HOME NETWORKING

MoCA: Lose One, Win Many

The MoCA crowd seems to have taken in stride the loss of the **AT&T** account to the rival HomePNA networking technology, if Patrick Henry, CEO of MoCA chipmaker **Entropic**, is an indicator. He started an interview by talking about the fact that Entropic has shipped its two-millionth c.LINK chipset, the basis for the MoCA standard, with 80% of them going into boxes that'll be used in gear implementing the MoCA standard for home entertainment networks.

> *multi-room DVRs*

Verizon and its FiOS TV service is the largest publicly announced user of MoCA boxes. **J:COM**, Japan's largest cable TV operator, is the second-largest user of c.LINK chipsets. Both companies are shipping c.LINK-equipped boxes that deliver triple-play services: phone, pay-TV and broadband. J:COM uses the c.LINK boxes mainly to network multi-tenant buildings. Verizon is putting them in homes to support its multi-room DVRs. Currently **Motorola** is the only publicly announced supplier of MoCA-equipped set-top boxes to Verizon. But MoCA also goes into broadband home routers (BHRs) and optical network terminal (ONTs) in the Verizon deployment.

Henry said that all the telcos remain a target for MoCA gear. The MoCA crowd hasn't given up on getting AT&T back at some point in the future. Henry confirmed that AT&T made to decision to use HomePNA about a year ago.

The Arithmetic of MoCA for Multi-room DVRs

Here's how Henry see the big picture in the States:
- 110 million homes with one or more TV sets
- 65.5 million cable TV subscribers
- 28 million satellite TV subscribers
- 100,000 FiOS TV subscribers, to-date
- The average US home has something between 3.5 and four TV sets
- 15% of US homes have a DVR
- DVR penetration in the States will be 70% by 2010, according to **iSuppli**
- 20% of US homes already have one or more HDTV sets
- 85% of DVRs come from the pay-TV services rather than being bought in retail stores
- Market research shows that once people get used to the "DVR experience" in one room, they want that capability at every TV in the house

The Evolution: Standalone DVR to Multi-room HD DVR

Everyone is going to want a DVR, Henry says. The natural evolution from a DVR is that consumers will want every TV set to be able to access that DVR. Why, Henry asked, put a hard disk in every room? (That is, however, what **DirecTV**, the single largest distributor of DVRs, is currently doing.) It just isn't cost effective for pay-TV service providers, when they can implement a home network for entertainment at a fraction of the cost, and give any room access to all the home's media, no matter where it is stored.

According to Henry, there is no other solution except MoCA for delivering high-quality, secure video throughout the home for all the US service providers - cable TV, satellite TV, telco TV and retail - short of re-wiring the house. Re-wiring is something the carriers and the homeowners do not want to do - too costly, too messy, too disruptive.

Echostar and **Cisco's Scientific-Atlanta** currently sell multi-room DVRs, Henry said, but use a technology called "analog remodulation" to transmit the signal. That means the video is sent to a single channel on the remote TV sets and requires that the main TV to be turned on.

All the major US pay-TV operators intend to put a multi-room entertainment network inside the house, Henry said. He likens it to the evolution of PCs. In the beginning PCs were standalone devices but their full power didn't come until they were connected to local area networks (LANs). The initial justification for LANs was printer and file sharing, but the bigger market came about when networked PCs became a media platform and were connected to the Internet.

The Killer App

The killer app for home entertainment networks, says Henry, is deploying them to get multi-room DVR capability.

DVRs, he says, are one of those things about which people say, "It changes my life." Once they get a DVR, he says, they'll want every TV set connected to one.

And the most cost-effective way of doing that is a multi-room DVR, not putting an expensive, noisy hard disk in every room. And, with the growing popularity of HDTV, the DVR will have to be able to stream multiple HDTV signals to every room.

> *"It changes my life."*

That, says Henry, can best be done with MoCA's coax networking technology, because MoCA technology was designed specifically for operation over coax wires. Thus it can, unlike HomePNA, coexist with other services operating on the same coax cable, such as a broadband service. This means a homeowner can use pay-TV from a telco while simultaneously using broadband from a cable-TV service over the same coax wires. That's why over 60% of the homes cannot use HomePNA, Henry says.

Henry predicted that there will be a paradigm shift in the way that entertainment and information is delivered throughout the home. It'll be the same change that came about when PCs were networked and connected to the Net.

What will drive the multi-room, HD DVR market, Henry said, is the fierce competition in the pay-TV industry between the phone, cable and satellite TV companies. Competition today is based on bundling of multiple services and the pricing of those bundles. Competition in the future, Henry said, will revolve around bundling of voice, video and data features, not just the pricing of bundles.

It won't only be telcos like Verizon that implement MoCA, Henry said. MoCA was

HOME NETWORKING

MoCA: *continued from page FIVE*

designed to meet the requirements of the cable TV operators as well.

Henry also says that PCs will be connected to the MoCA network. They'll be used to stream videos that have been downloaded from independent online service such as **Movielink** and from the pay-TV services themselves to TV sets.

It Won't Be Wireless

Wireless networking, according to Henry, is not good enough for high-quality and reliable video streaming. That, he said, is also the belief of every US pay-TV service, whether cable, satellite or telco. Not one of them intends to deploy wireless networks in the home; at least in the near term for whole house video.

A major Wi-Fi weakness

Yet, Wi-Fi will continue to be popular in homes, but for data and device portability, just not for securely streaming high-quality videos.

A major Wi-Fi weakness, Henry said, is its use of an unlicensed spectrum. This means that any consumer device can use that spectrum, and potentially cause interference. That problem is a showstopper for pay-TV service providers in distributing their video content throughout the home.

AT&T's Homezone boxes, he said, don't have MoCA capabilities today, and consequently cannot serve as a multi-room DVR.

Tivo's strategy, he said, is to put a Tivo box with a hard disk in every room, then allow a user to copy video files from one Tivo to another. That means there's a long delay between hitting the "play" button and actually seeing something.

DirecTV does not currently offer any multi-room networking.

Henry said that the big market for home networking for digital entertainment, and for MoCA, is North America, because of the high percentage of pay-TV households, the number of TV sets per household, the penetration of DVR and HDTV and the existence of coax wiring in most homes.

It is, he said, a huge market that is exploding.

Rotani Challenges Ruckus in TV over Wireless

The following originally appeared in *Wireless Watch*. To get a copy of the complete newsletter, please e-mail paper-boy@riderresearch.com

Effective delivery of IPTV over wireless networks is a key objective for triple- and quad-play carriers and their suppliers, but this is an area where Wi-Fi has remained largely unproven.

Two start-ups are grappling, however, to convince customers that their techniques for reducing interference on license-exempt networks will make WLans competitive for supporting IPTV and other advanced multimedia applications around the home or even the metro zone.

One, which has had significant attention and some early customer wins, is **Ruckus Wireless**. And now Arizona's **Rotani**, which recently released reference designs for its patent-pending AirReferee technology, is challenging it. Rotani claims to make 802.11g networks - and in the future, the emerging high-speed 802.11n - resistant to interference and able to deliver a guaranteed 35 Mbps even in congested wireless conditions.

Like Ruckus, Rotani is targeting IPTV providers looking to distribute video to different televisions and other devices round the home, where typically there will be high levels of interference from other units, especially in the free-for-all 2.4GHz band. The start-up has announced its first product based on AirReferee, called VideoPuck, software that can be added to the firmware of standard access points and set-top boxes to address interference and problems with multicasting over Wi-Fi.

Multicast signaling, which sends one stream simultaneously to many users with no requirement for acknowledgement by the receiver, can reduce Wi-Fi performance to under 1 Mbps but VideoPuck converts a UDP multicast signal into a point-to-point UDP signal in order to prevent that drop-off.

Rotani says **Deutsche Telekom** and **Telecom Italia** are already interested in its approach, especially as it uses standard APs rather than dedicated bridges, and so could be a lower cost method than Ruckus', which uses specialized IPTV bridges.

The core AirReferee technology, which will be licensed to OEMs, includes access points with two off-the-shelf 802.11 radios, each attached to one or more of Rotani's specialized directional antennas. The AirReferee AP scans the environment and automatically sets the channel for each radio and antenna to minimize interference with adjacent networks. The system automatically determines the best transmit and receive antennas.

Rotani has raised $4 million in venture capital so far, from German investor **Firstventury** and from Klaus Tschira, billionaire founder of software giant **SAP**. Rotani is now entering an "aggressive B round" of funding.

Separate from the *Wireless Watch* article, Rotani made the following announcement:

"One key issue for carriers wishing to deploy IPTV services is how to facilitate an appropriate connection between the DSL modem and the IPTV set-top box connected to the TV. Traditional installation methods require the installer to run new wiring, which is very time-consuming, costly and undesirable to the homeowner.

"A wireless (Wi-Fi) connection is generally the solution of choice for both the home-owner and service provider. Yet today's commercial Wi-Fi gear is used predominately for data networking, and does not provide support for wireless multicast IPTV. What's more, Wi-Fi gear suffers from packet loss that ultimately results in screen pixilation and poor video quality.

"VideoPuck software turns today's commercial Wi-Fi gear into a robust wireless solution for streaming multicast IPTV. VideoPuck is basically a wireless replacement of Ethernet cables and just as simple to install. Without any user intervention, VideoPuck automatically configures and establishes an error-free link for wireless transmission of IPTV. VideoPuck is processor and radio chip independent.

"'We have already validated VideoPuck on commercial platforms sold by leading Wi-Fi gear vendors for less than $49,' said Nicholas Funke, executive VP of Rotani. 'The video quality on this low-cost platform is immaculate and the range is exceptional, even when surrounded by multiple WLans co-located in neighboring apartments.'"