atis TECHNOLOGY AND OPERATIONS COUNCIL

Priority Work Plan Summary

Voice Over IP (VoIP)

Issue Summary **March 2006**

VoIP is a technology that digitizes and compresses voice conversations into IP packets for transport over a public or private IP data network. Using this method, voice traffic can originate and be delivered to any point on an IP network that has a valid IP address. The voice information is sent in digital form using discrete packets rather than via dedicated connections as in the circuit-switched Public Switch Telephone Network (PSTN). Reducing the need for separate voice and data infrastructures, VoIP offers the promise of streamlined network management and operation. However, a full migration to VoIP technology will require industry-wide adoption of open standards, processes and requirements, both technical and operational in nature.

The ATIS Technology and Operations (TOPS) Council established a VoIP focus group to create an industry technical work plan designed to identify needed standardization efforts pertaining to VoIP. The ATIS VoIP Work Plan was completed in 1Q 2004.

Work Plan Recommendations

The focus group developed an end-to-end interoperability reference model and identified over 40 specific actions needed with regard to VoIP standardization. Key focus group considerations regarding VoIP interoperability are as follows:

Cooperative application of standards and recommendations for interoperability among carriers, service providers, and customers/users is a necessity for ensuring reliable, secure and functionally rich public telecommunications services.

The application of VoIP elements and systems as new voice networks – and as additions within existing networks – brings about the need for new specifications that will ensure interoperability among the different technologies. Where interconnection is required with entities outside the domain of a single provider, specific operating requirements are needed to meet performance expectations for the collective telecommunications industry.

Interoperability between VoIP and circuit-switched PSTN networks is required at many levels. This includes interoperability with physical interconnection; trunk and access signaling; service control and proxy messaging; Quality of Service (QoS); security; reliability; administrative information exchange; and addressing.

Interoperable stability in packet-based internetworking scenarios could be achieved by concentrating standardization work primarily on one set of protocols. The focus group identified Session Initiation Protocol (SIP) as the appropriate protocol choice. Over time, it is assumed that SIP will displace other interworking protocols such as H.323 and BOCC at the edge of each interconnected network.

Interoperability needs to be addressed at every point of interconnection of network components such as protocols, vendor implementation, carrier, and service interoperability.

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The ATIS VoIP Work Plan provides assessments and outlines standardization efforts regarding the following areas:

- Signaling, to include SIP; SIP-based carrier packet interconnect; and H.323. The work plan proposes that the introduction of additional SIP profiles is undesirable and that new SIP extensions should only be considered after firm requirements cannot be met by existing or planned extensions. The plan includes an extensive assessment of QoS and identifies key QoS challenges, to include end-to-end performance monitoring.
- Service Architecture that supports real-time service processing as well as introduction of services such as conferencing, presence and multimedia messaging by service providers and third parties.
- VoIP Over Wireless, to include cellular/PCS transport and WiFi transport.
- Inter-provider Interfaces, to include QoS; billing; VoIP encoding; Voice Band Data; Station Signaling; Border Control Elements; and interfaces supporting the Government Emergency Telecommunications System (GETS).
- VoIP Routing Services, to include Public ENUM; Carrier ENUM; and Local Number Portability (LNP).
- Public Safety and Network Security, to include E9-1-1; CALEA and Lawful Intercept; CPE, NAT/Firewall Issues; and customer premises Border Control Functions.

Work Plan Status

ATIS committees working on standardization activities outlined in the plan include: Network Performance, Reliability, and Quality of Service Committee; Telecom Management and Operations Committee; Wireless Technologies and Systems Committee; Packet Technologies and Systems Committee (PTSC); the Ordering and Billing Forum (OBF); and the Emergency Services Interconnection Forum. Significant contributions have been made in the areas of SS7, SIP, inter-carrier billing and E911. PTSC sent several documents to ballot in January 2006, including a Network to Network Interface (NNI) standard, a Technical Report on Emergency Telecommunications Standards (ETS) in IP networks, and a draft ANSI standard on the interoperability between existing signaling protocols and SIP signaling. Work is underway for Lawfully Authorized Electronic Surveillance (LAES) and access in the IP network. In Q4 2005, the OBF published the *VoIP Ordering and Billing Issues and Concerns,* a compilation of industry questions, comments, concerns and assumptions surrounding VoIP and the related challenges for intercarrier ordering and billing. As a result, OBF formed a new committee, the Internet Protocol NNI (IP-NNI), to develop standards and processes related to accounting and settlements for use of the packet-based network and associated service elements, including VoIP. Resources continue to work in the responsible committees on Signaling; Service Architecture; Inter-Provider Interfaces, including QoS and Station Signaling; and VoIP Routing Services.

Additionally, for collaborative purposes, work plan details were shared with various standards bodies external to ATIS that are engaged in VoIP standardization activities.

Copies of the ATIS Work Plan for VoIP are available to ATIS member companies.

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