

VoIP Peering for End-to-End IP Communications

By: Richard "Zippy" Grigonis

The world is slowly evolving toward an IP utopia wherein any user using any kind of device anywhere will be able to make multimedia-based, "feature rich" calls to anybody else over fixed-lines, WiFi (News - Alert), cellular, 4G broadband wireless or what-not. End-to-end IP communications bypassing the PSTN is starting to take shape. You can already see its beginnings in the form of Stealth Communications (News - Alert)' Voice Peering Fabric that enables VoIP peering interconnect, allowing one provider to plug into one city location and another carrier to plug into another location in another city, with the VPF providing the link connecting the two cities. VoIP can be done on Layer 2 (carriers connect to a separate private network) or on a layer 5 basis (peering occurs on open networks such as the Internet, with routing and signaling managed by a central provider).

For example, during 2008 Stealth altered the original VPF model which was based on an internationally distributed Layer 2 Ethernet network purpose-built for VoIP traffic. Now, instead of accessing the VPF via the large node sites, smaller and out-of-the-way network operators can access the VPF and purchase services on the VPF trading platform via the public Internet. The trading platform, by the way, is based on Sansay (News - Alert) session border controllers (SBCs) which can do automated route matching. Also, Stealth opened up their ENUM and SRV Registries are now open for communities wanting to create sub-registries for new social networking and other community-like applications. A CLEC or MSO can now devise their own ENUM root in the VPF ENUM Registry and permit access via the look-up system to anyone agreeing to pay their set termination rate.

From VoIP Peering (News - Alert) to Voice Peering

Arbinet provides innovative voice and IP solutions to communications companies. They manage business relationships, backoffice operations and call routing for their members who route through Arbinet (News - Alert) approximately 2 percent of the world's international voice traffic to more than 1,300 destinations worldwide. These members include fixed-line, mobile, wholesale and VoIP carriers as well as calling card, ISPs and content providers around the world who buy and sell voice and IP telecom capacity and content.

Arbinet offers Marketplace Services (global exchanges for buying and selling voice minutes capacity); Managed Services involving pricing, routing, reporting, credit risk and settlement; Query Services

including advanced routing services to help increase call quality and reduce costs; and IP Services such as cost-effective solutions for managing ISP supplier relationships, streamlining operations and expanding network connectivity. Their global footprint includes Points of Presence (POPs), in New York, Los Angeles, Miami, London, Frankfurt and Hong Kong, with dedicated sales teams operating in North America, Latin America, Europe, the Middle East, Africa and Asia-Pacific.

Arbinet's Chief Technology Officer, Steve Heap (News - Alert), says, "VoIP Peering is a term used very loosely in the industry. The first area of VoIP peering is what I call VoIP Interconnect, which is very popular and is increasing everywhere. Let's say you have two service providers or carrier that want to interconnect with each other and they've got two core choices. They can string some circuits up and do a TDM interconnect like everyone used to do, or they can interconnect using VoIP as the technology between themselves. That interconnect between two providers is sometimes called VoIP peering. The reason that people jump on that term is because it's one carrier talking directly to another one and they think, oh, okay, that's sort of like peering as it would be in IP terms, so we'll call it VoIP peering. About 60 percent of Arbinet's traffic is now VoIP and everyone who is coming to connect to Arbinet these days wants to connect via VoIP, not TDM. Many larger carriers are converting their existing TDM connections to VoIP interconnects as quickly as they can. But TDM won't disappear immediately, because there are massive deployments of international TDM switches that are working fine and will take years to replace."

"But the second area is really based on the original definition of VoIP peering," says Heap. "That involves the identification, down to the full customer number, of, in effect, the ownership of a customer number, and routing the traffic to the carrier that 'owns' that number at a VoIP level. That's really where VoIP peering came from. The original idea was that you don't actually need carriers at all. The person with a VoIP phone could somehow find out the IP address of some distant IP phone and connect to that phone without any service provider in the middle. So the original scheme was end user-to-end user, but there are all sorts of practical reasons why that won't happen any time soon. But that led us to the next stage, which involved having an originating service provider find the location of the terminating service provider and connecting together after some sort of query against the full customer number. To me, that is the proper definition of VoIP peering."

"The third piece of the jigsaw regards the question of whether VoIP peering termination is free or paid or if there's some sort of commercial deal surrounding the process," says Heap. "That question got lumped into the whole mix and people jumped to all sorts of conclusions about that too. There's not much interest in free peering the present time. Most service providers currently get paid for terminating a call to their customer, which is usually counted as revenue, and nobody in this current economic climate wants to give up revenue. Even though you may incur a cost to terminate your calls with someone else, the idea of giving up revenue is not high on anyone's list at the moment. People want to be paid for calls reaching their customers."

VoIP Peering or Voice Peering?

Tata Communications (News - Alert) is a Tier-1 ISP with worldwide access through many of its TeleGlobe and Tyco Global Network assets. They're also one of the largest wholesale voice providers, having carried about 23 billion international voice minutes in 2007, 11 billion of which were VoIP. Their huge footprint includes TDM and VoIP-based interconnects. They have over 415 directly bilateral relationships with Tier-1 and other providers worldwide, with 600 VoIP-based interconnects.

Michael Corso, Product Manager for Tata's VoIPLink (News - Alert) IP-based interconnect service, says, "The way we look at VoIP peering is simply as Voice peering. The field started out with some VoIP providers linking up together, whether they were campuses or smaller portal-type providers, or small VoIP shops that really wanted to unify themselves and bypass the fixed TDM models, to exchange information between their different users. That's how it started. From a carrier point of view, that model's nice for smaller providers, but for a wholesale provider, we really want to be able to link up end users to each other. So we look at it as Voice peering because although broadband and native VoIP traffic is definitely a portion of that, ultimately we'd like to be able to link up providers to other providers, whether they be traditional fixed or new mobile providers. That's because if you look at where the natural traffic exchange is, it's definitely going to be over all these converged models out there. Many early adopters of peering were native VoIP-based traffic, but many fixed TDM-based subscribers will want to have access and be able to partner in these different networks."

"Until now, providers looking into peering traditionally have had small routing tables," says Corso. "I can definitely tell you from our experience as a wholesale provider, that we have many broadband customers and we find that, from an international point of view, they may have as few as three to five routing choices. This may be because of limitations in their billing or routing systems or algorithms. One impact of this is that they try to keep the number small because they may simply be forced to because of technology or staffing limitations. After all, to establish an interconnect with another provider, you go through a provisioning process. In the case of VoIP, for the most part it's a virtual interconnect, where one provider configures its equipment, mapping IP addresses, firewalls, access lists and so forth. In the case of a TDM based connection you must provision local loops and offer circuits and various other things. All of that can become a burden for a small staff, why may have held back voice peering a bit."

"Also, if there are various solutions in the marketplace," says Corso. "Many of the solutions have typically focused on just bridging VoIP or voice networks together through peering. I call that 'on-net', the uniting of one network with another. This is where you see the limitations of multiple route choices. However, we at Tata Communications have focused on becoming more of a 'one-stop shop' so that a provider can connect into us via voice transmission and international services, but as

needed they we can provide them the ability to peer with other partners that we already have connected into the network. It's more of a hub-type approach where we become that 'center hub' and we can therefore route traffic wherever it needs to go. We can terminate a call to the last mile if possible. If it's a peered mile, then terrific. If not, we'll send it to the ideal supplier who can terminate that call for us. By become a one-stop shop, we can better integrate into the providers."

But whether you call it Voice peering or VoIP peering, there's nothing mysterious about it. It's simply the forwarding of calls from one ITSP to another directly using VoIP technology with no detours through the PSTN. IT

Richard Grigonis (News - Alert) is Executive Editor of TMC's IP Communications Group.