VoIP Meets the Cloud

Walt Magnussen
Texas A&M University

In a 2007 survey of ACUTA members, 65 percent of the campuses that responded had some sort of VoIP initiative underway. It is safe to say that today that number would either be 100 percent or would be rapidly approaching 100 percent. In fact, I have spoken to some colleges and universities that have even already changed courses; they began down one VoIP path only to decide to consider a different one.

There are many reasons for this increased activity, including end-of-life of existing TDM systems, a desire to add enhanced features, a hope that VoIP would be less expensive, or a requirement to reduce dependency on failing infrastructure such as copper cable. Regardless of the motivation, the fact is that colleges and universities have either set a VoIP strategy already or are doing so now.

At the same time that the interest in VoIP was growing, the "cloud" was invented (or reinvented depending on who is talking). Higher education began to move services off campus that had traditionally been supported by our IT departments. These services now include e-mail, Web collaboration tools, storage, and many others. With these two technologies—VoIP and the cloud— getting this much attention, it only made sense to try to marry them.

The Project Begins

In the fall of 2011, when Dr. Charles McMahonen, CIO of Tulane University, approached the Texas A&M University Internet2 Technology Evaluation Center (ITEC), it was decided that the two institutions would work together on a feasibility assessment. That fall several meetings were held with Verizon, Level3, AASTRA, Qwest (now Century Link), Microsoft, and others. Ultimately, Tulane and TAMU requested and received support from Internet2. An RFP was written over the Christmas holiday and released on January 8, 2012.

This was not Internet2's first foray into evaluating voice services over the Internet2 network. In 2006 Internet2 commissioned the Voice Services Advisory Committee (VSAC) that was made up of approximately 20 members from various colleges and universities. The report from this committee recommended the creation of services at that time, but the then-recent FCC ruling that would have required CALEA compliance and the uncertainty as to what this meant resulted in the decision not to move forward for the time being.

We received RFPs from several major service providers in February, and a committee with representatives from Tulane, Rutgers, LSU, TAMU, Internet2, and others began the task of evaluation. The committee recommendation resulted in negotiations beginning with two service providers. AASTRA would provide cloud-based hosted VoIP station services, and Level 3 would provide SIP-based trunk services. Between the two service providers, there are about 20 different services to choose from.

From the beginning, the following requirements were established:

1. The services had to be cost effective and accessible from the Internet2 network.

2. They had to be IETF RFC 3261 and other SIP RFC compliant.

3. Each service had to be able to stand alone. They could either work as a part of a bundled service or could be integrated into an existing campus SIP-based platform. All

services had to be available on an a-la-carte basis.

4. MAC activity had to be supported via a service-provider portal.

5. There had to be local survivability that would allow calls to be completed in the event of a loss of Internet2 connectivity.

6. The system had to be 100 percent redundant.

7. The system had to be able to support 1,000,000 lines.

8. It had to include an E-911 solution.

9. There had to be a method that allowed proactive monitoring of voice call quality.

10. Both services would be hosted by service providers under an Internet2 contract.

11. The services would be hosted at Internet2 co-location sites.

A unique feature of this combination of services is the integration of the TAMU ITEC into the mix. A small part of the cost of the service will support an engineer and possibly students who would work on adding future capabilities. This leverages the strengths of both Internet2 and ACUTA, which are communities that are willing to share. These activities will be driven by an advisory committee to be created which will include representation from both Internet2 and ACUTA institutions. A development platform has been installed at the TAMU ITEC with support from AASTRA, Broadsoft (their proxies that are a part of

the core of the AASTRA Clearspan system). Potential projects include the following:

• NG 9-1-1 implementation.

• IMS-based fixed-mobile convergence with major wireless service providers

• LYNC client integration

• ENUM-based campus-to-campus dialing

•   Support for Internet2 AVCI video collaboration group. This would support integration of SIP voice and video with H.323 and telepresence video.

Going Live Fall 2012

As of the last week of July 2012, we were completing the contract negotiations with the intent of going live in November 2012.

▶

INTERNET2 NET+ SIP SERVICE
Clearspan Topology
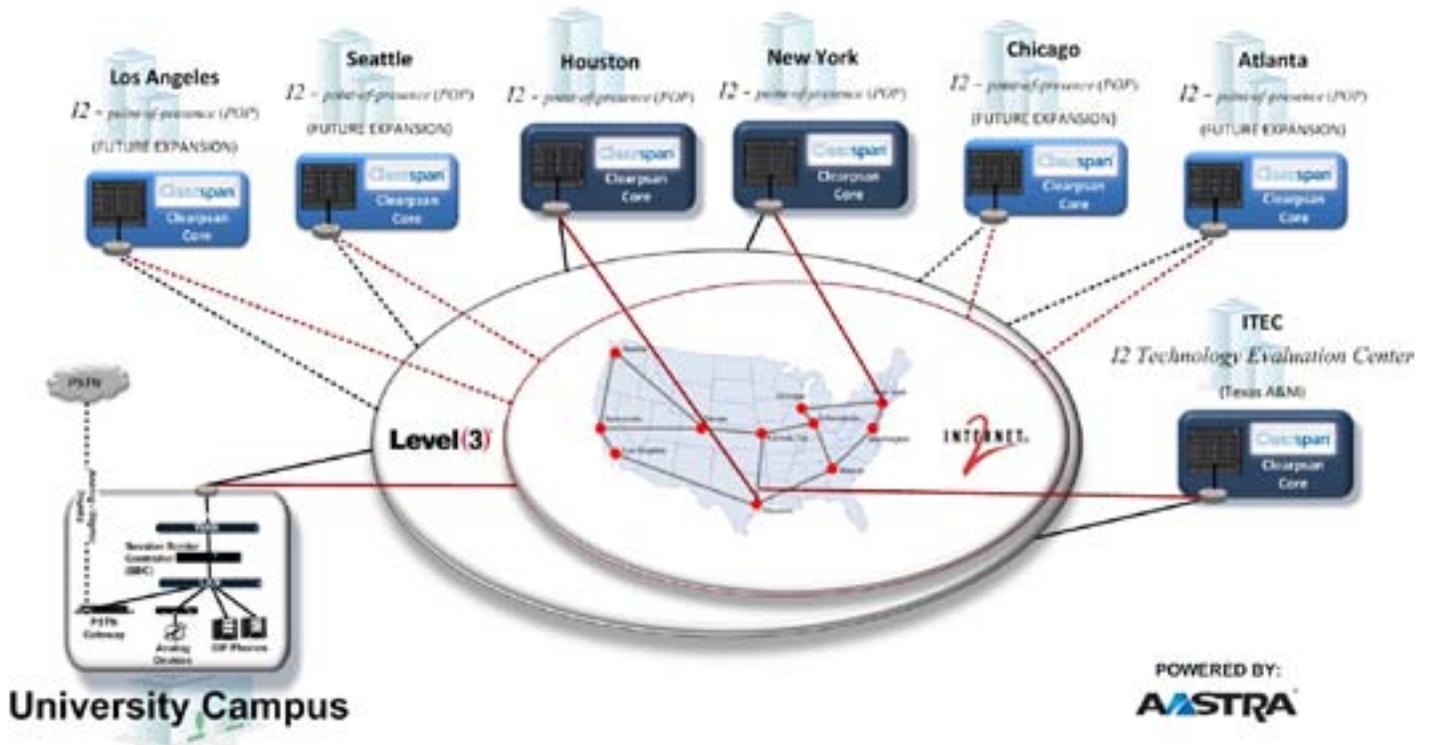
At least two early adopters have agreed to implement the solution. The development service at the ITEC is currently online, and we are porting 30 local lines over to Level3. Houston and New York City co-location sites are also being prepared for installation. Figure 1 is a detailed site implementation document.

Early adopters have already decided to implement these services. Tulane is going to begin a campus PBX replacement and Texas A&M University is going to utilize Call Center services. Several other universi-

ties are either ready to begin testing or have expressed interest in some sort of implementation. Behind all of these services will be an advisory committee. It will be sponsored by the ITEC and will consist of 20 members, 10 from the Internet2 community and 10 from the ACUTA community. This will make this the only cloud service that is more directed by the community than by the service provider.

While the SIP solution will remain the main service offering, the team has been asked to assess the feasibility of adding

both hosted Cisco and Microsoft solutions at some future date. There have already been two Internet2 webinars on this topic, and we hope to present an ACUTA webinar this fall. If you have any questions regarding this opportunity, send them to sip@internet2.edu.

Walt Magnussen, PhD., is a past president of ACUTA, a frequent speaker at ACUTA events, and author of many articles for ACUTA publications. Reach Walt at wmagnussen@mail. telecom.tamu.edu.

◆