers have visited their operator's technical support site at least once in the last 12 months.

Do-it-yourself provisioning and service support for broadband already accounts for a fast-growing business category.

Motive, the Austin, Texas-based vendor that supplies service-management software to companies like BellSouth and Time Warner Cable, ranks 31st on *Inc.* magazine's list of the U.S.' fastest-growing, privately held companies. And SupportSoft reports that revenue soared 42% for 2003's first six months to \$19.2 million.

The good news for vendors like that: The cable world is growing more complex, not less. More customers want more things, and the proliferation of home networks promises to create a new set of support challenges that software can help solve.

But that's just for now. If you think it's a challenge to keep 13 million U.S. cable modem subscribers happy, wait until they begin to sign up for telephone service, too. ■■■

Stewart Schley writes about media and technology from Englewood, Colo. He can be reached at ss.edit@att.net.

Usability's New Mantra: Keep it Simple

To keep everyone happy, cable must help subscribers get cozy with new technologies // **By Ken Freed**

A growing number of U.S. households are subscribing to digital cable service, but some customers aren't happy, and they'll soon return to analog cable.

Why?

The technology may be too difficult to master, pushing more than a few subscribers to churn out through sheer frustration – no small issue to cable operators slugging it out in a viciously competitive marketplace.

"I believe ease of use is a laudable goal, and should be a rallying cry for the industry," says Ross Rubin, a senior analyst at eMarketer, the Internet research firm. "There has been

slow progress in making systems easy to use, and this has slowed market penetration."

Notes Bindu Crandall, the marketing director at Scientific-Atlanta, Inc.: "We now have 14 million households using the PowerTV system for digital cable. As we improve the usability of the interface – like not overloading a button with too many functions – we expect the result will be converting most of our analog customers into digital customers."

Advanced cable services can't reach their full market potential unless consumers feel comfortable using them. And that comfort factor largely depends on the usability of the

interface, from the remote control to the on-screen guide and beyond.

A loose cable industry consensus long relegated interface design to each set-top box and middleware provider. Many industry players feared that premature standardization could lock cable into deadend solutions. So the tacit agreement was to let marketplace competition set the standards for the cable



TV interface, much as Windows became the standard for the personal computer through market dominance.

But competition led to repeated interoperability problems among middleware vendors. A crucial case was Motorola's delay producing its advanced DCT-5000 series digital box. After the vendor spent years unsuccessfully trying to squeeze the middleware from both Liberate Technologies and MicrosoftTV into that box for TCI and then AT&T Broadband,

The move is expected to improve the overall usability of advanced cable services.

OCAP middleware includes a standardized application interface (API) for all of the proprietary digital programming services delivered by the box, including the interactive or electronic program guide (IPG or EPG); information-on-demand services like news and weather; VOD; and games, home banking, home shopping, Internet access, and other interactive TV services.

through 200 or more channels."

Hawkins notes that in her household, "My kids might be watching Nickelodeon with a channel number at 500 something, but I may want to watch CNN at channel 50. I'm not willing to scroll from 500 down to 50 to select my program, and we enjoy channels spread all over the place. Setting up the favorite channels inside the guide is so complicated that we end up memorizing the channel numbers we like instead, and that's



"YOU SHOULD HEAR ALL THE HORROR STORIES I'VE HEARD ABOUT PRODUCTS THAT JUST DON'T DO WHAT THEY'RE SUPPOSED TO DO, AND THEN HOW CUSTOMERS ARE MADE TO FEEL STUPID WHEN THEY CALL THE COMPANIES TO COMPLAIN."

the cable operator finally canceled the order before selling out to Comcast Corp.

Plagued by delays rolling out advanced services, the cable industry finally agreed in 1997 to work through CableLabs to develop the Open Cable Applications Platform (OCAP) as the standard middleware for all digital boxes sold at retail in the U.S. to meet a federal mandate.

By late 2002, that effort led to the plug-and-play agreement between the National Cable & Telecommunications Association and the Consumer Electronics Association. TV set manufacturers agreed to install the chipset and software for one-way digital cable services. These new, cable-ready TV sets will work anywhere in the U.S., but the receivers won't support two-way cable services like video-on-demand (VOD), which will still require a set-top box.

To ensure compatibility between the boxes sold at retail and those that cable operators directly lease to subscribers, OCAP is being implemented by all digital cable box vendors selling in the U.S., including Motorola, Scientific-Atlanta, Pace Micro Technology, Panasonic (Matsushita) and Pioneer Electronics.

The upshot: Progress is being made on the usability front, but obstacles remain.

For example, TV Guide rigorously defends its Gemstar patents for the on-screen TV schedule layout, and some operators like Comcast and Motorola have adopted the company's IPG. But not everyone is willing to be compliant.

Scientific-Atlanta, which supplies equipment for Time Warner Cable, recently prevailed against TV Guide in two patent-infringement suits over its grid-style program guide. Canal+, conversely, developed a different plan for its MediaGuide IPG, which offers video feeds from channels in an on-screen block matrix.

Such variations may solve legal problems, but are they more usable?

"The 500-channel universe is changing the way we use TV," says Dr. Diana Gagnon Hawkins, an independent consultant in Redwood City, Calif., who specializes in interface design for advanced TV systems. "Back when cable had only 30 to 60 channels, it was easy to scroll through a channel guide. But that user paradigm broke down when hundreds of channels were added. Consumers do not want to wait while scrolling

not the way people want to watch TV."

Mark Hess, the VP of digital television at Comcast, admits that "ever since we launched VOD, we've been aware that we confused our customers by adding so much new content. The original EPG for digital TV was good for up to 200 channels, but now we're pushing past 300 channels with thousands of hours of content."

Hess says that today's TV Guide IPG is a work in progress.

"We're working internally on the features we require, and we'll share this with the provider," he says, declining to set a deadline. "Then, we'll test these changes in front of our customers."

Hess continues: "There's still a lot of work to be done together, and a lot of decisions to be made before everything comes together. What matters is that all of us making decisions – programmers, manufacturers and cable operators – must agree to deliver services and products that are dead simple for customers to use. This is critical."

One key to success is the fact that subscribers "want to find and manipulate content instantly," notes Tim Friezley, the

VP of global solutions at MicrosoftTV, which markets a software platform for digital cable.

To discover what works, Microsoft in the past year conducted a 30-city usability study with subjects who spent one to four hours a week programming a TiVo personal video recorder (PVR).

"We saw that the guide was clumsy for many users, who found it hard to find the content they wanted in the broadcast mode," Friezley reports. "And when they switched to the PVR's on-demand mode, the difference between the two interfaces was confusing. Out of 90 features on TiVo we tested, we found that most consumers could master only three to five of them before they just gave up trying."

At Scientific-Atlanta, engineers and usability experts are spending "a lot of time and research energy to design a very simple interface for average cable subscribers," says Dave Davies, the company's director of strategies and business development. He notes that the vendor is combining engineering with marketing elements in a series of focus groups and field tests to create the best possible navigation system for S-A boxes running PowerTV systems.

"Our goal is to reduce the number of clicks needed to navigate the screens for selecting content by time or category," Davies says. "The challenge is cutting the number of

different interfaces that subscribers have to deal with on a daily basis.

"For instance, a cable operator may deploy an IPG from us, but VOD from another vendor. We need to offer a more integrated experience so [that] subscribers who feel comfortable with one pay service are not afraid of trying another."

To that end, Davies says Scientific-Atlanta publishes a "style guide" for PowerTV and third-party developers with recommendations for the on-screen look and feel, as well as how each button on the S-A remote was designed to work. The vendor offers to test any new application or product to ensure its style guide extends across all the interfaces without conflicts.

However, S-A doesn't demand compliance with the style guide nor require formal certification.

"We want to leave the flexibility for a developer to do something different and better," Davies explains. If an application interface is too different, it may confuse consumers, he admits, "but that's why we're working together with cable operators. It's in their best interest to pick the most usable solutions for their customers."

Hawkins' solution? Cable should adopt software that allows the set-top box to adapt to subscribers' viewing habits. That software

also should generate personalized virtual channels based on viewers' habits and preferences, along the lines of what's possible with a PVR.

For consumers to fully accept that, though, "rigid privacy protections must be in place so [that] personal viewing filters or profiles never leave the box," Hawkins notes. "Cable customers do not want cable operators knowing what they watch."

Indeed, cable has a way to go before attaining nirvana or anything near it on the usability front.

"If there's a problem with the ease of use on any system, the real problem is with the system, not the user," says Dr. Clare-Marie Karat, a human-machine interface researcher at IBM's Thomas J. Watson Research Center in Hawthorne, N.Y. "You should hear all the horror stories I've heard about products that just don't do what they're supposed to do, and then how customers are made to feel stupid when they call the companies to complain."

In a 10-point *Computer User's Bill of Rights* first published in 1998, Karat began with an idea that the cable industry might take to heart: "The user is always right." ■■■

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A USABILITY MANIFESTO

WHEN DR. CLARE-MARIE KARAT at IBM's Thomas J. Watson Research Center in Hawthorne, N.Y., first published her "Computer User's Bill of Rights" in a 1998 *Business Week* article, the results were electrifying.

"I received calls and letters and e-mails from all over the world," she recalls. "The biggest complaint was that engineers tend to design technology without thinking about the ease of use for the people who are expected to buy that technology."

Karat believes that machines should adapt to people — not the other way around. That said, the 10 principles she offered for the computer industry remain valid for the cable industry today:

- The user is always right. If there is a problem with the use of the system, the system is the problem, not the user.
- The user has the right to easily install software and hardware systems.
- The user has the right to a system that performs exactly as promised.
- The user has the right to easy-to-use instructions for understanding and utilizing a system to achieve desired goals.
- The user has the right to be in control of the system and to be able to get the system to respond to a request for attention.
- The user has the right to a system that provides clear, understandable and accurate information regarding the task it's performing and the progress toward completion.
- The user has the right to be clearly informed about all system requirements for successfully using software or hardware.
- The user has the right to know the limits of the system's capabilities.
- The user has the right to communicate with the technology provider, and receive a thoughtful and helpful response when raising concerns.
- The user should be the master of software and hardware technology, not vice versa. Products should be natural and intuitive to use. ■■■



After years of fits and starts, cable may finally be moving into a brave new (and lucrative) world // By Alan Breznick

CABLE ADVERTISING EXECUTIVES harbor a lot of digital dreams these days – dreams about program advertisers shelling out extra dough to aim their commercials at just the right households. Sponsors backing entire programs, time slots or even networks to reach upscale digital cable, HDTV and video-on-demand (VOD) customers. Other advertisers and sponsors paying more for customized broadband ads to grab cable modem users.

Pipe dreams? Perhaps.

But a number of cable systems nationwide are making the switch from analog and hybrid analog-digital advertising systems to fully digital systems as the number of digital and broadband homes continues to climb.

With more than 20 million digital cable subscribers and 14 million cable modem customers in the U.S., cable operators, networks and vendors are scrambling to turn these two groups into major ad-revenue generators over the next few years.

While there has been some movement on the broadband side, as well, the biggest push in the \$15-billion cable ad business is being made in the \$4-billion local ad-sales sector. There, cable operators are converting their old ad-traffic systems to new digital program insertion (DPI) set-ups so they can seamlessly and inexpensively place local digitized spots into digital cable networks. Using new and improved digital ad-insertion technology, they're test-driving digital-into-digital techniques in several markets, and may introduce it in several others.

Take a look, for example, at what Cox Communications, Inc. is doing.

The nation's fourth-largest MSO with 6.3 million subscribers, Cox introduced DPI in its Phoenix and Orange County, Calif., systems. Blessed with strong success in Phoenix, it has since extended local digital-into-digital service to a total of 12 U.S. markets. The MSO is inserting local digital spots on an average of seven digital cable networks in each market, including ESPN News, ESPN Classic, Toon Disney, SoapNet, Lifetime Movie Network, The Biography Channel and History International.

"We'll likely deploy in an additional market or two next year," says Guy McCormick, the VP of technology operations at Cox Media. "We're evaluating how deep we go."

Although Cox has not yet seen "a great deal of incremental revenue" from its DPI deployments, he says, the MSO has been able to "shift ad dollars to complementary networks from networks under inventory pressure."

Comcast Cable launched DPI in its Los Angeles cable system a while back, inserting local digital spots on a whopping 40 digital cable networks. In June, Comcast announced that it had already racked up 60 million digital ad inserts on the vast cable system.

Comcast extended its reach to the Miami area in September, signing a deal with nCUBE Corp. to install its digital ad-insertion system that consists primarily of two devices: a large video ad server and an ad splicer that sells for \$1,000 to \$3,000. The MSO plans to roll out the technology in a few more major markets in 2004.

"All new networks are going to have to go to [the] digital format," says Paul Woidke, the VP of technology at Comcast Advertising Sales. "But leaving those ad avails empty is a loss. If an operator carries a network in digital, it doesn't get to insert advertising into the channel unless it moves forward on the digital ad initiative."

DPI works by using two new technical standards – SCTE 35 (formerly

DVS 253) and SCTE 30 (formerly DVS 380) – to place digitized ad spots in digitized programming streams. The first standard is sort of a siler digital cue tone that trumpets the start of a commercial break. The second standard enables the digital video splicer, which talks to the video server, to place the right commercial in the break.

Cable operators are pursuing DPI for several reasons.

First, they see digital-into-digital as a way to recoup local ad-revenue losses as they shift more cable networks and customers from expanded basic service on analog to digital basic and tier services. With digital cable penetration approaching 30% and rising steadily, more cable customers no longer see the national or local commercials carried on analog cable. And if their cable systems can't place their local spots on digital channels, subscribers don't see the local commercials on digital, either.

"Now, the cable operator can reclaim that revenue from regional ads," says Mark Jeffery, the senior product manager for digital video solutions at Terayon Communication Systems, which sells technology that synchronizes programs' and ads' bit rates and then splices the ads into the programs. "They can splice in the local hamburger joint ad."

As in cable advertising's early days two decades ago, ad executives also believe – or at least hope – that DPI will let them charge premium to advertisers for reaching select digital cable customers with niche interests. A golf equipment maker might, for example, pay a premium to target The Golf Channel's digital viewers. A home-furnishing store might shell out a bit more to reach Do-It-Yourself Network's digital viewers.

Most important, cable ad executives recognize DPI as the basic building block for inserting lucrative spots into HDTV, VOD, interactive TV and even digital video recorder (DVR) programming, because all of them merely rely on larger digital files to transmit content. Ad executives figure that such options will continue to widen if digital cable's total base soars past the 30-million- and 40-million-home marks, as expected.

"There are all kinds of opportunities that open up when you get into digital set-top boxes," Woidke says. "Without digital-into-digital, those advertising opportunities would be lost. So this [DPI] becomes an enabling technology."

To be sure, DPI's success isn't a slam dunk.

The relatively low number of digital cable subscribers, the still relatively small group of digital cable networks, low digital ad prices, the resulting increased ad inventory, and the lack of a solid business model may conspire to keep digital-into-digital technology from taking off quickly.

"The challenge is that there's not a lot of reach in many of these digital tiers," notes Jeff Siegel, ESPN's VP of affiliate ad sales, marketing and new business.

The conversion from today's analog and hybrid advertising systems to fully digital systems also may prove to be a slow, long and messy process, because cable operators don't want to rip out existing ad-insertion equipment and start from scratch. A more likely scenario: Cable operators will add digital ad servers to existing systems, and gradually shift channels over to DPI as digital cable penetration grows.

"The transition plans are what give the senior engineering people headaches," says John Boland, the VP/GM of nCUBE's Advertising Systems

Group. "Cable CTOs are looking for ways to gracefully add DPI to systems with minimal disruption to the cable ad-insertion business. It's very much an incremental thing."

But if the DPI concept doesn't take off in the cable industry, it won't be for lack of trying. Besides Comcast and Cox, Time Warner Cable is plunging into digital ad insertion, and other major MSOs aren't far behind.

"It's definitely come into standard deployment mode," says Joseph Ambeault, the director of advertising systems at SeaChange International, the ad server and splicer supplier. "A large portion of the top 25 markets have this capability now."

With cable operators offering HDTV service to more than 60 million U.S. homes passed, several cable operators and equipment vendors are already tinkering with high-definition ad insertion, quietly testing it in the lab and the field. Vendors like Terayon, nCUBE and SeaChange have demonstrated the technical smarts to insert high-definition ads, while Cox and other MSOs have conducted trials.

"We're now looking very aggressively at HD," says Cox's McCormick, whose company has run ad-insertion trials with vendors in several undisclosed locations. "It's a very appealing, very attractive customer base."

Likewise, with VOD available in 110 U.S. markets, cable operators are exploring ad insertion in on-demand programming. In one well-publicized test last year, Cox set up a free, ad-supported VOD channel called FreeZone in San Diego featuring micro-channels that advertisers could brand.

Cox, for instance, found that about half of its San Diego customers tapped into commercials on the free VOD service in the first year, accessing a total of more than 2 million advertising videos. Those viewers also called up an average of 3.76 videos a week, and spent about 25 minutes apiece watching the commercials each week. What's more, FreeZone advertisers enjoyed an average response rate of 4.4% — double direct mail's.

"We're evaluating how far we deploy this," McCormick says. "We're also talking with other MSOs about aggregating all of our footprints, the way we do with spot products today."

At the same time, vendors like SeaChange, nCUBE and Concurrent are touting software that enables cable operators to offer highly targeted advertising by inserting multiple versions of the same commercial into a VOD stream. The software acts as a kind of internal ad splicer that plops the commercials into the right places.

SeaChange's new software due in early 2004 won't give advertisers the capability to target individual consumers or households quite yet. But it will let advertisers zero in on small nodes of 200 to 500 homes,

permitting them to aim messages at small neighborhoods or just a few blocks. "It's a crawl-walk-run model," Ambeault says.

SeaChange and Nielsen Media Research also are developing an audience-measurement tool for VOD programming, using the vendor's software and Nielsen's data-analysis expertise. The goal is to create detailed VOD ratings reports that cable operators can use to pitch commercial time to advertisers. MSOs like Comcast and Cox, which have already launched free VOD services in pilot markets, should be particularly interested.

Beyond the acronym soup of HDTV, VOD, interactive TV and DVR ad insertions, cable-advertising executives are betting that DPI's deployment will ultimately lead to fully addressable spots, which has long been the cable ad world's Holy Grail. Addressability would let cable systems deliver a customized sales message not just to each cable system node, but to each person, household or location. As ESPN's Siegel says, "That's what will really separate cable from broadcast."

Before rolling out DPI nationally, Comcast took a step toward the addressable future in September when it announced a deal with Adlink, the large Los Angeles cable ad interconnect, to license the latter's Adtag and Adcopy targeting technologies.

Adtag lets advertisers run the same commercial throughout a market, while tagging the spot with individual dealer, franchise or store names inside the market. Adcopy lets advertisers run different commercials at the same time within market subsections.

With the Adlink deal, Comcast says it will begin to offer market-segmentation products to cable advertisers nationally by early 2004. Plans call for launching first in Chicago and Detroit.

"They don't presume a digital-into-digital environment," says Woidke, who ran Adlink when it developed the two products several years ago. "They will work in a traditional hybrid environment."

Comcast also has been testing fully addressable advertising in the Denver suburb of Aurora, Colo., with ACTV's Spot On subsidiary. The trial, inherited from AT&T Broadband, is integrating software into decoders, traffic and billing systems, and other applications in the ad process to measure the operational costs and sales benefits.

"From where I sit, once we have these technologies in place, lots of different things can happen," Woidke says. "All of these technologies build off the very basic [DPI]." ■■■

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DIGITAL PROGRAM INSERTION WILL LEAD TO FULLY ADDRESSABLE SPOTS, WHICH HAS LONG BEEN THE CABLE AD WORLD'S HOLY GRAIL.



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Going to e-School on Employee Training

There's a ways to go, but operators are beginning to see the value in online learning // By Ken Freed

WHEN A NEW FIELD TECHNICIAN or customer service rep joins RCN Corp., a lot of the employee's training is done online.

The cost and time savings – and the opportunity to immerse new people in its own unique corporate culture – nurtured by distance learning mean a lot both on and off the balance sheet to RCN, a scrappy overbuilder that needs every break it can get in competing with cable operators and telcos in seven of the U.S.' top 10 markets.

"We see online learning as part of the culture within our company," says E.K. Ramani, RCN's senior VP of operations and customer care. "We call it the RCN experience, because our training does more than teach the necessary skill set. We teach a whole way of doing things that's different than our competitors."

In online and classroom sessions, RCN technicians are taught, for example, that they should always put on a clean pair of surgery-suite booties before they enter a home in order to protect the rugs. "I cannot tell you how many letters we get from our customers who disbelieve how much we care about them," Ramani says. "We instill this thoughtful bedside manner as part of our training."

Tapping into multimedia networks to train

technicians and CSRs is picking up momentum in cable industry circles. The challenge lies in doing it right in order to extract its full value.

"There's a lot more talk about online learning in cable than there is online learning actually going on," says Tom Brooksher, the president/CEO of NCTI, the Denver-based cable-training institute. "There is a growing body of online training content available from companies like ours, and more is being developed every day in anticipation of the demand. But cable has not rushed to embrace it."

Brooksher estimates that 90% of the cable industry's training is still being conducted in traditional classroom settings, coupled with "a significant amount of self-study." What's more, most of today's training materials are

still being printed on paper rather than electronically processed, he adds.

That said, NCTI is steadily translating its own catalog of printed materials to Web-based formats, according to Brooksher. "Whether it's delivered on the Web or within a digital network learning management system [LMS], we think online is the way to go," he argues.

At varying speeds, every major U.S. cable operator is moving into distance learning primarily because of its cost efficiencies. Online education is less expensive than flying trainers to a company's outlying offices, or funneling personnel to central training facilities. What's more, digitized curriculum materials save printing costs.

Gaining visibility among cable operators is the LMS, according to Brooksher, which stores digitized training documents on servers for instant extranet and intranet access. An LMS also can efficiently track each employee's training progress. Still, few operators have fully tapped LMS' potential, Brooksher says:

"We have electronic content ready for them, but most of them still want our paper-based training products."

That may be changing, however slowly.

In June, Comcast Corp. named Rebecca Ray the president of Comcast University, which oversees the MSO's training and development efforts nationwide. Before joining Comcast, Ray launched the corporate university at American Skandia; steered in-house learning and development efforts at Merrill Lynch & Co., Inc. and Prudential Securities; and taught management at New York University.

Comcast – the U.S.' largest cable operator with 21.3 million video and 4.3 million broadband customers – isn't saying much about Ray's agenda, or what the company expects to gain financially or educationally from her efforts. But in a rabidly competitive marketplace in which any edge can be measured in millions of dollars, Comcast's commitment to Ray is strong. One former Comcast affiliate says the MSO has little to show for the more than \$1 million it had spent on its own LMS before hiring Ray. Now, Comcast intends to make up for lost time and opportunity

Time Warner Cable, which also is reluctant to go into detail about its distance-education efforts, is pushing hard to develop "effective training across the enterprise," according to Dave Temlak, the company's senior VP of customer care. That effort already includes face-to-face classroom sessions, corporate training of regional division trainers, and e-learning.

On that last front, Temlak says his MSO is developing training capabilities "on the transport level" with an LMS and the World Wide Web to deliver "distance-learning opportunities wherever possible... [because] we believe that e-learning technology will come to make a major contribution to our training efforts."

Online training is a priority at Adelphia Communications, Inc., says Regina Hutchinson, the MSO's VP of learning and safety: "We've started to venture into distance learning, and already have some courses online, such as training in customer service, and field technicians using high-speed data services, which seems perfect for teaching online."

Today's programs at Adelphia are mostly text-based with some graphics. "We don't have any streaming video, because the infrastructure for it is not in place just yet," Hutchinson says, "but we'll get there."

Adelphia's e-learning courses – they make up about 20% of the company's training regimen at this point – are available during the workday

OF COURSE, SOME SKILLS, LIKE POLE CLIMBING, CAN'T BE TAUGHT ONLINE. AND THAT'S WHY ADELPHIA AND OTHER OPERATORS WILL CONTINUE TO USE A MIX OF E- AND CLASSROOM COURSES.

when CSRs can train at their own workstations in modules that run from 20 to 60 minutes. Field technicians also can migrate to a corporate training center, and Adelphia is installing e-learning kiosks in each city it serves to save time and cut travel-related costs.

Of course, some skills, like pole climbing, can't be taught online. And that's why Adelphia and other operators will continue to use a mix of e- and classroom courses. "We'll use the classroom where it's most effective, and we'll use a learning-management system or the Web when that's the best way to go," Hutchinson says.

Advance assessment and planning is key to putting distance learning to its best use, says Carmine Porco, the VP of Toronto-based Prescient Digital Media, a consulting firm that specializes in e-learning intranet development.

"You need to do site visits for staff interviews and focus groups," says Porco, whose clients include AOL Time Warner, Cisco Systems, Inc., Bell Canada, and Sprint PCS.

"Find out how your people prefer to be trained. Is a video of an interaction with a difficult customer going to be more effective for a CSR than reading instructions on what to say?"

Then, companies must create a plan for managing their educational activities and assets, and craft a way to measure online training's results. As Porco notes, "Benchmarking your performance standards is vital."

Offering incentives to a company's workers also can get results. For example, Porco recalls one unidentified telecommunications company that offered a \$1,000 bonus to the first 100 employees who completed a voluntary online training course. On the flip side, he remembers one insurance-services enterprise that threatened to financially punish its people if they didn't sign up for an e-learning program.

"The question is how to calculate your return on investment," Porco says. "Be sure not to build your business case only on the financial benefits. The money you save on travel to a classroom course may end up costing you more in the long run if the material is not truly suited to online learning."

An LMS should ideally pay for itself in two years, he notes, "but when you look under the covers, are people really learning what they should and how they should? Sometimes, e-learning is best only as an enhancement or reinforcement of classroom training – not as a replacement for it."

Investment in online learning has a boisterous, visionary cheerleader in cable pioneer Glenn Jones, the chairman of Denver-based Jones International, which established Jones International University, the first fully accredited online college and post-graduate institution.

After selling Jones Intercable to Comcast a few years ago so he could focus on online education, Jones now offers several cable-related training programs, including a general safety course; set-top-box installation courses for each converter manufacturer; and a customer-service course.

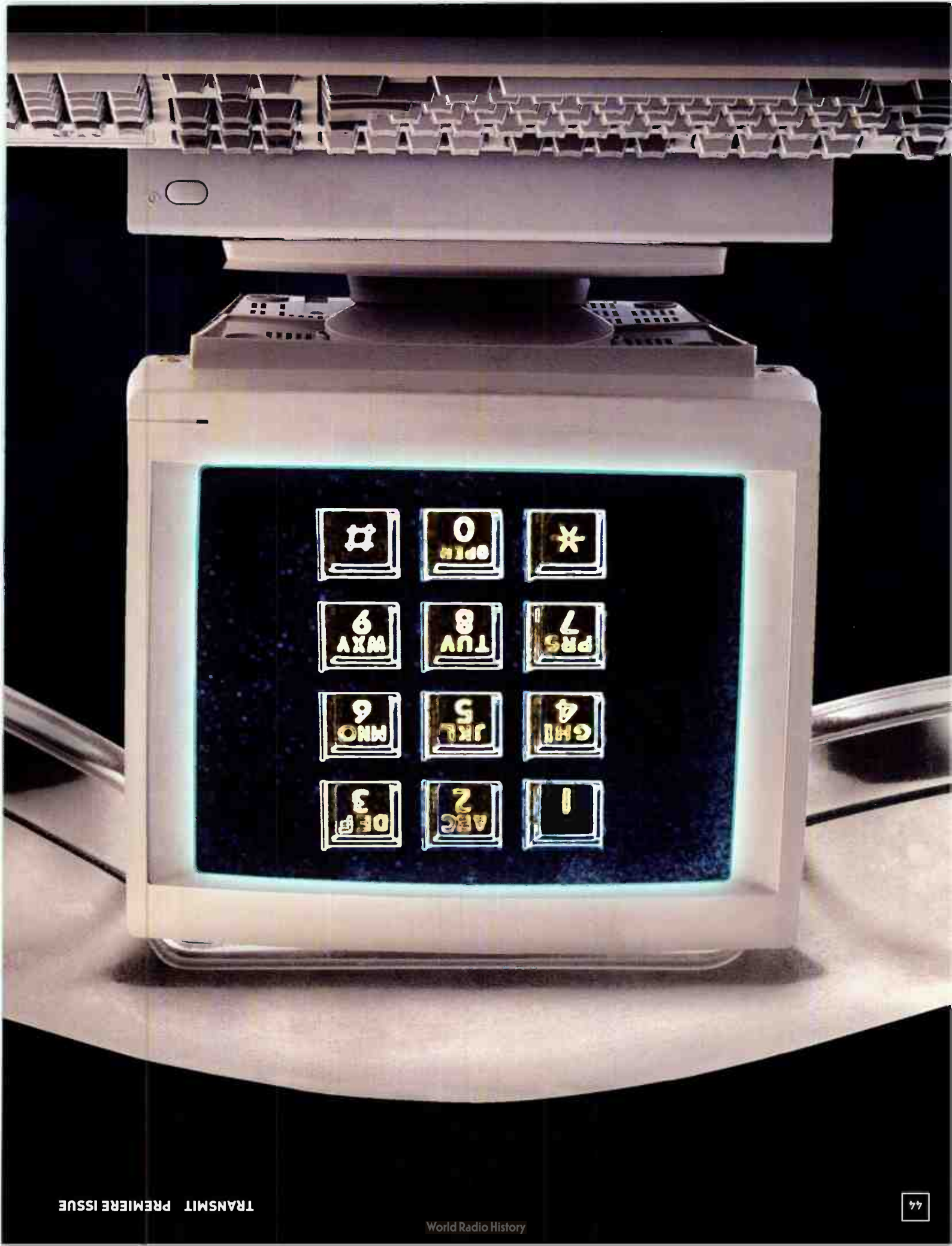
"The change to distance learning is not easy," Jones says, "but cable people are already technologically minded, and that helps a lot. The main thing is to apply the best practices from instructional design and make the online interface as user-friendly as possible."

Indeed, cable is a big target for distance learning, says Dr. Bernard Luskin, the director of the media studies program at the Field Graduate Institute in San Bernardino, Calif. To fully tap the medium, he adds that cable operators must hire highly qualified "chief learning officers" who understand how the media impacts personal motivation and corporate culture.

"You need to overlap an effective learning environment with a clear vision of what you're trying to do," says Luskin, whose roots in distance learning go back to the 1970s. "The key is putting as much emphasis on the staff's personal growth as on job performance."

As Jones says, "A well-trained workforce is cable's best defense against competition in the marketplace." ■■■

Journalist Ken Freed at www.kf.com specializes in interactive TV and distance learning.





Will VoIP Make Sense for the Cable Industry?

It all depends on who you talk to about the long-term prospects for telephony // By Jim Barthold

FIRST OFF, THERE'S NOTHING THAT SAYS cable operators can or will ever make money delivering voice over Internet Protocol (VoIP) service.

Granted, some analysts see a market that could generate \$30 billion in annual revenue. But those figures continue to wildly fluctuate due to the continuing falloff in voice service pricing in the marketplace as a whole.

"If you looked at the business case five years ago, it was \$50-a-line local and \$50-a-line long distance, and they were making \$30 a customer on TV. So voice looked really attractive," says Scott Wharton, a marketing VP at BroadSoft, Inc., which sells next-generation telephony equipment.

Because its customer base is largely comprised of more traditional telephone players, BroadSoft wouldn't mind seeing cable waver in the voice space. But Wharton's comments, taken on face value, make some sense.

"By the time the cable companies ever get their act together on the VoIP side, we're talking \$20, \$30, \$40 a month, including long distance and features and lines," he notes. "It's not as attractive as it used to be."

That, however, could merely be a glass-is-half-empty analysis, according to Mark Dzuban, the vice chairman of VoIP technology vendor Cedar Point Communications, Inc., who's more optimistic about cable's voice potential.

"Even in a market where the average telephony subscriber reduces from \$50 or \$55 per month to \$40 a month, there's a huge margin opportunity with voice over IP, because it's a leveraged shared network, costs are minimized, and it's a very healthy operation in a competitive environment," he argues.

Delivering standard switched telephony, which Cox Communications, Inc. is doing with great success, is expensive, with per-subscriber startup costs running up to \$750. But as Dzuban notes, "In the voice over IP environment, you can start to drop that based on the type of service you're offering down to a couple hundred dollars per subscriber."

Even if the pot of gold at the end of the telephony rainbow is still obscured by clouds, many in the cable industry say voice will give them the three-product weaponry – along with video and high-speed data – they need to optimize their newly upgraded infrastructures and fend off competitors.

Little wonder, then, that theories, trials and systemwide rollouts abound as the debate over voice roars on.

There's no assurance that cable operators will ever make huge profits – or any profits – offering services that compete with entrenched local and long-distance players.

Consumers are fickle, prone to chasing the lowest price, which makes marketing a tricky and expensive proposition. Cellular plans that offer buckets of minutes for almost nothing are turning the voice space upside down. Instant messaging and hobbyists' forms of VoIP, while lacking in quality, are nurturing so-called "free" long-distance

service. And the incumbent local exchange carriers (ILECs) are continuing to lower prices and bundle services and features to fend off challenges within their own industry, cable notwithstanding.

What once looked like easy pickings for cable – merely give consumers the same or a little-better-featured service for a lower price, and the money will flow in – are now more difficult to pick. The phone companies, despite their persistent whines about being regulated, can afford to engage in price wars, because their installed infrastructure has been delivering service for more than a century.

Those negatives for cable, however, don't outweigh what most in the industry see as the positives for running voice service over networks recently upgraded at a cost of several billion dollars. Indeed, operators are convinced that new voice services can be delivered in ways that leverage the unique characteristics of the industry's well-accepted data networks. To those operators, voice is nothing more than a software – not a move-the-mountain hardware – addition that will pay off sooner rather than later.

IP is viewed in cable industry circles as the best way to deliver voice-over-cable service. Even MSOs that have followed the old constant-bit-rate route are expected to eventually move into the IP camp. There, they'll find an industry divided not along technology, but size, lines. What's more, they'll face the challenge of building and operating an IP telephony infrastructure or using a branded overlay from an outsider that has already entered the space and is ready to quickly – and more important, cheaply – deliver voice services over cable systems.

"Tier one guys will always try to build it themselves. They figure the margins are better in the long term, which may not be true," says Louis Holder, the executive VP of product development at Vonage Holdings Corp., which operates bare-bones IP telephony services over broadband networks, including, but not limited to, cable.

If there's a guidepost among tier one providers, it's the nation's largest cable operator, Comcast Corp., which passes about 32.1 million subscribers with high-speed data networks that can also carry voice.

Although the company is saddled with some conventional telephony infrastructure via its AT&T Broadband and MediaOne acquisitions, Comcast's true mission has always been to develop, and then adhere to, CableLabs' PacketCable specifications for IP telephony and, down the road, multimedia built on cable networks.

Despite a growing sense of urgency in the cable industry to move into the voice-services space before the phone companies lock it up – coupled with the attempts of MSOs like Time Warner Cable and Cablevision Systems Corp. to jump into the IP space – Comcast is sticking to its belief that there's no middle ground. To its thinking, the only way voice services will ever be offered over cable networks is via standardized IP.

"There is that temptation to run out there and do telephony vs. PacketCable," argues Steve Craddock, a former Bell executive who

has been spearheading not only Comcast's IP telephony efforts, but PacketCable's, as well. "You really have to be on the [PacketCable] side."

The differentiator – it's not a serious split – is that Time Warner and Cablevision have launched without finalized PacketCable specifications, while Comcast is still waiting.

The main reason for staying the CableLabs course – many vendors, Craddock reports, "were really hoping that we'd give up on the PacketCable side" – is that PacketCable is tailored to cable networks. It's designed to deliver a quality of service [QoS] level that assures carrier-quality voice services over cable networks.

There are no firm figures pointing up a financial advantage to taking that route – at least not yet. But the thinking is that voice could be something of a retention tool for cable operators, a way to hold on to subscribers who might otherwise split – sort of like an e-mail address that pins subscribers to a high-speed data service.

One vendor that hasn't strayed from the PacketCable course is Cedar Point Communications, which has patiently moved along the IP telephony course with Comcast and several other MSOs. While Cedar Point executives could, with some justification, be impatient with the progress of the specifications process and Comcast's rollouts, they've been supportive, at least publicly.

"There's actually some pretty good logic behind what [Comcast is] doing," says Cedar Point's Dzuban, another former Bell executive. "The pilots are fine-tuning the huge-piece parts to make sure they're consistent with both the financial and performance expectations just prior to scale [launch]."

Comcast, Dzuban argues, is moving in the right direction toward VoIP, pushing more quickly than might be publicly perceived.

"I see what Comcast is doing, hiring 80-some people, spending more than 1 million bucks on hardware and other assets for voice over IP, and preparing to launch in several markets," he notes.

Many industry analysts also believe that the most logical way for cable to move into the telephony space is via VoIP. Cable networks are optimized for data, and VoIP is nothing more than a data service. On the other hand, selling VoIP requires a new way of thinking for cable operators like Comcast, as well as a new way of marketing that differs sharply from the way pure entertainment video services have been sold.

Operators like Comcast committed to full VoIP capability also are cautious about getting it exactly right, and avoiding the mistakes made during the launch of high-speed data services a few years ago.

There's a *Catch-22* element at play here, though.

As Comcast waits for the standards and mature technology to do it its way, telephone companies with a history in the voice space are lowering prices and developing their own forms of IP services. And companies like Vonage are moving into the broadband network space with their own efforts that carry the potential to steal cable subscribers of all stripes.

The last question that hasn't been resolved, though, is how much the voice market is worth. For the most part, it might be more of a case of keeping the whole – voice, video and data – intact than in any one piece turning a huge profit.

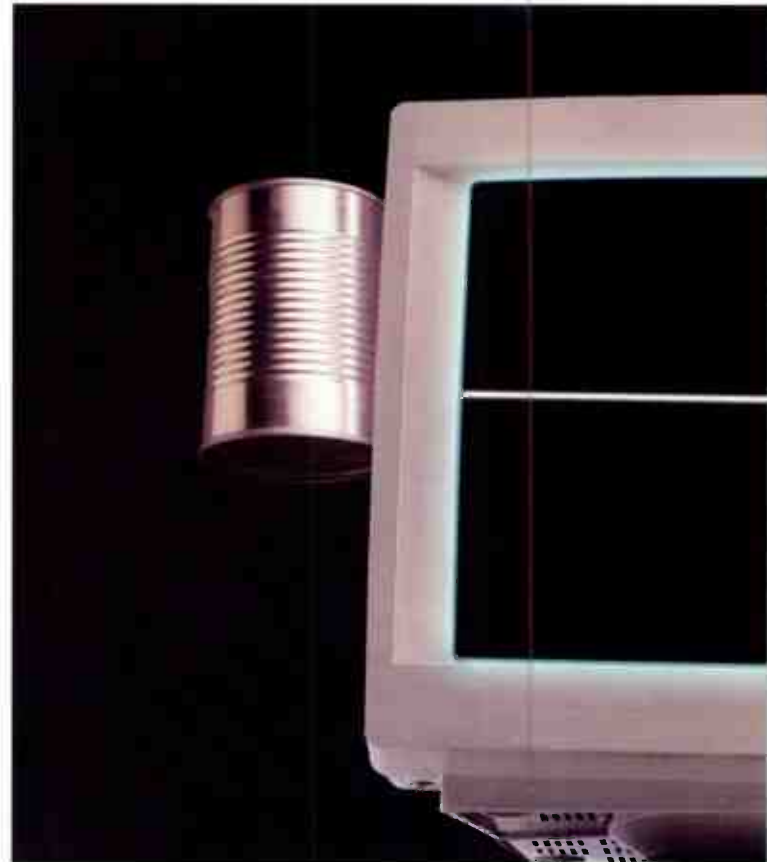
For Comcast and the rest of the cable industry, CableLabs' progress in setting and finalizing PacketCable voice-over-cable specs will be the true starting point for any voice deployments. Without PacketCable, any solution offered by a cable operator could be attacked as a "me, too" iteration of existing telco offerings – and not something built specifically for cable.

Progress, it seems, depends on PacketCable's pace, and PacketCable – importantly – is not just about voice.

"The foresight around PacketCable five years ago was to create a platform that creates true multimedia," Dzuban says. "Voice was the first of a number of applications."

But voice will be the first application perfected and applied strictly to cable operations.

PacketCable, according to Craddock, "differentiates services from other [more general] VoIP services [like] Vonage" because it's very "cable-centric."



It's also taking what seems like an eternity to arrive. Craddock's response: "We had to make sure our networks were carrier class."

That said, Comcast, with deep pockets and a lot on its plate, can afford to wait as it tests the various pieces in places like the Philadelphia suburb of Coatesville, Pa., where the company has been conducting a voice trial for the last year. But other MSOs are more eager to get going with IP telephony.

Time Warner Cable, for example, is running what it calls a "controlled launch" to 6,000-plus customers in Portland, Maine, and plans to spread the service to other areas. And Cablevision is launching IP voice everywhere it serves high-speed-data customers, leveraging its Optimum HSD platform.

Time Warner Cable is taking a cable TV approach to IP voice services, according to Christopher Williams, the MSO's senior VoIP engineer. As a TV entertainment-programming provider, the MSO buys product from entertainment business suppliers, packages it, and then delivers it over its own hybrid fiber/coax (HFC) lines. Telephony, Williams says,

can work the same way, traversing those same multibillion-dollar HFC networks. That moots the need to build new infrastructure.

Time Warner Cable will team up with local exchange carriers to "leverage the staff and expertise," then package that expertise into a Time Warner-specific offering, according to Williams, who adds that demand is "high."

Like Comcast, Time Warner sees voice as just the first "latency-sensitive service that we're considering offering" as PacketCable matures and applications that use the broadband networks grow, Williams notes. The operator is charging \$39.95 per month for all-inclusive local

THE PHONE COMPANIES, DESPITE PERSISTENT WHINING ABOUT BEING REGULATED, CAN AFFORD TO ENGAGE IN PRICE WARS, BECAUSE THEIR INSTALLED INFRASTRUCTURE HAS BEEN DELIVERING SERVICE FOR MORE THAN A CENTURY.

and long-distance voice service that excludes Alaska, Hawaii and international calls.

Cablevision is taking a more aggressive rollout approach than Comcast or Time Warner. But like them, it's tying its voice offering to its Optimum data service, which has attracted 920,000 subscribers in the New York-New Jersey metro region.

Adding voice to the data service – Cablevision charges \$34.95 a month for service that includes Alaska, Hawaii and Canada – requires "a lot of tedious detail to get it just right," says Nicholas Damenti, Cablevision's VP of Optimum voice-product management. "It's one thing to move packets around. It's another to move packets around deterministically."

Cablevision, like its MSO counterparts, is determined to make the most of its network infrastructure for voice and not-yet-developed multimedia applications. But another player – what Holder might call a "tier two" operator – has taken another approach.

Armstrong Cable, a privately held telecommunications company in western Pennsylvania that serves 250,000 basic cable subscribers,

has signed with Vonage to offer voice service as "an ancillary service to our high-speed data," says Dave Wittman, the operator's director of cable marketing. "We've been looking at doing it ourselves for some time, and continue to look at that option. We see this as just another product offering that gives our customers more choice."

Without citing figures, Wittman notes that "this is a revenue model that does generate dollars for us. We think it's an opportunity that a certain percentage of our customer base will find attractive."

Besides, he argues, if Armstrong didn't jump in, there was nothing to stop Vonage from doing it on its own, and taking all the revenue.

Customers who buy Armstrong's Zoom Phone bundle get the standard Vonage package of \$34.99-per-month service for unlimited calls in the U.S. and Canada, or a lesser service of 500 long-distance hours for \$25. Like all IP offerings, it includes popular phone features like caller ID, call-waiting and voice mail.

The slow development of cable-telephony specifications at least partly led to Armstrong's decision to go with Vonage.

"We've been testing voice over IP for almost two years," Wittman says. It hasn't been rolled out, he explains, because "manufacturers could not generate the equipment we needed cost-effectively. [That's] because none of the large companies, like Comcast, had committed to voice over IP. What we're testing with, in some cases, is hand-built, and you can't go to market that way."

Armstrong also wanted to get to market before the bottom dropped out of what it could charge for service.

"Providing some sort of telephony option for your customers and bundling it is absolutely critical to our long-term success," Wittman says. "How you accomplish that keeps changing."

Armstrong reevaluates its voice-service delivery mechanism every 60 to 90 days, because the goal at all times is to beat the incumbents' price in a market where there's no brand loyalty.

"I don't know how many people are going to take this service, but we're going to find out," Wittman says. "I know from surveys I've seen [that] there's no loyalty. If service is the same and the quality is OK, [consumers] will even live with a few inconveniences."

That's the Vonage model.

"We'll do everything for you, and all you have to do is market," Holder says. "The idea is for them to get into the game and have a service offering."

That service offering, he emphasizes, doesn't have to include all of the technological gee-wizardry of IP telephony. It just has to be voice service at a lower price.

"It's like home phone service," Holder says. "You can't market this product as high-tech VoIP."

Even cable operators going it on their own aren't really doing anything to prevent Vonage from marketing the service in their territories. Why would they? Vonage, according to Holder, draws subscribers to cable's high-speed data services.

"There are a lot of people who use dial-up and want to do Vonage services, and we upsell them to broadband," Holder says. "Cable operators know that, so they definitely want it to work on their plant [so they can] sell the broadband connections."

Even operators who insist on doing it themselves. ■■■

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The Cable Center's Game Plan

An ongoing commitment to education — past, present and future

FROM THE MOMENT 50 YEARS AGO when an enterprising TV retailer hooked up a community antenna network to a television set in his store's window, the cable telecommunications industry has produced a record of technological achievement and societal contribution that would make Edison proud.



Bob Russo

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Today, some of the fastest residential Internet connections in the world flow over cable. Cable companies deliver more high-definition TV channels than any other medium. Video-on-demand has moved from drawing board to reality in millions of cable-connected homes. And now cable companies are making a serious foray into the business of transmitting the human voice.

The pathway that took the cable industry from the first humble community antenna systems to today's interactive digital pipelines makes for a terrific story, every bit as intriguing as the rise to prominence of the automobile or the microprocessor. Like those two staples of modern life, cable touches the lives of hundreds of millions of people around the

world every day. And like those two categories, cable has the pedigree and presence to fascinate and inspire people curious about the evolving adventure of the human experience.

The Cable Center in Denver, Colo., has accepted as its mission the cause of educating the cable industry, academic community and public about the history and ongoing promise of cable telecommunications. Through a combination of on-site resources and wide-ranging outreach programs, The Center is the touchstone created to educate millions of people about the contributions that cable is making to life in today's modern world.

The Center is part library, part schoolroom, part television network and part gathering place. It's a resource for continuing education that informs and enlightens individuals and organizations about cable telecommunications' past, present and future.

The Cable Center's constituents are industry professionals. They're executives and educators; researchers and financiers; high school students and civic leaders. The Center's educational initiatives include a vendor advisory board that unites tomorrow's technology entrepreneurs with today's chief technical officers; a distance-learning program that brings federal government leaders from Washington, D.C., up close and personal to college students thousands of miles away; and an on-site exhibit that gives visitors the opportunity to marvel at how far and fast cable technology has progressed.

Those initiatives also include a high-definition theater that wows invitees with sneak peeks at the next generation of cable programming and technology, and an online information resource that chronicles the history and progression of a medium that has captivated millions. And that's just the beginning.

If it helps people understand the contributions of the cable telecommunications industry, it's at The Center. The organization's agenda is all about education. Institutionally, The Center brings a collective of learning resources together under one roof so that individuals and organizations have ready access to information and experiences that build a deeper appreciation of a medium that has changed the way the world communicates.

The amount of information, entertainment and interaction that flows through cable's high-capacity networks each day is awe-inspiring. The Cable Center fosters a wider understanding of cable's enormous contributions, and inspires the next generation of leaders to propel the medium even further. ■■■



The Cable Center's panegyric to programming greets visitors.

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OPERATORS TRY TO FIGURE OUT A NEW LINE OF WHAT COULD BE A VERY BIG BUSINESS — IF THEY DO IT RIGHT // BY JIM BARTHOLD

As it lightly treads into the home-networking business, the cable industry is taking the back-to-the-future route of leasing equipment to its customers in hopes it can make some big money on an enterprise whose pieces aren't fully under its control.

Just a short time ago, many operators weren't sure they wanted to push into such an unproven new business, even though some say it could be worth billions of dollars in a few years. The wakeup call came when early do-it-yourself home networkers began to link their personal computers through the same broadband pipe delivering video service to their homes. It soon dawned on operators that they were losing a golden opportunity to sell or lease networking equipment, as they did with set-top converters, to these people.

What's more, cable operators realized that they were fools to be spending their own money on the technical support needed to answer these subscribers' often-knotty questions about home networking.

And so as operators sought ways to make money, rather than lose it, on this burgeoning

practice, they resorted to a tried-and-true way to make a buck. With video, subscribers pay for additional set-tops so they can access premium content. That, in turn, offsets the operator's investment in a second box, and generates a new, incremental revenue stream that runs beyond basic and pay subscriptions.

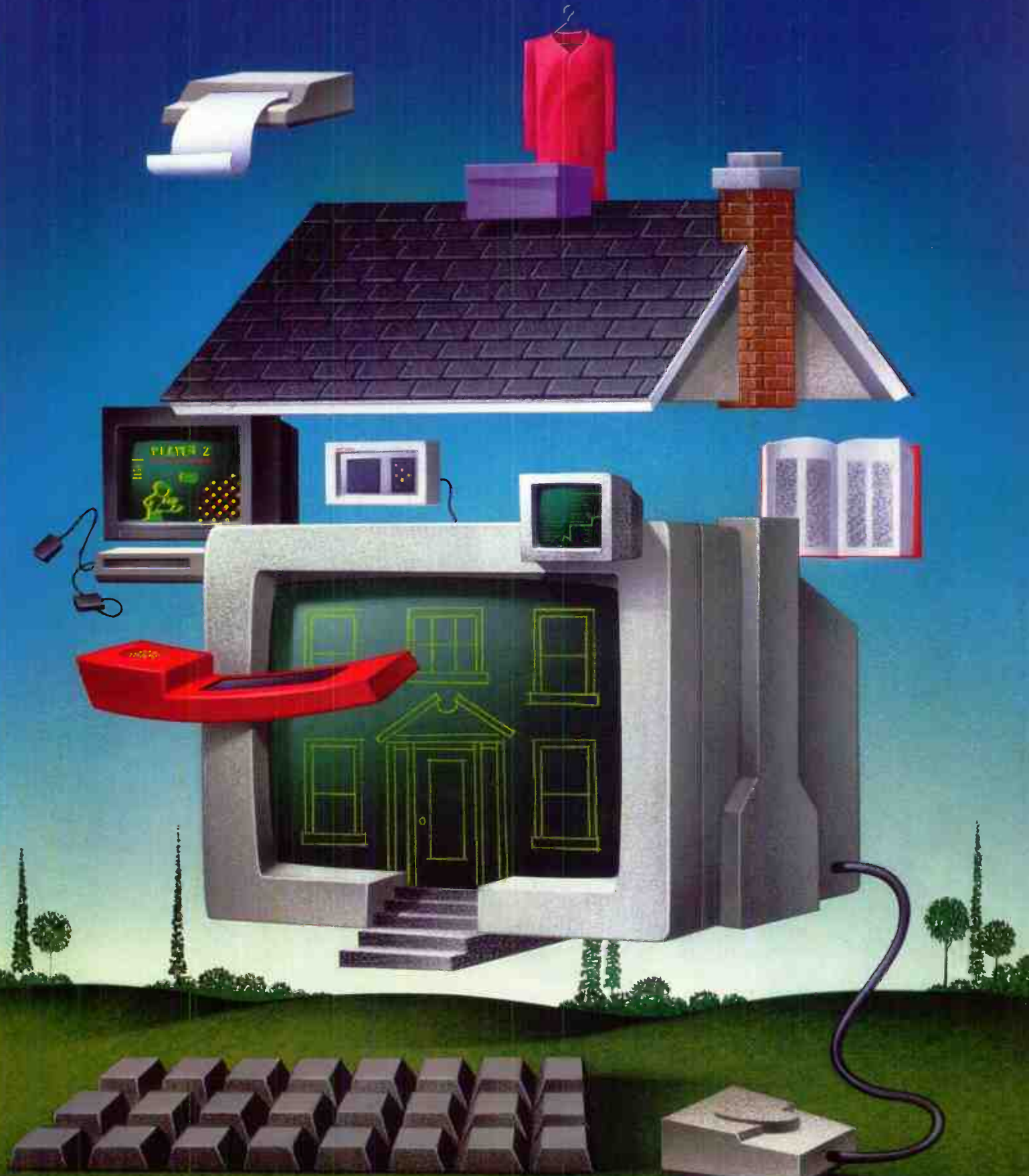
In broadband data's leasing model, subscribers who want to link more computers to their high-speed-access connection can lease or buy the technology and expertise from their cable operator for an upfront fee, plus a monthly service charge. A subtle difference, however, comes into play between video and data that's forcing cable operators to market the living heck out of their home-networking solutions.

Set-top-box leasing worked because cable subscribers had no other way to tap into premium channels on one or more TV sets. But today's savvy data consumer can buy a router, or even a cable modem/router unit, plug it into a home broadband connection, and begin to network away.

Because no cable operator content is being stolen, there's no signal theft. Yet operators can lose from \$4.95 to \$9.95 a month in recurring fees for installing and maintaining a routed network in a subscriber's home. Operators also can lose control of a home's network, which kills the chances of prepping it for more advanced and potentially lucrative services like sharing music, streaming video, and interactive gaming. Even more menacing for cable is the threat that a subscriber could sign up for a telco's digital subscriber line (DSL) service, which is being marketed as a more home networking-friendly alternative.

Little wonder, then, that many cable operators are aggressively reaching out to subscribers who haven't built their own networks in the effort to make them cable-dependent.

Cox Communications, Inc., for example, is charging \$349 to wirelessly hook up two computers to high-speed-access service. A wired connection costs \$299. Each additional wireless connection is \$99; each wired one is \$49. Most Cox operators also offer a year-long service contract at \$9.95 a month. In return,



subscribers get around-the-clock phone support and an extended warranty with a wiring-maintenance plan.

The model is supported by Linksys, a Cisco Systems, Inc. division that's the industry's largest broadband router manufacturer. Matt McRae, Linksys' director of broadband, argues

“Home networks are becoming table stakes

that subscribers will easily fork over \$9.95 a month on top of a typical monthly fee of \$39.95 for high-speed broadband because the home network has been installed and is being maintained by a cable operator. The win-win here: The operator makes a tidy profit, and subscribers save significant upfront costs by leasing, and not buying, equipment.

“If the MSO goes out and actually installs the equipment, the amount of tech-support calls that come after that are minuscule,” McRae notes. He adds that by “lowering the threshold that needs to be crossed from a financial outlay of funds, the lease model works really well. We’re seeing attach rates anywhere from two to three times higher than if the MSOs just try to sell” service, and let subscribers do the rest.

Cox won't discuss the financial aspects of its home-networking initiative. All that Mark Bell, the product development manager for the MSO's high-speed Internet division, will say is that “the broadband business is doing quite well. We just see home networking as a means to provide additional services to our customers.”

But those “additional services” will be moneymakers in the long run only if cable operators can find ways to charge for, say, the hourly spikes of broadband demand fueled by gaming and other applications, or sell customized content through an Internet pay-per-view model.

Cable's retail model requires the operator to sell the modem and/or router to the subscriber at a price roughly equivalent to what a retailer like RadioShack might charge. Then, the operator can upsell support or maintenance, or at least make sure that the equipment is properly installed. The subscriber, though, must still make an upfront investment in new gear.

Along those lines, some subscribers might not like paying a cable operator even more for

a broadband connection that's already pricey – about \$10 a month more than DSL charges. But that issue could evaporate as CableLabs' CableHome effort reaches fruition and begins to add devices like MP3 players, TVs and telephones to home networking's capabilities. That's cable's end game, according to McRae, who points to “all these services and all these revenues that

in our broadband business, and if we want to get into other applications, we need to embrace

those — not make it more difficult for our users to do it.”

come on top of that \$39.95 a month [in broadband-service fees]... in-home networking, parental controls, music subscriptions, content and other things. [Cable knows that it has] the best access to the customer.”

Cox's Bell agrees.

“The largest part of our business is dispensing content to our customers,” he notes, pointing to relationships with networks like ESPN that could expand across several media within the home thanks to broadband-based networks. “We're still kind of early in that strategy.”

That, however, is giving competitors time to step into the home-networking arena.

DSL is selling its networking services on price, features and consumer-friendliness, which it hopes will divert prospective subscribers' focus from the speed issue. Comcast's home networks, for example, run as fast as 4 megabits per second (mbps) downstream compared to DSL's 1.5 mbps. However, DSL service providers are banking on the new ADSL2+ standard to close that gap, believing that networking will be a prime battleground in the fight to secure broadband data subscribers.

“Home networks are quickly becoming table stakes in our broadband business, and if we want to get into other applications, we need to embrace those – not make it more difficult or less enticing for our users to do it,” says David Glazner, the DSL product manager at Verizon Internet Services, Inc. “It's not the current thought process just to arbitrarily charge more for home networking.”

Indeed, Verizon and other DSL providers are charging less for broadband connections. Throwing in a home network as part of the package can be quite enticing, as well as offering other bundled services like cellphone, local and long-distance calling. With its DSL Forum, the industry also has developed a DSLHome initiative that in many ways mirrors CableLabs' CableHome push.

“We're crafting our standards and specifications to help us with speed to the market, and to do things that help the providers... that

make us an attractive home-networking alternative,” Glazner says.

The telco ammunition – some of it's supplied by DSL Forum members like Linksys – includes free home network installation; a monthly price point of about \$29.95; and bundled telephony services.

“The idea is to provide stickiness to the consumer,” says Bob Escalle, a DSL Forum board member. “Once they have the broadband connection to a modem router and then the router throughout the home ... they'd have to replace that equipment with new ones if they wanted to switch from DSL to cable.”

Cox's Bell says he'd rather be proactive with subscribers who want networking services than merely react to what DSL players are doing.

“Customers are asking for it, and as broadband proliferates and multi-PC households proliferate, we see this as an ongoing need,” he explains. “What DSL decides to do could play into our plans. But right now, we're pretty focused on deploying and being successful with our customer base.” ■■■

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Cable's Knowledge Quotient

Here's where to go for industry-related information of all kinds and shapes

POP QUIZ: What's just like the world's biggest library, with the books scattered all over the floor?

Yep, it's the Internet, a collection of more than 2.5 billion documents that's growing at a rate of about 7.3 million pages per day. When it comes to business intelligence, the Internet can be one of our most effective resources – if we know where to look.

The trick to using the Internet for business information is to know where it's located, who's supplying it, and how credible those sources are. In cable TV, the most reliable sources are usually the industry's trade associations, analysts, trade publications, and the government agencies that interact with the business.

For starters, let's look at five major cable-related associations and centers, and the information they provide at their websites.

THE CABLE CENTER

Best in class for historical materials; oral histories of key industry players, past and present; and live online help from knowledgeable librarians. (www.cablecenter.org)

Headquartered on the University of Denver campus in Colorado, the industry-supported Cable Center has been collecting cable-related publications, photographs, videos, oral histories, equipment, memorabilia and archival papers for several decades, beginning with its early years at Penn State. The Center offers the cable industry's broadest, deepest collection of historical materials that are particularly valuable to anyone who conducts comparative studies or research or needs data or artifacts tied to the medium's development.

A lot of this material is available online via The Center's Web site, which continues to add more data monthly. Equally important, The Center's librarians and archivists are known throughout the industry as the most helpful, knowledgeable and friendly "search engines" around. If they don't have the information you need at hand, they'll refer you to a source that does. To submit questions at the Web site, select Library > Ask the Librarian.

NATIONAL CABLE TELEVISION ASSOCIATION

Best in class for current industry statistics. (www.ncta.com)

The NCTA is the premier source for current statistics and quotable press releases about cable usage, market penetration, trends like HDTV's availability, and industry overviews. Available online for free, the NCTA's biannual *Cable & Telecommunications Industry Overview* also offers a snapshot of who's doing how much of what.

The annual *Cable Programming Guidebook* also provides an excellent overview of cable's programmers, including their focus, subscribership, new and original series, films and specials. *Television Facts* offers industry statistics,

including numbers for penetration and expenditures over the past two decades, as well as excellent information on such critical topics as broadband deployment and programming initiatives. For even more statistical data, such as the nation's top 25 systems, MSO stats and network data, select Industry Overview > Statistics & Resources from the site's menu.

CABLE & TELECOMMUNICATIONS ASSOCIATION FOR MARKETING

Best in class for keeping abreast of breaking industry news. (www.ctam.com)

CTAM provides research information to members, as well as a free, industry-related daily news feed, *CTAM SmartBrief*, to non-members. Sign up at the Web site to track business news, programming news, HDTV initiatives, marketing trends, broadband, and competitive issues. Each category includes several headlines with brief info blocks, plus links to the full articles in such sources as *Multichannel News*, *TVWeek*, *The Hollywood Reporter*, *CableWorld*, Yahoo and Reuters.

CABLE ADVERTISING BUREAU

Best in class for ethnically targeted consumer marketing ideas and information. (www.cabletvadbureau.com)

CAB is widely known for its annual *Cable TV Facts*, *Cable Network Profiles* and *Cable Promo Calendar*, which are available online. Beyond those standard resources, CAB also delivers dynamite coverage of an important growth opportunity for the industry: ethnic programming. Select Home > Multicultural Marketing Resource Center > Facts & Figures for African-American, Asian-American and Hispanic demographic information, including projected growth rates.

Select Programming Options to map your company's marketing strategy against programming networks' upcoming initiatives; Psychographic and Cultural Insights for various marketing research studies on ethnic attitudes and values; and Case Studies for analyses of successful real-life advertising strategies.

WOMEN IN CABLE AND TELECOMMUNICATIONS

Best in class for job searching, looking for new hires, and fantasizing about moving to Hawaii. (www.wict.org)

Most of WICT's initiatives are face-to-face programs, so there's little information on its Web site, save for organization-focused materials. WICT does, however, offer a robust career-center function that lets visitors post resumes, companies post job openings and company profiles, and experienced writers spiff up job seekers' resumes for a fee. ■■■



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The a la Carte Conundrum

Consumers should be careful what they pray for, just in case

WHY DOESN'T *USA TODAY* sell its Sports, News, Money or Life sections individually?

Surely, one of the nation's largest daily newspapers could do just that, while helping consumers save money. Instead of one *USA Today* box at the street corner, there could be four. Owner Gannett Co., Inc. also could sell each section separately at the newsstand, giving buyers the opportunity to decide which sections they really want.

The technology is here that would let *USA Today* sell its product that way, but it doesn't necessarily make sense from a business or customer viewpoint. Yet, a recent *USA Today* editorial argued that cable should sell its products piecemeal before the government regulates it to do just that.

However, promoting the capability to order individual cable programming services on an a la carte basis would be a short-lived and hollow victory for consumers at best. Ultimately, a la carte would do little to lower the cost of cable TV service, and could actually strengthen the power of cable and DBS operators to programmers' and consumers' detriment.

The technical challenges of delivering a la carte service may, indeed, be nominal, such as setting up headend scrambling equipment for each network, and upgrading some infrastructure like racks and powering levels. But even the experts who focus on the engineering side of the business are quick to point out that programming agreements are much more of a barrier to going a la carte.

Programmers' dual-revenue-stream model includes per-subscriber fees paid by the operators, as well as advertising revenue. While an argument could be made that consumers who purchased an individual network's service would be more valuable ad targets, fewer prospective viewers would probably reduce overall advertising revenue, along with overall license fees.

Putting aside the fact that many long-term programmer-operator carriage contracts have already been signed, what conceivably would those players charge for an individual network? What would happen, for example, if subscribers didn't find such a price right? Would the government be asked to intervene and regulate the individual pricing structures for dozens of cable network services?

In an environment in which each network might be sold separately, how could a new service — particularly one that's independently owned — build an audience base? In this case, the power to decide which networks should be offered to consumers would shift even more to major cable operations that also own programming — not to mention a certain DBS service that Rupert Murdoch may soon acquire. That, in turn would create an incentive to grow larger by amassing more programming.

About a decade ago when DirectTV launched, it claimed that consumers would be able to select only the network services they wanted. At the same time, wireless cable operators were offering a less-expensive alternative to cable with fewer channels. If it made business sense for cable TV's competitors to offer a la carte programming, where are those alternatives today? Consumers say they want choice and control, but they also want simplicity, which explains the success of, say, the Value Meals at McDonald's.

Perhaps most important in the a la carte debate is the fact that consumers have historically rejected the concept as it's tied to cable TV and a lot of other products and services.

In the mid-1990s, many MSOs offered a la carte, as well as packaged, pricing on so-called "new product tiers." But very few customers took advantage of that individually priced option. Services ranging from The Golf Channel and Disney Channel to Music Choice also have played with various monthly payment options. But outside of HBO, Showtime, Starz! and their sister networks, no programmer or service has been able to successfully stand alone as a separately priced monthly subscription service at any price.

About 50% of today's multichannel video subscribers take digital cable or DBS service. For a large number of those consumers, the lure of more channels has been a key reason they've signed up for those more-expensive packages. That said, a la carte offerings wouldn't necessarily drop prices for the rest of the lower-spending, analog subscribers. The reverse could very well happen.

A la carte service requires a set-top converter box for each TV. A recent Leichtman Research Group survey found that while the average analog house has 2.7 television sets, almost two-thirds of those households report that they have no set-tops. And so for the privilege of getting fewer channels through a la carte, the average analog subscriber would face the prospect of shelling out another \$6 or more in monthly set-top rental fees.

Just as it may make no business or consumer sense to sell newspapers one section at a time, a la carte crusaders should be careful what they wish for. Their dreams could very well turn into nightmares. ■■■

Consumers say they want choice and control, but they also want simplicity, which explains the success of, say, the Value Meals at McDonald's



Bruce Leichtman heads the Leichtman Research Group, Inc., which specializes in research in the multichannel video and broadband industries. He can be reached at Bruce@leichtmanresearch.com.

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Getting Customers In Line Online

Cox Communications, Time Warner Cable are casting a much wider 'Net for subscribers

OK, SO MAYBE THE INTERNET didn't change the world overnight. But it's doing it by degree. And from what I've seen, it seems to be having the same impact on cable.

I recently spoke with two MSOs whose Internet-based strategies are having a profound impact on their businesses. Cox Communications, Inc. is one of a number of major cable operators offering online bill paying, order taking, and other service considerations, while Time Warner Cable is making hay with two ongoing e-mail initiatives.

What separates Cox from the pack is its belief that its Web site can be more than a store window or a vehicle to serve the techno fringe element, and that it can significantly reduce the number of phone calls it receives, while increasing the attention CSRs can give each caller.

In one recent 12-month stretch, Cox says online orders from new and existing customers grew 277% from the previous year, while online payments shot up 435%.

Even an operationally challenged person can see the benefit in those numbers, especially if they hold true over the next few years. Churn gets minimized and bad debt is slashed. Billing costs are cut and, most important, the customer-satisfaction needle begins to move in a positive direction.

At a handful of Time Warner Cable divisions, the company has launched a monthly e-mail newsletter that performs all the functions of its hard-copy predecessor with big differences: Costs are reduced to a fraction of what they were; the ease in responding to e-mail nurtures more customer participation in surveys; and there's a more convenient first step for people with complaints.

Along with its just-launched electronic welcome kit/new customer survey that's e-mailed soon after an install, Time Warner Cable has put two Internet-based vehicles in place to manage and measure quality of service.

Indeed, both Cox and Time Warner Cable told me that their initiatives are more about raising customer-service levels than they are about marketing. But that, in turn, begs the question: Why can't those efforts be about both?

Customer relationship management – a relatively new-to-cable concept – assumes that by building a relationship

with a customer, a company will find optimum levels for the services it provides and the products it sells.

In other words, Cox and Time Warner Cable have made great first steps online, but why stop there? Why not round out the customer/company relationship and use the companies' online resources to accumulate information about consumers and build a marketing database?

Granted, video-on-demand, subscription VOD and personal video recorders – digital options that give ultimate control to the consumer – are still in their infancies. But wouldn't it be better to build a database now, rather than wait for a sea change in consumer choices? Wouldn't it be prudent to gear up for a marketplace driven less by viewing options and more by buying options?

When I buy a velvet Elvis painting from eBay or a Mitch Miller CD from Amazon.com, each seller learns something about me. Combined with the information I provide at sign-up and the browsing I do later, both eBay and Amazon.com know more about me than I'd like to admit. And so when similar items become available, rest assured that each vendor is all over me with reminders.

Why, then, isn't my cable company following suit?

Brian Deagan of Knotice, which manages Time Warner Cable's online initiative, told me that such higher-level messaging will happen in time. He says his business is ultimately about the customer "profile-enrichment process" and "moving away from pure acquisition, and into relationship management."

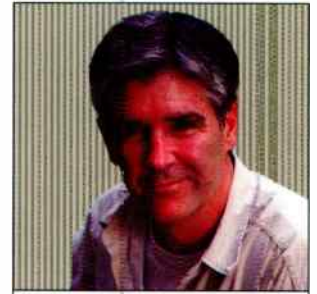
If that's the case, I hope it starts soon for the MSOs' sakes, because DBS continues to chip away at cable's market share as it positions itself as a technologically superior alternative.

With broadband and high-speed Internet access, however, cable operators may ultimately hold the competitive trump card. High-end users have embraced cable modems like no product in recent memory. If cable can harness their enthusiasm, get to know these people in a way that goes beyond name, address and phone number, and develop meaningful, two-way relationships with them, it will be able to better market itself down the road.

People a lot smarter than I have said that the cable industry's future will be about choice, convenience and control. No one says that that future has to be about lower monthly bills or thinner margins.

Knowing customers and building relationships with them will help cable prevail in the digital wars. An understanding of customers' hot buttons and what triggers their buying impulses will be the make-or-break factor in an age of choice.

As Deagan told me, "Ultimately, the goal of programs like the one we're doing with Time Warner Cable is getting that cable bill from \$40 a month to \$120 a month." ■■■



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Users have embraced cable modems like no product in recent memory. If cable can develop meaningful, two-way relationships with them, it will be able to better market itself down the road.

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VOD Today... and Tomorrow

A toddling technology begins to display some legs and market presence

VIDEO-ON-DEMAND – a complex, quickly evolving entertainment technology – is still in its infancy. But its prospects for generating incremental cash flow, as well as profits, for cable TV operators of just about any size look rather good. What's more, this nascent business could become a strong defense against subscriber churn, an increasingly important issue in an ultra-competitive marketplace.

Nonetheless, more than a few VOD-related issues face today's cable operators, not the least of which are tied to pricing, maintenance, costs, marketing, programming, gauging demand, and managing bandwidth. In time – probably sooner than a lot of us think – those issues will be addressed. And that, in turn, will clear the way for cable operators to use VOD – along with high-speed data and voice – as another way to monetize the promise of the hybrid fiber-coax networks they've spent billions of dollars upgrading over the last decade.

Because VOD's revenue streams flow from movies-on-demand, subscription VOD (SVOD) and time-shifted broadcast or cable programs, a grasp of some technical issues is critical to understanding the migration of so-called "broadcast" cable TV service to "on-demand" television.

The heart of VOD technology lies in the video server, which stores, manages and delivers content or programming via the downstream network to a subscriber's digital set-top box. It also should be

noted that some new server suppliers have separated storage functions from VOD's management and delivery.

The amount of storage depends on the number of titles a cable operator offers. Typically, each 100-minute movie digitally compressed using MPEG-2 requires about 1.7 gigabits of digital storage space. In addition to the video server, a cable operator needs separate servers for each application, such as movies-on-demand or SVOD; asset- and subscriber-management software; server and bandwidth managers; and billing software.

The number of 6-MHz channels a cable operator devotes to VOD is a function of the modulation scheme deployed on a particular cable system. If an operator uses 256-QAM, then 10 video streams – that is, 10×3.85 megabits per MPEG-2 video stream = 38.5 Mbps – can be digitally compressed into a 6-MHz analog channel.

On the economic side of the equation, we've estimated VOD's per-stream capital cost of about \$500. The break-down pegs a VOD server at \$175 per stream; software at \$75; modulation and transport at \$150; and remodel costs at \$100. The number of streams a system requires is a function of the digital customer base, as well as the estimated peak utilization rate. For example, if a system

counts 100,000 digital customers and an estimated peak utilization rate of 10%, the operator would have to build a 10,000-stream VOD system. At \$500 per stream, capital costs would total \$5 million.

Typically, a 100-title movie library for a movies-on-demand model would price new releases at \$3.95; classic and recent favorites not available on pay-per-view at \$1.95; and adult movies at \$6.95. Anticipated VOD movie buy rates vary considerably. At the upper end, some cable operators theorize that consumers, who on average rent three movies per month, would replace store rentals with three monthly VOD buys.

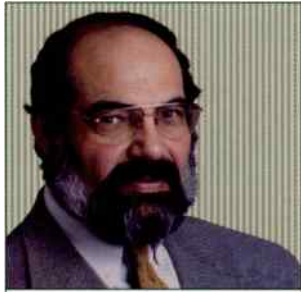
The major operating expense for movies-on-demand is the actual cost of the programming itself.

The pricing strategy for SVOD varies considerably. Some operators offer SVOD as a standalone, add-on service priced on an a la carte basis. Other operators offer a single SVOD package that includes all premium services. Still other operators package the premium service with the SVOD service as a combination package. Research into the demand for and pricing of on-demand, time-shifted broadcast and cable programming is still in its infancy, with programmers like A&E, ESPN, Comedy Central, Cartoon Network and The Discovery Channel leading the way in testing the concept and its pricing.

But this much is known: The major operating expense for movies-on-demand is the actual cost of the programming itself. This expense, along with the quality of programming – that is, the release window – will continue to be major factors in VOD's long-term viability. Along those lines, the Hollywood studios are beginning to reach pricing and availability agreements with the cable industry on top-release movies for VOD.

Programming costs for SVOD are still comparatively minimal, because premium programmers' strategy for launching this service has centered on reinforcing or supporting the demand for core premium services. Eventually, though, programmers will begin to charge for SVOD. ■■■

A more detailed discussion of VOD's economics can be found in "The Economics of Video-on-Demand: A Simulation Analysis" in the Journal of Media Economics, 15 (3), pp.209-225, by Drs. Michael Wirth and Ron Rizzuto. (Note: Capital costs have fallen approximately 40% since this article was written.)



Dr. Ron Rizzuto

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The Companies

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"If we look at the growth curve for interactive TV from *Winky Dink* in the 1950s to Gold Pocket today," says cable industry researcher Gary Arlen, the president of Arlen Communications, "we see each wave ends higher on the shore."

The technology keeps improving as it becomes more affordable, so iTV no longer costs more than it earns.

U.S. cable operators are now taking iTV more seriously than ever because of its success in Europe, especially in the U.K. and France.

The skeptics fairly argue, of course, that Europe isn't the U.S.

Granted, people in Europe have a long tradition of going to the TV screen for Teletext information, while people in the U.S. have now adjusted to visiting a PC screen for information.

Granted, Europe's best iTV offerings have been deployed on more capable boxes than those in the U.S.

Granted, Europeans adopted the open multimedia home platform (MHP) standard for interactive content on any set-top box in a digital video broadcasting (DVB) network, regardless of manufacturer. That happened while iTV development in the U.S. was delayed by open competition among incompatible proprietary solutions for the set-top middleware.

Granted, Europe allows iTV gaming, while TV-related gambling has been deemed unacceptable in the U.S.

But even with these differences and more – even with NTL's failure in the U.K. – the overall uptake in Europe undeniably proves the market for iTV. Now, it's facing another resurrection in the U.S. Small wonder: The pieces finally are falling into place.

After a \$75-billion investment, the U.S. cable plant has been largely rebuilt over the last few years. With digital services available to more than 80% of the nation's TV households, cable has attracted 20 million digital subscribers.

The digital boxes now deployed aren't as advanced as some may wish, but the installed base is large enough to build a business on. By adopting more open standards such as OCAP and XML, producers can at last create iTV content once and then see it played anywhere.

Given these developments, the financial balancing act between development and deployment at last looks favorable for iTV. Consequently, we haven't seen such hope for the concept in this country since Barry Diller married the television, telephone and computer into the magic money-making machine of home shopping.

Will the 21st Century's first decade begin the iTV era in the U.S.? Will cable operators soon be rolling out advanced services that go beyond electronic program guides and video-on-demand? Will cable make its move before satellite operators flip a switch for full-bore nationwide iTV services?

"It's inevitable that interactive TV is going to be big," says analyst Paul Kagan, the chairman/CEO of Kagan Capital Management, "but it's coming together later than we thought. It's happening in bits and pieces, creeping into our lives."

Kagan expects three to five years to pass before iTV services in the U.S. reach the levels of interactivity already available in Europe. "We're now waiting for the last contractual pieces to fall into place, the carriage deals between the networks and content providers, but it's coming," he predicts.

For the U.S. to match iTV's European success, "we'd first have to see the prices become more affordable," says Sean Badding, a senior analyst at The Carmel Group. "Then, we'd have to see more applications targeting specific interest groups. And these applications would have to be more intuitive, providing a more customized or personalized feel for each consumer."

The financial balancing act between development and deployment of Interactive TV at last looks favorable.

The delusion still plaguing cable, Arlen warns, is a belief there will be one killer application that puts iTV over the top. In reality, success will hinge on a wide range of offerings that appeal to different markets. "We tend to think in terms of what's already been done, but these services may be things we can not even imagine yet," Arlen notes.

"I'm optimistic that interactive cable TV will happen in the U.S.," says Gary Lauder, managing partner of the new media investment fund Lauder Partners. "What oscillates back and forth is public opinion and the pundits' views about the options for interactive TV, and for TV in general. What doesn't change is a tendency to offer interactive services."

So, is interactive TV in the U.S. a business, at last?

We're still waiting. ■■■



Ken Freed

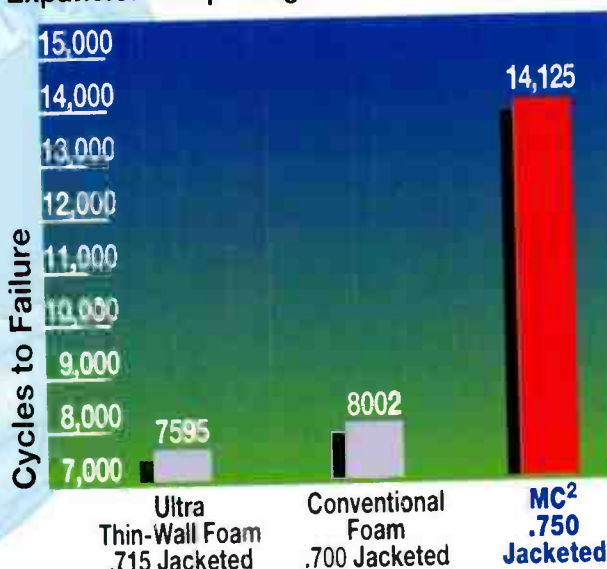
Ken Freed at www.kf.com is a veteran journalist who specializes in interactive TV.

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