

Asia-Pacific Economic Cooperation
Telecommunications and Information Working
Group
Tuesday, 25 April 2006

TEL 33 - Regulatory Roundtable

What are APEC Member Economies' laws, policies, and/or regulations
on Voice Over Internet Protocol (VoIP)?
How many VoIP users are there in each Economy?

APEC MEMBER ECONOMY	COMMENTS
Australia	<p>The Government released a report into the policy and regulatory implications of VOIP services on 22 November 2005. The report is available at: http://www.dcita.gov.au/tel/internet_and_broadband_services/emerging_voice_services.</p> <p>The report found that there was no immediate need for any fundamental changes to the legislative framework. However, the report did recommend some small adjustments to subordinate regulation in such areas as numbering, emergency services and consumer protection to better accommodate VOIP services.</p> <p>It is proposed that VOIP services have access to geographic numbers in a specified range of circumstances. A new non-geographic number range is also proposed for VOIP services to give providers greater flexibility in offering VOIP services, particularly when these services are “nomadic”. In addition, the report recommends that the Customer Service Guarantee (relating to service connection and fault repair times) should apply in full to VOIP only where the service is either supplied in fulfilment of the Universal Service Obligation, or where it is the primary stand-alone telephone service provided to the premises and the VOIP service provider is also the carriage service provider. VOIP services terminating calls on the PSTN will need to provide emergency call access. In the absence of effective location information, VOIP services will be flagged as “nomadic” in the Internet Public Number Database. Special emphasis is being placed on raising consumer awareness and understanding of VOIP and the issues it raises for consumers.</p> <p>All of the recommendations of the report have been accepted and are being implemented by the Government. The Australian Communications and Media Authority has a key role in the implementation of the report’s recommendations.</p> <p>The treatment of VOIP services is seen as the first of many issues to be raised by next generation networks and services, the implications of which are also to be considered by the Government and industry.</p>

APEC MEMBER ECONOMY	COMMENTS
Brunei Darussalam	TBC
Canada	<p>On May 12, 2005, the CRTC announced that it will regulate Internet telephony in Canada in the same manner as it regulates traditional wireline telephone service. The CRTC concluded that these services were not materially different from traditional telephone services in that they use telephone numbers and connect to anyone on the traditional telephone network. Thus, the Incumbent Local Exchange Carriers (ILECs) will be required to obtain CRTC approval for prices, features, term and conditions of local Voice over Internet Protocol (VoIP) services before offering them in their incumbent territories. Also, if an ILEC wants to offer VoIP as part of a bundle with another service, it must also get prior CRTC approval. The CRTC said that it will regulate these services to ensure that competition won't be stifled by below-cost pricing or through the use of anti-competitive bundling strategies. As well, ILECs have to abide by winback rules which prevent them from marketing VoIP services to a residential consumer who has taken another service provider's local or VoIP service in the previous 12 months and three months, in the case of a business customer. In addition, both ILECs and competitive VoIP service providers are required to adhere to measures in regard to such matters as privacy safeguards, access for the disabled and message relay service for the hearing-impaired. The CRTC will not be regulating private computer -to-computer voice services over the Internet or peer-to-peer (P2P) as these do not connect to the public telephone network which is consistent with previous CRTC decisions not to regulate retail Internet services. The web site for information on the main decision is: http://www.crtc.gc.ca/archive/ENG/Decisions/2005/dt2005-28.html</p> <p>The CRTC approved customer notification requirements in regard to the offering of 9-1-1 and Enhanced 9-1-1 emergency services by local voice over Internet Protocol (VoIP) service providers. Accordingly, local VoIP service providers are required once a year, to inform their customers about the nature, availability and limitations of their VoIP emergency service offerings as compared to emergency services offered by wireline carriers. This information must be approved by the CRTC before it is disseminated to customers, given the importance of public safety issues surrounding the provision of emergency services.</p>
Chile	TBC
China	TBC
Hong Kong, China	<p>The Telecommunications Authority (TA) cleared the way forward for IP telephony by issuing a TA Statement on 20 June 2005, which covered significant issues including (a) policy and licensing, (b) numbering resources, (c) interconnection and charge settlement and (d) consumers and other issues. Under the new regulatory and licensing framework, a two-class licensing regime is adopted, where Class 1 service has to meet all relevant requirements applicable to conventional fixed telephone services offered under Fixed Carrier (FC) / Fixed Telecommunications Network Service (FTNS) licences while Class 2 service only needs to meet minimal licensing conditions so as not to inhibit technological deployment.</p> <p>A new Service-Based Operator (SBO) licence has been introduced for new entrants for providing Class 1 and/ or Class 2 services. For existing FC/ FTNS licensees, they may apply for amendments of their existing licences if they wish to offer Class 2 services.</p> <p>Eight digit numbers will be allocated for Class 1 and Class 2 services. Class 1 service will share the existing numbers with prefix of “2” and “3” while new numbers with prefixes of “57” and “58” will be allocated for Class 2 service.</p> <p>Details of the new framework can be found at: http://www.ofa.gov.hk/en/tas/ftn/tas20050620.pdf. and http://www.ofa.gov.hk/en/tas/ftn/tas20060106.pdf.</p>

APEC MEMBER ECONOMY	COMMENTS
Indonesia	<p>VoIP license is generally awarded to ISP – Internet Service Provider. Up to now, Government has issued 14 licensed VoIP (phone-to-phone) operators including to the existing PSTN and cellular operators.</p> <p>These VoIP operators are classified under service based operator, because they do not have their own customer based but customer's of PSTN and Mobile operators. Almost all of VoIP operators are using two step dialing scheme using 170XY access code and dependent of E1 line from PSTN and/or mobile operators. Besides the existing PSTN and cellular operators , although they are also given single step dialling using 010XY access code , they can not operate this method before they have agreement with incumbent PSTN and mobile operators. At the present network condition in Indonesia, majority of the networks are still narrow band , VoIP PC-to-PC is classified as a features of ISP. But in the near future when the broadband era is coming, most likely, VoIP operator will be able to build their own customer based using the IP network (e.g WiFi-WIMAX). The Government is now considering to expand the VoIP operator as a network or facility based operator instead of as service based operator as it is now. Therefore it is required to re-formulate some regulatory issues like numbering, access code, routing, interconnection etc.</p>
Japan	<p>1 Regulation of IP telephone</p> <p>1) No regulation of charges and tariffs</p> <p style="padding-left: 20px;">In Japan so-called VoIP is categorized into three types. The payment of interconnection charges has been required when a VoIP network is connected to a PSTN network. VoIP has not been regulated in principle.</p> <p>2) Technical Conditions are imposed on the allocation of telephone numbers to ensure interoperability and enhance reliability for the development of VoIP.</p> <p style="padding-left: 20px;">a. No number allocation --- No conditions for QoS (e.g. using PCs via Internet)</p> <p style="padding-left: 20px;">b “050” --- Minimum Voice quality as telephony service (e.g. VoIP via ADSL)</p> <p style="padding-left: 20px;">c “0AB-J” --- Voice quality equivalent to the existing telephone services (e.g. VoIP via FTTH)</p> <p style="padding-left: 40px;">“0AB-J” number is included in the number framework of the existing public switched telephone services. But service providers who provide “0AB-J” numbers are required to meet the following technical conditions.</p> <p style="padding-left: 60px;">1) Voice quality equivalent to the existing fixed-line telephone services</p> <p style="padding-left: 60px;">2) Geographic correspondence</p> <p style="padding-left: 60px;">3) Access to emergency services</p> <p style="padding-left: 60px;">4) Direct Access Line to user</p> <p style="padding-left: 60px;">etc</p> <p>3) VoIP itself is not regarded as universal service.</p> <p style="padding-left: 20px;">However <u>contribution for the Universal Service Fund</u> is required.</p> <p>2 Current situations on VoIP in Japan</p> <p style="padding-left: 20px;">28 service providers have been allocated VoIP specific telephone numbers (“050”) (Dec 2005)</p> <p style="padding-left: 20px;">18.8 million VoIP specific telephone numbers (“050”) have been allocated to service providers (Dec 2005)</p> <p style="padding-left: 20px;">9.25 million have subscribed to IP Telephony (“050”)(Sep 2005)</p> <p style="padding-left: 20px;">13 operators provide “0AB-J” type VoIP service. (Dec 2005)</p> <p style="padding-left: 20px;">0.51 million have subscribed to IP Telephony (“0AB-J”)(Sep 2005)</p>

APEC MEMBER ECONOMY	COMMENTS
Korea	<ul style="list-style-type: none"> □ Consolidation of entry policy and service notification <ul style="list-style-type: none"> ○ Classification and notification of Internet phone service as facilities-based telecom service (July '04) <ul style="list-style-type: none"> - Internet phone service is a telecommunication service which transmits or receives voice signals by means of telecommunication facilities without coverage limitation - Exceptionally, transmitting and receiving voice signals among users by using personal computers is not subject to Internet Phone service. □ Provide called number and establish quality standard <ul style="list-style-type: none"> ○ Due to the uniqueness of internet phone service like a nationwide calling service without coverage limitation, common service identification numbers starting with 070, are provided. <ul style="list-style-type: none"> - Considering the quality testing of Internet phone service taken by Telecommunications Technology Association (TTA), the government provides the certified companies with their own internet phone numbers starting with 070. (Dec. '04) □ Internet phone interconnection <ul style="list-style-type: none"> ○ The establishment of the existing communication network's interconnection rights and reasonable payment in case of using other operator's communication network have been made for the purpose of successful Internet phone service. (Aug. '05). <ul style="list-style-type: none"> - The VoIP operators using other operator's Internet network should pay 1,500 won per month per subscriber to the network providers.
Malaysia	<p>Migration of Applications Service Individual Licence to Class</p> <p>With effect from 1 April 2005, the licensing regime of the Applications Services such as VoIP has been liberalized by migrating the licensing requirement of such activity from individual licensing regime to class. (APEC TEL 31 Regulatory and Policy Update)</p> <p>VOIP services</p> <ul style="list-style-type: none"> • Until early 2000, the policy was that only fixed network telephone companies were allowed to provide Voice over Internet Protocol (VoIP) services. However in order to promote competition and provide an alternative to traditional PSTN market, the Government reviewed this position and allowed new applications services providers (ASPs) to provide VoIP based telephony. Improvements in the quality of service and low costs has made this a popular services amongst all sections of the public. • There are presently two ways of providing VoIP – PC to PC-based (Internet Telephony) and phone to phone-based through Public Switched Telephone Network (PSTN), which involves multistage access dialing (VoIP or IP telephony). • A total of 63 licences were issued by the MCMC for the ASP (I) since the IP telephony market was opened in year 2000. Since the opening up of the market to new entrants, there were repeated calls to control the number of players. Policy reviews were conducted in 2002 and 2004 and at both occasions, the policy was upheld. • However following the latest review, the MCMC intends to re-examine the current VoIP guidelines to make them more comprehensive and monitor the quality of services provided to VoIP licensees as well as to provide better consumer protection. (APEC TEL 30 Regulatory and Policy Update) <p>The Ministry encourages service providers to take advantage of new technologies to provide a choice of varied yet affordable products and services to consumers. One of the technologies that is fast gaining acceptance is Voice over Internet Protocol or VoIP. Currently 75 Applications Service Provider licenses have been approved to provide the VoIP services. (APEC TEL 29 Regulatory and Policy Update)</p>
Mexico	TBC

APEC MEMBER ECONOMY	COMMENTS
New Zealand	TBC
Papua New Guinea	TBC
Peru	TBC
Philippines	TBC
Russia	TBC
Singapore	<p>Under the framework, an IP Telephony service provider can commercially decide to set up a “close-user” network and not request for interconnection with existing telecommunication networks. However, if the IP Telephony service provider chooses to interconnect with existing telecommunication networks, such as the PSTN or mobile networks, the existing FBO and SBO licensees must observe the interconnection requirements stipulated under the Telecom Competition Code to allow interconnection. Similarly, if existing FBO and SBO licensees request for interconnection with the IP Telephony service provider, the latter will have to observe the requirements stipulated under the Telecom Competition Code and allow interconnection. IDA recognises that IP Telephony is a new and evolving technology, therefore, consistent with IDA’s policy objectives and approach, IDA will not dictate the specific interconnection configurations that must be adopted at this stage. IP Telephony service providers are free to commercially negotiate and pursue the most appropriate interconnection arrangements with the Dominant Licensee and/or other service providers. In negotiating interconnection arrangements, IP Telephony service providers must observe the Minimum Interconnection Duties for establishing interconnection agreements as set out in the Code.</p> <p><u>Quality of Service (“QoS”)</u> IDA has set minimum QoS standards for basic local call services, currently provided by FBO licensees such as Singapore Telecommunications Ltd and StarHub Ltd. As for international call services, the market is highly competitive with many service providers. IDA believes that IP Telephony service providers, when entering the market, would have the commercial incentives to achieve a comparable level of QoS in order to compete with existing local and international call service providers for customers. IDA believes that it should let market forces determine and let end-users decide the level of QoS that is acceptable and the price points end-users would pay for the services provided. IDA therefore will not impose minimum QoS on IP Telephony services. IDA reserves the right to require a minimum set of QoS standards at a later stage, depending on market development. IDA does not mandate number portability for IP Telephony as we believe that mandating number portability at this early stage will place a significant burden on IP Telephony players. IDA reserves the right to do so at a later stage if demand warrants and as the service matures. (APEC TEL 32 Regulatory and Policy Update)</p>

APEC MEMBER ECONOMY	COMMENTS
Chinese Taipei	<p>The VoIP service is defined as Internet Telephony Service (ITS) which means the voice service received and transmitted through Internet provided by the operator in Chinese Taipei.</p> <p>Chinese Taipei deregulated the ITS on 1 July 2001, allowing Type II telecommunications enterprises (i.e. Service-based operators) to offer the voice telephony service via the Internet. With this service as an alternative to PSTN telephony, consumers are able to make peer-to-peer voice calls through the Internet.</p> <p>With the rapid growth of Voice over Internet Protocol (VoIP) technologies, as well as in response to the demand from the industry and the public, DGT conducted two consultation rounds in 2004 to seek comments on issues relating to numbering policy for ITS and relevant regulatory issues. After careful consideration on the comments received, DGT decided to allocate non-geographic “070” prefix number with total number length 11-digits to operators who are engaged in the ITS. This decision is based on the consideration of enabling consumers to clearly distinguish the VoIP service from PSTN calls.</p> <p>In the light of its decision on the allocation of E.164 number, DGT has amended relevant regulatory measures to create a level-playing field between PSTN and ITS and to protect consumers.</p> <p>The key amendments include:</p> <ol style="list-style-type: none"> 1) License Fees: increase License Fees from 0.5% of AGTO (Annual Gross Turnover) to 1% for ITS, the same level as the fixed network license. 2) Interconnections: the ITS operators using E.164 number have the right to request interconnection with Type I telecommunications enterprises (i.e. Facility-based operators). 3) Universal Service Fund (USF): the ITS operators using E.164 number are obliged to contribute to USF. 4) QoS: currently, DGT hasn't established any QoS standards for ITS operator using E.164 number. However, the ITS operators using E.164 number are required to provide a table illustrating the service difference between ITS and PSTN service in Code of Practice. 5) Emergency Telephone Services: the ITS operators using E.164 number shall provide free Emergency telephone services (e.g. 119 or 110) for subscriber in Chinese Taipei. 6) Number Portability: DGT does not mandate number portability for the ITS operators using E.164 number, but reserves the right to do so at a later stage according to technology feasibility and market competition status. 7) Communications Supervision: the ITS operators using E.164 number shall provide lawful interception function for law enforcement agency. 8) Application Procedure for E.164 Number: the ITS operators shall acquire subscriber numbers from Type I telecommunications enterprise that operates ITS using E.164 number. However, applicants with paid-in capital in excess of NT\$ 5 hundred million dollars may apply to DGT directly. 9) Marketing of Foreign E.164 Numbers: An operator shall obtain the license of ITS using E.164 number in Chinese Taipei prior to delivering the ITS with the E.164 number issued by foreign authorities. <p>There are five applicants for ITS using E.164 number as of now and these applications are under the deliberation by NCC.</p>

APEC MEMBER ECONOMY	COMMENTS
Thailand	<p>(I) <u>VoIP by CAT</u></p> <ul style="list-style-type: none"> • VoIP provided by CAT has been available since 1998. Currently there are 4 types of services: <ul style="list-style-type: none"> - CAT 009 is the economical international telephone service. Callers can access by dialing the prefix code '009' from their fixed lines or mobile phones to more than 150 countries worldwide with 24-hour flat rate charge. - CAT PhoneNet is the prepaid calling card for economical international telephone service. The destinations and charging rate are the same as CAT 009. - CAT2Call is the prepaid PC-to-Phone service. Callers can download the client web phone from the website <http://www.cat2call.com> to call to 46 countries with 24-hour flat rate charge. - CAT2Call Plus is the broadband internet phone-to-phone service. Callers can make/receive calls from their own CPEs (Customer Premises Equipments) connected to their broadband internet. The service is provided on a prepaid and postpaid basis. The destinations are the same as CAT2Call but the rate is higher. • The VoIP pricing can be scaled from high to low as follows : CAT 009> CAT PhoneNet> CAT2Call Plus> CAT2Call <p>(II) <u>VoIP by TOT</u></p> <p>The Y-tel 1234, another alternative offered for service users, is a domestic long-distance telephone service which is offered at a rate of approximately 37% - 70% lower than what was originally charged. The Y-tel 1234 is one of the IP Telephony services in the IP network. Y-tel 1234, a Readily Accessible Service. Press 1 2 3 4 + long-distance code + the telephone number at the destination. Users of the TOT's basic telephone service, whether it be home phones, office phones, or public phones, will instantly be able to take advantage without having to install any extra equipment. No application for the extension service is required and no extra fee will be charged.</p> <p>Operation</p> <p>The voice signal of the service user which is transmitted from the initial point travels to the telephone exchange in the form of a digital signal. This signal is then relayed to the gateway, where it is changed into a packet signal, at which it is divided into several parts. After that, the packet signal is transmitted to the IP network. When the packet signal arrives at the terminal gateway, it will be changed back into a digital signal once again. After that it will be relayed to the last telephone exchange and then to the receiver at the terminal point.</p> <p>Advantage of the IP Network</p> <p>Because of the use of modern technology in the IP network to transmit and receive packet signals, the capacity of the communications channels increases many times compared to the traditional network. Consequently, a greater amount of signals can be transmitted, thus resulting in a reduction in the rate of long-distance telephone services operated by the IP network. In addition, the quality of sound transmitted by this system is also clear.</p> <p>The Difference Between IP Telephony and Internet Telephony</p> <p>IP Telephony is the transmission of sound via IP network while Internet Telephony involves a computer linked to a telephone line and a modem in order to link with the Internet. An applied program is used in telephoning, and sending or receiving fax messages.</p> <p>Payment of Service Fees</p> <p>The TOT will notify the amount of the long-distance telephone service fees in the monthly notification form according to the economy rate charged by Y-tel 1234. Call a long-distance at an economy rate, call 1234.</p>

APEC MEMBER ECONOMY	COMMENTS					
Thailand, cont.	Service Rate (baht/minute)					
	Day		Service Rate 0-50 km.	51-00 km.	101-200 km.	200 km.
	Workday	07.00-18.00	2.00	4.00	6.00	8.00
		18.00-22.00	1.00	2.00	3.00	4.00
		22.00-07.00	0.75	1.50	2.25	3.00
	Weekend	07.00-18.00	1.50	3.00	4.50	6.00
		18.00-22.00	0.75	1.50	2.25	3.00
		22.00-07.00	0.50	1.00	1.50	2.00

APEC MEMBER ECONOMY	COMMENTS
United States	<p>The United States traditionally has declined to impose common carrier regulations on “information services” in light of the competitive market for such services. The regulatory distinction between telecommunications services subject to common carrier regulation and information services was codified in the Telecommunications Act of 1996.¹ In 1998, the Federal Communications Commission (FCC) released a report commonly referred to as the ‘Stevens Report’ which suggested that phone-to-phone services offered in a fashion similar to circuit-switched voice services may be a “telecommunications service,” but did not make a definitive determination in this regard.²</p> <p>In February 2004, the FCC issued a ruling that categorized Pulver.com’s peer-to-peer type of voice over Internet Protocol (VoIP) service, which allows users to make calls only to other member users, as an “information service” subject to federal jurisdiction, and concluded that the service should remain largely unregulated. The FCC ruled that pulver.com’s Free World Dialup (FWD) offering is neither “telecommunications services” nor “telecommunications.”ⁱⁱⁱ In April 2004, however, the FCC issued a decision on AT&T’s petition for exemption from access charges concluding that even though the inter-exchange carrier transmitted its inter-exchange service using its Internet backbone, the firm’s service is “telecommunications service” because (1) it uses ordinary customer premises equipment with no enhanced functionality; (2) calls originate and terminate on the public switched telephone network (PSTN); and (3) the service offers no enhanced functionality and the message undergoes no net protocol conversion.ⁱⁱ</p> <p>In March 2004, the FCC released a Notice of Proposed Rulemaking (NPRM) seeking comment on issues relating to services and applications making use of Internet Protocol (IP), including VoIP services. Specifically, the NPRM seeks comment on ways in which the FCC might properly categorize IP-enabled services. In addition, the NPRM asks questions on the appropriate legal and regulatory framework for each type of Internet service and the relevant jurisdictional considerations for each category. Final rulings are to be made on these extensive issues.</p> <p>In November 2004, in its Order in the matter of the Vonage petition, the FCC found that Vonage’s DigitalVoice service cannot practically be separated into intrastate and interstate components since, among other characteristics, DigitalVoice customers can use their phones from a broadband connection anywhere in the world, making it difficult to determine whether a call is local, interstate or international in nature. The FCC, in its Order, noted that the question of whether DigitalVoice should be classified as an unregulated “information service” or a regulated “telecommunications service” under the Communications Act would be addressed in the FCC’s IP-Enabled Services Proceeding.ⁱⁱⁱ The FCC made it clear that to the extent that other entities provide VoIP services – whether application service providers, cable operators, local exchange carriers (LECs), or others – the FCC would preempt state regulation to an extent comparable to the preemption in this Order^{iv}, thereby effectively avoiding the patchwork of inconsistent state regulations.</p> <p>In the United States, the FCC ordered in May 2005 that interconnected VoIP providers, who are able to receive calls from and place calls to the PSTN, are</p>

¹ The Telecommunications Act of 1996 defined “information services” to mean “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications network or the management of a telecommunications service.” 47 U.S.C. § 153(20). The “information service” category includes all services that the FCC previously considered to be “enhanced services.” See *IP-Enabled Services*, WC Docket No. 04-36, Notice of Proposed Rulemaking, 19 FCC Rcd 4863, 4881, para. 27 (2004), citing *Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Communications Act of 1934, as Amended*, CC Docket No. 96-149, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 21905, 21956-57, para. 102 (1996) (subsequent history omitted).

² *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501 (1998) (*Stevens Report*).

	<p>required to supply E911 emergency calling capabilities to their customers as a mandatory feature of the service. Interconnected VoIP providers must provide emergency operators with the call back number and location information of their customers (<i>i.e.</i> E911) where the emergency operator is capable of receiving it. Although the customer must provide the location information in some cases, the interconnected VoIP provider must provide the customer a means of updating location information, whether he or she is at home or away from home. Interconnected VoIP providers must inform their customers, both new and existing, of the E911 capabilities and limitations of their service. The incumbent LECs are required to provide access to their E911 networks to any requesting telecommunications carrier. They must continue to provide access to trunks, selective routers, and E911 databases to competing carriers. Interconnected VoIP providers were required to comply with these requirements, and submit to the FCC a letter detailing such compliance, no later than 120 days after the effective date of the order. Finally the Commission stated its intention to adopt, in a future order, an advanced E911 solution that includes a method for determining the customer's location without the customer having to self-report location information.^v</p> <p>In the United States, the FCC's number administrator generally allocates local geographic numbers. The FCC has not designated VoIP providers as equivalent to PSTN local service providers (although it is still in the process of deciding on how to classify VoIP services). With the exception of one VoIP provider that has obtained a waiver from the FCC, the FCC's numbering administrator does not provide numbers to VoIP providers and there has been no distinct allocation of numbers for VoIP services. Rather, the FCC has up to now allowed VoIP providers to obtain geographic numbers from telecommunications carriers, which have obtained the numbering resources from the FCC's numbering administrator.</p>
Vietnam	<p>Telecom Carriers VoIP: VNPT, Viettel, VP Telecom, SPT, Hanoi Telecom, Vishipel. (APEC TEL 32 Regulatory and Policy Update)</p>

- ⁱ *Petition for Declaratory Ruling that pulver.com's Free World Dialup is Neither Telecommunications Nor a Telecommunications Service*, WC Docket No. 03-45, Memorandum Opinion and Order, 19 FCC Rcd 3307 (2004).
- ⁱⁱ *Petition for Declaratory Ruling that AT&T's Phone-to-Phone IP Telephony Services are Exempt from Access Charges*, WC Docket No. 02-361, Order, 19 FCC Rcd 7454, paras. 1, 4, 7, 24 (2004).
- ⁱⁱⁱ *Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission*, WC Docket No. 04-211, Memorandum Opinion and Order, 19 FCC Rcd 22404 (2004) (*Vonage Order*).
- ^{iv} *Vonage Order*, 19 FCC Rcd 22404, 22424, para. 32.
- ^v *IP-Enabled Services*, WC Docket No. 04-36, *E911 Requirements for IP-Enabled Service Providers*, WC Docket No. 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245 (2005).