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VoIPeering

INTERNET TELEPHONY

Are You Experienced?

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The VoIPeering series is almost two years strong now and in that span there have been several discoveries and clear distinctions made in this seemingly new space. In a sense, VoIP Peering has been "discovered" in the past two to three years. It's not that it wasn't functionally happening prior, but it hadn't been properly identified, or specifically marketed by any service provider.

Specificity is a major distinction in and of itself. It means that the evangelizer, or product developer, knows enough to realize that there is a difference between one thing, or service type, and another and they know how to, and do, articulate it. This is the critical first step towards accurate dissemination.

An interesting dimension of VoIP Peering, and one that led us all through a "discovery phase," is that Voice over IP is not an application that consumes a great deal of bandwidth. Even in order for voice to be full duplex and clear the most conservative CODEC, G.711, is only a 64k session. That's not much pipe in the grand scheme of things. Why is this important? What we all discovered is that voice as VoIP works over the public Internet fairly well. This has proven to be rather convenient as most people and businesses have Internet access, but its smallness adds to the misconception of VoIP meaning "voice over the Internet" and that leads to inaccurate information being disseminated.

Voice quality is reliant upon many components of the entire process and not just one sliver (i.e., a CODEC), but the low capacity requirement helps to mask VoIP as an application that can achieve high quality over the public Internet. (Security is an entirely different matter.) Since the public Internet currently exists and is used for many other applications, what's adding one more going to do? Not much, but cause mass confusion and be a factor in hesitating on VoIP (define - news - alert) migration and buying decisions for enterprises and some carriers.

As we all move in to Video over IP, the clear distinction between IP over a private network (IPTV) and IP over the Internet (Internet TV) as application delivery mechanisms will be made. There will be no misinformation, or misunderstanding as real broadcast video, or even high quality Video on Demand cannot tolerate the bestefforts nature of the Internet. Video as an application, especially HD, requires magnitudes greater transport capacity and, therefore, cannot be “hidden” in the public cloud. The only logical thing to do is for the video content originators and the video content distributors to find a common, physical point where they can privately peer (cross connect), or even use a common switch fabric.

Ethernet switching makes a lot of sense for VoIP, again for the same capacity reasons. A Gig E of VoIP equates to numerous simultaneous full-duplex calls. A decent size GE switch today has dozens of ports, and if that’s too small in the grand scheme, go for the 10 Gig ports and it will easily handle millions of calls. But, with video, the industry will most likely move right to wavelength switching. HDTV channels eat GE’s for breakfast.

The past five years of voice-to-VoIP transitioning is now playing out in video. This evolution and its natural conclusions will soon mimic for video the development of VoIP peering services (i.e., TDM to SIP conversion) that sprung up out of necessity and will soon create video peering service (TV1 to SDI to MPEG2/4 conversion) opportunities as standalone businesses.

This picture of the future is crystallized in the triple play service delivery network diagram, which was created by Arnold Jansen, Senior Marketing Manager for Triple Play solutions at Alcatel, and his comments on it and the relationship between what he calls the “Super Hub Office” and what is known as the Carrier Hotel.

I saw the diagram in an article Mr. Jansen authored for another industry publication. It struck me as being very telling as to the state of mind that hardware vendors are in regarding all types of application delivery, voice, Internet, and video — the Triple Play. So, I emailed him and set up a call. Mr. Jansen defines a Super Hub Office as: “A place where a myriad of satellite and terrestrial networks converge to bring in the video signals and connect. There are only a few Super Hubs in an entire video distribution network because of the cost and complexity.”

Notice on the far right of Figure 1 the PSTN, little globe, and VOD. That’s voice (converted to VoIP), Internet (Web) and video. They all have their own connections to the Broadband Service Router of the distribution network. Why don’t they all just come in over the Internet? They’re all IP, right? Here’s what Arnold had to say about that: “Although the IPTV model can be enhanced with Internetbased services, it does not use the Public Internet for transport and distribution of broadband video content. There are all sorts of SLAs that must be lived up to that can’t be met with the Internet in the middle. The IPTV model uses a controlled, private networking infrastructure over which broadcast TV channels and cached Video on Demand [VoD] content is distributed to the various access nodes. It is high quality video programming. Internet TV is a different model. Streaming 12Mbps for HDTV can’t be sustained over the public Internet.”

So Internet TV is not IPTV and YouTube, for example, is not a direct competitor to IPTV. It is a personal content site offering a different experience with different economics and is oriented towards PC users. IPTV is more along the lines of TV as we know it while enabling On Demand services. Over time, IPTV will evolve to enable its users to share personal content, such as digital pictures and videos, with other users to watch on their TVs.

Are we getting all of this? I hope so. Even though YouTube is not competitive with IPTV, my money is on a direct cross-connection between them and Verizon Wireless instead of peering over the public Internet — if that deal ever happens. As far as the different capacity requirements for VoIP versus IPTV go, take a look at the far left cylinder in Figure 2. Notice how the minimum Committed Information Rate (CIR) for HD takes up the majority of the pipe and VoIP is the smallest component. That may sound very obvious, but it helps to see it to understand what the limits of distribution networks are. Now, on the topic of the best way to actually deliver the video from origination point to delivery point and on to the end user, here is what Mr. Jansen has to say: “Carrier Ethernet today has very rich QoS and security features. Setting up Ethernet or even wavelengths, then running IP over that makes sense for

interconnecting video content providers and distributors.”

Peering Super Hubs at Carrier Hotels makes a lot of sense because that’s where all of the fiber in the metro and long haul leads to. Centralizing the networks and having the Carrier Hotel owner amortize the infrastructure helps to reduce the cost of acquiring content and building SHOs and therefore more people can make use of them. As a result, video peering conversion services will be created there in the same way that similar voice peering services have been.

There have not been to date any defined physical interconnection points for all of the video content, both the origination and distribution of it, outside of satellite farms and legacy video switching sites which are difficult and expensive to reach. As the world turns the dial to IPTV; the satellites, VoD servers, transport networks, SHOs and all will most logically meet where all of the fiber already exists today — the Carrier Hotel. I would like to say thank you to Arnold Jansen of **Alcatel** (news - alert) for his time, insight to the future of video and the use of his slides.

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