Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of Petition of the SBC ILECs for a Declaratory Ruling VarTec Telecom, Inc. Petition for Declaratory Ruling	WC Docket No. 05-276

Declaration of Sam Shiffman

1. I am an Executive Vice President for UniPoint Enhanced Services, Inc., d/b/a, PointOne. I am responsible for overseeing the research, development, deployment and operation of the PointOne network, including systems and physical network elements; a network in which PointOne has invested over a million man-hours and over $100 million developing.

2. PointOne provides IP-based processing and enhanced services to IXCs, ISPs, ASPs, and other domestic and international service providers as an integral part of their provision of services to their own customers. PointOne's offering allows a communication session comprised of voice, video, text, or other data communication applications originating on any type of device to be connected to and completed via any type of device. In other words, PointOne's service enables "any-to-any" connectivity, meaning that it transmits communications between any configurations of IP and/or PSTN endpoints and makes its processing and communications enhancement capabilities

available to every possible configuration, including those communications where two legs of the communication are on the PSTN during all or part of the session.

3. PointOne contracts with its customers to receive the customers' communications (voice, video, and other data), and then process them using its Advanced IP Communications Network (AIPCN), by offering various enhanced features as part of its service. From PointOne's perspective, it makes no difference whether a particular leg of the session is part of the PSTN on a LEC's legacy facilities or reaches its destination in some other manner. PointOne converts from TDM to IP (if necessary, assuming that a communication session does not enter the PointOne network in an IP format), processes the IP packets across its network so that the enhanced features and functions can be accessed and used, and then routes the communication toward the desired endpoint, converting from IP to TDM (when necessary).

4. Since PointOne's service bears no direct relationship to any exchange access services, PointOne generally has no reason to monitor whether a particular communication terminates in a particular format, and it has no reason to expect that it receives exchange access services. Implementing such a monitoring capability would require network-wide insertion of specific identifying information at the IP layer of communications. It would be impossible to derive this information retrospectively, and inserting a tracking system prospectively would be a massive endeavor requiring the cooperation (or regulation) of the entire Internet community.

5. PointOne's service also involves interaction with and changes to customer-supplied information ("content") with every session or "call." Due to PointOne's AIPCN architecture and Any-to-Any support, a communication session may

enter and leave the PointOne network in a multitude of different signaling protocols and codecs, each of which change the content of the information transmitted as explained below:

a) PCM (Pulse Code Modulation) takes a digital signal such as voice or modulated modem tones and creates a digital recreation.

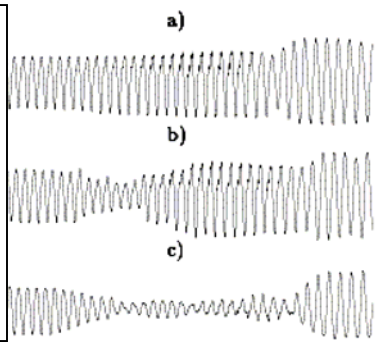
b) T.38, the ITU standard, represents facsimile/modem modulated tones as data, which are recreated on the other side as modulated tones. Missing or lost data is retransmitted where possible or the gaps are interpreted where not.

c) PLC (Packet Loss Concealment) is a method for dealing with packet loss in IP networks, whereby missing data is created by evaluating previous speech samples.

d) CELP (Code-Excited Linear Prediction) is a hybrid of source and waveform coding, achieving the data rate of source coding and speech quality of waveform coding.

e) LPC (Linear Predictive Coding) analyzes the speech signal by estimating the formants, removing their effects from the speech signal, and estimating the intensity and frequency of the remaining buzz. LPC provides human-recognizable quality improvements, and it actually interprets and predicts human speech and creates lost or missing data. This can be seen in the testing results reproduced below comparing resulting waveforms from both CELP- and LPC-based encoders, in which the waveform in (b) is quite clearly providing the listener with both different or restructured information, by predicting missed data from the speaker, based on the speaker's transmitted information (i.e., voice).

Figure: Robustness of the Frame-Independent Long-Term Prediction compared to a standard CELP method. ITU-T Standard G.729A: a) original signal segment; b) decoded signal resulting from iLBC after a single IP Packet was lost in the transmission; c) same as b) but for G.729A



[1]

[1] Fig.2 from ILBC – A Linear Predictive Coder With Robustness to Packet Losses http://www.ilbcfreeware.org/documentation/iLBCpaper_andersen.pdf

This combination of signaling and codec interworking is analogous to a letter in an envelope, where the envelope and letter are written in the sender's language, which may differ from the receiver's language. In this event the envelope's address written in English must be translated to French. Additionally the letter must be opened to change the address on the body of the letter. These functions are the responsibility of the signaling interworking. The codec interworking function is responsible for acting on the content of the letter, including translating from English to French, spell checking, correcting grammatical errors, and replacing missing words. These corrections maybe needed due to errors made by the sender of the letter or due to damage to the letter either before the hand off to PointOne's network or during the handling of the letter by PointOne. This is to say that the codec interworking function is in place not only to maintain quality of the letter but to also improve its content.

6. In addition, PointOne's network makes other enhancements available to customers on every communication session that traverses its network, either at the user's election or as triggered by predetermined events, regardless of the type of equipment or edge device the user employs to access the network. For example, a user may initiate a communication session to another user and then invoke different network resources, such as retrieving a real-time stock quote from the Internet on each and every call (see ¶ 8 below). The user can initiate such a response by sending a SIP INFO request from their soft client, IP phone, or a key combination from a mobile or POTS phone (which is interpreted and translated into a SIP INFO request). Computers (application servers, soft switches, etc.) attached to and a part of PointOne's AIPCN then decide the appropriate application(s) to which the user is directed. The use of IP in this environment is not

incidental; it is essential to making available to all users, including those accessing the network from legacy equipment, the advanced features of the AIPCN.

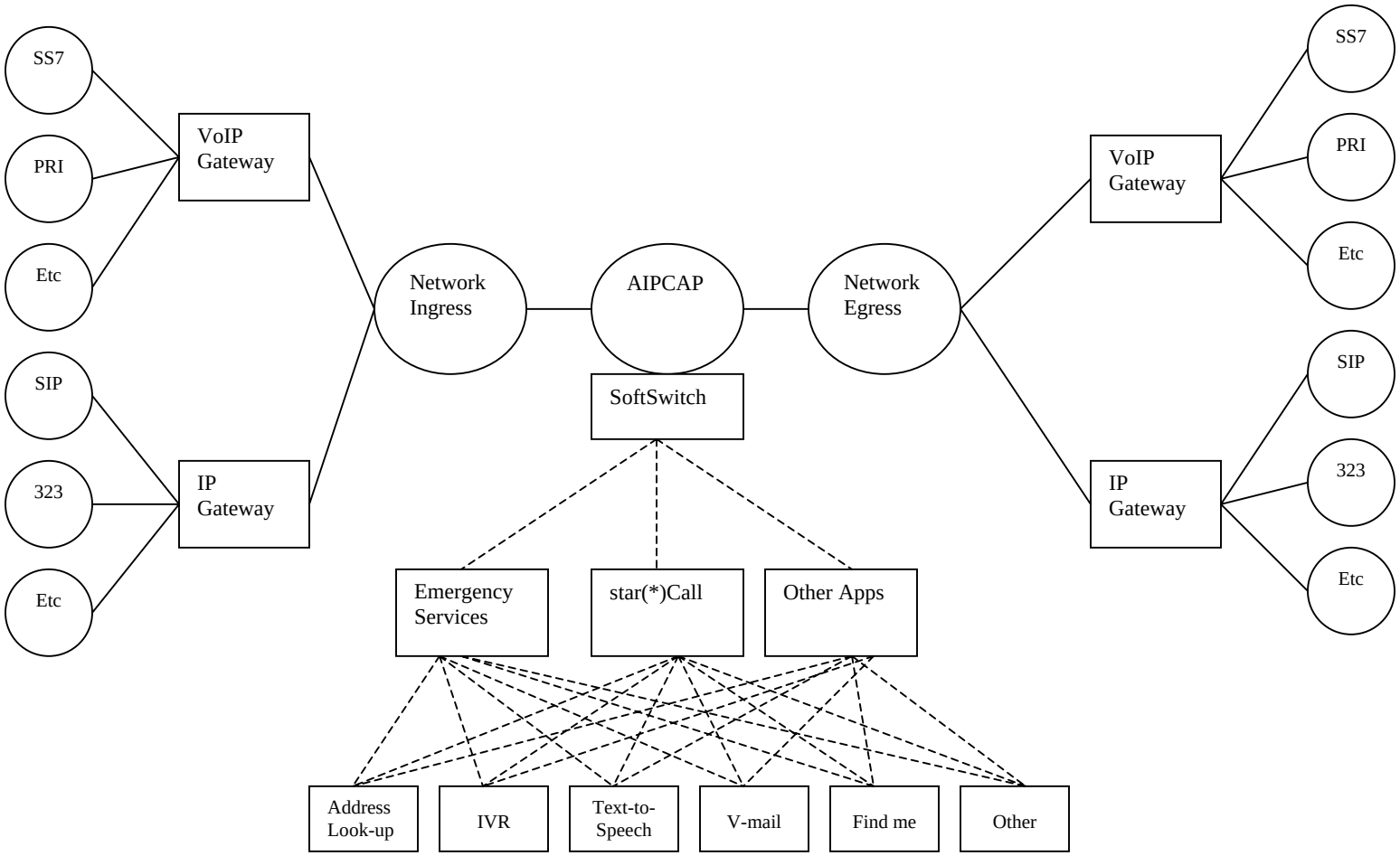
7. PointOne can provide these enhancements because of its AIPCN architecture, and it could not offer them at a comparable scale, it at all, if it operated a legacy TDM/circuit-switched network. PointOne provides these enhanced service capabilities to customers as a single integrated package. Each voice based (or other) communication session is comprised of at least two "legs" joined by the AIPCN. The "legs" of the communications session are each composed of a gateway IP or VoIP and network ingress/egress. The Advanced IP Communications Access Point (AIPCAP) serves as the entry and control point for bridging/marshaling additional features, services, and resources into a communication session. The following is a rudimentary description of the responsibilities of the different components of the PointOne AIPCN.

a) VoIP/IP Gateways are responsible for interworking between different end point types.
   - Transcoding may be brought into a communication session as required, with it primary responsibility being the interworking between disparate codec capabilities.
   - IP Gateways provide interworking between disparate IP end-points.
   - VoIP Gateways provide a bridging function between legacy PSTN interfaces and IP interfaces.

b) Ingress/Egress Network is comprised of IP/Ethernet routers and switches, and network management and control elements.
   - Every communication session must be looked up in an IP routing table, and in real time a decision is made as to the then current location of the IP end points.

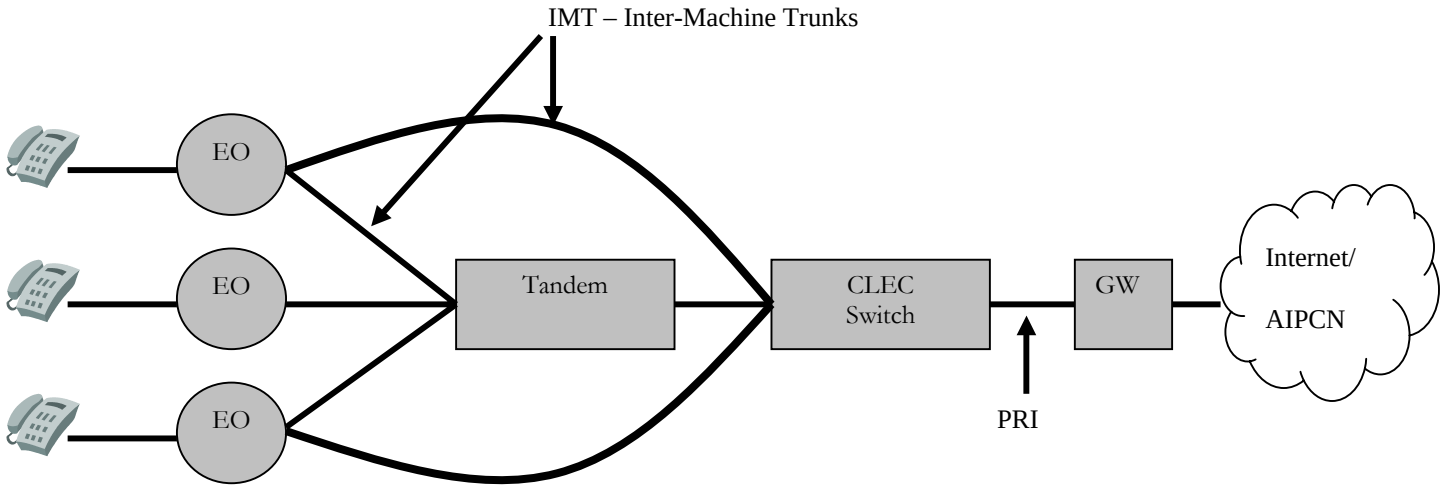
c) SIP and other VoIP application enabling signaling protocols are used to communicate with SoftSwitches and other Application Servers. These protocols are vital in enabling access to SoftSwitch/Application Services on every communication session.

d) SoftSwitches/Application Servers are used to setup, monitor, receive user input, marshal additional processing resources as required or requested by users, and teardown communication sessions.



8. The culmination of the kind of IP-enabled services the AIPCAP offers and provides can be found in PointOne's star(*)Call IP function/service. The service provides customers with access to real-time information via both the 12 button POTS interface and voice recognition, such as stock quotes and driving directions, the ability to communicate with instant messaging services such as Free World Dial-Up, as well as other advanced features. The service is offered to all customers and is available regardless of session end points, including "PSTN-PSTN" sessions.

9. PointOne's PSTN interconnection is identical to that used by Dial-Up Internet Service Providers (ISPs). The following is a typical network architecture used by Internet Services Providers including most Dial-Up Internet access service providers.



The Dial-up Internet access service provider will use a kind of gateway between the PSTN (usually through a PRI interface) and an IP-based network, including the Internet. The Dial-up Internet access provider's gateway is typically called a Remote Access Server, or RAS. PointOne's gateway looks very much like, and functions in quite similar ways, to a RAS, although of course it will generally use different software. The interface, however, is exactly the same, since it uses ISDN PRI, and the LEC networks perform a similar if not identical amount of work for both PointOne's services and a Dial-up Internet access service provider.

I declare under penalty of perjury that the forgoing is true and correct.

Executed on November 10, 2005 Sam Shiffman