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BROADBAND BEAT

Marvell: Next Gen G.hn to Hit 2Gbps Speeds

- Runs over All Three of the Home's Wires

- Coexistence with Existing G.hn, MoCA, HomePlug and HomePNA

*The most important announcement at last week's Broadband World Forum was **Marvell**'s next generation of G.hn, called G.hn Wave-2, which can provide speeds up to 2 Gbps, work over any wire in the home and is totally **ITU**-T compliant. Products with the new G.hn Wave-2 chips are expected to start appearing in the second half of 2016.*

Marvell has doubled down on G.hn home network technology by introducing a major new version called G.hn Wave-2, which, by doubling channel bandwidth up to 200 MHz, can provide speeds of up to 2 Gbps. The chips are intended for both consumer home network products and for telcos and cellcos to use in gear for their backhaul networks.

G.hn's alliance the **HomeGrid Forum** calls it G.hn 200.

In addition to its amazing speed, G.hn Wave-2 can operate over any wire in the home – coaxial cable, powerlines and phone lines – although Marvell did not say whether all three wires are supported on the same chip, unlikely, and if not, when the G.hn Wave-2 chips will be available for each wire – and what the speeds will be for each type of wire. What is certain is that 2 Gbps over any wire in the home is an earth-shaking product that will impact chip and equipment makers in both the HomePlug and MoCA markets.

"What is certain is that 2 Gbps over any wire in the home is an earthshaking product that will impact."

Marvell said that ITU-T compliant G.hn Wave-2 "is specially optimized to provide a reliable backhaul [in the home] for 802.11ac Wave-2 Wi-Fi access points and extenders," products that are just recently coming to market.

Marvell said the chips will enable equipment makers to build a new generation of solutions for wired IPTV pay TV delivery and 802.11ac Wave-2 Wi-Fi extenders that "will double the throughput and increase the range of existing products."

What the product makes possible is a home with a couple of 4K streams – let's say a 4K TV and a 4K iPad – plus a couple of HD streams – all flicker-free. To those you can add high-speed multi-player gaming, telemedicine visits and examinations in 4K – or at least HD, plus all those little IoT thingamabobs furiously communicating with each other and with devices outside the home. It's easy to make a case for the home in the near future needing 300 or so Mbps. *Faultline* paints a picture of "10 Gbps to an MDU building, 1 Gbps to each home using Ethernet-over-coax, and 300 Mbps around each home, as a real world scenario."

Other notable features of G.hn Wave-2 are:

- Compliant with ITU-T G.9960/61/62/63/64 including 200 MHz coax and 100 MHz MIMO powerline band plans. The new 200MHz coax channel bandwidth simultaneously achieves lower power consumption and smaller size than products currently available in the market. The draft ITU-T standard is scheduled for approval in February 2016.

- Compliant with ITU-T G.9979 and IEEE 1905.1a – 1905.1a allows different home network technologies to work together.

- Compliant with Broadband Forum TR-069 for remote diagnosis and repair.

- Compliant with the IEEE 802.1 and IEEE 802.3

- Reference designs for equipment manufacturers that want to get products to market quickly and at low costs.

- Fully interoperable with previous generation of 1 Gbps G.hn products

Marvell said equipment makers can integrate its MoChi-enabled 88LX5153 processor with other MoChi-enabled application processors to build a virtual system-on-chip (called the Marvell VSoC), which will make possible lower system cost, simpler board design and faster time-to-market.

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It is a remarkable achievement for a network technology that many have written off multiple times as dead during its often delayed development.

Philip Poulidis, VP and GM of the business units for wireless and Internet of things at Marvell, said,

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"Our G.hn Wave-2 offering is the result of Marvell's commitment to help broadband service providers deliver gigabit-class services to their subscribers using in-premises wiring. These products combine the fastest data rates in the industry with the flexibility provided by our MoChi architecture to build custom virtual SoCs that exactly meet customer needs at very competitive price points."

Marvell's G.hn chips provide "mechanisms for seamless coexistence with networking products based on legacy MoCA, HomePNA or HomePlug specifications."

It promised that its G.hn chipsets "guarantee QoS for carrier-grade 4K and HD (2K) video delivery, and are optimized for multicast management and automatic elimination of interference from neighboring home networks."

Faultline said, "In truth we are looking at 300 Mbps to 600 Mbps genuine average backhaul need for a [Wi-Fi] access point."

Marvell said the G.hn Wave-2 chips will be available to customers in Q1 2016 and that products based on G.hn Wave-2 chipsets are expected to reach the market during the second half of 2016.

Google Fiber Eyes Three More Cities

Alphabet, previously **Google**, is working with the cities of Jacksonville, Florida; Tampa, Florida and Oklahoma City, Oklahoma as possible future locations for its 1 Gbps Google Fiber (hmmm, wonder why it's not Alphabet Fiber?). Google Fiber has previously begun building all-fiber networks in Provo, Utah; Austin, Texas and Kansas City, Missouri and committed to building it in six other cities.

Google works closely with local authorities to a) keep its construction costs low and b) find neighborhoods where a high percentage of residents will sign up.

Jill Szuchmacher, director of Google Fiber expansion, said on a company Web site, "These growing tech-hubs have a strong entrepreneurial spirit and commitment to small business."

"Marvell's commitment to help broadband service providers deliver gigabit-class services to their subscribers using in-premises wiring."

ENABLING TECHNOLOGY

SMPTE Issues Call to Arms for HDR Technology

There are those who say that the upcoming HDR (High Dynamic Range) technology will do more to improve picture quality than the increased number of pixels that 4K and 8K offer – plus HDR can be used with HD, 4K and 8K resolutions – and yet take only about 15% to 25% more bandwidth compared to 4K's need for double that bandwidth.

The **SMPTE** has issued the recommendations of its High Dynamic Range (HDR) Imaging Ecosystem technical committee (10E SG), according to *Faultline*, which says the report examines the issues at stake in the current HDR ecosystem, and identifies areas which need to be tackled. It aims to propose definitions for HDR and its related technologies, describe the problems in the current HDR ecosystem, and identify the existing standards that may be impacted by the rise of HDR – with a view to identifying areas that require further investigation.

It is part of the industry's drive to a standard that will be used by everyone in the chain – from content creators to TV sets – and yes smartphones and tablets.

The SMPTE wants a standard that automatically detects the brightness of the viewing environment, so that the panel can adjust its brightness to match the room – and achieve a better and more accurate contrast. This would potentially allow for TVs to save energy by dynamically altering their power consumption, but more importantly, it would produce a better picture.

The report says, "The HDR ecosystem needs imaging performance requirements that must be met with sufficient precision to ensure that high-quality color reproduction can be achieved on displays with different capabilities without introducing unacceptable artifacts. Properly designed HDR systems will dramatically improve the available creative palette and directly enhance the consumer experience."

The **MPEG** Committee is also evaluating whether HEVC needs to be modified to support HDR, and over in Japan, **NHK** has announced a time table for the delivery of HDR and WCG content in homes.

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