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The MDU Battleground

By Craig Kuhl and Jonathan Tombes

Competitive pressures and advancing technologies are converging on the multiple dwelling unit (MDU) market.

Competition continues in the wake of sustained telco video initiatives and the upholding by a Federal Court of Appeals in May of a ban on cable operators arranging exclusive service contracts with owners of MDUs.

The technology drivers include passive optical networking (PON) equipment, bendable fibers, and niche video, high-speed data and telephony equipment designed for applications that, while niche, add up to tens of millions of dollars in bulk account revenue for some larger MSOs. (See table, page 3, for video specific equipment.)

MUST-HAVES

Driving this business are expectations from consumers that services in all MDUs resemble those found in single-family residences.

"Services like HD and high-speed Internet are must-haves for MDUs. They must be at parity with their competition. Maybe not the best out there, but not an inferior service. It's a parity issue," said Bruce Leichtman, principal for the research group, LRG.

It's an issue that has become top of mind for both MSOs and its competitors, such as Verizon's FiOS and AT&T's U-verse, as they jockey for position in this market.

The market is worth fighting for, with nearly half of all U.S. apartment residents saying the availability of broadband influ-

ences their rental or buying decisions, according to the National Multi-Housing Council.

Hotel chains also figure in the mix. (See also sidebar).

"We're seeing new flat screens with bad analog feeds, and guests are bringing their own content and devices with lots of Internet streaming.... It's a big issue," said Doug Rice, EVP and CEO for the Hotel Technology Next Generation group (HTNG).

MDU TECHNOLOGY

MDUs are the larger market. "About one fourth of the U.S. households are in MDUs," said Michael Weston, director of marketing for Verizon Enhanced Communities, said. "It's a long-

term investment. But now we can do fiber to the desktop and minimize the distance...using smaller (ONTs)."

In July, Verizon began extending its FTTP offering into more MDUs by deploying router-sized GPON ONTs from Motorola and Alcatel-Lucent.

"It means we can go deeper into MDUs with tighter, bendable fiber," Weston said. "Within 18 months, the ONT will be the size of a deck of cards, (further) reducing the space requirements."

Space constraints and need for scaling requirements leads service providers to distinctive technical solutions. Bendable fiber is one. Introduced in mid-2008, Corning's ClearCurve was pitched as a fit for *continued on page 3*

Checking into Hotels

The emergence of the hospital-ity industry as a fertile market for video, voice and data service providers is sparking a renewed interest from both the hotel and cable/telecom sectors.

With little or no compatibility among service providers and hotels, increasing bandwidth requirements and a growing appetite for high-speed data, HD, VOD, and always-on connectivity, hotels are now raising the bar for these advanced services.

"There's a great deal of interest

with cable MSOs, and we're engaging that issue and the adoption of standards," said Doug Rice, EVP and CEO for the Hotel Technology Next Generation (HTNG) group.

"Hotels want to control the channel lineup for guests, brand the experience and integrate guest services via TV from hotel to hotel. But we would much rather have all the technology at the headend with tru2way in each room," Rice said.

The sticking point is cable's footprint and how to extend

it nationally.

"Nearly 75 percent of the hotel market rooms get content from satellite, but cable has more content to offer hotels," said Rice. "That's what we're discussing with seven hotel companies, Time Warner Cable, Cox and Comcast. We want enough discussion to push a standard to an OCAP standard then push it out to the industry."

And eventually push satellite out of the picture.

"Satellite requires a headend

in the hotel, and it's not a simple headend," Rice said. "It's difficult to maintain and requires lots of engineering. The hotel industry is now about creating the home away from home, and it's currently frustrated by not giving its customers what they want."

Space counts, particularly in the hotel sector, where the discreet placement of set-top boxes and other devices is considered a must.

"A set-top box in every *continued on page 3*

Reclaim Analog Bandwidth Now

Vecima's **digital to analog** gateway provides MDU networks with legacy analog channel line-ups while freeing up bandwidth for new enhanced digital services. Vecima's **QAM to QAM** gateway provides hospitality networks with a secure means of delivering HD content to guest rooms using Pro:Idiom™ technology.

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MetaQAM This multi-channel High Definition QAM to QAM Transcriptor for use in the hospitality industry securely decrypts, groups, then re-encrypts with **Pro:Idiom™** technology. The MetaQAM demodulates up to 32 QAM carriers and supports up to 6 multi-channel CableCARDS to decrypt streams for both SD and HD programming.

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the MDU market, where a typical installation could require a dozen 90-degree bends.

ATX Networks is another vendor with a host of specialty products addressing MDU applications (including hospitality) ranging from analog and digital video deletion and insertion to digital voice switches for intercoms to amplifiers and nodes to connectivity, filters and power converters.

Another vendor with a reputation for custom engineering, Vecima Networks developed its Terrace MDU gateway as a multi-channel QAM to RF converter that acts like one very large digital-to-analog (DTA) terminal device. Reportedly, Comcast has signed an agreement to deploy Terrace.

Software helps reduce the operational costs of Terrace, a compact and complicated device. "There's lots of parallel processing, de-modulating, decrypting, all in a box 20 inches x 30 inches. It's essentially a headend in a bread box, with fixed capital costs and future-proof because it's re-configurable with software that requires only a network software adjustment," said Richard Blenkinsop, VP of marketing and business development for Vecima.

MORE FIBER

While Verizon has deployed its FiOS technology to residential and MDU and small-to-medium-sized business (SMB) endpoints, MSOs have been pushing fiber deeper, via GPON, EPON and cable-friendly RF over Glass (RFoG) access technologies, as well.

"The MDU, hotel and SMB markets are heating up," said Shane Eleniak, EVP of marketing and business development for Alloptic. "MSOs are using the SMB market to push fiber into MDUs, and they are paying more attention to that market."

Alloptic's family of access devices work in multiple settings. "There's lots of RFoG-type technology, micro-nodes, even in hotels. And with 8-16 apartments per micro-node, it's even more economical for MDUs. The business case is there for MDUs," he said.

Yet participants in these markets have no illusions about the technical and business challenges that lie ahead.

"Owners of apartments are asking for optimum choice for their customers. But how do we structure them so each customer has maximum flexibility of choice?" said Jim Honiotes, principal and COO for

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LCR Enterprises, a consultant to cable's MDU market. The problem is that "no one thought beyond one set of coax and twisted pair."

"But there is also lots of opportunity to grow into the MDU market as long as cable continues to innovate and head towards an all-digital lineup."

COMPETITION

The market has become an active battleground in the competition between MSOs and telcos, with vendors playing the role of fiber access arms dealers

"Technology is continuing to evolve with fiber, PON infrastructure and upgraded paths to PON, and the applications of core technologies like wall-plate placed ONTs, which look like CATV jacks but with PON behind them. And innovations at the MDU level are the key because of the high density," said Steve Hersey, senior director of customer marketing for Motorola Access Networks.

Yet for competitors vying for market share in this space require some deft maneuvering, solutions compatible with their existing triple-play infrastructure and a commitment.

"It will take dedication to the

MDU market for MSOs, similar to what the residential market has been," said Tom Williams, VP of marketing and business development for Arris. "The MDU market can't take a back seat to residential, and will require some tenacity."

The stakes are rising. "The MDU, hotel and small business markets are very important to us, and competition is likely to grow," Verizon's Weston said.

"We've launched video services to small businesses like doctor's offices and bar settings. There are challenges to network planning, but we've always seen the development of FIOS as a consumer and small business play. Now, it's been accelerated."

Just how quickly service providers accelerate their moves into these markets will likely determine who gets what market share, given that business and bulk accounts are likely to churn more slowly than those on the residential side.

Influencing those moves will be the development of fiber transport and equipment designed for the voice, video and data applications that consumers now expect wherever they happen to live or temporarily reside. ↩

Checking into hotels

room is not what the hoteliers want," said Glen Hardin, chief architect for video systems at Time Warner Cable. "But they need something with an RF two-way device and a return path for VOD. Hoteliers want an off-premise solution and a cross-MSO offering, but that requires a multi-MSO agreement."

Pending such collaboration, MSOs still face a basic technical hurdle.

"The use of Interactive TV, digital, HD and other technolo-

gies and applications has hit the hotel market and radically changed the way we equip hotel rooms. But (the hotel market) uses a proprietary encryption scheme (pro:Idiom) with little compatibility, which has created a market at risk within our footprint."

Others recognize this conditional access dilemma.

"There is a push by larger hotel chains for HDTV content, so cable operators need to meet certain encryption require-

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ments," said Jay Lee, CTO and VP of business development at ATX Networks. "Cable operators have lots of HD content but it is encrypted in other formats like Scientific-Atlanta's Power Key. This is a very significant requirement."

In its UCrypt platform, ATX opted to enable decryption of programs via CableCard and output content in either 'clear' or the LG Electronics-based Pro:Idiom encrypted format. RL Drake has embraced Pro:Idiom with its

hospitality system product.

There is some movement toward an OCAP (tru2way) standard and a solution, but it will take more time. "Within 12-18 months we expect to send a complete standard to CableLabs," Rice said. "We're definitely moving forward."

A common approach is the best solution, Rice said: "We're in the exploratory stage and the problems such as billing systems are not difficult to solve. But they require standards." ↩

MDU/Hotel Video Technology

ATX Networks

Product name	Product type	Features
DVIS and DVISm	QAM Insertion	Designed to deliver locally generated content in a digital format. The DVIS version is a scalable wall-mount solution for encoding up to 10 A/V programs and multiplexing them onto a QAM channel via its integrated QAM modulator/upconverter. The DVISm version encodes up to 4 A/V programs. Both units also support add/drop multiplexing.
UCrypt	MDU/Hospitality video	Designed to support MSOs with the delivery of content into hospitality and bulk accounts directly from the HFC plant without the use of set-top boxes. The UCrypt line of products enables decryption of multiple HD and SD programs via CableCard and outputs content in either 'clear' or Pro:Idiom encrypted format. Options include bulk QAM to QAM; bulk QAM to GigE; bulk QAM to analog.

RL Drake

Product name	Product type	Features
Drake Digital HD Hospitality System	Hospitality video market	LG Electronics Pro:Idiom technology into Drake's scalable, high-definition video distribution architecture. Delivers existing HD and SD channels to hotels, hospitals, etc. over HFC plant, without requiring set-top box in each room. Centralized encryption. Stream multiplexing/QAM modulation (2 HD or 6 SD programs) via Drake MQM6000L.

EGT (now ARRIS)

Product name	Product type	Features
HEMi	Micro Edge Encoder	A multi-channel edge encoder used for insertion of local channels in MDUs, HEMi converts existing analog local insertion channels to digital. Supports from 1 to 8 channels; embedded multiplexer with add/drop channel replacement capability; multi-mode integrated modulator (QAM 64 or 256).

Motorola

Product name	Product type	Features
QUE100	QAM Micro-encoder	The plug-and-play product accepts existing local analog video feeds from parking lot cameras, lobby cameras, etc. and delivers these channels in QAM modulated digital form to tenants' set tops and digital TV sets. Its standard QAM RF output merges into the buildings' all-digital service lineup. Provides MPEG-2 SD video encoding.

Radiant Communications

Product name	Product type	Features
5000 Series	Analog Digital Direct to QAM Local Insertion	The QRF series of QAM encoders are single and dual-channel SD encoders designed for MDUs and hotels. The QRF5000-HD model encodes for high definition. The DQ models include QAM channel deletion. The QRF encoders are expandable with QRF-5010 and feature front panel or GUI interface for monitoring and configuration, embedded hardware solution in rackmount unit, agile channel output and low power usage.

Vecima Networks

Product name	Product type	Features
Terrace	MDU gateway	A multi-channel QAM to analog RF converter. Demodulated MPEG-2 transport streams from multiple QAMs are decrypted, decoded to analog, and then converted to the correct RF channel. The Terrace can demodulate up to 16 QAM carriers, select the MPEG 2 transport streams and remap them to 82 standard definition MPEG 2 program streams, which are NTSC modulated to analog video channels, for direct connection to analog television sets.