Cupria™ is "Apples and Dells" Above the Competition

Brad Ketch Interview Part III

In our previous session we began a discussion of the challenges encountered in VDSL 2 deployment. In this section, we will expand on some of these issues. Hopefully, we will clarify the worldwide market potential for Rim's Embarq™ family of transport processors.

Tick Tock: Brad, explain in more detail Cupria's™ triple play solution?

Brad: Well, our triple play approach allows high definition TV, voice and data across existing copper telephone lines. VDSL 2 does not provide this solution very well, still has deployment problems, and tries to deliver triple-play at a network cost about twice that which we can provide.

Tick Tock: Since Embarq's™ technology is not built on the VDSL 2 standard, are you not then creating a brand new standard?

Brad: "We are providing an enhancement to the existing standard. The result has been that our customers, the equipment makers who then sell to the telcos, are becoming very interested in collaborating with us."

Tick Tock: Without attempting to wade through the entire history of telecommunications technological development, let us begin the journey to understanding VDSL 2 deployment challenges at the introduction of the Digital Subscriber Line (DSL).

DSL first burst on the scene in the early 1990s in an attempt to solve the analog problem.

Prior to the internet age, we were content to use our grandparent's analog telecommunications technology with its low frequency and low bandwidth capabilities. In the analog age, when moving only voice and text traffic was necessary; kbps (thousands of bits per second) was adequate.

When customers started to demand the ability to move large amounts of data quickly, (enabled by the invention of the transistor by none other than Bell Labs) we were thrust into the digital age. Modern customers demand that data be moved in mbps (millions of bits per second). Today, the speed at which data can be moved is limited largely by the Telcos lack of required upgrades to the last-mile access lines that reach the home plus the lack of innovative thinking on the part of the equipment designers.

With this new demand for speed we have encountered new challenges.

- The faster the car travels (frequency), the more likely it is to jump to another lane! Darn those teenage drivers!
- In order for various flavors of xDSL technologies (or for that matter, multiples of the same flavor) to co-exist on the same

copper loop, they have to stay in their own lanes. No cross-talking allowed!!!

- The longer the distance, the weaker the signal. Remember the soup can and string telephones when you were a kid?

- When speed and distance are increased, noise is also introduced. The bigger the gun, the more noise it makes!

VDSL 2 did not do a very good job of overcoming these challenges. While it showed promise in the lab, in the Telcos real world environment, the noise and crosstalk challenges (excuse the pun) were amplified!

A compromise solution was to decrease voltage (power) and frequency (speed) enough to at least have high data rates at short distances of less than 500 feet. This proved adequate overseas, for apartment buildings and commercial high rises in highly populated areas such as Asia, and even a few US metropolitan areas called Multiple Dwelling Units (MDUs).

But 75% of American homes are on loops longer than 3,000 feet!!! No wonder the US Telcos have been reluctant to invest heavily in VDSL 2 technology.

Since VDSL 2 operates optimally on loops less than 3000 feet, this creates the need for additional Digital Subscriber Line Access Multiplexers (DSLAMs). DSLAMs act as gathering/distribution hubs for telephone lines coming from homes to the central office.

DSLAMs are normally housed in the Telcos central offices. However, in order to provide VDSL 2 service to homes further than 3,000 feet from the central office, additional DSLAMs would have to be placed in neighborhoods, closer to the customer homes.

Thus, VDSL 2 technology requires significant capital outlays to add (outpost) DSLAMs in virtually every neighborhood. This is an expensive and less than optimal solution to the problem.

Quoting Brad Ketch, because our technology's design is based on a standard other than VDSL 2 (Apple instead of Dell), our capabilities exceed those of our competitors.

Rim has designed the Embarq™ technology on a standard that is compatible with existing xDSL technology, yet different in that it handles noise and cross-talk issues better, therefore giving it greater capabilities.

We will use the race car engine as an analogy. Going faster is not difficult. Going faster without flying off the track is where the challenge lies. In my opinion, Rim has learned to better control the need for speed.

Tick Tock:

Brad, I understand that Telcordia-formerly Bell labs, has recently reviewed your technology. How long have these test results been available to the outside world?

Brad: The test results have been available to our customers for a couple of months now. The testing environment is very sophisticated and proprietary to Telcordia. As result, the exact parameters that Telcordia utilized in its testing were not published. Their testing objective was to predict performance in the real world. They used accurate transmission system models including precise models of the copper telephone loop plant, plus the impact of crosstalk and external noise. The report describes Cupria™ modulation system, discusses the performance analysis methodology used, and presents an array of performance results compared to VDSL2.

Tick Tock: Is the technology behind Cupria™ capable of even greater innovation?

Brad: I think that it is. We continue to work with Telcordia. Almost weekly, our engineers discover innovations and incremental design changes that improve performance. At some point, we will have to stop and save these new design improvements for later versions.

Tick Tock: Where are you in the product release phase?

Brad: Our competitors do not routinely make public where they stand in the process of product development. We have released the FPGA of version of Embarq. Because it remains in the FPGA phase, we are able to make continuous updates in its design. When a FPGA design of the chipset meets customer satisfaction, the ASIC version is ordered.

Tick tock: Is Rim setting a new global standard? It appears that way. (See my post dated 8/31/06.)

At the April 2006 shareholders meeting, Brad Ketch mentioned that Rim has presented IPSL's measured Ethernet network parameters to the ITU (International Telecommunications Union). This presentation sought the techs consideration as a new worldwide standard. The Ethernet parameter is coined Internet Protocol Subscriber Line, (IPSL). Brad mentioned that by ITU establishing this new standard, the way is paved for global acceptance of the technology. Since some carriers will not widely deploy a technology until the standard is established, Rim is again laying the foundation for a dramatic entrance into the global telecommunications marketplace.

Where do we go from here? What is the market potential for the technology?
Next week we will look at some INSTAT numbers that will floor you!!

Telcordia and ITRI to open optocommunications testing and certification center in Taiwan
http://investintaiwan.nat.gov.tw/en/news/200502/2005021102.html

NASA/Telcordia Partnership
http://www.isr.umd.edu/~baras/news/2005/

DOD/Telcordia Partnership
http://www.telcordia.com/news_events/pressreleases/2006/04182006.html