*Technical Report*

# Voice over Internet Protocol (VoIP)

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**Prepared for**

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# Preface

This report is the result of technical assistance provided by the Economic Modernization through Efficient Reforms and Governance Enhancement (EMERGE) Activity, under contract with the CARANA Corporation, Nathan Associates Inc. and The Peoples Group (TRG) to the United States Agency for International Development, Manila, Philippines (USAID/Philippines) (Contract No. AFP-I-00-00-03-00020 Delivery Order 800). The EMERGE Activity is intended to contribute towards the Government of the Republic of the Philippines (GRP) Medium Term Philippine Development Plan (MTPDP) and USAID/Philippines' Strategic Objective 2, "Investment Climate Less Constrained by Corruption and Poor Governance." The purpose of the activity is to provide technical assistance to support economic policy reforms that will cause sustainable economic growth and enhance the competitiveness of the Philippine economy by augmenting the efforts of Philippine pro-reform partners and stakeholders.

This report was written by Jaime M. Faustino after 6 months of technical assistance requested by Romulo L. Neri, Socio-Economic Secretary and Director General of the National Economic Development Authority (NEDA).

The views expressed and opinions contained in this publication are those of the author and are not necessarily those of USAID, the GRP, EMERGE or the latter's parent organizations.

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## Executive Summary

Based on a request from the National Economic Development Authority, this report provides an overview of telecommunications, the Internet and VoIP in the Philippines and internationally.

Information and communication technology (ICT) is transforming the world, making time and distance virtually insignificant. As illustrated in Chapter 1, the lightning speed transmission of information and knowledge to anywhere in the world is redefining the way people live, the manner in which business is done, and the pace of development. As seen in many countries, ICT brings enormous opportunities for economic growth. Rapid access to information helps make markets work more efficiently and accelerates the development process. The chapter provides successful examples of ICT applications for development in governance, education, public health, and environmental and natural resource management. The impact of ICT on poverty reduction has some positive anecdotal evidence but is not conclusive.

Telecommunications and universal access play central roles in exploiting the enormous potential and opportunities in ICT. Achieving universal access to telecommunications and ICT is now a primary goal for most countries. In Asia, Korea, China, Malaysia and India are witnessing the profound impact of ICT in achieving development. Global trends also reveal that countries with efficient telecommunications and ICT infrastructure are major destinations of investors. However, access to basic telecommunications and ICT services remains limited to cities and large towns where profit is guaranteed. With over 40% of the world's population living in rural and remote areas in developing countries, the challenge of universal access remains.

Chapter 2 provides an overview of telecommunications in the Philippines. It notes the progress achieved to date and highlights outstanding issues. The main issues are increasing accessibility and affordability.

Chapter 3 shows how the Philippines lags behind its Asian counterparts in terms of Internet and broadband penetration. It also depicts how countries like Korea, Malaysia, Singapore, China and India that strongly embrace policies for an enabling environment for innovation and new technology are already reaping the economic benefits of ICT.

Chapter 4 provides an extensive discussion of the economic advantages, global impact and trends, and potential benefits of Voice over Internet Protocol (VoIP). VoIP promises to change the face of telecommunications, as we know it. It is a major ICT application that has caught the attention of markets and consumers around the world. Compared to the traditional circuit switched networks, VoIP allows voice calls to be made using Internet Protocol (IP) technology. As such, already existing infrastructure can be used much more efficiently and can carry more traffic at any one time. This makes distance almost negligible and call rates cheaper.

This chapter also includes a list of the approaches and policy initiatives of various countries on VoIP usage and development. Developed countries have only just begun to embrace VoIP largely due to the regulatory issues and restrictions. Most of the telecommunications and ICT laws and policies were developed prior to the introduction of VoIP to the mass market. However, countries like the United States, the European Union, and India have recognized the tremendous benefits of VoIP and are promoting its use either by taking a pro-competition stance in interpreting its existing laws or by reforming the policy environment.

The main regulatory issue is whether VoIP should be regulated as a telecommunications service or as data service, which remains widely unregulated. The Philippines, like most countries, confronts the same issue—a policy and regulatory environment ill suited for the converging technologies such as VoIP. The current framework allows for two categories—telecommunications companies, which primarily provide voice service and value-added service providers who principally provide data services. VoIP, which is voice but transmitted as data, is blurring those definitions.

As seen in Chapter 5, countries like the Philippines can benefit from advancements in telecommunications and ICT such as VoIP. The liberalization of the telecommunications sector has opened the door for competition and dynamism in the market. The market has seen how new technology can stimulate the economy and encourage innovation. The mobile sector, for example, is now a significant economic growth enabler and has created new markets because of the affordability of text messaging. This illustrates that cheaper and efficient alternatives in communication can create a domino effect that will not only spur more growth in the telecommunications but also benefit the common Filipino and jumpstart development in other sectors.

This paper argues that the decision of the National Telecommunication's Commission to define VoIP as a value-added service, therefore allowing other players aside from public telecommunications entities to provide the service, sends a strong pro-competition signal to the market. By creating an enabling environment for VoIP to flourish, the Philippine government joins the growing number of developed and developing countries the world over that have adopted non-restrictive policy approaches regarding VoIP having recognized its advantages in achieving universal access and attracting more investments.

The NTC's current pro-active policy approach on VoIP also enables further growth in the IT and IT-enabled sectors. Call Centers, business process outsourcing, medical and legal transcription and others will benefit, as their telecommunications costs are reduced. Export-oriented groups and small and medium-sized enterprises (SMEs) heavily dependent on telecommunications can also save on costs. Deregulation will eventually encourage the development of new applications, and increased investments, jobs and competitiveness for the Philippines in the global ICT market.

Filipino consumers stand to benefit from competition in the provision of VoIP. Overseas Filipino workers, which total almost 8 million, and their families can take advantage of the cheaper international calls, thereby providing a means to minimize the social cost of labor migration. VoIP can also be deployed to provide services in unserved and underserved communities in the rural area. Community telecenter and Internet cafes can also exploit the technology for their business to have added service. Finally, the general public is given more choices and can avail of cheaper and efficient communications service.

A purposeful policy decision and clear guidelines create an enabling environment for new and useful technologies like VoIP to flourish. Allowing other players to compete with incumbent telecommunications companies in providing VoIP will benefit the consumers, as multiple service providers will compete based on efficiency and price. Finally, the introduction of Internet applications such as VoIP also promotes the deployment of high-speed internet in the Philippines. This, in turn, may have a positive effect on e-government projects both at the national and local level.

# Chapter 1 The Internet, Economic Development and VoIP

## ICT as Catalyst of Economic Growth

Globalization, propelled by the development of information and communications technology (ICT), is transforming the world. ICT accelerates the transmission and use of information and knowledge, crucial elements for in fast-paced, information driven society. This powerful combination of forces is redefining the way companies do business and changing the way people live the world over. The cumulative effect of these micro-level changes in firms and their markets results in an increasingly information-based global digital economy. This phenomenon, commonly referred to as the "information revolution", has given birth to what is now called the "global information society" and the "knowledge economy," spawned by digital technologies. The current information revolution driven by ICT, without being a panacea, promises to bring enormous opportunities for growth and poverty reduction.[1]

ICT, in particular the Internet, creates a domino effect on the economy. They provide the means for reorganizing businesses and processes, from on-line procurement of inputs to more decentralization and outsourcing, and can boost efficiency and productivity in manufacturing and the distribution sector. Rapid access to information helps make markets work more efficiently by allowing consumers to seek the lowest price and firms to have access to more suppliers. It significantly reduces transaction costs and barriers to entry for entrepreneurs --- from small farmers getting instant information on weather, prices and crop conditions in other regions to huge manufacturers tracking changes in demand more closely via direct links to electronic scanners in shops.

What makes the information revolution so fascinating is that its impact on the lives of the common people, leading to what is known as the "knowledge society." Never before has the use of ICT been enjoyed by so many than today. New technologies are increasingly becoming more responsive to people's needs at the same time that people's lives are being transformed by technology. For these reasons, the use and application of ICT is seen as one of the most powerful engines for economic growth and as the best hope for developing countries to accelerate the development process. According to Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, what remains now is the task of intensifying efforts to enable individuals, businesses and governments to benefit more fully from the use and application of ICT.

Successful ICT applications for development have been documented in governance, education, public health, and environmental and natural resource management. In developed countries, for example, geospatial information systems (GIS) are modifying farming methods and improving productivity, resulting in better produce for the consumers. Data warehousing is slowly changing the conduct of environmental performance evaluations (EPEs) in some countries. Some semi-

[1] Toward E-Development in Asia and the Pacific: A Strategic Approach to Information and Communication Technology, Asian Development Bank, November 2003, p. 9-10.

industrialized countries such as Israel are harnessing the potential of nationwide digital maps to trace Hepatitis A to water pollution, to control the disposal of residential effluents, and wherever possible, to site new homes and businesses near sources of safe drinking water.[2]

## ICT for Development

The speed with which information and services move between two points is the cornerstone of ICTs centrality to development. ICT has the potential to improve the access of people to information anytime, anywhere, and thus to increase their productivity, a feature not possible with other infrastructure or human resources. Relevant and timely information is needed for everything from agricultural input to decision-making concerning epidemic control. ICTs can help to increase access to market information and reduce transaction costs for poor farmers and traders; increase the efficacy of education and learning through the application of technologies and ICT-enabled skill development.[3] ICT also has an ever-increasing role in promoting sustainable economic growth through increases in productivity; promotion of exports, especially of services; and improved markets and quality and efficiency of government services.

Some developing countries have been creating new and innovative ways through ICT to dramatically help the poor and revolutionize the way people earn their income either by providing access to information or by creating job opportunities. Provision of ICT can help the poor access markets, demand services, receive education, and learn new skills. Community linkages to government-run educational and information sites will be useful for providing access to information on public sector operations, such as job opportunities, business expertise, micro-credit. ICT can give a voice to the disadvantaged, a voice that enables the poor to use their own knowledge and strengths to escape poverty. For example, rural populations with access to information such as crop prices, weather, and new farming techniques can help improve farmers' income.[4]

Countries all over the world have recognized this potential. The government of Andhra Pradesh, one of the less developed states of India, has pursued an aggressive strategy to promote the pervasive use of ICT, especially in modernizing governance systems through e-government over the last few years. In Jordan, a non-government organization (NGO) reported an increase in village wealth through use of solar energy and Internet facilities for health, education, and communication. Farmers in Bangladesh are using cellular phones to bypass middlemen and get better prices for their products.[5] In countries like the Philippines, cellular phones are used not only as a mode of communication but of banking, business and

[2] Nuimuddin Chowdhury, "Information and Communications Technologies and IFPRI's Mandate: A Conceptual Framework," IFPRI, 2000, p. 8
[3] Global E-government Readiness Report 2004: Towards Access for Opportunity, United Nations, New York 2004.
[4] ADB, 2003, p.28.
[5] ADB, 2003, p. 9-13.

government.[6] Mobile phones have become so popular in the country, primarily because of short messaging system (SMS) or "texting," that subscription has outpaced fixed lines shortly after its boom in 2000.[7]

ICT offers a potent solution to a nation suffering from "information poverty."[8] With the integration of ICT in development programs, an enabling policy environment, and a culture willing to embrace innovative means to achieve development, developing countries can harness the potential of ICT as a powerful tool to accelerate economic growth and to meet vital development goals such as poverty reduction, basic health care, and education, far more effectively than before.

Access to information and knowledge is critical for sustainable development. By increasing knowledge and awareness about opportunities for income generation, health and education interventions, ICTs can contribute to poverty reduction. By integrating technology into development planning, more effective and speedy solutions can be found to the delivery of basic services. The application of the new tools of the knowledge economy leads to opportunity, security, and empowerment, especially for poor people.[9]

### Internet Access Gap and Digital Divide

ICT has a great potential of helping poverty reduction and development programs. It is ironic, however, that those who are able to invest in ICT are the economically developed countries. This threatens to widen the "access gap" and worsen the information poverty situation of countries struggling to catch up. As a result, the world is now divided into the "haves" and "have-nots" in terms of access to the opportunities that ICT promises to bring.

Studies on the access of countries to ICT services, particularly the Internet, and their capacity or readiness to engage the digital world consistently ranked the rich nations such as the United States and Scandinavian countries as the top performers.[10] In Asia, where the Internet generally started in 1995, Hong Kong, South Korea, Singapore and Taiwan, all having strong economies, are considered among the most "connected" countries.

Singapore and South Korea have consistently outranked other Asian countries in terms of ICT development. Owing to public-private partnerships and the government's proactive efforts to promote ICT penetration and usage, Singapore

[6] Due to the popularity of cellular phones in the Philippines, mobile or "m-government" as opposed to e-government is also being popularized to enable government transactions through text messaging.

[7] Cellular phone subscription in the Philippines has reached over 30 million as of December 2004. There are 191 cellular phone subscribers for every 1,000 Filipinos compared to 42 for every 1,000 Filipinos who have landline access. Voice calls, however, remain expensive, at P6.00 to P8.00 per minute within Metro Manila and $0.40 for calls to the U.S.??

[8] The United Nations uses "information poverty" to refer to countries that do not have access to information vital to achieving human development. Economically poor countries are more often that not information poor countries.

[9] United Nations Global E-government Survey 2004.

[10] United Nations Global E-government Survey Report 2004-2005; The Networked Readiness Index Rankings 2003, Global Information Technology Report 2003-2004, World Economic Forum; ITU Information Technology Statistics 2003.

ranked no. 2 in the Networked Readiness Index (NRI)[11] for 2003-2004, only second to the United States. This is a big leap from its eighth position two years ago. Meanwhile, South Korea ranked fifth in the Global E-government Survey for 2004-2005 next to Sweden, the United Kingdom, Denmark and the United States. Singapore ranked 8th in the same survey, followed by a great distance by Japan at 18th place.

## Telecommunications, ICT and Universal Access

Access to telecommunications and ICT services is crucial for development in today's knowledge society and new global economy.

The concept of *universal access or service* has significantly evolved through the years. In the early days of telecommunications, it was considered as the full interconnection of all telecommunications networks, an important issue when many incompatible networks were developing in different regions. Later on, universal service came to mean the provision of telephony to all who requested it, at affordable tariffs. It gained more importance and in some countries, especially in the less developed parts of Europe, was set alongside great national drives to create widespread access to electrification, water, and other basic services. But in the last decade or two, the term has entered a more ambiguous phase owing to a great shift in the industry from government monopoly to privately owned, competitive supply.[12]

To promote universal access for their low-income population, developed countries have traditionally made use of subsidy mechanisms. Government resources were used for the development of telecommunications and maintaining long distance tariffs above costs was allowed in order to channel the surplus resources into the financing of local and rural networks, which have usually been regarded as unprofitable.

But with the emergence of competition in the telecommunications markets and the technological progress that has paved the way to a dramatic reduction in costs and given access to a better quality and greater variety of services, the traditional subsidies financing scheme had to be reassessed. Developed countries are now tending to discard mechanisms of crossed subsidies in tariffs and substitute them by a mechanism of universal service funds that makes for a more transparent allocation of subsidies and less distortion in markets, as well as facilitating clear identification of beneficiaries.[13] Some developing countries have adopted this approach and have crafted innovative means to provide universal service.

Universal access became more complex and urgent with the emergence of ICTs, particularly the Internet, which is now one of the main drivers of economic growth

[11] The Networked Readiness Index (NRI) is a major international assessment of countries' capacity to exploit the opportunities offered by ICTs, and the first global framework to map out factors that contribute to this capacity. "The Global Information Technology Report 2003-2004," World Economic Forum, INSEAD and Infodev, Oxford University Press, 2004.

[12] International Telecommunications Union.

[13] Strategy for the Development of Rural Telecommunications and Universal Access in Peru: Fund for Investment in Telecommunications.

in many countries. Unequal access in this globalized, digital world translates into a lack of opportunity for development.

Telecommunication infrastructure is the platform on which ICT development is built. Access to physical infrastructure by as many people as possible is imperative for ICTs to yield the full potential. However, access to basic infrastructure remains limited to cities and large towns in most low-income developing countries.[14] Over 40% of the world's population lives in rural and remote areas of developing countries and have difficult or no access to even basic telecommunications services.[15]

The impact of a lack of pervasive national telecommunications infrastructure is directly translated into a lack of online access. In terms of global access these disparities are vast. Only around 12 percent of the world population is currently online. Despite growth rates in excess of 100 percent in many developing regions of the world, such as Southeast Asia, issues of poverty and income result in a very few people with Internet access.

According to the International Telecommunications (ITU), 80 per cent of the 500 million Internet users worldwide are in the developed world, and two out of every five people in developed countries are online. Conversely, in developing countries only one person in 50 has access to the Internet.[16]

While the average OECD (Organization for Economic Cooperation and Development) country has 11 times the per capita income of a South Asian country, it has 40 times as many computers, 146 times as many mobile phones and 1,036 times as many Internet hosts. Africa, which comprises 14 percent of the world population, is home to only 1.5% of the world's internet users compared to North America, which represents 28 percent of the world's internet users but only hosts 5 percent of the world's population.

Compared with the West, Asia had a slow start in Internet development. In the mid–1990s, over 90 percent of Internet hosts were found in North America and Western Europe while Asia had only a share of three percent of global Internet hosts. In 2001, however, Asia's 144 million Internet users are not too far behind the 180 million users in North America and 155 million users in Western Europe, although proportionally the number of Asian Internet users is still way behind that of North America or Western Europe.

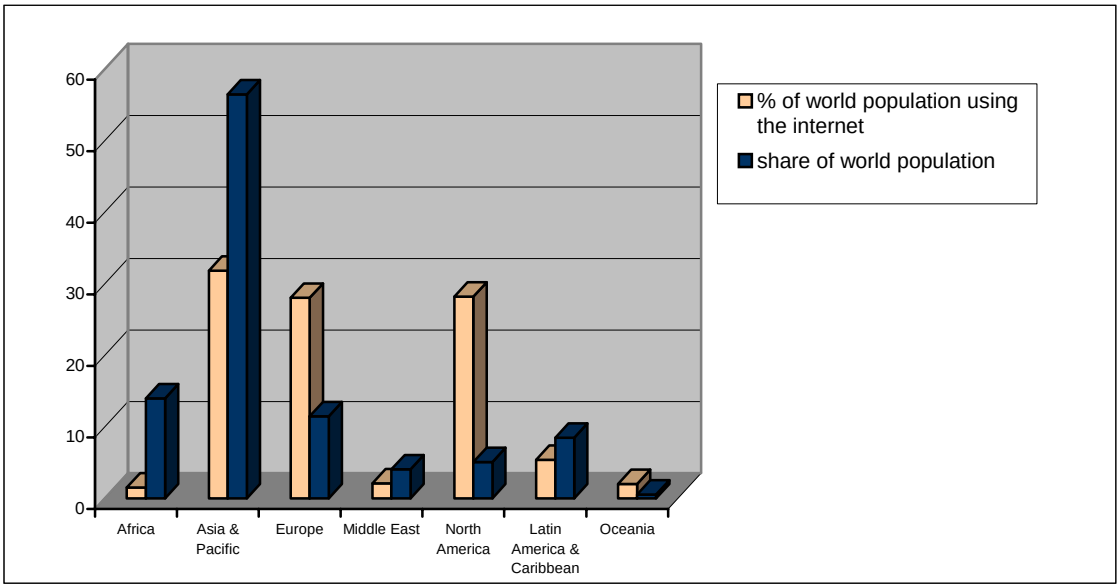
Despite the lag, Asia has come a long way in terms of the Internet in the past ten years. After a slow start, the region saw its average Internet penetration rate up from a mere 0.46 in 1995 to 3.7 in 1998, 8.8 in 2000 and 12.5 in 2002. It has been a marked achievement in just seven years. However, the growth is not evenly spread among all Asian countries. Fast Internet growth has been achieved only in

[14] In Asia, it is estimated that 75% of its population lives in rural areas.
[15] International Telecommunications Union.
[16] Cited in Madanmohan Rao, "The nature of the information society: A developing world perspective," 2004.

the more developed countries such as Hong Kong, Singapore, Taiwan, South Korea and Japan.[17]

High-income countries, which have already put in place extensive communication infrastructure, have found it easier to take advantage of the new technologies. On the other hand, countries where telecommunications reforms, including privatization of telecommunication industry, are still in its infancy remain far behind. For example, in 2004, every 2nd person in South Korea was an Internet user and had a telephone in stark contrast to Cambodia where more than 300 persons shared a telephone line while only 1 in 1,250 was online.[18]

**World Share of Internet, 2004**




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.5 | 31.8 | 28 | 2.1 | 28.2 | 5.4 | 2 | % of world population using the internet |
| 13.98 | 56.45 | 11.44 | 4.05 | 5.09 | 8.48 | 0.5 | share of world population |

*Source: United Nations Global E-government Survey, 2004*

Barriers to access to telecommunications and ICT, however, are not limited to lack of infrastructure. They can encompass one or many of the following: inadequate access to digital tools; poor supply of electricity; high cost of online access relative to local purchasing power; lack of awareness about or skills related to ICTs; lack of local relevance of online services; lack of local language content and tools; concerns over security and reliability of ICT infrastructure; lack of supporting legal protection for online transactions; poor participation in global standards councils; undue control over local media and institute measures to filter internet content; un-sustainability of many ICT pilot projects; and unequal playing field for telecommunication and data communication operators.[19]

[17] Hao Xiaoming and Chow Seet Kay, "Factors Affecting Internet Development: An Asian Survey," *First Monday*, Volume 9, Number 2 (February 2004), p. 3.
[18] UN Global E-government Survey Report 2004.
[19] Madanmohan Rao, "The nature of the information society: A developing world perspective," 2004.

This is supported by a recent study on Internet penetration,[20] which suggests that Internet access is positively correlated to four key factors: 1) a country's wealth, 2) telecommunication infrastructure, 3) urbanization and 4) the stability of the government.

The deployment of the Internet carries large costs and only a few countries with strong economic power are able to build the Internet in such a way that it allows access to as many people as possible. In the more economically advanced countries of Asia, flexible and low–cost communication provided by the Internet led to further improvements in productivity, business, education, health care, entertainment, global awareness, and quality of life. On the other hand, poorer countries are facing many problems in developing their telecommunication systems. ISPs are usually accessible in industrial and business locations or urbanized areas but their extension to rural areas and remote places is costly and tedious, thus limiting access for poorer and under–privileged citizens to new knowledge resources.[21]

However, a strong economy only works when it can break down into per capita wealth. Big economies with poor individual income (GDP per capita), such as China and India, offer no advantage in popularizing the Internet over small economies with bigger per capita share, such as Singapore and Hong Kong. Since individual access to the Internet is based on cost–sharing by investors and users, the financial situation of the ordinary citizen also plays a crucial role in ensuring public access to the Internet. Many less developed countries in regions such as Asia where universal access to basic communication and information services remains a goal have yet to taste the fruits of this new technological invention.[22] This is where community or shared access plays an important role in developing countries.

Strong ties exist between development of the telecommunication infrastructure and Internet penetration rate. Telecommunication infrastructure provides the means for the Internet diffusion as the access of most individuals to the Internet depends on the existing telephone or cable lines.[23] But distance remains a handicap to wired communication, which remains the dominant means for connecting computers together. Naturally, cost for building Internet links over vast distances are higher than in a densely populated community where many users, businesses or homes, are located close to each other. In this sense, urbanization not only increases the need for communication, but also reduces the costs for communication.

Achieving universal access has very significant economic and social benefits for a country. From the economic point of view, access to efficient and affordable communications services facilitates the transit from a subsistence economy to one of development of industry and services, promoting the integration of certain areas into a market economy. Economic efficiency is gained through the reduction in the

[20] Hao Xiaoming and Chow Seet Kay, "Factors Affecting Internet Development: An Asian Survey," *First Monday*, Volume 9, Number 2 (February 2004).
[21] Hao Xiaoming and Chow Seet Kay, p. 2.
[22] Ibid.
[23] Ibid.

cost of transactions because geographical location will no longer be a barrier. Benefits are also derived from the growth of the network itself. The value of the system increases for all users because of the increased access of the population. Access also facilitates businesses expansion, with a multiplier effect on employment and on consumption. From the social point of view, gaining access to communications services will make disadvantaged people (i.e., low-income, rural dwellers) part of the network. This participation will build a more cohesive society.

## Telecommunications, ICT and Investment

With the emergence of a globalized networked world, the role of telecommunications and ICT have become an imperative not only to provide communication services to its citizens but also to facilitate trade and investment. Where distance, time zones and national boundaries are fast becoming obscured in economic activities, the speed, efficiency and accessibility of communication services play a vital role in conducting business, attracting investment, and in spurring economic growth. Among other variables, including an educated labor force, a stable policy environment, peace and security, the quality of a country's telecommunications infrastructure and ICT services are seen as an important factor in attracting investors.[24]

According to a McConnell International Report, the ability to exchange information, goods, and services with the rest of the world, including affordable ICT and services, reliable electrical power, and a reasonable transportation system for people and goods, is a necessary albeit not sufficient condition for participation in the networked economy. Connectivity addresses the overall availability and reliability of these infrastructures. Key elements include:

- Availability of wireline and wireless communication services, community access centers (free and paid), and networked computers in businesses, schools, and homes.
- Affordability and reliability of network access, including the cost of service, downtime, and the prevalence of sharing access among individuals.
- Underlying infrastructure, including the reliability of electrical supply for business-critical computer operations, and the ease of importing and exporting goods and of transporting them within a country.

The report maintains that substantial investment in infrastructure is the basic prerequisite to exploiting the broad benefits of ICT (in terms of e-business and e-government). These investments must be made by the private sector, which requires a suitable investment climate. Critical to that climate, and to affordable communications service, is the ability to compete. It further suggests that progress will be slow in countries where monopolistic telecommunications suppliers remain in place.[25]

The reward of investing in telecommunications and ICT may not be immediate but will certainly create a positive impact to a country's economy and over-all

[24] Chowdhury, 2000.

[25] Risk E-Business: Seizing the Opportunity of Global E-Readiness, a report prepared by McConnell International in collaboration with World Information Technology and Services Alliance (WITSA), August 2000.

development. The effect of spending on ICT development is apparent in developed countries and in emerging markets where global firms are choosing more and more to invest in.

China, the largest recipient of foreign direct investments in 2002 and 2003, is wasting no time in improving its connectivity to attract more investors and sustain its economic growth. According to a research by the Gartner Group, China spent US$60 billion in 2003 on network development, installing over 110 million new telephone lines in the process – two thirds of all the lines installed in Asia for that year. China's ICT development is also unrivalled. It was the world's largest fixed-line market in 2001 and mobile market in 2002. It will overtake the US in terms of the number of broadband subscribers in 2004 and the absolute number of Internet users around 2008.

India, reputed as a software powerhouse, had one of the lowest tele-densities in the world in 2000, with 66 persons for every telephone line and approximately 500 persons per computer. But since liberalizing its telecommunications sector and investing in ICT, its connectivity has improved significantly. India increased its ICT expenditures vis-à-vis GDP from 2% to 4% between 1997 and 2000. In 2004, its indicators considerably improved, with 25 persons per one telephone line and 139 persons per computer.

Allowing competition and removing restrictions in investments in the telecommunications sectors also proved significant for countries like Poland, one of the world's top emerging markets. Poland initially maintained a restrictive foreign investment regime in the telecommunications sector. However, it phased-out those restrictions and, in 1997 to 2000, Poland's ICT expenditures grew from 2% to 6% of GDP, a growth rate twice that of India.[26]

### Impediments to Investment

Foreign direct investment (FDI) is a major driver for the economy of developing countries and in recent years, is coming from more countries, resulting in diverse markets that bring opportunities for more players. Both economists and CEOs agree that more and more FDI will be market-seeking investment in service sectors as well as investment in tourism and offshore services, the benefits of which are already being felt in developing countries like China, India, Malaysia, Thailand and to some extent the Philippines.

The new world economic landscape is dominated by countries that recognize the value of competition. To become a global economic player, countries must be keen on addressing the issues that hamper investments like ill-designed privatization processes, contracts, and regulations, which are present in many Asian countries. A study of India by the McKinsey Global Institute in 2001 showed that the removal of FDI restrictions in the automotive sector unleashed competition and investments,

[26] Dean Proctor and Simon-Pierre Olivier, "Capital flows and cost of capital: The Importance of Liberalized Investment Rules for a Competitive Telecommunications Sector," presented at *"Switching to High Growth: Issues in Policy and Regulation in the India Telecom Sector"* Conference held in New Delhi, India, October 19, 2002.

resulting in a threefold increase in productivity that translated into a threefold increase in output due to falling prices. This was paired with a growth in employment.[27] Similarly, India liberalized its telecommunications sector in the early 1990s to promote universal access and for its role in serving the new policy objectives of improving global competitiveness of the Indian economy and stimulating and attracting foreign direct investment."

Economies hoping to attract more foreign investments must also focus on improving conditions for doing business in their countries. The requirements for efficiency-seeking investment in manufacturing include low factor costs, a flexible labor market, a small regulatory burden, efficient infrastructure and customs. Less obvious factors include easy access to a competitive supplier base and efficient business service providers.[28]

This assessment is backed up by the FDI Confidence Index® that says corporate investors are gravitating to emerging markets such as China, Poland, India, Mexico and Brazil to take advantage of higher growth and lower costs, and to address business continuity issues that emerged after "September 11." A survey report released by A.T. Kearney in 2003 reveals that one in five investors cited terrorism among the most critical operational risks to their firm. For this reason, around 63 percent of global investors indicate that they have invested in back up IT and physical infrastructure and 11 percent plan on doing so. As a result, many emerging markets have become attractive locations for reducing both costs and operational risks.[29]

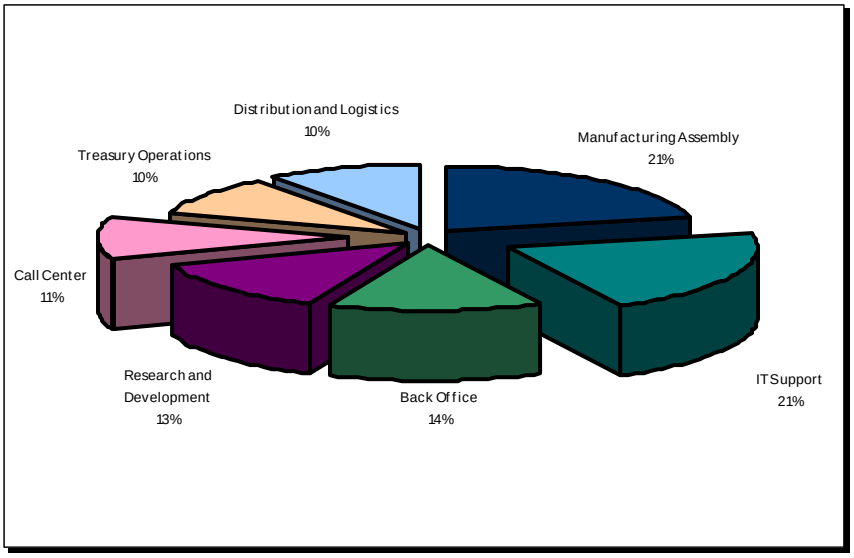
The survey suggests that firms seeking offshore opportunities likely drove the improvement of FDI attractiveness for many emerging markets. Relocating business processes, such as data processing, research and development, design, accounting and personnel services, has gained greater attention as firms seek to cut costs, spread risks and ensure business continuity through multi-country strategies. Recipient countries that are likely gaining from this are making advances in education and are reducing foreign investment barriers in the service sector. The integration of low-cost, offshore destinations into the high-speed, global data network is also improving investment, trade, and the incomes of these emerging markets.

In 2003, the biggest support functions that global companies expected to send offshore include manufacturing or assembly, back-office, R&D, call center, treasury operations, distribution and logistics. Offshore investors are looking for talent, technology and a sound business environment in recipient economies. For IT support, back-office functions, call centers and manufacturing and assembly, China and India were seen as attractive locations. Countries like Slovakia, Russia, Mexico, Malaysia and Croatia were considered for offshore manufacturing and assembly.

[27] Vincent Palmade and Andrea Anayiotas, "FDI Trends: Looking Beyond the Current Gloom in Developing Countries, Viewpoint, Note Number 273, The World Bank Group, September 2004.
[28] Ibid. p. 4.
[29] FDI Confidence Index, Global Business Policy Council, Volume 6, September 2003 by A.T. Kearney, the management consulting subsidiary of the EDS.

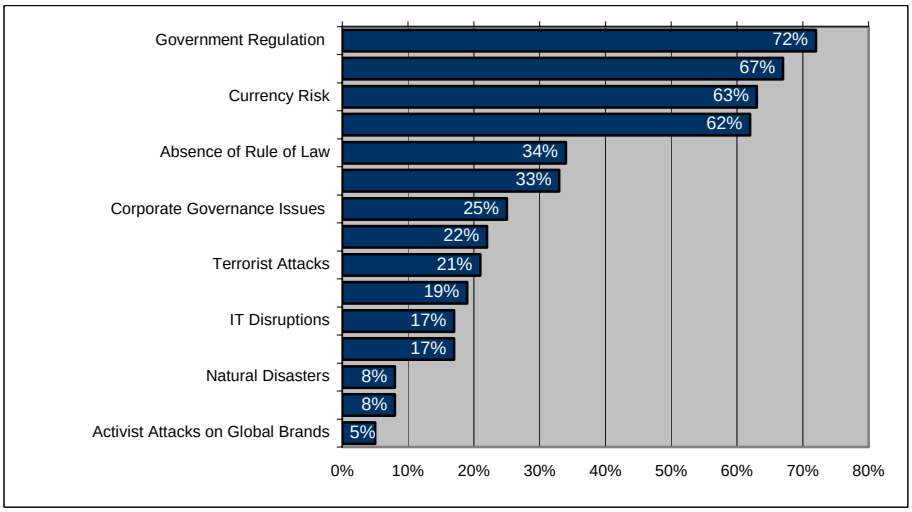
Attractive call center locations include Poland, Slovakia, the Philippines and Costa Rica while Singapore, Malaysia, Slovakia and Hong Kong were highly considered for distribution and logistics operations.[30]

**Capabilities that Companies Plan to Send Offshore**




*Source: A.T. Kearney (FDI Confidence Index, 2003)*

**The Most Critical Risks to Corporations**




*Source:* A.T. Kearney (*FDI Confidence Index, 2003)*

Next to the performance of the U.S. economy and global and regional trade initiatives, corporations see increased government regulation as a critical factor affecting FDI, with 10 percent ranking it as the most important consideration. The most critical risks identified also include financial and currency risks, political and social instability, terrorist attacks, and supply chain and IT disruptions. Based on these assessments and surveys, a country's telecommunications and ICT indicators are a key factor affecting trade and investments.

[30] FDI Confidence Index, 2003, p. 6.

The Asian Development Bank (ADB) cites lack of access to ICT as one of the major obstacles to investment in today's technology-driven globalized world. In developed countries, ICT and the Internet have helped globalize production and capital markets and speed up innovation by reducing the time for designing new products, through powerful computers that make it easier and cheaper to process large amounts of data. This is not generally the case for developing countries, where the cost of computers and telecommunications remain high, because of insufficient liberalization and deregulation of markets, and years of chronic under-investment.[31]

This is true for developing countries like the Philippines whose attractiveness to investors and competitiveness continue to dwindle since 2000. Based on the Global Competitiveness Report[32], the country's ranking slid from 48 in 2001 to 56 in 2002. It continued to drop down to 66 in 2003 until it plunged to 76 in 2004. Experts say that the high cost of doing business continue to hamper the country's competitiveness.

- Power costs are higher compared to China, Taipei, Korea, and Indonesia due to high distribution charges. (Philippine power rates, however, are lower than Singapore, Malaysia, Thailand, and India).
- Investor confidence are weakening due to concerns about fiscal sustainability, and structural problems such as peace and order and a weak infrastructure and logistics system. The poor quality of infrastructure is perennially cited as the main problem in the Philippines' global competitiveness.
- Telephone and mobile phone charges in the Philippines were cited as the highest among ASEAN member countries (The 13th Survey of Investment-Related Cost and Comparison in Major Cities and regions in Asia, March 2003)

The government has constantly positioned the Philippines as the premier investment site for customer contact centers in Asia. Investors often locate in the country primarily because of its low-cost, highly educated, customer-service oriented, English speaking workforce.[33]

[31] Asian Development Bank, 2003.

[32] The Global Competitiveness Index gauges the ability of the world's economies to achieve sustained economic growth over the medium to long term. It primarily assesses the impact of those factors that economic theory and the accumulated experience of policymakers in a broad range of countries have shown to be critical for growth, whether narrowly focused on elements of the macroeconomic environment or, reflecting the latest insights in the economics literature, institutional and other factors.

[33] Based on a recent survey of top executives conducted by Hong Kong's Political and Economic Risk Consultancy.

## Chapter II Telecommunications in the Philippines

The Philippine telecommunications sector is distinctive for three reasons:[34]

1. It is one of the few countries in the world where telecommunications services have historically been operated and provided by the private sector.
2. The innovative regulatory requirement laid out in the mid-1990s that called for mobile and international telecommunication operators to install a specific number of fixed lines to balance lucrative opportunities in the international market against the supposedly less profitable requirement to roll-out lines outside the main population centers.
3. The explosive growth of mobile, made the nation among the first where mobile surpassed fixed telephone lines.

Competition in the Philippine telecommunications market is relatively high. In most areas, there are at least two operators theoretically allowed to provide fixed service in each region across the country, five companies providing mobile cellular services, and eleven international gateway providers.

Unlike many countries, licenses per se are not issued to telecommunication companies. Instead they apply for a Congressional franchise, certificate and approval to provide telecom service.[35] Ownership of a telecommunications entity is also restricted as the Constitution limits foreign ownership in public utilities up to 40 percent.

### Eras of Telecommunications in the Philippines

- Monopoly Era
- Liberalization Era
- Mobile and New Technology Era

### Monopoly Era

The Philippine Long Distance Telephone (PLDT) Company, the nation's largest and oldest telephone operator, dominated the monopoly era until 1993. Incorporated in 1928, it was given a 50-year franchise to establish and operate telephone services in the country by the Philippine legislature. Its services were temporarily interrupted during the war years (1942-1946) and resumed when US military authorities turned over what remained of the system to PLDT in 1947. In 1968, a group of Filipino industrialists and businessmen headed by Ramon Cojuangco acquired the block of shares owned by the General Telephone and Electronics Corporation of New York. In 1998, First Pacific Company Limited acquired PLDT shares representing a 17.2 percent economic stake, equivalent to a 27.4 percent voting interest. Manuel V. Pangilinan was then named President and Chief Executive Officer, and a Director of PLDT.

[34] "Pinoy Internet: Philippines Case Study," International Telecommunication Union, March 2002.
[35] Republic Act 7925 or the "Public Telecommunications Policy Act of the Philippines" Article VI, Section 16, 1995.

As the incumbent operator, PLDT provides about 67% of the telephone service market in the country. All the other telephone service providers combined account for the remaining piece of the pie. (SOURCE AND YEAR)

### Liberalization Era

The liberalization era of telecommunications began in 1987 with the de-monopolization provision of the Constitution. Based on that mandate, President Fidel Ramos issued Executive Order (E.O.) 59 in February 1993 mandating interconnection among local telecom firms and lower telephone subscription rates for consumers. At the start of the process, teledensity stood at about 2 phones per 100 persons.

In July 1993, the NTC established the Service Area Scheme (SAS) created by E.O. 109. Built on a cross-subsidy structure, this scheme divided the country into eleven geographical service zones. International gateway operators and cellular service providers were required to install a minimum of 300,000 and 400,000 local telephone lines, respectively, within a five-year period (reduced to three years by the Telecommunications Policy Act of 1995). SAS participants were also required to give priority to underserved and unserved municipalities and to roll-out one landline in a rural area for every ten lines rolled out in urban areas. (Annex 1)

The liberalization of the telecommunications industry in the early 1990s introduced a new set of issues for the Philippine Government. Unlike the previous monopoly era, the Government confronted a multi-player environment with a dominant player. Using its market power, the dominant player used interconnection with its network as a tool to stifle competition. Without access to the subscribers of the dominant players, small firms experienced difficulty in increasing their subscriber base.

In March 1995, Republic Act 7925 or the “Public Telecommunications Policy Act of the Philippines” was enacted. The law sets out the duties and obligations of public telecommunication operators and interconnection rules. It endorses the policy of private ownership, instructs the government to sell remaining publicly held telecommunications assets and also calls for operators to list up to 30% of their shares to encourage citizen ownership. The Act also entrusts the NTC with the right to establish tariffs for telecommunication services.

The SAS program achieved its goal of expanding access to phone service by increasing teledensity to about 9 phones per person. Fixed lines installed were up to 6.5 million at the end of 2003 as compared to 740,000 lines in 1992. In less than ten years, landline subscription grew to 3.3 million in 2003.

### Mobile and New Technology Era

The latest data from the NTC shows that at this stage when the number of telephone service operators have increased and the time of waiting has been

reduced to days, people are starting to brush aside fixed line and prefer the more affordable and accessible mobile phones.

The NTC data released in May 2004 highlights two contrasting Philippine telephony trends, the continuous decline of wireline teledensity amid the continuous surge of wireless subscription volume. NTC recorded a teledensity of 8.09 installed fixed line for 2003, a 0.61 decrease from 2002's data of 8.70 fixed line teledensity. According to the data, there are about 8.09 phone lines that are ready for use per 100 inhabitants in 2003. In 2001, NTC registered an 8.88 fixed line teledensity. Meanwhile, the subscribed line teledensity, or telephone lines in use, stood at 4.07 in 2003, a 0.1 decrease from previous year's 4.17 subscribed line teledensity. Exactly two years before, NTC's subscribed line teledensity stood at 4.26 subscribed phone lines per 100 inhabitants.

The popularity of the cellular phone service is highlighted by the fact that while the installed capacity of the wireline telephone service fell 3.7% to 6,557,403 lines in 2003 from 6,811,616 lines in 1999, the number of mobile phone subscribers grew eight times during the same period to 22,509,560 from 2,849,880. At the end of 2003, Smart led with 45% of the market share in the cellular arena, followed by Globe Telecom with a 39% share, Piltel with 13%, Digitel with 3% and Extelcom with less than 1 percent.

The cellular mobile telephone service (CMTS) density stood at 27.77 in 2003. Translating its value, the country has, on the average, 27.77 listed cellular phone users per 100 inhabitants. The 2003 data is a significant leap from 2002's 19.36 CMTS density and 2001's 15.61 CMTS density. The fast uptake of cellular phones can be largely attributed to the popularity of short messaging service or SMS. Everyday, an average of 70 million text messages are being sent, making the country the “texting” capital of the world.
Of the 22.3 million or so users in 2003, the PLDT group (Smart and Piltel) accounted for 58% of the total number of subscribers. By the end of 2004, total mobile phone subscribers reached 30 million. In terms of the revenue split between wireless voice and data, voice accounted for 62% while data (mostly short messaging service, or SMS) took 38%. The continued growth of mobile services can be attributed to the lower cost of handsets, the ubiquity of text messaging (each subscriber on the average sends seven messages a day), the “calling party pays” (CPP) scheme, and the use of the prepaid system.

As seen in the rapid increase of mobile phone users and the changing market, the policy and regulatory environment need to continue evolving as a result of new and greater demands for more convenient and efficient communication services, rapid technological innovation, and the emergence of new players.

The Internet, has become the driving force for new technologies such as Voice over Internet Protocol (VoIP), a viable, cost-effective technology that can challenge, if not replace, the prevailing system of circuit switched phone services. Traditionally, telephone calls have been transmitted over voice networks though circuit switching system. However, the Internet has created the opportunity to reverse this trend

and now send voice over data networks through packet switching. The technology breaks voice into small packets of data, which are dispersed over any number of possible routes, mixed with other data and then sorted out at the receiving end. This technology is considered more efficient and less costly than the conventional telephone network that routes a single call via circuit switches, which tie up an entire network circuit.

Industry experts say that VoIP could be the most important development in public telecommunications since analog switches were replaced by digital equipment more than two decades ago. Analysts predict that consumers and enterprise VoIP will grow at over 100% annually for the next years becoming a $100 billion industry by 2007.

One of the main reasons and probably the most significant interest in the race to send VoIP is the cost advantage that this process offers organizations and consumers due to the flat low cost of internet traffic. Analysts estimate that installing a packet switching network could be done for about a third the cost of a circuit switching system and that operational savings could be as high as 60 percent, which translates to reduction of telephone call rates.

The Philippine government can take advantage of VoIP as a tool to energize the telecommunications industry, reduce telephone call costs and be a source to bridge the digital divide inline with the government's policy of lowering costs services in marginalized areas. The challenge, therefore, is to formulate enabling policies for VoIP.

There are, however, no rules or guidelines governing VoIP in the Philippines. The absence of clear policy guidance is unnecessarily stifling and impeding the development, deployment and use of VoIP.

To address this, the DOTC issued on November 25, 2003 a Memorandum Circular (MC) directing the NTC to begin conducting public hearings on the issue of VoIP and to promulgate the rules and regulations that will govern its use and deployment. This Circular is an important and indispensable first step toward the issuance of VoIP rules that can be expected to provide at least three tangible benefits.

First, a more definite regulatory regime for VoIP will complement stepped-up government efforts to promote universal access to ICT. VoIP can be the "killer applications" of the Philippines that will help increase connectivity in the rural areas.

Second, formal rules for VoIP will provide the market with the necessary policy guidance for its widespread deployment. Private sector players that stand to benefit include:

- telecommunications companies, internet service providers and other potential providers,
- export industries who can save significantly on the costs of long distance calls, and
- call centers and other e-services providers

Finally, the wider availability of VoIP will provide better consumer choice for long distance communications and will be of great value to the large overseas Filipino communities estimated at over 7 million, around 2.9 million of whom are overseas Filipino workers (OFWs) who can benefit from more cost-effective options for keeping in touch with loved ones in the Philippines, especially in the rural areas.

## The Policy and Regulatory Environment

The NTC has developed a strengthened regulatory environment for telecommunications through implementing a series of new rules that are bringing the Philippines closer to having a fully competitive telecommunications market. The new rules have:

- Helped improve interconnection
- Helped improve the investment climate
- Increased universal access
- Provided more choices for consumers
- Helped the Philippines become an e-services hub
- Moved towards more efficient frequency spectrum management

The SAS had a profound impact on the telecommunications industry. It created a different set of issues that have severe implications on the telecommunications sector, the economy and consumers.

- The economics of the "cross-subsidy" scheme are increasingly irrelevant. Subsidies assumed under the mid-90s environment are rapidly disappearing. For example, international long distance calls may have cost $4.00/minute a few years ago but cost only $.40/minute.
- There is now excess capacity. By end 2003, there were about 6.6 million landlines available but only 3.3 million subscribed.
- The excess capacity is putting a huge financial strain on telephone companies.
- Not all SAS participants complied with the roll-out obligations. This raises the issue of what "sanctions and rewards" will be given to the SAS participants.
- There are new and potential telecommunications firms who can provide service but are not interested in a technology-specific "landline services."

The changing times gave rise to developments that affect the SAS and the government's universal access program. The growth of cellular service spurred by the introduction of prepaid cards and text messaging, estimated to total 12 million subscribers will continue to erode the revenue base of landline service providers. The imposition of the use of landline technology and a specific number of lines created the oversupply of fixed lines of 3.3 million unsubscribe lines. And finally, reduced revenues from International Toll Operations, a source of cross-subsidy for local exchange operations of carriers, rapidly declined due to global competition and the availability of cheaper options for consumers such as Callback, International Simple Resale and Voice over IP.

According to a 2002 assessment of the Service Area Scheme (SAS), high-unsubscribed capacity is an indication of depressed market conditions brought about by the 1997 Asian economic crisis as well as market lag factor. The crisis created a slowdown in the demand for telephone service, thus, aggravating the over supply situation in service areas where the roll-out was completed. Some operators who failed to complete the financing in 1997 encountered difficulties in securing additional funding for the last phase of the expansion program.

From the technical side, the network may not be fully equipped and wired to cover a big service area thus, limiting its market capability. Some operators encountered financial difficulties during the implementation phase thus delaying the commercial roll-out of its facilities due to delayed completion of network and corresponding project acceptance and turnover of facility.[36]

To strike a balance among the difficult issues brought about by national as well as regional and global development, the DOTC mandated the NTC to rethink the SAS and develop a new program that will work towards increasing subscribed lines, keeping the firms viable, continuing downward pressure on retail prices to consumers, and allowing effective competition in the local exchange service.

As part of that process, in September 2000, NTC issued an order directing telephone companies to provide information on the rollout obligations of SAS. Many PTEs responded that same month. The compliance profile reflects the success or lack thereof of the SAS:

(1) As of 2000, six (6) operators – Digitel, Globe, Bayantel, PLDT, Smart and Piltel were able to roll-out the required number of local lines, and rural deployment but were deficient in covering the required areas.
(2) Three (3) operators – Islacom, Capwire, Philcom were deficient in rolling-out the required number of lines and required areas to be covered but were able to meet rural development
(3) ETPI who started the program in the later period failed to roll-out the required number of lines as well as meeting other requirements.
(4) Both Extelcom and BellTel have not started with their roll-out program.

[36] Assessment of the Implementation of the Service Area Scheme (SAS), Accelerating Growth, Investment and Liberalization with Equity (AGILE), United States Agency for International Development (USAID) for the National Telecommunications Commission under USAID Project No. 492-C-00-98-00018-00, January 2002.

**SAS Obligation Compliance of PTEs**

| PTE | SERVICE | COMPLIANCE | | |
|---|---|---|---|---|
| | | No. of Lines | SERVICE AREA | URBAN-RURAL DEPLOYMENT |
| DIGITEL | IGF | ✓ | X (1) | X |
| GLOBE | IGF, CMTS | ✓ | X (14) | X |
| BAYANTEL | IGF | ✓ | X (7) | X |
| PLDT | IGF | ✓ | ✓ | -NA- |
| SMART | IGF, CMTS | ✓ | X 62) | X |
| PILTEL | CMTS | ✓ | X (22) | X |
| ISLACOM | IGF, CMTS | X (134,271) | X (186) | X |
| CAPWIRE | IGF | X (144,583) | X (94) | X |
| PHILCOM/ MAJORTEL | IGF | X (239,583) | X (109) | X |
| ETPI/TELETECH | IGF | X (229,140) | X (92) | X |

*Source: Assessment of the Implementation of SAS, 2002.*

Despite the large investments that telecommunications companies made to meet these targets and the limited consumer uptake of lines, the companies were only provided with provisional authority to operate. The carriers' operating authority had to be renewed every 18 months or, more recently, every three years. The uncertainty of this provisional status increased the risk of investing in the Philippines.

After a study of ways to rationalize and continue regulatory encouragement for broader spread of service, a new NTC action plan was adopted on May 15, 2002 with technical assistance from the AGILE project of USAID. This plan replaces the SAS with a new procedure that encourages provision of telecommunications services in unserved and underserved areas, throughout the country. Under the new plan, the NTC is both providing clear incentives for broadened spread of service and a less risky regulatory environment for telecommunications investors.

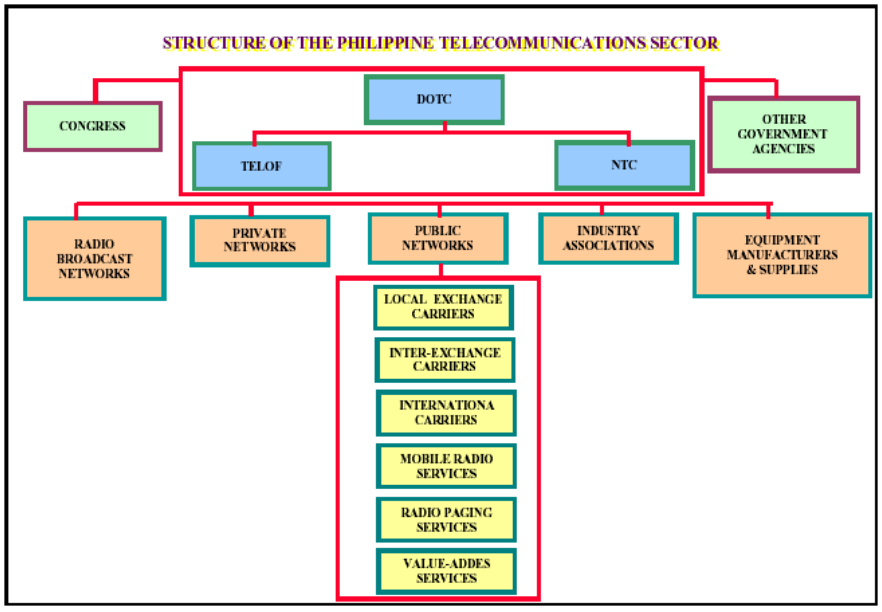
An incentive for the carriers to provide such services is the granting of permanent operating licenses. On July 23, 2002, the NTC granted "Certificates of Public Convenience and Necessity" (CPCNs) to seven SAS-participating carriers: Smart Communications, Pilipino Telephone Corp., Globe Telecom, Isla Communications Co., Digital Telecommunications Phils., Capitol Wireless, Philippine Global Communications Corp., and Philippine Telegraph and Telephone Co. The firms were required to install, within three years, public calling stations or telecenters in the areas where installation of local exchange lines was still pending. Targets for installation were 40% in the first year, 30% in the second year and 30% on the third year. Priority is to be given to municipalities without local exchange services or public calling stations. In support of this, the NTC also issued Memorandum Circular (MC) 08-07-2002 on "Deployment of PCOs and Telecenters in the

Countryside", allowing any firm to register as "Public Telecommunication Office and Telecenter Service Providers" for both basic (voice) and value-added services (Internet, telex, fax, satellite communications, etc.).

Despite the shortcomings, the impact of opening up the market on fixed-line growth cannot be overlooked. It introduced new investors and reinvigorated the incumbent PLDT, which still holds more than half of local line subscribers up until now.

## Structure of the Philippine Telecommunications Industry

The Philippine telecommunications sector includes offices in the executive branch, Congress, and several private sector players offering various services.




*Source: DOTC*

The telecommunication industry structure now consist of the following services:

- Local Exchange Carrier Service (LECS)
- Cellular Mobile Telephone Service (CMTS)
- Paging Service
- Public Trunk Repeater Service
- International Record Carrier
- Domestic Record Carrier
- Very Small Aperture Terminal (VSAT)
- Public Coastal Station
- Radiotelephone
- Value-Added Service

## Present Situation

Despite meeting the target, majority of the lines installed in compliance with the SAS policy is not in use. With only 44 percent of installed lines in use, the Philippines has one of the world's highest ratios of unused telephone lines. A major reason is that lines were installed in places where people could either not afford them. Subscription charges were also not dramatically reduced.

TELEPHONE DISTRIBUTION BY OPERATOR 2003

| OPERATOR | INSTALLED LINES | SUBSCRIBED LINES | % INSTALLED | % SUBSCRIBED |
|---|---|---|---|---|
| BAYANTEL | 443,910 | 227,057 | 6.77 | 6.88 |
| BELL TELECOM | 12,710 | 1,942 | 0.19 | 0.06 |
| DIGITEL | 633,190 | 391,605 | 9.66 | 11.87 |
| ETPI/TTPI | *** 89,386 | 21,242 | 1.36 | 0.64 |
| GLOBE | *** 790,291 | 134,803 | 12.05 | 4.09 |
| ISLACOM | *** 693,978 | 73,491 | 10.58 | 2.23 |
| PHILCO\M | *** 219,343 | 49,596 | 3.34 | 1.50 |
| PILTEL | 236,561 | 48,186 | 3.61 | 1.46 |
| PLDT | *2,933,555 | 2,098,493 | 44.74 | 63.60 |
| PT&T | 125,912 | 36,751 | 1.92 | 1.11 |
| SMART | ** - | - | - | - |
| OTHER LECS | 378,567 | 216,195 | 5.77 | 6.55 |
| **TOTAL** | **6,557,403** | **3,299,361** | **100.00** | **100.00** |

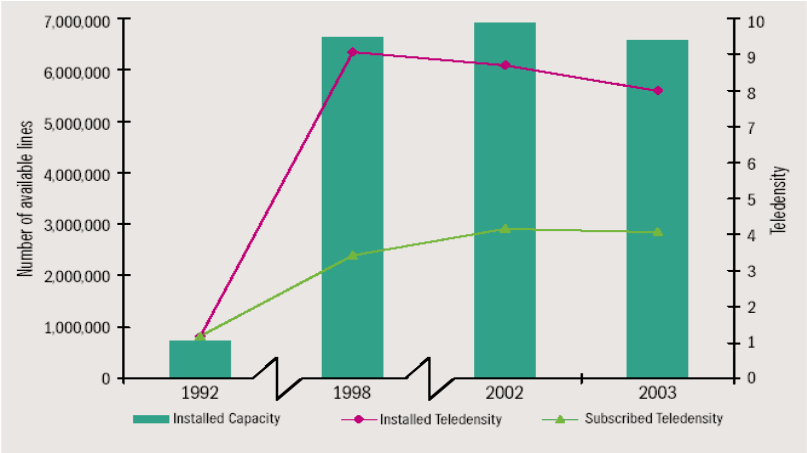
* Report is as of September 30, 2003

** Smart data included in the PLDT reports

*** No report submitted for 2003

*Source: NTC*

**Number of Installed Lines and Teledensity (1992 to 2003)**

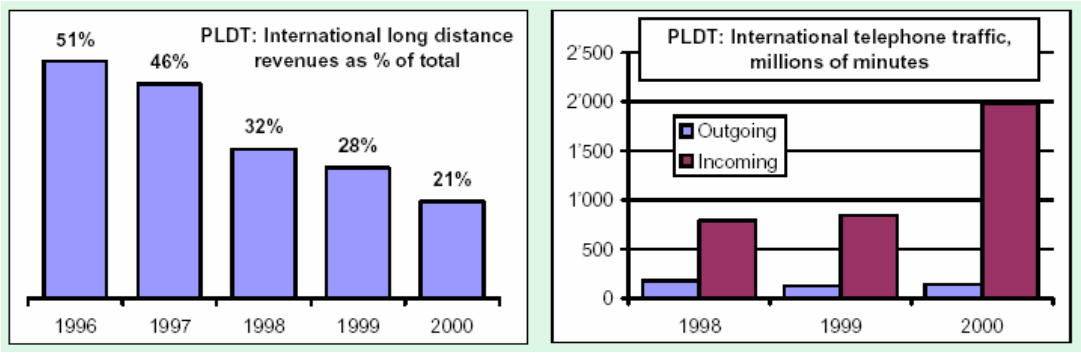



*Source: NTC, ITU*

Until 2000, the Philippines constantly outperformed the other members of the Association of Southeast Asian Nations (ASEAN) in terms of its fixed line network for every year. But in 1995, mobile phone growth peaked. The Philippines is one of first few countries where mobile surpassed fixed line. Mobile subscription has also been consistently higher in the country since 1992, with a notable upturn in 1998 partly as a rebound from the 1997 Asian financial crisis. But it also reflects the beneficial impact of pre-paid tariff packages.

At the end of 2000, there were 77 operators providing fixed telephone line service. Most are provincial operators (PAPTELCO members) that account for a small portion of lines. Under E.O. 109, nine operators were obligated to install fixed lines. When all the lines installed were added up, the result is four million or more than quadruple the number that existed in 1993. This was five years ahead of target, with some operators exceeding their line installation requirements and others not completing theirs. Some operators said that part of the reason for not accomplishing their target was "peace and order" particularly in the south, lack of permission from local authorities, and the financial crisis.

**PLDT's International Revenues as Percent of Total and PLDT's International Telephone Traffic**




*Source: ITU adapted from PLDT*

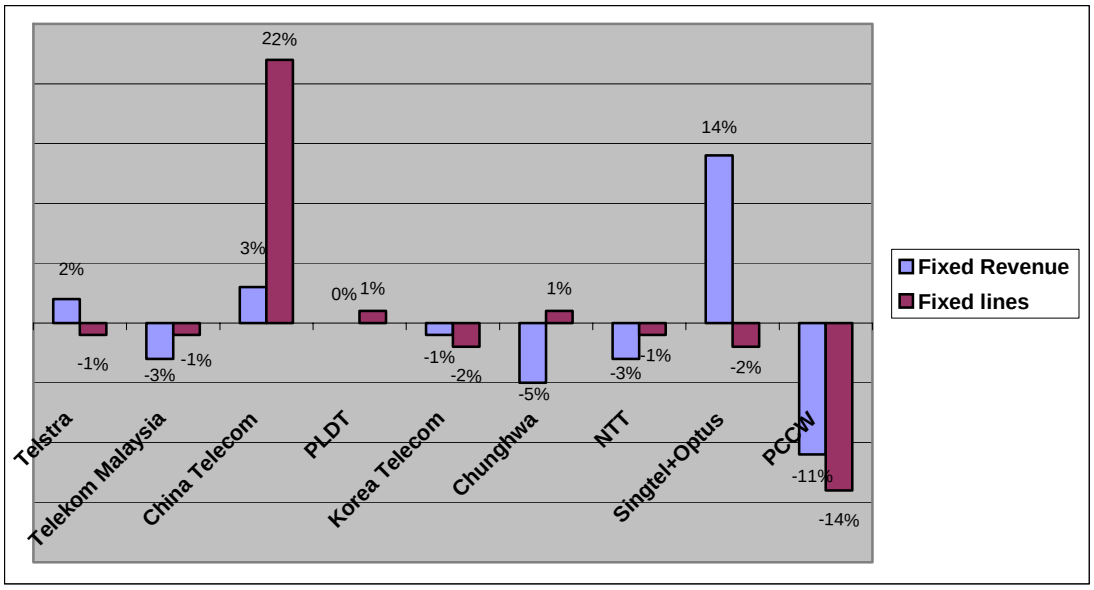
As a result of the upsurge of mobile phone subscription and the availability of cheaper options for consumers such as Callback, International Simple Resale and

Voice over IP, PLDT's revenues continued to plunge from 1996 to 2000. In fact, incumbent telephone operators throughout Asia experienced a declining and often negative revenue growth from fixed lines in 2002-2003, due to the dominance of the mobile and data sector.

According to Ovum, Asia's incumbents are at a crossroads. Their core business is changing - they are experiencing severe price erosion in their fixed telephony business. The market is changing - subscriber growth is reaching saturation point, a sign of market maturity. Competition is changing - it is increasingly fierce in core growth sectors such as broadband and mobile, and is coming from new types of players. Regulatory pressures are increasing. Legacy technologies are being replaced with cost-effective alternatives, advantaging new entrants.

The few delivering double-digit revenue gains - SingTel Group (Singapore), Telekom Malaysia (Malaysia) and PLDT (Philippines) - did so on the back of strong mobile growth. PLDT chairman Manuel V. Pangilinan confirmed this, saying that fixed line has reached its growth peak amid the seemingly marketable mobile business. Riding on the popularity of mobile phones, Mr. Pangilinan said PLDT has began offering value-added services which are similar to services being offered by cellular phones.

**Fixed Line Growth and Revenues (2002-2003)**

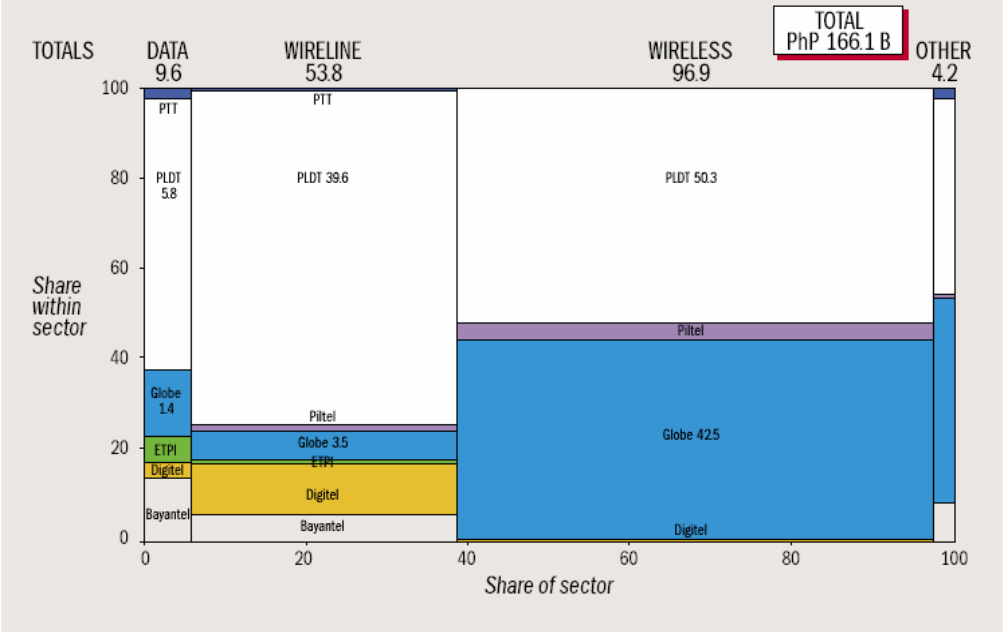



*Source: Ovum report quoted in ITU Telecoms Asia 04 On-Line News Service.*

Despite the difficulties, the SGV Group/Knowledge Institute Industry Brief for 2003 says that communication services grew at least three times faster than the Philippines' Gross Domestic Product (GDP). By the end of 2003, the leading telecoms companies generated over P166 billion in revenues and directly employed around 30,000 people. This also marked the sector's return to profitability on the global and local level, with wireless players still enjoying an explosive growth. Since

the industry is capital-intensive, players must remain making the most out of existing investments, managing debt levels, and finding new areas of growth.[37]

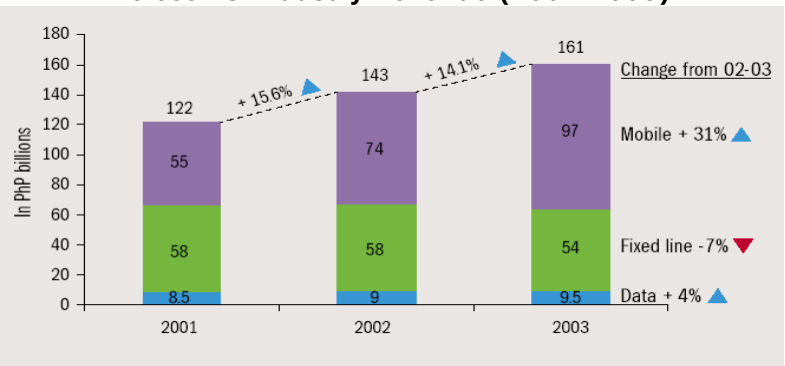
**The Philippine Telecoms Market (2003), in Billion PhP**




*Source: Company reports, Knowledge Institute estimates taken from Industry Briefs 2003, The SGV Review, September 2004.*

Every year, the industry's total revenues continue to increase. The growth of the various segments (mobile, fixed line, and data), however, is not evenly distributed. Driven by the mobile phenomenon, with revenues up by 31% in 2003, total industry sales rose by 14% from P143 billion to P161 billion. Philippine market saturation levels have been pushed to the 45%–50% penetration levels, from the 30% levels indicated in 2003. Given the size of the Philippine population, this translates to a potential market of at least 45 million wireless subscribers.

**Telecoms Industry Revenue (2001-2003)**



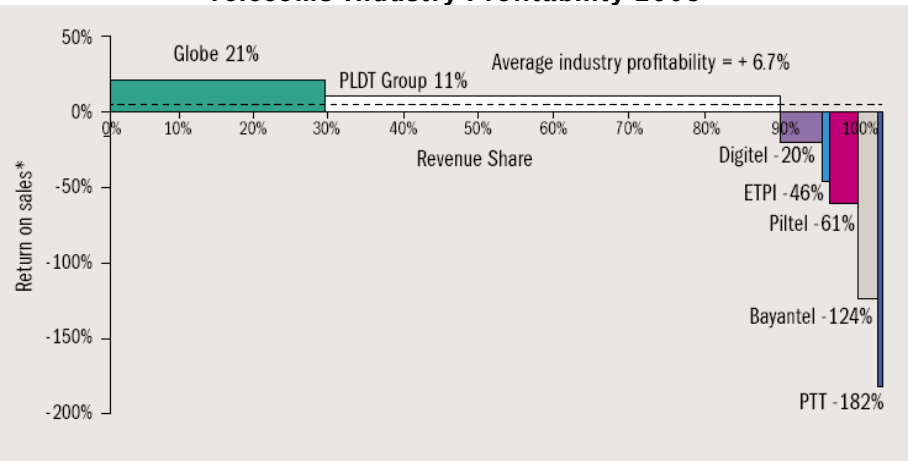

Source: Company annual reports, Knowledge Institute analysis
[*Excludes other revenue streams which do not directly result from mobile, fixed line, or data services (around PhP4 billion in 2003)]*

[37] Francis L. Huang, "Industry Briefs: Telecommunications Industry 2003, The SGV Review/Knowledge Institute, September 2004.

Mobile telephony has provided a direct and convenient substitute for fixed line services. Once considered the cash cow of telecommunications companies, fixed line services are not doing as well, having declined by 7% to PhP54 billion. For industry players, this decline is a major area of concern considering that historically, around US$10 billion has been invested to provide the necessary infrastructure.

Industry-wide data services grew but at a slower than expected rate of 4 percent. Demand for broadband and high-speed data services picked up, driven by the growth of ICT-enabled industries such as contact centers, shared services, and data conversion services. Bandwidth prices, however, have declined significantly because of the high levels of existing worldwide capacity. In terms of net income, the telecoms industry earned PhP8.4 billion in 2003 after the previous year's net loss of nearly PhP20 billion. The PLDT group (who owns mobile subsidiary Smart Communications and affiliate Piltel) and Globe Telecom led the industry's march to profitability, accounting for 90% of total industry sales and almost all of the industry profits.[38]

**Telecoms Industry Profitability 2003**




*Source: Company annual reports, Knowledge Institute analysis taken from Industry Briefs 2003, The SGV Review, September 2004. *Return on sales= net income divided by net sales*

Prepaid cellular phone continued to dominate, accounting for 95% of the total number of subscribers. World prepaid penetration was 9.3% in 2002 and now accounts for more than 90% of total wireless subscribers in Mexico and around 80% in Latin America. In more developed countries such as the US, Canada, and Japan, there is a lower proportion of wireless prepaid subscribers relative to postpaid users.

[38] Francis L. Huang, "Industry Briefs: Telecommunications Industry 2003, The SGV Review/Knowledge Institute, September 2004.

## Chapter III The Internet in the Philippines

With the development of the telecommunications sector came the birth of the Internet in the Philippines, with telephone lines being the main medium for the Internet in the country. The rapid growth of the Internet globally, the convergence of multi-media technologies, and the emergence of e-commerce are driving the demand for bandwidth.

It was not until 1994 that the Philippines obtained its first public connection. The Philippine Network Foundation (PHNET) achieved the nation's first public permanent connection to the Internet, via a 64 kbit/s link in Sprint in the US on March 29, 1994. PHNET, a consortium of private and government institutions, managed what was then the country's only public gateway to the Internet. These institutions included government agencies, especially those affiliated with the Department of Science and Technology, universities, and some commercial ISPs like Mosaic Communications (MosCom), which launched service in August 1994.

There is no official figure for the number of ISPs operating today. The NTC has registered over 150 VAS providers. However not all are ISPs nor are they all in operation. There are also ISPs that have not registered with the NTC. But based on the members of the Philippine Internet Service Organization (PISO), it seems safe to say that there were less than 50 active ISPs in the Philippines in October 2001.

According to a report, PISO estimated a total of about 200 ISPs in the Philippines but only around 10 are first-tier ISPs or those with leased lines to the international Internet. In effect, the majority of local ISPs are "sub-lessees" to the first tier ISPs. As obtaining bandwidth is very expensive in the Philippines, PISO suggested that ISPs integrate their efforts to acquire international private lines, satellite links and domestic private lines and then share in the costs.[39]

The structure of the Internet market in the Philippines is hierarchical because VAS providers must lease their transmission infrastructure from licensed telecommunication operators. Moscom and Pacific Internet, for example, use the Philippine Internet Exchange (PhIX), the first interconnection or network access point established in the Philippines by PLDT. At the top of the pyramid are the public telecommunication operators like PLDT and Bayantel with the international Internet bandwidth. Some of them have their own Internet subsidiaries. Almost all international telecom operators lease international Internet bandwidth to downstream ISPs. The larger ISPs in turn resell connectivity to smaller ISPs in the provinces.

No reliable figures on the number of Internet subscribers in the country exist because there are no official reports or any standard methodology of ISPs for reporting subscribers. Some reports however say that only one in 100 Filipinos use the net through ISPs. Data culled from the NTC estimate that there were 800,00 subscribers to 53 available ISPs in 2004. Of this number, 675,000 are dial-up

[39] U.S. & Foreign Commercial Service and U.S. Department of State, 2001.

subscribers while only 125,000 are availing of broadband. [40] Groups like Digital Filipino are also attempting to publish their own estimates in the Filipino Internet Users (FIU) Report. By 2005, Digital Filipino expects 7 million Internet users in the country.

**ICT in the Philippines**

Compared to its Asian neighbors, the Philippines' ICT situation can be considered fair. Its Asian counterparts continue to outrank the Philippines every year despite a good start. In the NRI for 2003, the Philippines ranked 69, lower by 11 notches than its previous rank in 2001-2002. It was easily overtaken by India (45), China (51) and Vietnam (68), and lags behind neighboring countries such as Malaysia (26) and Thailand (38), which went further up the ladder.

It is of concern that the country was recently outranked by Vietnam, which ranked poorly in 2001-2002. In early 2001, the ASEAN e-Readiness Assessment Study categorized Vietnam as a nation at the "emerging" stage in terms of infrastructure, e-commerce, and e-government. The Philippines then was considered a nation at the "evolving" stage, a level higher. Thailand also showed significant improvement compared to the Philippines in terms of basic infrastructure and connectivity.

According to the *United Nations E-Readiness Index for 2004*, the Philippines ranked no. 47, lagging behind Asian countries such as Malaysia (42) Israel (23), Japan (18), Singapore (8) and South Korea (5). The indicators are used to measure e-readiness including a country's web measure, telecommunications infrastructure, and human capital indices. Although the Philippines scored high and was tied with Norway at no. 17 in the e-participation index[41], this was a long slide down from its no. 6 standing in 2003, where it ranked higher many developed countries including France, the Netherlands and Australia. The country ranked no. 33 in the 2003 e-government readiness survey.[42]

The ICT surveys used telecommunications indicators, among other variables, in assessing the performance of each country. Below is a table showing the most recent statistics of the telecommunications indicators of selected countries in Asia:

[40] Kerlyn G. Bautista, "The Connectivity Challenge: Ten Years of Philippine Internet Experience," *IT Matters*, March 29, 2004.

[41] The E-Participation Index assesses the quality, usefulness and relevancy of on-line information and services and the willingness of countries to engage citizens in public policy making through the use of the e-government programs.

[42] UN Global E-Government Readiness Report 2004: Towards Access for Opportunity, UN Global E-Government Survey 2003.

**Telecommunications Indicators 2004**

| | Persons per Technology | | | | | |
|---|---|---|---|---|---|---|
| | PC | Internet | Tel Lines | Online | Mobile | TV sets |
| Korea | 1.8 | 1.8 | 2 | 1.9 | 1.5 | 2.8 |
| Singapore | 1.6 | 2 | 2.2 | 1.9 | 1.3 | 3.3 |
| Japan | 2.6 | 2.2 | 1.8 | 2.3 | 1.6 | 1.4 |
| Israel | 4.1 | 3.3 | 2.1 | 5.8 | 1 | 3 |
| Malaysia | 6.81 | 3.13 | 5.25 | 3.98 | 2.65 | 4.98 |
| Thailand | 25.13 | 12.89 | 9.52 | 51.02 | 3.84 | 3.33 |
| China | 36.2 | 21.7 | 6 | 27.9 | 6.2 | 3.2 |
| Philippines | 36.10 | 22.73 | 23.98 | 12.87 | 5.23 | 5.78 |
| Vietnam | 102.04 | 54.05 | 20.66 | 204.08 | 42.74 | 5.38 |
| India | 138.9 | 62.8 | 25.1 | 149.3 | 82 | 12 |
| Cambodia | 500 | 459.6 | 384.6 | 1250 | 36.2 | 125 |

*Source: ITU Information Technology Statistics 2004; UN Global E-government Survey Report, 2004.*

There is still a great disparity in the ICT preparedness of countries around the world mainly due to lack in basic telecommunications infrastructure. Some countries have the necessary policies and legislative framework already in place, but very slow implementation progress; others have formulated their policies but are still awaiting adoption while some have ICT plans that are not implemented. The table below shows an example of the E-business readiness ranking of selected countries/areas in the Asia and Pacific region in 2000. Some have already reached a similar stage or have outpaced advanced countries, whereas others are lagging behind, mainly because of insufficient infrastructure.

**The E-Business-Readiness Rankings: Asia and the Pacific Region**

| Rank | Countries/Areas | Business Environment Ranking, 2002-04 | Connectivity Rating | E-business-Readiness Ranking |
|---|---|---|---|---|
| 8 | Singapore | 8.55 | 8 | 8.3 |
| 9 | Hong Kong, China | 8.52 | 8 | 8.3 |
| 16 | Australia | 8.14 | 8 | 8.1 |
| 17 | New Zealand | 8.10 | 8 | 8.1 |
| 21 | Japan | 7.43 | 8 | 7.7 |
| 24 | Republic of Korea | 7.30 | 7 | 7.2 |
| 27 | Taipei,China | 8.13 | 5 | 6.6 |
| 28 | Thailand | 7.27 | 5 | 6.1 |
| 32 | Malaysia | 6.91 | 5 | 6.0 |
| 38 | Indonesia | 6.16 | 5 | 5.6 |
| 46 | Philippines | 6.72 | 3 | 4.9 |
| 50 | India | 5.97 | 3 | 4.5 |
| 51 | People's Republic of China | 5.88 | 3 | 4.4 |
| 52 | Sri Lanka | 5.87 | 3 | 4.4 |

*Source: Charmonman, Sriskadi. 2000. The Role of Internet in ASEAN Development. Paper presented to ITU Telecom Asia 2000 Forum, Gateway to Opportunity. Hong Kong, China. The E-commerce variables used to rank the E-business-readiness include logistics, telecommunications infrastructure, and financial systems.*

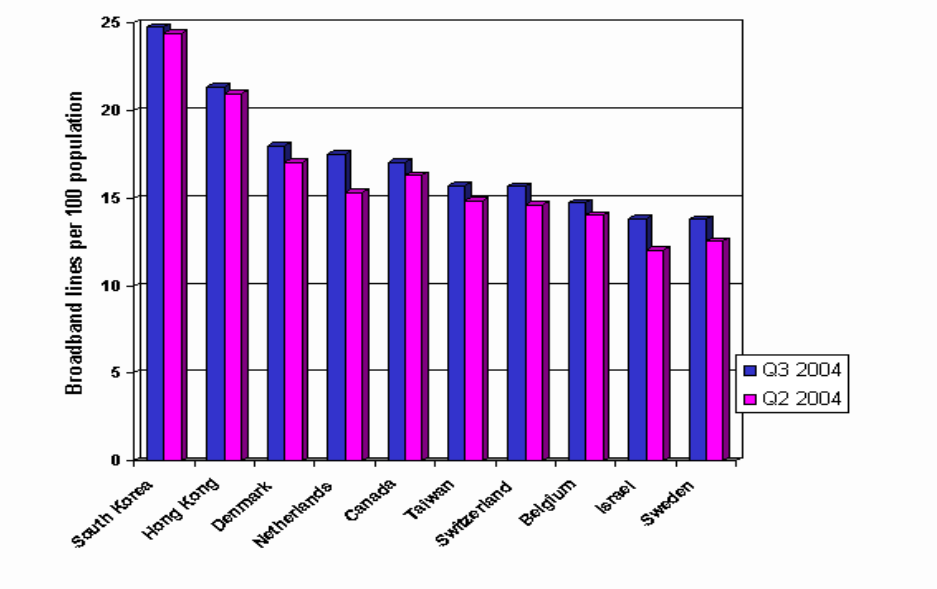
## Broadband Penetration and Access[43]

Global trend in broadband access shows a rapid rise in uptake in many countries, especially in Asia. By end 2004, it was estimated that worldwide broadband subscribers would have exceeded 150 million. *Point Topic's* latest analysis of the World broadband market indicates broadband subscriptions rose to 136.4 million by end September 2004. This marks a 53% increase from 89 million lines in the same quarter last year or an absolute increase of 47 million lines.

The Asia Pacific share of subscriptions stood at 43% with 58.7 million lines. The United States remains the world's leading broadband country achieving 31.7 million lines in the third quarter of 2004. China is in second place, adding 3 million to reach 22.2 million lines, and is pulling further ahead of Japan**,** which had 17.2 million lines. In terms of percentage growth, Thailand led the way with 95% growth to reach 110,000 lines, which were mainly DSL. Elsewhere, the Eastern European countries have displayed particularly strong growth, due to a combination of strong demand and greater transparency in their respective telecommunications markets.[44]

In terms of broadband penetration, South Korea remains the leader on almost 25 broadband lines per 100 people, with Hong Kong still in second place with 21 lines per 100 people. The Netherlands has made the biggest impact in this 'top ten' overtaking Canada to take 4th place with 17.5 broadband lines per 100. Israel has also been impressive in eighth place with 13.9 lines per 100 - overtaking both Japan and Sweden.

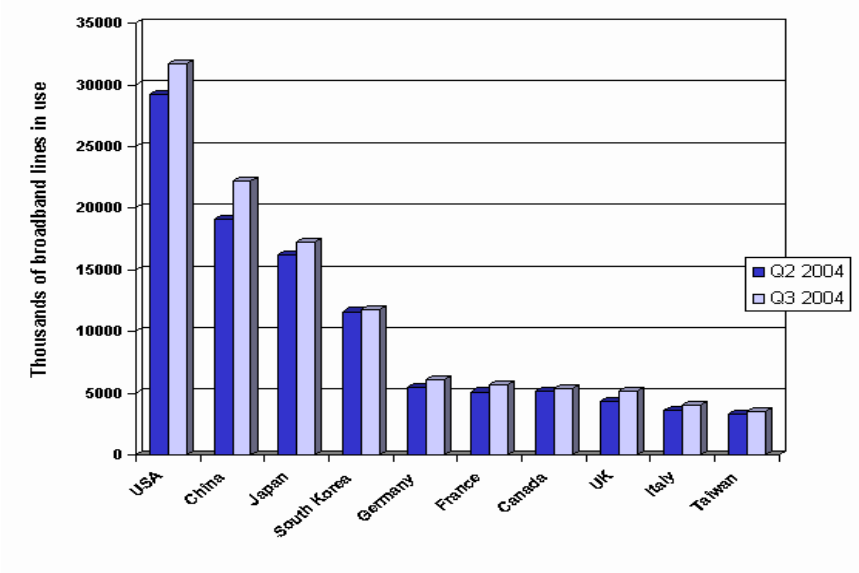
**Top ten broadband countries by penetration: Q2 - Q3 2004**




*Source: Point Topic*

[43] The definition of broadband differs in each country. In some countries, 128Kbps (kilobytes per second) is already considered broadband. In others, it is much faster.
[44] Point Topic Report.

**Top ten broadband countries by number of lines: Q204 - Q304**




*Source: Point Topic*

Globally, the broadband subscriber base has increased five-fold since 2001 but most of these users are in the developed world. Most fixed line telecommunications companies have turned to data services as their next growth area but doing so will be challenging as competition is increasing and data services have become a "lowest cost-commodity type" business.

There are several factors that affect broadband penetration such as GDP/capita, access to computers, perceived need for high-speed access (availability of broadband content), government policy, and pricing of broadband services.

Based on ITU's Digital Access Index (DAI)[45], which measures the overall ability of individuals in a country to access and use ICT, most of the nations that got into the high access list belonged either to the Asian or European region. ITU attributed the fast growth of ICT in the Asian region to the decreasing significance of the English language in determining the rate at which technology is adopted in a certain economy because of the increasing volume of content made available in other languages.

Korea ranked fourth with a score of 0.82 among the 25 countries classified to have high ICT access. It trails behind Sweden, Denmark and Iceland. Hong Kong and Taiwan tied for the fifth spot with Norway, the Netherlands and Finland. Meanwhile, both Japan and Singapore got the same rating as Luxembourg and Austria. The index showed that Malaysia had the highest ICT access among developing countries in the Asian region and was categorized to have "upper access." ITU also noted that

[45] DAI classifies countries into one of four digital access categories: high, upper, medium and low. Specifically, the ITU index takes into account a country's infrastructure, literacy and education levels, technical criteria, the price of telecoms services and the number of Internet users.

Malaysia ranks among those that have used IT as a development enabler and whose government policies have helped them reach an "impressive" level of ICT access.

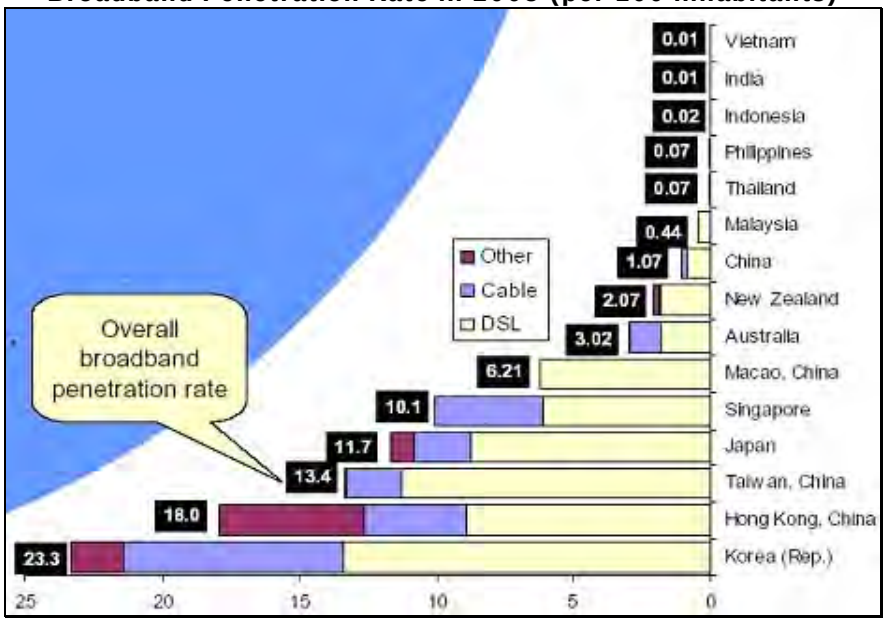
The other four developing Asian countries with the highest DAI ratings are Brunei Darussalam which scored 0.55, Thailand with a 0.48 grade, and China and Fiji which both got 0.43. Similarly, the Philippines got a 0.43 score in the worldwide index. It was categorized under the medium access list. However, it was not included in the top five list.

As expected, Korea led the list of countries with the highest access to broadband Internet connectivity, with 21.9% penetration. Hong Kong follows with a broadband penetration rate of 14.6 percent. Canada, the only North American country on the DAI list, ranks third with a score of 11.1 percent. Taiwan ranked fourth while Belgium came in last with respective scores of 9.4% and 8.4 percent.

Locally available broadband technologies include satellite, cable (hybrid fiber-coaxial or HFC), integrated services digital network (ISDN) and digital subscriber line (DSL) and its variants ADSL and xDSL.

The ITU Internet Reports for 2004 estimated that there were around 3.5 million Internet and broadband subscribers or 4.4 Internet users in every 100 Filipinos in 2003.[46] Around 0.07 users per 100 Filipinos were using broadband access.

**Broadband Penetration Rate in 2003 (per 100 inhabitants)**




*Source: ITU Internet Reports 2004: The Portable Internet, ITU Telecom Asia 2004*

The growth of the pre-paid Internet market also poses a statistical problem since there are different ways to account for this. The ITU estimates that there were around 270‘000 dial-up subscribers at the beginning of the year 2001. It is

[46] ITU Internet Reports 2004: The Portable Internet, www.itu.int/portableinternet.

estimated that the top four ISPs account for around half the market. According to a government report, there were some 1.5 million users at the end of 2000 for a penetration of around two per cent of the population.

Broadband services are the key to developing Information and Communications Technology (ICT) and e-services in the Philippines, but they need to be more widely available, less costly, and fully reliable. While most ICT firms in the Philippines' main urban areas now have access to broadband, pricing has been a major barrier to utilization.

Unlike basic analog telephone service, "enhanced services" based on digital technology were not covered in the provisions of the 1993 Service Area Scheme that pushed competition into all markets in the Philippines. Unfortunately, regulators had not foreseen the importance of data services such as text, Internet and wireless access protocol (WAP). As a result, the NTC did not have clear rules enabling it to prevent anti-competitive behavior, especially pricing, in enhanced digital services.

Although prices are gradually falling, the NTC is studying options for regulatory standards needed to promote competition and investment in broadband. The Commission is strengthening its technical and economic expertise on the technology and the economic conditions under which the technology is deployed.

The Commission has issued a Memorandum Circular on "Rules and Regulations on the Provision of High Speed Networks and Connectivity to IT Hub Areas" (May 13, 2002). These rules focus on "IT hubs" to create a regulatory environment that would encourage new services and reduce costs for service providers. As a result, by encouraging entry of the said service providers into IT hubs (or "parks") with a predictable regulatory regime, the new rules on IT Hubs will allow users to pull their requirements together and pay for the capacity they need.

## Chapter IV VoIP: A Major Internet Application

The promotion of universal access to information and communications technologies, particularly in unserved and underserved areas, is a national priority. This objective is consistent with the Constitutional recognition of the "vital role of communications in nation-building,"[47] and statutory mandates for "a viable, efficient, reliable and universal telecommunications infrastructure using the best available and affordable technologies."[48]

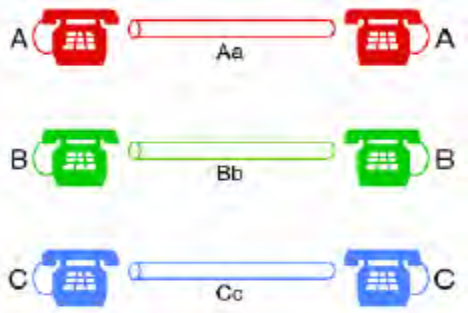
One such technology is Voice over Internet Protocol or VOIP, a relatively new technology that offers cheaper phone calls using the Internet. As with many technological developments, VoIP is raising new and unexpected policy and regulatory issues.

### What It VoIP?

VoIP is a generic term that refers to all types of voice communication using Internet protocol (IP) technology.

Traditional phone systems were built using circuit switched technology. The conventional *circuit-switched technology* of the PSTN requires a circuit between the telephone company's switch and the customer's premise to be open and occupied for the entire duration of a call, regardless of the amount of information transmitted. The permanent link for the duration of a call cannot be used for any other purpose during this time.

**Circuit-Switched Technology**

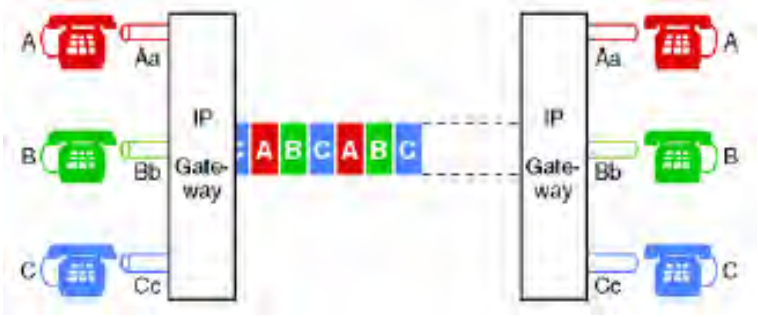



*Source: Discussion Paper on Voice over Internet Protocol, NTC, 2004*

In contrast, on *IP networks*, all content --- whether voice, text, video, computer programs, or numerous other forms of information --- travels through the network in packets that are directed to their destination by diverse routes, sharing the same facilities most efficiently. At the destination, the packets are then reassembled and re-sequenced. Packet switched technology provides a virtual circuit connection. A connectionless network allows network resources to be used very efficiently as bandwidth can be shared. (See Figure 2)

[47] 1987 Philippine Constitution, Article II, Section 24.
[48] Public Telecommunications Policy Act (Republic Act 7925), Article II, Section 4 (a).

**IP Packet Switched Technology**




*Source: Discussion Paper on Voice over Internet Protocol, NTC, 2004*

IP Technology enables users from different parts of the world to engage in what effectively amounts to international voice conversations without having to pass through the international gateway facilities of telephone companies who charge fees for the use of their networks. Instead, voice communications can be made on any IP network regardless of the fact that it is Internet, Intranets or Local Area Networks (LAN), making distance almost virtually negligible. This makes call rates using VoIP cheaper. From interviews from call center and contact center operators, calls can be made from the Philippines to the United States for as low as US$ 0.04 a minute. Some even provide VoIP on the Internet for free.[49]

Internet telephony, on the other hand, is a specialized form of VoIP in which a regular voice telephone call is transmitted via the public Internet, thus bypassing all or part of the public switched telephone network (PSTN). Internet telephony can occur between computers, between a computer and a phone, and between phones.

## How Does VoIP Work?

Typically, a VoIP transmission is completed in the following manner:

(a) Because all transmissions must be digital, the caller's voice is digitized. This can be done by the telephone company, by an ISP, or by a PC (or other personal machine such as a VoIP phone).

(b) Using complex algorithms, the digital voice is compressed and then separated into packets. Using IP, the packets are addressed and sent across the network then reassembled in the proper order at the destination. Again, this reassembly can be done by a carrier, an ISP, or by one's PC.

(c) During the transmission on the Internet, packets may be lost or delayed, or errors may damage the packets. Conventional error correction techniques would request retransmission of unusable or lost packets, but if the transmission is a real-time voice communication, that technique obviously would not work. So, sophisticated error detection and correction systems are

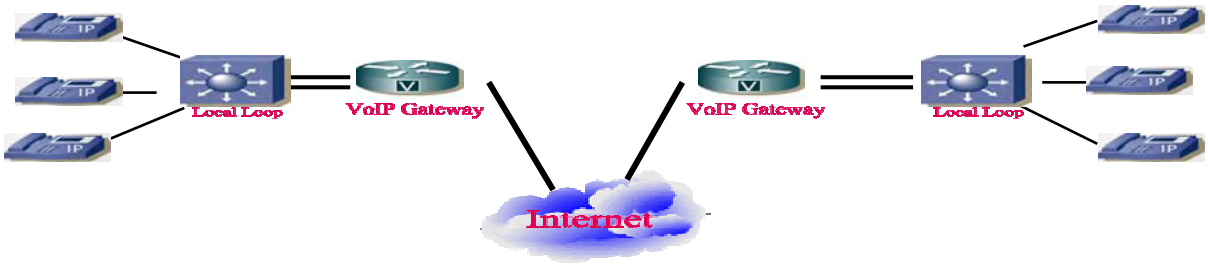
[49] VoIP is available in free popular chat clients like Yahoo or MSN. However, free applications have disadvantages, like crackling sounds, choppiness, echoes, etc.

used to create sound to fill in the gaps. This process stores a portion of the incoming speaker's voice, and uses a complex algorithm to "guess" the contents of the missing packets and create new sound information to enhance the communication.

(d) After the packets are transmitted and arrive at the destination, the transmission is assembled and decompressed to restore the data to an approximation of the original form.

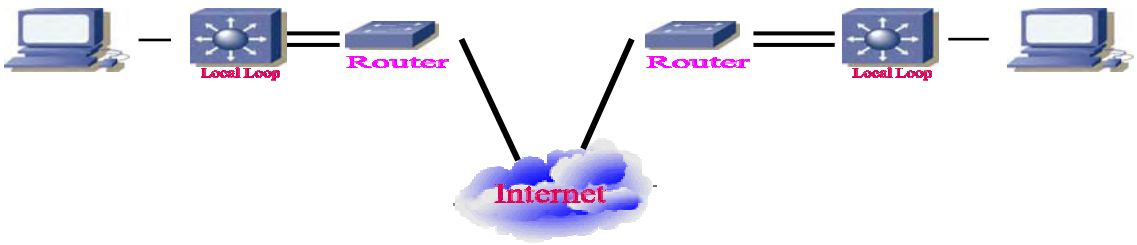
Below are simple VoIP configuration options:

- **Phone to Phone**



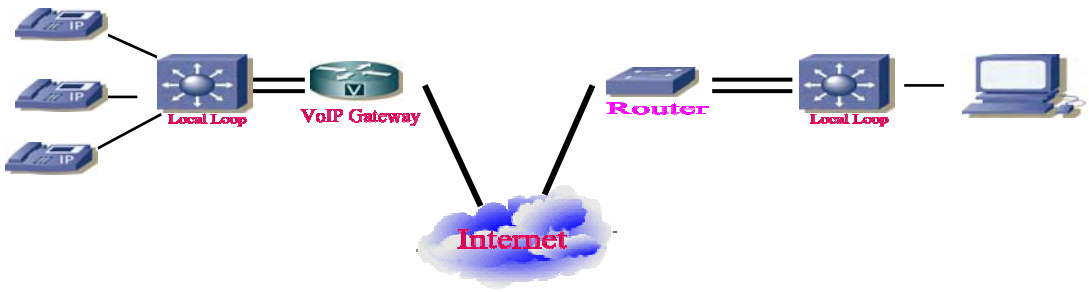

When a user originates a call using a telephone connected to the public switched telephone network, and a VoIP service provider carries the call using a "gateway" that connects the call to its data network (or the public Internet), to another "gateway" connected to the public switched telephone network on the other end of the call that routes the call to another person on a receiving telephone.

- **PC to PC**




When a user uses a personal computer or other device to connect to the Internet or other data network, generally using a microphone or headset and which transmits voice calls to another computer or other device connected to the Internet where the other participant is located.

- **Phone to PC / PC to Phone**



When a user uses a PC or other device connected to the Internet to transmit voice calls to a "gateway", which switches the call on to the traditional circuit switched network, usually close to where the terminating caller is located. The call is then routed to its destination and answered using a telephone handset.

### VoIP Technical Architectures and Business Models

Different types of VoIP have different technical architecture and use different business models.[50] *Analysys* provides a simple explanation of the basic VoIP services and payment flows for the following:

| VoIP Type | Technical Architecture | Business Model |
|---|---|---|
| **Self-provided consumer** ("DIY" model) | Users set up their own calls using client software they have installed. The address server is not necessary, as IP addresses could be exchanged by some other means such as email or IM | Each user is a 'peer' and carries his/her own cost. The users are connected via the Internet: neither is using the PSTN |
| **Independent of Internet access** ("Vonage" model) | Offers a SIP (session initiated protocol) service over the Internet to broadband users. E.g., User A with a VoIP phone calls User B on the PSTN, both calls and signaling are translated in the gateway | User A calls User B who is on the PSTN. User A will have to pay a retail charge for call to the PSTN, part of which will be used to pay the termination charges of User B's telecom network's operator. User B pays for line rental and might ultimately have to pay to receive the call (e.g., if roaming abroad on a mobile network, or if the number called was a non-geographic number) |
| **Provided by broadband access provider** ("Yahoo! BB" model) | The access provider is connecting users to its VoIP network by providing analogue terminal adapters (ATAs) so that users can continue to use their existing phones. Both users are on-net and using the same SIP server. | similar to Vonage model but with less number of parties involved. |
| **Internal use on business (LAN/WAN)** | The call is between two sites, one of which has an IP PBX that uses internal VoIP call processing, and the other is a traditional PBX connected to the IP network through a gateway. | User A and B both work for the same organization. User A is calling User B on the corporate telephone network. Much of the cost is carried by the end-user organization directly purchasing LAN and other IP equipment. The WAN element is optional. |
| **Carrier internal use** | The carrier is replacing its circuit switches with | User A and User B are on the PSTN, but the call uses IP technology. This |

[50] "IP Voice and Associated Convergent Services," Final Report for the European Commission, Analysys, January 28, 2004.

| | | |
|---|---|---|
| | softswitches – equipment intended to slot into a network in place of existing PSTN switches | model is identical to the PSTN business model, at least until the point where the interconnect between the two telecom network operators can be via an interconnect using VoIP. |

## Advantages of VoIP

Telecommunications carriers around the world have already introduced Internet Protocol or IP into their networks because it provides economic benefits over traditional telecommunications networks.

- **Greater Efficiency and Lower Cost**
  The older circuit-switched technology was designed to establish an end-to-end connection. The common "all circuits are busy" recording is a result of that design technology. Because of its "shared" nature, IP can use the infrastructure but with multiple users simultaneously. Because of its greater efficiency, IP systems can dramatically lower costs as the same infrastructure of cable and wires are used to transport much more data. In short, it not only significantly increases bandwidth efficiency, but also paves the way for the convergence of voice, video and data.

- **Higher Reliability**
  In some respects, IP networks also offer the potential for higher reliability than the circuit-switched network because IP networks automatically re-route packets around problems such as malfunctioning routers or damaged lines.

- **Supports Innovation**
  IP is a nonproprietary standard agreed on by hardware and software developers, and is free to be used by anyone. This open architecture allows entrepreneurial firms to develop new hardware and software that can seamlessly fit into the network. In contrast, the circuit switched network operates as a closed system, thus making it more difficult for innovative developers to build and implement new applications.

### Issues concerning VoIP Usage

- Quality of Service - Individual users seeking to use VoIP over their PCs encounter some limitations. IP technologies currently lack a guaranteed quality of service. The ordinary telephone network (if properly installed and maintained) is designed to offer end users a very high quality of service for real-time communications. IP technology, however, is steadily improving and the quality gap between IP and circuit switched voice communications has now decreased to a point where any differences in quality might no longer be obvious to the ordinary listener.

- Location independence and emergency access – emergency service access via VoIP may be of a reduced quality as a result of the location independence of VoIP

technologies. In contrast to a PSTN, a VoIP service provider cannot necessarily supply the emergence services with the address that users are calling from.

- Network integrity – network may be available in cases of disaster or catastrophe.

## VoIP Global Trends

VoIP is a growing industry globally. According to research firm *Gartner Dataquest,* Internet telephony is now a US$1.5 billion business in the Asia-Pacific region. Corporate buyers who had long shunned VoIP due to security, reliability and return on investment concerns, seem to have finally overcome their initial resistance. As a result, Gartner predicts that spending on VoIP products within the region will grow by 20 percent annually to hit US$1.75 billion this year.

According to iLocus, a London-based market research firm, the service sector for IP telephony was worth US$1.8 billion in 2000, with a compound annual growth rate (CAGR) of 120 percent. The equipment market for products in this sector was worth US$2.08 billion last year. As of December 2000, IP telephony networks accounted for an estimated 1.6 billion minutes of traffic per month. Executives in countries around the world are already leveraging the gains of voice-traffic over managed IP networks, followed closely by consumers making voice calls over the public Internet.

Over the past years since 2001, leading players in the VoIP market are IP-PSTN gateway vendors (*Cisco, Clarent, Nuera, Vocaltec, Lucent, Sonus, Unisphere, Convergent Networks*), carriers (*ITXC, Genuity, NetVoice, Net2Phone, iBasis*) and network operators (such as *Concert, PointOne, China Telecom*). Two of the fastest-growing technology companies in North America since the late 1990s were in the VoIP market ITXC and iBasis.

Nearly half of the carriers use Cisco gateways, a company with a diverse portfolio and the ability to finance start-up carriers. *Clarent, Sonus* and *Nuera* are strong in Asia.

A 2002 report by telecommunications research and consultancy firm *TeleGeography* says that about 10 percent — or 18 billion minutes — of all global voice calls were IP-based. This compares with 6 percent in 1999. Within the VoIP sector, Latin America, East Asia and Eastern Europe were the primary destinations of voice termination. For instance, routes into China, Russia and Brazil accounted for 10 percent of global VoIP traffic between 2000 and 2002. Meanwhile, traffic into India and Indonesia posted the largest increase, registering 100 percent growth over the last two years. The top originating calls were from the US. These were mainly terminated in developing nations such as Mexico, China and Colombia. Combined, the three routes garnered a market share of about 20 percent, or 3.6 billion minutes.

In 2003, *TeleGeography* estimated that 1/8 of international long-distance telephone minutes were running over IP networks.

Based on global research by industry consultants *Frost & Sullivan*, about 75 percent of global voice traffic would be done through VoIP by 2007. By then, sales of VoIP equipment would already hit 2.7 billion dollars. Southeast Asia alone would achieve 1.2 billion dollars during the same period, with a 57.1 percent compounded annual growth rate.

More developments show that VoIP is gaining global momentum.

- In the 2nd quarter of 2003, 1/3 of US handset exports were IP enabled
- *The Yankee Group*, a Boston-based communications research firm, estimated that there were more than 600,000 subscribers to VoIP services in the US in 2004, up from about 130,000 the previous year. It projected about 1 million subscribers by end-2004. *The Yankee Group* also projects that 83% of European operators surveyed will offer VoIP services within 3 years
- *Metagroup* estimates that 30% of US businesses may move to VoIP within 3 years
- By 2009, 40% of all calls in the US will be carried on the internet
- In 2004, *Cisco* sold its 2 millionth IP phone handset
- In Japan, voice over broadband (VoBB) is gaining popularity, with fees as low as US$ 3 a month. The country is aiming for all VoIP calls by 2010.[51]
- As of February 2005, there are already 70 million users of *Skype*, a PC to PC VoIP service
- Some of the major long distance companies in the US – *AT&T, MCI and Sprint* – embraced VoIP for the vast opportunities it offers

Although officials in the **United States** have yet to come out with a definitive policy on VoIP, recent rulings indicate that VoIP is seen as a VAS (information service), not a telecommunications service. In an October 2003 ruling, the US District Court (Dminn) issued its Memorandum and Order in *Vonage v. Minnesota Public Utilities Commission,* holding that Vonage is an information service provider, and that state laws that regulate telecommunications carriers cannot be applied to Vonage. The Court wrote that, "State regulation would effectively decimate Congress's mandate that the Internet remain unfettered by regulation." The conclusion prevents state and federal government entities from applying rules that apply to telecommunications, such as those pertaining to the filing of tariffs, cross subsidies, unbundling, wiretapping and other electronic surveillance by the FBI and other law enforcement agencies, and 911.

Vonage provides a service that permits voice communications over the Internet. It sells a service called *Vonage DigitalVoice* that enables its customers to engage in voice communications, with broadband Internet connections, using VoIP.

Last year, the US Federal Communications Commission (FCC) issued several rulings that may very well define the future of VoIP in the US. **On February 12, 2004,**

[51] At the end of 2003, of the 47 million Japanese households, around 13.6 million had broadband and 19.1 million had dial-up Internet access. IDC estimates that around 50 percent of all households in Japan should have broadband by 2007-2008. Ouida Taaffe, "VoIP is here, not hype" and "VoBB rises in Japan," *ITU Telecoms Asia 04*, September 9, 2004.

**the FCC found that an entirely Internet-based VoIP service was an unregulated information service**. On the same day, the FCC began a broader proceeding to examine what its role should be in this era of increased consumer choice and what it can best do to meet its role of safeguarding the public interest. Recognizing that telecommunications services are moving to Internet-based platforms, the FCC organized an Internet Policy Working Group to identify, evaluate and address policy issues in the new environment.[52] (Also, see Annex)

"Streamlining regulation of VoIP companies is key to growth of the fledgling industry," says FCC Chairman Michael Powell. "To subject a global network to disparate local regulatory treatment by 51 different jurisdictions," he contends, "would be to destroy the very qualities that embody the technological marvel that is the Internet."

More recently, on November 9, 2004, U.S. regulators ruled that providers of Internet-based phone call services fall under the jurisdiction of the federal government and cannot be regulated by states. The FCC voted 5-0 in favor of Vonage Holdings Corp. of Edison, N.J., which had asked the agency to declare the company's product an interstate service, giving the FCC regulatory control.[53]

The ruling applies to cable, phone and other companies offering an Internet phone service similar to the one Vonage provides. The decision does not, however, preclude states from imposing some taxes and fees. It also does not address access charges, which are fees paid to local phone companies for completing calls sent via the Internet to conventional phones.

Vonage has been battling public utilities officials in Minnesota who want the company to register in the state as a telecommunications service, subjecting it to rate regulation and other state rules.

In the **European Union**, telecommunications services are governed under the 2003 Regulatory Framework (the New Regulatory Framework or NRF). Within this framework electronic communications services (ECS), such as VoIP, are divided into a number of categories:

- Private ECS (such as networks for closed user groups)
- Public ECS (such as broadband Internet access)
- Publicly available telephony service (PATS) (a subset of public ECS)

Each of these is regulated, to a lesser of greater degree.

Some VoIP and associated convergent technologies do not fit within the NRF, either because they are not within the definition of a "service provided for remuneration" (they are genuinely free, such as some peer-to-peer services, or are self-provided) or else they are argued to be information society services. Other VoIP services do

[52] www.fcc.gov/ipwg
[53] www.fcc.gov/voip/ also see "FCC Rules on VoIP Regulation", the NewsFactor, November 9, 2004.

fit within the NRF, but in a number of instances it is not clear which categories or definitions should be applied to them.[54]

The European Commission has taken the position that Internet voice services do not constitute voice telephony unless:

- They are offered commercially and separately to the public as voice services;
- They are provided to and from PSTN termination points; and
- They are offered in real time at the same level of speech quality and reliability as offered by the PSTN.

**The EU presently holds that VoIP does not fit the definition of telecommunications because it does not involve direct speech transport in real time**. However, recent improvements in the quality of service and the growth of the European VoIP market could eventually induce the EC to review its position.[55]

In the context of the revised Lisbon agenda, the European Commission sees that the potential of the information and communications technologies plays a key role in its action plan for growth and jobs. The EU aims to improve broadband penetration – currently at 6.5 per cent on average in the EU 25 – that, in its view will only be increased substantially if interesting new services (such as VoIP) are made available to the consumer at attractive prices.[56]

The EU hopes to exploit the potential of VoIP like its counterparts in other continents. Estimates in early 2005 say that there are around 4.9 million VoIP customers in Japan and 1 million in the United States, compared to only 110,000 in Germany, 220,000 in France and 50,000 in the United Kingdom.

Undoubtedly, Internet telephony is changing the face of voice and data communications in countries across the world. Apart from the U.S., Japan, and Western Europe, VoIP has already caught the attention of market players, governments, businesses and consumers in Asia and Eastern Europe. However, regulatory restrictions remain a key issue in the full deployment of VoIP in many countries.

Experts say the key challenges for telecom operators lie in ensuring seamless migration paths from existing legacy infrastructure to IP technology. Major incentives for them to migrate include: better functionality at lower costs; faster deployment; potential for new applications; and the emergence of a new generation of computer-friendly users. [57]

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[54] "IP Voice and Associated Convergent Services," Final Report for the European Commission, Analysys, January 28, 2004.

[55] "Voice over Internet Protocol (VoIP) Around the World," International Telecommunications Union. www.itu.com.

[56] "The European Commission's Approach to Voice over IP: Frequently Asked Questions," Memo/05/46, Brussels, 11 February 2005.

[57] Madanmohan Rao, "IP Telephony to Have a Dramatic Impact on Asian Voice, Data Communications Markets," e-OTI (On The Internet), May/June 2001, www.isoc.org/oti.

Tom Evslin, chief executive officer of ITXC, the largest wholesale carrier of IP telephony traffic in the world predicts that by 2010, all voice traffic will be over IP networks. This is supported by market observers like Jahangir Raina, director of iLocus, a London-based market research firm, who see Asia as the most promising region for the growth of IP telephony due to increasing deregulations in voice and data communication markets, coupled with the maturation of IP telephony technology itself.

In Asia, China and India, two of the biggest and fastest growing economies in the region and in the world, have recently both allowed the deployment of VoIP by both telecommunications companies and ISPs.

**China**. By the sheer size of its population and economy, China's telecommunications market is also one of the biggest and fastest growing in the world. While demand for telecom services has weakened visibly in parts of the developed world, Chinese demand continues to grow. As of September 2004, China boasted more subscribers for cable television (over 100 million) and mobile phones (320 million) than any country in the world, with fixed-line users reaching over 306 million. Its Internet uptake has been phenomenal --- from virtually zero in 1995 and only 26.5 million in July 2001 to 87 million online users by July 2004 (of which 31 million were broadband).

One of the major drivers of broadband take-up in China has been its pricing strategy, with broadband access discounted significantly by service providers at the behest of a government policy that sees the rapid growth of broadband services as an object in itself, regardless of whether the service is provided (for now, at least) at a loss. As a result, the standard price for broadband access of Rmb1,000 for installation and around Rmb300 per month for access in 2001 was lowered to Rmb400 for DSL installation, with unlimited access averaging Rmb50 to 100 per month, a pricing at par with dial-up services.

This broadband explosion in China mirrors recent experiences in Korea, Japan, and Taiwan, where similar shifts in government policy have also resulted in low prices and a rush of new subscribers. This also created an enabling environment for new technologies and Internet applications such as VoIP. **In 1999, deregulation of China's telecommunications sector permitted IP telephony for carriers China Telecom, China Unicom and China Jitong,** the top three state-owned operators. In less than one year, the number of VoIP operators increased to five, with the addition of China Netcom and China Mobile Group. By 2001, more than 18 Chinese cities have IP telephony connections, and the number continues to grow.

**India.** After decades of state monopoly, India began dismantling its monolithic telecommunications infrastructure in the 1990s. Private companies are now allowed to operate fixed and mobile networks and provide Internet services in the US$8.6 billion (euro6.58 billion) telecommunications market. According to the Federal Telecommunications Industry, the private sector controls 41 percent of the market.

Since the liberalization of its telecommunications sector, the country has witnessed a dramatic increase in telephone penetration, currently fewer than 10 percent for a country with a population more than 1 billion people compared to under 1 percent a decade ago. Mobile phones have outnumbered fixed lines, and the government has set a national target of having 250 million telephone connections by 2007. According to V. Ramachandran, director general of the Cellular Operators Association of India, this target means a fund requirement of 1.6 trillion rupees (US$ 35.5 billion). In February 2005, India raised the foreign investment limit in the country's lucrative telecommunications sector from 49 percent to 74 percent, while imposing conditions to address security concerns.

To further increase its competitiveness and promote universal access, **the Indian Government decided to permit ISPs to process and carry voice signals or Internet telephony effective April 1, 2002**, simultaneous to opening the ILD sector for private participation. The TRAI made a distinction between Internet Telephony & telephony services offered by facility based operators under their existing licenses. It defined Internet telephony as “an Application Service, which the customers of ISPs can avail from their Personal Computers (PC) capable of processing voice signals” while defining telephony services offered by facility based operators as “the provision of real-time voice communication from anywhere to anywhere by means of dialing a Generic Telephone Number (PSTN/ISDN/PLMN) as defined in E.164 recommendation of the ITU” or telephone numbering country code.

TRAI recommended suitable modification to existing licenses of the facility-based operators as well as ISPs to avoid any ambiguity. Making Internet telephony an integral part of the Universal Service Obligation (USO) program by providing cheaper option to conventional telephony, in rural & remote areas and thereby helping address digital divide, TRAI ruled that Internet Telephony through PCs or IP based terminals should be made available also through the Public Tele-Info Center (PTIC) & Internet Kiosks at Sanchar/Cyber dhabas (their version of telecenters) for the benefit of those who do not own the Customer Premises Equipment required for this service.

In TRAI’s view, “VoIP Technology should be fully exploited to provide cost effective services without disturbing the existing licensing regime. Such a policy has been adopted successfully in number of developing countries including China, where an explosive growth of national long distance (NLD) traffic was witnessed after the deployment of VoIP technology in the national backbone by facility based operators.” By permitting 'managed VoIP' backbones as a substitute to the PSTN backbone, the TRAI argues that it is bringing in “greater technology neutrality” in regard to engineering of networks by operators. This approach is believed to likely give the facility-based operators a wider choice while deciding the most cost effective technology option in their service areas. TRAI believes that “any cost saving in the backbone should enable the operator to invest more in the access

network, i.e. the last mile, thus extending the telecom network to rural & remote areas."[58]

## VoIP Approaches in Different Countries

| Asia | |
|---|---|
| **1. China** | China's entrance to the WTO allowed foreign operators to provide VoIP services. The WTO document did not define which category VoIP would be in, which leaves the interpretation to the Chinese government. As such, the government ruled that VoIP can be either data or a value added service. To date, the government restricts VoIP licenses to only a handful of operators. |
| **2. Korea** | Telecommunication services in Korea are divided into facilities based services and value added services. PC to PC and IP phone to IP phone calls are considered VAS. The government is regulating VoIP based on functional equivalence with minimal regulations compared to telco services.<br><br>In 2004, Korea joined the growing number of countries to allocate a special area code for VoIP, when the Ministry of Information and Communication allocated the "070" prefix. The government also introduced two-way Internet phoning in 2003 by giving eleven-digit VoIP-specific numbers with the dialing prefix of 070. Four operators have received a license. Over 4 million VoIP numbers are expected to be in use in Korea by 2007. Domestic researcher IDC Korea also estimates the size of Korea's VoIP market would expand about 8-fold during the next five years from 109 billion won this year to 808 billion won in 2008. |
| **3. Japan** | Japan has regulations that increase competition. Japan only requires prior approval from the Ministry of Posts and Telecommunications before providing VoIP services and reports on income and volume of traffic to be submitted periodically after VoIP services are offered. |
| **4. India** | Since April 2002, Internet telephony has been made legal in India simultaneous to the opening of the International Long Distance (ILD) to private players. In November 2002, the Telecom Regulatory Authority of India (TRAI) further regulated VoIP by issuing a notification concerning the standards of Quality of Service (QoS) to be provided by service providers of VoIP-based ILD. |
| **5. Thailand** | The Communication Authority of Thailand (CAT) Corporation, which is both an operator and a regulator, has the monopoly of giving concessions to ISPs. CAT has the sole authority to use VoIP. It now uses VoIP for its international long distance calls. |
| **6. Vietnam** | The government allows outbound Internet-based calls from computers to computers and from computers to telephones while prohibiting inbound Internet phone calls. |
| **7. Indonesia** | The government issued five (5) licenses of Internet Telephony for Public Services in 2002 as part of pilot project in order to form regulatory framework to implement Internet telephony. The pilot project was recently evaluated to look at the performance of the Internet Telephony operators and to provide inputs for future policy of Internet Telephony in Indonesia. |

[58] Telecom Regulatory Authority of India (TRAI), Recommendations On Opening Up Of Internet Telephony," 5 September 2002.

| | |
|---|---|
| **8. Cambodia** | It is still illegal to use VoIP in international calls. |
| **Americas** | |
| **9. United Sates** | The debate whether VoIP is a telecommunication service or an "information service", which would be outside the scope of traditional telecommunication regulation has been a decade long debate. But recent developments reveal that the Federal Communications Commission (FCC) appears to be taking a different view of the issue than many state regulators.<br><br>The state commission of Minnesota, for example, became embroiled in a dispute with a VoIP service provider. The two sides disagreed, essentially, on the provider's classification, with Minnesota asserting its jurisdiction over the company as a telecommunication service provider, and the company insisting it was an information service provider exempt from state regulation.<br><br>In a ruling on VoIP in November 2004, the FCC ruled that they, and not state commissions, have the responsibility and obligation to decide whether certain regulations apply to IP-enabled services. |
| **10. Canada** | The government makes a distinction between Internet data applications, which are free from regulation, and Internet applications that provide an alternative to public switched voice services, which are regulated. IP Telephony between telephones, therefore, is subject to regulation. Providers of this service are treated like any other telephone service providers and must contribute to support the universal service fund.<br><br>When a company called Primus introduced a VoIP service, Bell Canada filed a complaint with the Radio, Television & Telecommunications Commission, claiming the Primus service did not comply with relevant regulations, including emergency call services and QoS obligations. The results are not yet complete, but it appears that Canadian regulations focus on the service attributes rather than the technology (i.e., PSTN vs. Internet), and therefore it is likely VoIP will be regulated in the same fashion as standard telephone service. |
| **11. Peru** | Its Ministry of Transport and Communications regards VoIP as a value-added service and does not regulate it under the country's Telecommunications Act. |
| **Europe** | |
| **12. European Union** | The European Union maintains that VoIP does not fit the definition of telecommunications because it does not involve direct speech transport in real-time. Recent improvements, however, in the quality of service and the growth of the European VoIP market might eventually lead the European Commission to review its position.<br><br>The European Commission favors an EU-wide "light touch" approach to Internet telephony as the best way to encourage competition between internet carriers of telephone traffic and traditional telephone networks. As the market develops, the EC intends to ensure, jointly with the national regulators, that throughout the EU, the roll-out of new IP-based services will not be hindered by regulatory hurdles. In its view, it is in the interest of Europe's businesses and citizens that new technologies should be able to flourish and deliver better services at lower cost. |
| **13. United Kingdom** | The provision of telecommunications services using any technology, including VoIP, is permitted. There are no technical standards or quality of |

| | |
|---|---|
| | service requirements imposed on VoIP services. Yet, VoIP is regulated under the Telecommunications Act of 1984, which sets out the licensing regime to which all telecommunications service providers are subject. |
| **14. Switzerland** | VoIP is currently not subject to detailed regulation in Switzerland. The key criterion in determining whether a certain type of IP telephony constitutes public telephone service under the Swiss policy is whether the service is "transmitted through direct transport and switching of speech in real time." Currently, VoIP services are not considered real time. |
| **15. Norway** | The Norwegian Post and Telecommunications Authority (NPT) published a policy paper on April 15 2005 on how VoIP services are regulated under Norwegian Law.<br><br>The Policy Paper identifies three main categories of VoIP offerings:<br>*Category 1* - VoIP offerings that are not any-to-any communication enabled; no gateway to the PSTN/ISDN or mobile networks exists (e.g., Skype)<br><br>*Category 2* - VoIP offerings that are partly any-to-any communication enabled; a gateway to the PSTN/ISDN or mobile networks exists (e.g., Skype Out)<br><br>*Category 3* - VoIP offerings that are any-to-any communication enabled; a gateway to the PSTN/ISDN or mobile networks exists, giving the possibility to both call and receive calls from POTS. Currently the following findings only apply to VoIP offerings within category 3. |
| **16. Ireland** | The Commission for Communications Regulation on February 17, 2005 issued draft Directions to allow access to the new '076' number range for voice over internet phone services (VoIP).<br><br>In October 2004, ComReg made the 076 phone number range available to telecoms providers. To date, telecoms providers have not succeeded in negotiating terms that would allow 076 numbers to be connected to the wider telecoms network. |
| **17. Spain** | The Telecommunications Market Commission (CMT) of Spain finalizes consultation on VoIP regulation and proposes VoIP numbering and portability guidelines. |
| **Africa** | |
| **18. South Africa** | Announced a partial liberalization of VoIP in underserved areas in 2004 as part of its general market reform in advance of the introduction of a second national fixed-line operator. |
| **19. Nigeria** | The Nigerian Communications Commission conducted an industry consultative workshop on VoIP technology and its impact on international access and international gateways. It invited stakeholders to submit comments on the proposed guidelines for VoIP and international access gateway |
| **20. Egypt** | Consistently blocked IP telephony traffic for years but now decided to grant Telecom Egypt monopoly rights to provide IP telephony services. |
| **21. Mauritius** | Allows "network applications service providers" to obtain a license to provide Internet telephony as long as no VoIP call terminates on a traditional fixed or mobile telephone in Mauritius. |
| **22. Algeria** | Developing legislation in VoIP. |

## VoIP in the Philippines

VoIP is not yet being fully used in the Philippines because of regulatory barriers and a long debate about its definition and nature that started a few years ago but was officially taken into considered in 2003.

Recognizing that added competition in and deployment of VoIP can help achieve the broader policy objectives of Republic Act 7925 to develop and maintain "a viable, efficient, reliable and universal telecommunications infrastructure using the best available and affordable technologies," and to improve and extend "services to areas not yet served," the Department of Transportation and Communications (DOTC) issued a Memorandum on November 25, 2003 (refer to Appendix) ordering the National Telecommunications Commission (NTC) to: (1) determine the regulatory implications of VoIP, (2) conduct public hearings and consultations with concerned stakeholders, and (3) promulgate the necessary implementing rules and regulations and guidelines that will govern the deployment and use of VoIP by businesses and the general public.[59]

In response to the directive, the NTC in July 2004 issued a Discussion Paper on VoIP (refer to Appendix) and announced that it will issue the necessary rules that will govern the deployment and use of VoIP in early 2005. The NTC issued a Memorandum on March 25, 2005 and conducted a public hearing on the draft rules on May 3, 2005, where close to a hundred participants attended. The NTC gave a 10-day deadline after the hearing for stakeholders to submit their comments and position papers.[60]

The bone of contention is whether VoIP is a telecommunications service or a value-added service since this will determine who will be allowed to provide the service.

An interpretation popular among the major telecommunications companies is that under Philippine law (Republic Act 7925), only public telecommunications entities (PTEs) with Congressional franchises are allowed to offer telecommunications services, which includes VoIP. On the other side, stakeholders like the Internet service providers (ISPs) argue that VoIP is a value-added service since it is "data" and not a voice service. Lack of legal clarity and predictability has discouraged major investments and innovation in VoIP in the country.

Even with the draft rules out, the country can expect a tedious debate on VoIP as the NTC continues to weigh the arguments of the different parties involved. The rules are the first step and a great step forward for the NTC, whose officials were also divided house on the issue. In the past, NTC Director for Common Carrier Services Edgardo Cabarios echoed the position of the major operators that, "voice calls are still the same, no matter if they pass through the traditional PSTN or through the Internet."

[59] Department of Transportation and Communication, Department Order on Voice over Internet Protocol, November 25, 2003.
[60] Lawrence Casirava, "Pros and Cons of VoIP raised in NTC Hearing," Computer World, May 9, 2005.

Citing RA 7925, Cabarios maintains that only authorized PTEs are allowed to offer voice calls.

Commissioner Ronald Solis, however, has always assured the public that the NTC was not closing its doors on anyone, particularly the ISPs. He said that they would continue to look into possibilities for VoIP services to work in the Philippines and to get the PTEs and the ISPs to come to an agreement. His office has been studying several models, particularly from the US, on how VoIP is being regulated.

The House of Representatives is pursuing its own investigation of the appropriate legislative approach for VoIP. In February 2005, the Congressional Committee on Information and Communication Technology announced the creation of a technical working group (TWG), which Committee Chair Congressman Simeon Kintanar said would be tasked to write a draft bill setting terms for the deployment of VoIP. The group will also consolidate bills related to its implementation.

Two similar bills on VoIP deployment were filed in Congress. One was House Bill 3476 of 4th District Cebu Representative Clavel Asas-Martinez. Representative Abraham Kahlil Mitra of Palawan's 2nd District also submitted HB 3644, based on the same premise as Martinez's bill. In a statement, Rep. Martinez said that her bill seeks to classify VoIP technology as a "distinct mode of communications" that would allow smaller firms to break "the monopoly of the giant telecommunications firms [have] over this particular communication service." She said House Bill 3476 would lead to lower communications costs for Filipinos keeping in touch with relatives overseas.

The Congressional TWG, which will be composed of legal and technical experts in telecommunications, will be formed when the ICT committee completes the collection of proposals and position papers from various groups involved in the dispute. It runs parallel to the NTC's own TWG, which is still trying to resolve the long-standing debate. Kintanar stressed that their TWG would also review the NTC's draft resolution in order to come up with a better proposal. The NTC will have to give way to Congress should the latter decide to pursue legislative action on VoIP deployment.

The different players and stakeholders of VoIP have differing opinions about the classification of and the corresponding regulation that should govern the new technology. The incumbent telecommunications companies stand to benefit from the status quo since they can already exploit the technology. On the other hand, VAS providers, especially the new small players, will benefit from a market open to competition. In addition, Filipino consumers are given more choices and access to cheaper telecommunications services (Refer to Annex for a list of "Key VoIP Players and Stakeholders").

### Telecommunication Companies and VoIP

For as long as the debate continues, the major telecommunications companies will predominantly use VoIP technology for their own operations.

Telecommunications carriers are increasingly using IP for their networks to reap these benefits. A review of market prices for international calls reveals the wide range of prices for essentially the same service. It is clear then that the use of VoIP has reduced costs and prices for telecommunications carriers but those savings have not been passed on to consumers.

| Market Prices for IDD Calls in the Philippines | |
|---|---|
| Dominant cellular companies | $.40c/min |
| Dominant landline company | $.40c/min |
| New entrant cellular company | $.30c/min |
| PLDT Budget Calling Card | $.18c/min |
| Netopia Internet café | $.10c/min |
| Call center wholesale price | $.02 to 03c/min. |

PTEs have a lot to gain from a growing VoIP market. IT companies see the expansion of VoIP as one of the trends in 2005, together with growth in wireless communications (particularly in 3G mobile service).[61] Executives predict that the market will be looking at new technologies that would provide faster, broader, and more cost-effective solutions for both the enterprise and end-user markets.

There are already some new entrants offering VoIP service. The most visible is Netopia, an Internet café. It enjoys access and justifies its service through its affiliation with PLDT.

Ariel Roda, senior vice president for PLDT's business development, said that VoIP services tend to have a "destructive" effect on PTEs because VoIP providers have little or no investment on infrastructure, unlike the telecommunications providers. Roda further argues that VoIP services do not have that much demand in the Philippines primarily because most people use mobile phones instead of regular voice calls. This assumption overlooks one small detail --- that Filipinos tend to send SMS not out of preference but because voice calls are many times more expensive than text messages.

Calling it the "height of injustice, inequity and unfairness," PLDT said that the other consequences of allowing VAS providers offer VoIP will include:

- collapse of the PTE's stable sources of revenues, which currently count in voice service for domestic and international, as well as inbound and outbound calls
- government's deprivation of taxes from the PTEs because allowing VAS providers offer VoIP will result in huge revenue leakage, as government may be unable to monitor VoIP usages gong in and out of the country
- violation of the Philippine Constitution. Foreign carriers will effectively be able to provide voice service to, from, and within the Philippine territory in clear

[61] Erwin Lemuel Oliva and Alexander F. Villafania, "3G, VoIP, outsourcing head 2005 Trends," INQ7.net http://news.inq7.net/infotech/index.php?index=1&story_id=23049.

violation of the Constitution that allows only Filipinos with franchise from congress to operate a public utility company.[62]

During the most recent public hearing, Rogelio Quevedo, PLDT's head of regulatory affairs, argued that the current draft rules go against the provisions of the Philippine Constitution limiting the operation of public utilities to Filipino nationals. He cited section 11, article 12 of the Constitution, which states: *"no franchise, certificate, or any other form of authorization for the operation of a public utility shall be granted except to citizens of the Philippines or to corporations or associations organized under the laws of the Philippines at least sixty per centum of whose capital is owned by such citizens..."* As public utilities offering basic telecom services, telecommunications companies Quevedo said are required to abide by this nationality requirement. This argument was countered by other stakeholders led by the ISPs and cable operators.

### VAS Providers on VoIP

Defining VoIP as a VAS will allow entities other than PTEs to provide VoIP services.

There are already some "grey market" service providers selling phone cards as well as VoIP phone instruments. Due to the lack of regulatory clarity, these companies run major risks. Anecdotal evidence reveal that one company's broadband connection was disconnected by its telephone service provider when it was suspected of offering VoIP service.

"Because of the uncertainty incumbent telephone operators are the only ones benefiting from the technology as the lack of guidelines prohibits companies from taking advantage of the technology," says the *Philippine Internet Service Organization* or *PISO*, an organization of Internet service providers (ISPs), in their response to NTC's Discussion Paper on VoIP.[63]

PISO president Jojie Yap argues that similar to any data traveling through the Internet, which is mostly unregulated, VoIP is clearly (a) not a traditional telecommunication service, but (b) an enhanced service therefore a value-added-service (VAS)." Classifying VoIP as a telecommunication service regardless of the technology used, explains PISO, is "a simplistic definition" that will deny the Filipino people of a cheap alternative to plain old-fashioned telephone system (POTS). PISO claims that incumbent telecommunication players currently benefit from VoIP by using the new technology for their own operations, yet the savings do not translate to cheaper long distance calls for the Filipino consumers.

PISO laments that ISPs suffer from the PTE's unfair and anti-competitive practices. Since "the PTEs are the only ones who can set up a telecommunication infrastructure, VAS providers like ISPs and (hopefully) VoIP providers, will always use an incumbent

[62] Kerlyn Bautista, "Groups plead gov't for quick VoIP resolution," *IT Matters*, November 19-20, 2004.
[63] Philippine Internet Society Response to the NTC VoIP Request for Comment, http://www.piso.org.ph:8080/piso/?page=PISO_RESPONSE_TO_NTC_VOIP_RFC.

telecommunication operator for its infrastructure." According to PISO, PLDT's pricing of its E1/R2 Lines[64] was unreasonable and discriminatory, and PLDT is involved in predatory pricing in order to eliminate the competition.

The current situation is that while the incumbent operators are providing telecommunication services to VAS players, they are also competing and offering the same services to the public for a much lower price (far lower than the telecommunications costs of VAS players) and, as cited above, are denying services to VAS players.

*ISP Mosaic Communications (MozCom)* president William Torres said plotting out a viable revenue stream from VoIP services remains one of the biggest hindrances to the technology's use in the Philippines. Profit can be made from VoIP because of its potential as a more cost-effective alternative to the traditional PSTN.

For its part, industry group *Philippine Cable Television Association (PCTA)* believes that the NTC should free up competition in VoIP by allowing new entrants to offer the service. This would be beneficial to the general public, most especially to areas in the country beyond the interest of PTEs due to their perceived non-profitability.

The expansion and fortification of the PTE's infrastructure and capacity could spell death for a lot of small VAS players in the country.

On January 21, industry leaders launched the expansion of the country's second largest telecommunications backbone called the National Digital Transmission Network (NTDN). *Bayantel*, which owns more than 90 percent of NTDN's capacity, spent $80 million for this project to upgrade its capacity from 2 gigabits per second to 10 Gb per second. Its co-owners, including Digitel, Eastern Telecom, Extelcom, Globe Telecom, PT&T and Smart Communications, are today's dominant providers of both data and voice services in the country.

Bayantel chief consultant Tunde Fafunwa said that the higher bandwidth from the NDTN expansion is the foundation from which the company will be building its Internet protocol (IP) infrastructure. With the enhanced capability, Bayantel plans to offer new services and applications including voice over the Internet (VoIP), video-conferencing, multi-branch communications, among others." The NTDN covers a distance of 2,762 kilometers stretching from San Fernando, La Union and Santiago City in the north to Davao in the south via Cebu and consists of microwave, submarine, and land cable segments.

### VoIP Providers in the Philippines

There are a number of companies offering VoIP services in the country. Some of them are affiliated with the incumbent PTEs. Some offer VoIP "hard phones" while

[64] E1R2 is the "raw" material of access providers. It is a signaling standard that allows a single cable to have thirty (30) channels. According to PISO, despite the fact that unlike the ordinary trunked voice service (which requires individual cables for each channel – i.e., more costly), independent service providers supply their own multiplexer (the equipment needed to breakdown the signal to different channels) and only requires dial-in features and yet the cost offered by PLDT is still 20-45% higher.

others only provide “soft phones.” A few players are based in other countries and offer VoIP systems and services in the Philippines by downloading their software or shipping equipments that need to plugged into computers or local phones (refer to Annex for a List of VoIP Providers and examples of their services package and products).

A number of private companies are using VoIP for intra-office operation.

There are also schools such as the University of the Philippines that use VoIP for their system. UP is now giving away accounts for soft phones (software based telephone) that are valid even out of DilNet (Beta-testing) or via Virtual Private Network (VPN). PSTN (PLDT/Bayantel) access is not allowed. Users are given a local phone number for every account. Soft phone supported clients include Xten's X-lite for both MS Window and MAC, and Kphone for Linux.

The VoIP project started in March 2004, connecting the Faculty Center to the new telephone network. Each and every faculty room is provided with a telephone unit, which has access to both local and PLDT. With this new system, it is mandatory to implement a new numbering scheme, which will give the campus a more coherent numbering system.

**Who Benefits from VoIP?**

- **Overseas Filipino Workers (OFWs)**
  The President’s Development Agenda seeks to “take advantage of VoIP to reduce long distance calls, which will bring immense benefits to OFWs and their families.”

  Netopia President Raymond Ricafort notes that their VoIP service specifically targets the families of OFWs who may want to avail of their much lower international rates (10 US cents per minute offered by Netopia vs. 40 US cents per minute charge from local telephone operators).

- **Unserved/Underserved Rural Areas**
  With VOIP, it may be more viable to extend Internet access beyond the urban areas to tap into rural demand.

- **Export Oriented Industries, Contact/Call Centers and SMEs**
  Industries that are heavy users of voice calls would reap considerable savings on international calls.

- **Existing Cyber cafés, Telecenters and similar facilities**
  Offering VoIP for cheaper call rates would be an additional revenue-generating service that many people use and need.

- **General Public**
  Individual households or communities with broadband access can avail of cheaper and more efficient communication services

# Chapter V Impact of Telecommunications, Internet and VoIP

## Impact of the Internet and VoIP

With the globalization of operations driven by the improvements in telecommunications technology and logistics chain, outsourcing has grown into a multi-billion dollar global industry. Business process outsourcing (BPO), which processes back office work to offshore clients, is now seen as a major organizational decision aimed at reducing fixed cost of companies in managing human resources, logistics, financials, and customer relations, among others. While it has provided a means to earn more profit for large organizations in the developed world, it has afforded huge business opportunities to developing countries.

Access to the Internet and the availability of reliable and cheap communications services are prerequisites of such an industry as it requires fast and efficient services to be delivered notwithstanding distance and time.

Based on an Indian BPO report, BPO thrives on highly educated work force, convenient currency exchange rates and efficient infrastructure, and many more leading to win-win situations at both ends.[65] On the other hand, the *Meta Group* cites mature telecommunications infrastructure and policies are one of the necessary requirements for countries positioning to become outsourcing destinations.

Historically, enterprises outsourced many 'non-core, non-critical processes' – activities such as landscaping, cafeteria and janitorial services. But as the global economy becomes more and more competitive, enterprises are inclined to review their internal operations in an attempt to more fully understand their true core competencies, and focus on only those competencies. This is the number one driver behind the growth in the BPO market today. Evaluation of cost and efficiency of implementing non-core yet critical activities such as claims administration, human resource services and payment services are important considerations of organizations when deciding to outsource.

A secondary driver of growth in BPO is a desire by enterprises to improve their current service levels. The third driver is a desire by enterprises to extract all possible costs from within their internal operations. Any chance of decreasing transaction-processing costs frees up precious capital that can then be applied to more strategic initiatives.

Charles Bligh, general manager for IBM's e-business on demand, says that some companies are consolidating their resources and sharing them among their subsi-diaries all over the world. Enterprises, according to Bligh, would soon move towards an "on-demand" environment, where third parties manage business processes.

India remains a tough competitor to beat in the BPO industry. The Indian BPO industry is slated to be worth more than $60 billion by 2007.[66]

[65] Excerpts from "BPO: A Perspective on Outsourcing" 2004.
[66] "Daksh sets up BPO in Philippines," CyberMedia News Service, January 07, 2004.

Although India is the pre-eminent location for offshore business process outsourcing delivery, a new survey by the *Nelson Hall* research firm suggests that the country is being increasingly challenged by the Philippines. Nelson Hall said Mexico is an important delivery center for North American service provision, and South Africa for service delivery aimed at the European market. China is also challenging India, offering lower staff costs but only limited language capabilities, the research firm said.

According to Nelson Hall, nearly 60 percent of work done offshore is in customer management services such as technical support for software and hardware products, telemarketing, and basic customer care such as order taking. Some 64 percent of offshore work overall is voice-based, with 85 percent of customer management services being voice-based. Most offshore processes today involve basic data entry or are rules-based. The firm further predicts that the offshoring of "judgmental" processes -- more complex processes requiring agents to make informed decisions to fulfill requests -- and "analytical and expert services" -- highly complex processes requiring specialist knowledge and expert judgment -- will only increase to 10 percent of offshore BPO activity by 2006. [67]

The Philippines, with its highly educated, English-speaking labor force as its ace, is trying to tap into a portion of this business and is gearing up to become a popular destination for outsourcing, particularly call centers.

A call center is a central customer service operation where agents (often called customer care specialists or customer service representatives) handle telephone calls on behalf of a client. Clients include mail-order catalog houses, telemarketing companies, computer product help desks, banks, financial service and insurance groups, transportation and freight handling firms, hotels and IT companies. This business is heavily dependent on telecommunications.

Tagged as the country's sunshine industry, the call center business is one of the many segments in the BPO market. The government has announced its intention to develop and promote the country as a hub in the delivery of customer contact center, medical transcription, animation, BPO and shared financial services. Even the Arroyo administration's vision for education is to create knowledge workers for the growing market for IT-enabled services.

There are around 16 key industry players in the call center business today, most of which are joint ventures with ICT conglomerates. Among these are:

- Etelecare International Inc.
- Infonxx
- PeopleSupport
- C3 Customer Contact Center Inc.
- Sykes Asia, Inc.
- Contact World

[67] "Philippines poses challenge to India in BPO," www.rediff.com, March 9, 2004.

- SVI Connect
- Cquadrant
- Immequire Philippines, Inc.

The telecommunications industry is evolving to take advantage of the boom. Even Easycall Communications Philippines Inc. has abandoned the paging business and is investing P1.46 billion over the next five years in a call center facility, based on the records of the Board of Investments.

The number of call centers that have registered with the Philippine Economic Zone Authority (PEZA) in the first nine months in 2004 totaled to eight, a 38.46% drop from figures a year ago. But experts like University of Asia and the Pacific (UA&P) microeconomics specialist and professor Winston Padojinog say that the preliminary PEZA data may not yet reflect the true status of the industry. Rather, the industry may really be growing but results may not be visible immediately. Preliminary PEZA data still does not include figures on investment costs, and projected employment and number of call centers.

PEZA-REGISTERED CALL CENTERS (Jan-Sept/2000-2004)

| Period | Total No. of IT Firms | No. of call centers | No. of call centers outside Metro Manila | Call center growth (in %) |
|---|---|---|---|---|
| Jan-Sept 2004 | 29 | 8 | 2 | (38%) |
| Jan-Sept 2003 | 27 | 13 | 3 | 333% |
| Jan-Sept 2002 | 15 | 3 | 0 | (25%) |
| Jan-Sept 2001 | 13 | 4 | 0 | 100% |
| Jan-Sept 2000 | 4 | 2 | 0 | -- |

*Source: PEZA Master list of IT Enterprises as of October 31, 2004*

The size of a call center operation is described in terms of the number of "seats," which consist of a station with two or three people alternating in several shifts to provide 24-hour call center service. The industry's main target markets include the United States, Australia and the United Kingdom.

Since 2001, the Philippine call center industry has been more than doubling every year.

**Call Center No. of Seats (2001-2004)**

| Year | No. of Seats |
|---|---|
| 2001 | 3,500 |
| 2002 | 7,500 |
| 2003 | 20,000 |
| 2004 | 40,000 (est.) |

*Source: PEZA Master list of IT Enterprises as of October 31, 2004*

Each seat roughly translates to 1.5 agents, which means that for 2004 alone 30,000 agents will be hired by this industry. This is confirmed by estimates that show the industry hiring about 3,000 agents per month today.

According to several call centers, the hiring rate is 3% to 5% of applicants. Since the Philippines produces 380,000 college graduates per year, 5% or 19,000 per year would qualify as call center agents.[68]

The volume of call center seats in the country, estimated last year between 40,000 to 60,000, is not even an inch of the volume of seats in the United States with 1.5 million seats, the United Kingdom with 400,000 seats, Australia with 600,000 seats, and India with 100,000 seats.

In an interview with Businessworld, Mr. Padojinog was quoted as saying that while new investments for call centers were not heavy in 2004, expansion initiatives from existing call center operators are taking off. One expansion initiative seen last year was the P257-million new facility of Convergys Philippines in Northgate Cyberpark Special Economic Zone. Convergys recently opened a facility in Cebu.

The eight new call centers registered from January to September 2004 include:

| PEZA-REGISTERED CALL CENTERS | |
|---|---|
| Call Center | Description |
| Calltek Center Int'l Inc | a 99% American-owned company, located inside the JY Square IT Center in Cebu City |
| ClientLogic Philippines | Its P320-million facility in Baguio City, has a capacity target of 850 seats, running on a two-shift operations. Its other facility in Pasig City, which started operating in 2000, has about 1,700 seats employing some 2,000 call center agents doing mostly in-bound calls. |
| HSBC Electronic Data Processing Philippines, Inc., | a 99% American-owned company, is in PBCom Tower in Makati City; local BPO arm of HSBC group in the Philippines whose primary purpose is to carry on the business of electronic data processors, manufacturers, assemblers, buyers, sellers, exporters, developers, designers and dealers in all types of computer software and hardware, peripherals and to act as system analysts, programmers, data processors, and call center operators. |
| ILDAEIL-EDU, Inc | located in RCBC Plaza in Makati City; provides online ESL tutorials to Koreans |
| iTouchpoint Softech Private Limited | Mauritian iTouchPoint is in Eastwood City Cyberpark in Quezon City; a business process solutions firm offering complete contact management solutions to Global 2000 companies via telephone, e-mail, website (live pro-active and reactive chat) and fax. |
| Pacific Corporation | a 59% Filipino company, reported investment to cost P76.01 |

[68] Gregory Domingo, Undersecretary for Industry and Investments, Department of Trade and Industry, "RP Call Center Growth to Drop in 2005," Computerworld, http://www.itnetcentral.com/article.asp?id=14001&icontent=17395

| | |
|---|---|
| | million and the new facility to employ an average 659 call center agents in a year. |
| Sitel Customer Care Philippines Inc. | reported investment cost to reach P196 million and annual employment capacity of 556 call center agents. |
| Crecent Services Pte. Ltd., | No website |

Call services processed by the call center business include company or product inquiries, helpdesk, payment, order taking and confirmation, complaints handling, concierge services, directory assistance, telemarketing, tele-survey, tele-collection, sales verification, sales dispatch, and reactivation of accounts.

Investment per seat is generally bigger for new call center players. Combined investment for the equipment and training per seat is pegged at $250,000, higher than the estimated investment of about $15,000 per seat for those call centers which have existing local operations.[69]

Investments in telecommunication, call centers, IT and business process outsourcing (BPO) helped inject income into the economy as they propped up consumer and investments spending from July to September. Despite a downtrend in government-approved investments in IT in the first nine months of 2004, Socioeconomic Planning secretary Romulo L. Neri said that BPO, call centers and telecoms continued to help cushion effects of high prices of oil and protein-based products on the purchasing power of Filipinos.

Contact centers and software development projects dominated the IT sector investments for January-September 2004. they include HSBC Electronic Data Processing (Philippines), Inc.; Lexmark Research and Development Corp.; Clientlogic Philippines; Crescent Services, Pte. Ltd.; Convergys Philippines Services Corp.; Ambergris Solutions Phils. Inc.; Sitel Customer Care Philippines, Inc.; and Advanced Contact Solution, Inc.

It is difficult to estimate the growth rate of BPO in the country because according to NSCB secretary general Romulo Virola, "investments in BPO come fast, at a rate our current methodology cannot quickly measure."

BPO in the country includes software development, systems integration, medical transcription, digital animation, and development and maintenance of regional procurement systems. Outsourced processes include internal auditing, payroll, human resources benefits management, customer care, payments and claims processing, real estate management, and supply chain management.

According to PEZA, employment in IT zones and buildings in the country jumped 228.218% to 3,978 in 2001 from 1,212 in 2002. But for the first five months of 2003, employment has already increased to 5,813. Jobs generated in IT zones and

[69] Maricel Estavillo, "New PEZA Call Centers drop 38% in first 3 quarters", IT Matters, January 21-22, 2005.

buildings are largely due to the rise in call center seats. With operations on a 24-hour basis, each seat entails several shifts of two to three personnel.

Call centers are the biggest drawer of employment in the IT zones, PEZA director Elmer San Pascual said in an interview. Call centers like Convergys are opening approximately 1,400 seats to be located in two recently proclaimed IT buildings -- The Enterprise in Makati City and Robinsons Equitable Tower in Ortigas City. The government has started to proclaim IT zones and buildings only in late 1999. To date, there are already 16 such industry specific zones proclaimed nationwide.[70]

Industry experts say that many factors contribute to the rapid development of call centers in the country. One is the rising cost of doing business in industrialized countries like the United States, forcing foreign companies to downsize and outsource peripheral e-services to developing countries like the Philippines to cut overheads. Contact Center Association of the Philippines (CCAP) president Jose Ferreros also cites the better power and telecommunications infrastructure, competitive labor cost in terms of quality and value for money, and strong government support for ICT-related industries.[71]

### Remaining Tasks

Given its potential, VoIP innovations can be a force for increased competition in the telecommunication market and other related enterprises, a platform for innovation, a driver of broadband deployment, a vehicle for consumer benefits, and in general an enabler of economic growth.

There are apparent differences in service take-up and business models seen around the globe. In an *Analysys* study for the European Commission, it says that countries with competitive voice call markets and limited broadband access networks expect slower growth in VoIP compared to countries where voice calls are relatively high and broadband access is being actively exploited.[72]

Nevertheless, the global trend is clear: more and more voice calls will be made over IP networks. In the process, a new range of services will emerge, supported by new technologies that continue to improve.

Countries who have embraced VoIP early on are already reaping the benefits of cheaper access to telecommunications services and its impact on investment. On the other hand, countries that see its potential as an enabler of economic growth and are bent on harnessing the advantages of ICT have began devising means to adopt VoIP.

What remains now is a choice between traditional and more expensive telecommunications services or a cheaper but efficient alternative that promises to

[70] PEZA data, Pamela Y. Ong, "Call centers up employment in IT Zones -- PEZA data," IT Matters, August 13, 2003.
[71] Romelda C. Ascutia, Call Centers -- RP's Emerging Sunshine Industry, Bristol Virginia Untilies, from Jobstreet.com, http://www.sullivan-county.com/id3/cable_passed.htm
[72] "IP Voice and Associated Convergent Services," Final Report for the European Commission, Analysys, January 28, 2004.

transform the way the public and businesses communicate through convergence of technologies, widely recognized as the evolutionary direction of the 21st century information highway.

To fully harness the potential of VoIP, the government needs to be creative and forward-looking. It should look into several policy options and innovative means to jumpstart broadband development based on best practice and the country's own realities, such as telecommunications infrastructure, geography, resources, and market conditions.

### NTC Rules on VoIP: Creating an Enabling Environment for Competition

The current interpretation of VoIP services in the Philippines, as contained in the NTC's Memorandum issued on March 29, 2005 (refer to Appendix), goes well with the spirit of competition that has already driven growth in many sectors. By creating an enabling environment for VoIP to flourish, the Philippine government joins the growing number of developed and developing countries the world over that have adopted non-restrictive policy approaches regarding VoIP having recognized its advantages in achieving universal access and attracting more investments.

In the memorandum, the NTC reiterates its mandate to interpret and clarify the legal nature of VoIP "in a manner that encourages fair and equitable competition, increases consumer choice and welfare, and is consistent – always – with the letter and spirit of Philippine law, particularly Republic Act 7925, otherwise known as the Public Telecommunications Policy Act of the Philippines."[73]

The NTC supports that "telecommunications" as argued by the PTEs clearly covers VoIP and all other Internet services, which rely on processes that enable the relay and reception of data through technological means.[74]

> *Telecommunications - any process which enables a telecommunications entity to relay and receive voice, data, electronic messages, written or printed matter, fixed or moving pictures, words, music or visible or audible signals or any control signals of any design and for any purpose by wire, radio or other electromagnetic, spectral, optical or technological means. (RA 7925, sec. 3a)*

However, the NTC further contends that Congress construed value-added services (VAS) as a subset of the broader set of "telecommunications" services based on Article IV of RA 7925, which identifies a VAS provider as a telecommunications entity.

**And based on the definition that a "value-added service" is an enhanced (telecommunications) service beyond those "ordinarily provided" for by**

[73] Memorandum for Voice over Internet Protocol (VoIP), National Telecommunications Commission, Quezon City, Philippines, March 29, 2005.
[74] Memorandum for VoIP, March 2005, p. 2.

**local exchange and inter-exchange operators, and overseas carriers, VoIP is a value-added service**.[75]

The logic used to identify what services were "ordinarily provided" by local exchange and inter-exchange operators and carriers is simple. The Commission believes that the legislative intent must be construed strictly in terms of what was being ordinarily offered at the time RA 7925 was passed, that is, in 1995. The Internet, which VAS providers have been offering since the mid-1990s, was used as an example.

Other arguments as to why VoIP is classified as a VAS include:

- at the time the law came into force, only voice services that were offered through the use of traditional circuit switched networks can be construed as having been "ordinarily offered by LECs, IECs and overseas carriers," and that, therefore, any other voice service that is offered to the public not using the traditional circuit switched network technology – as in the case of VoIP – must be classified as a Value Added Service."

- VoIP by definition, is not offered via circuit switched networks, and therefore, cannot be considered to have ordinarily been offered by LECs, IECs and overseas carriers. It is, therefore, a Value Added Service

In sum, because traditional voice and VoIP services are NOT the same, the traditional voice regulations and licensing requirements should not apply to VoIP.

The NTC also argues that, "VoIP technology is "an advanced communication application that can converge voice communications seamlessly with other digital applications," beyond the attributed of a traditional voice services. These include instant access to customer records, videophone, voice mail and advanced call management.

Finally, the Commission acknowledges that network providers are and must be entitled to reasonable compensation for the use of their equipment and facilities by VoIP providers.

With the draft rules under consideration, it is just a matter of time before VoIP takes off.

### Advantages of Deregulating VoIP

Deregulating VoIP in the Philippines, on the ground that it is a data, rather than a traditional voice service, will have its advantages.

The strongest argument for deregulation is the potential of VoIP as a technology to promote affordable and universal access to ICT. Premature intervention would risk

[75] Memorandum for VoIP, March 2005, p. 4.

stifling innovation and competition in ICT. Deregulation will encourage the development of new applications, and increased investments, jobs and competitiveness for the Philippines in the global ICT market.

Noting the difference in quality of service, VoIP would also increase consumer choice. By foregoing quality in favor of affordability, or vice-versa, consumers will be able to choose between traditional telecommunications services, and VoIP.

Following the argument of the Voice on the Net (VON) Coalition,[76] VoIP has the potential to deliver important benefits that include:

- dramatic cost savings for consumers
- reduced operational costs for providers
- innovative new features for users
- increased competition for communities
- greater infrastructure investment
- accelerated broadband deployment
- improvements in emergency services
- lower cost communications for rural areas and government users
- increased access for persons with disabilities, and
- increased productivity for our economy.

## Creating an Enabling Environment for New Technology

ICT has the potential to be a vital driver of socio-economic growth and development in the Philippines. By the turn of the 21st century, the Philippine Government envisions to have laid the infrastructure for every business, every agency of government, every school, and every home in the Philippines to have access to ICT. More importantly, it plans to use ICT for to reduce poverty, creates jobs and to attract more investments.

The NTC made a big step towards this direction in its decision to allow competition in providing VoIP.

Section 4 (a) of RA 7925 or the Telecommunications Act states that "the growth and development of telecommunications services shall be pursued in accordance with the following policies:

> *"A fundamental objective of government is to develop and maintain a viable, efficient, reliable and universal telecommunication infrastructure using the best available and affordable technologies, as a vital tool to nation building and development."*

The cornerstone of the law is also the promotion of competition for greater efficiency and affordability of telecommunications services.

[76] The Von Coalition includes AT&T, BMX, Callipso, CallSmart, Convedia, Covad, IceNet, iBasis, Intel, Intrado, MCI, Microsoft, PointOne, Pulver.com, Skype, TeleGlobe, Texas Instruments, VocalData, and Voiceglo.

The Medium Term Philippine Development Plan for 2004-2010 of the National Development Economic Authority (NEDA) supports this goal. In line with the goals, strategies and action plans of the MTPDP is the reduction of connectivity cost. The Plan states that:

> *"The government will push for the reduction of connectivity costs by allowing an enabling environment to permit new entrants of various telecom players, including but not limited to ISPs, to provide ICT and ICT-related services, thus, promoting market competition."*[77]

To achieve this, the "government will promotion of investments that support the provision of physical infrastructure for high-speed connectivity, high capacity and secured network services at low cost."

The government believes that "investments in physical infrastructure will depend heavily on market demand for broadband, which will be achieved by the provision of market attractive value-added features" and identifies VoIP or Internet telephony as "a prime market attractive value-added feature." The Plan also encourages the resolution and development of a clear legal regime for VoIP. To quote:

> *"Issues relative to opening the market to VoIP will be resolved and a clear legal regime covering VOIP, convergence of web, email and voice services through Internet telephony will be provided. Simultaneously, VoIP services will be rolled out. This will immensely benefit overseas Filipino workers and their families and ensure the accessibility and affordability of these services for all. On the other hand, other prime public service value-added features that include distance education, e-health and the delivery of e-learning to all public schools through the Internet will be pursued and supported through the establishment of community e-centers (CeCs) throughout the country."*

The benefits and opportunities of ICT applications are evident in Asia. ITU's Digital Access Index (DAI) revealed that over the last four years, there has been a big shift in ICT leadership towards Asia and away from the English-speaking nations. This is a significant and exciting trend that brings with it a lot of opportunities for the region.

Asian countries have recognized this. Malaysia, for example, was noted to have the highest ICT access among developing countries in the Asia and was categorized to have "upper" ICT access. ITU observed that Malaysia ranks among those that have used IT as a development enabler and whose government policies have helped them reach an "impressive" level of ICT access. The other four developing Asian countries with the highest DAI ratings include Brunei Darussalam, Thailand, China and Fiji. The Philippines tied with the latter two and was categorized under the medium access list.

[77] National Economic Development Authority, "Medium-Term Philippines Development Plan 2004-2010," Digital Infrastructure, Chapter 6, p. 87.

To position the Philippines as truly an ICT services hub in Asia entails that the country embrace innovations and create an enabling environment for new ICT applications to thrive.

It is observed in many developing countries as in the Philippines that regulatory reform is proceeding at a slower pace than technology development or market and service potential. This may result from regulatory "capture" where the government is pressured to promote the interests of a few players, usually the monopoly, or the government itself does not stand to benefit from competition. This makes regulation the limiting factor constraining growth. But regulation, especially in the initial stage, can serve as a key to drive reforms and to set the stage for competition.

A number of cases in the region show that sound regulatory foundations are needed to attract investment, and to promote applications of new technologies and development of new services.

In China, a country where liberalization came in much later compared to its Asian neighbors, the government was keen enough to see the potential of VoIP. Although the service is still provided by telecommunications operators, the number of players is growing. Since commercial VoIP services began back in 1999, the adoption of VoIP has risen vigorously. By 2003, over 83 billion minutes of voice traffic was carried over IP, a year-on-year increase of 46 percent. Driving this growth are the economics, mobility and flexibility VoIP offers carriers, cable operators, enterprises and consumers.[78]

An analysis of VoIP in China by Dr. Kaili Kan, Dean of the School of Business Management of the Beijing University of Posts & Telecommunications (BUPT), explains how China is gearing up as a leader in convergence by embracing VoIP. According to Kan, the explosive growth of VoIP provides a golden opportunity for the evolution of China's public network. Although the price of the VoIP long-distance service is less than one-third of its traditional counterparts, because of the monopoly-created tariff imbalance, this service is still extremely profitable. The government's decision to allow more players to come in was welcomed by consumers. The monopoly of China Telecom was broken and it was forced to lower the pricing of its traditional long-distance services.

Furthermore, China already has over 180 million fixed and mobile telephones, compared with roughly 10 million Internet users. Thus, VoIP naturally becomes China's "killer application" to lead the evolution towards an IP-based packet-switched public network. For example, it has been reported that China Unicom and China Netcom, two of the newest players in the VoIP market, have both decided to build their entire networks based on IP instead of the traditional circuit-switching technology. Since voice is still the most basic and moneymaking service around the world, it is predicted that China has thus obtained a significant advantage from VoIP. The reason: After leapfrogging over crossbar switching and microwave

[78] "Step up to a VoIP Future: An Overview," taken from http://www.infoexevents.com/voip/index.htm.

transmission by going directly into digital and fiber, it is now possible that China will take the lead in the worldwide race towards convergence of voice, video and data because of its VoIP policy.[79]

A purposeful policy direction that allows competition to flourish is thus the crucial first step to taking advantage of the benefits of VoIP technology.

India took it a step further by allowing ISPs to provide VoIP by classifying it as a service "different in nature, scope and kind from the real time voice, offered as telecommunication service by operators under their existing license.

According to India's *Guidelines for Issue of Permission to Offer Internet Telephony Services*, "Internet telephony means an application service, which the customers of ISPs can avail from their Personal Computers (PC) capable of processing voice signals or other IP based Customer Premises Equipment (CPE) as mentioned below:

a) PC to PC (Both within as well as outside India)
b) PC to Telephone (PC in India to Telephone outside India)
c) IP based H.323/SIP Terminals in India to similar Terminals both in India and abroad, employing IP addressing scheme of the Internet Assigned Numbers Authority (IANA)."

An amendment to the existing license of ISPs was therefore mandated. This shows that a calculated maneuvering by the regulator and necessary changes in policy need not be dramatic to result in reform that is beneficial to both business and the general public.

In Korea, one of the world's leading countries in broadband penetration and Internet applications, VoIP is already transforming the market. The government considers the Internet phone business as one of the "IT839" strategies to build domestic IT capability. It is thus bent on addressing the barriers to the service's take-off. In 2003, the Ministry of Information and Communication (MIC) introduced two-way Internet phoning by giving eleven-digit VoIP-specific numbers with the dialing prefix of "070" and awarding a license to four outfits. The government first allocated the two-way VoIP licenses to small-sized firms to prevent bigger players from overwhelming the market. Large-scale telecom firms will soon be allowed to enter this market. KT and Hanaro Telecom have already applied for licenses. The government's goal is for Internet phones to go mainstream by 2010. This is proof that regulation can be used to jumpstart competition and ensure a level-playing field.

For India, the key was to clarify the definition of Internet telephony and how it differs from the services traditionally provided by incumbent players. The issuance of clear-cut guidelines for the provision of VoIP is also a crucial function of regulators that can facilitate investment by creating a stable and predictable investment environment**.**

[79] Kaili Kan, "VoIP in China," taken from http://www.china.org.cn/english/OP-e/6035.htm.

VoIP is successful in Korea largely due to an impressive broadband penetration, with 78% of households subscribed to broadband. The Korean experience in telecommunications reform shows that minimizing regulation and allowing market forces to operate can result in a more dynamic market.

Unlike the Philippines, reforms in the Korean telecommunications market were not patterned on the US system of network sharing or "unbundling" where entrants were allowed to use the existing phone network facilities at prices set by regulators. Instead, when policymakers enacted rules allowing rivals to challenge the state monopoly, Korea Telecom, new entrants such as Hanaro and Thrunet were denied the opportunity to use KT's network to deliver signals the "last mile." As a result, they scrambled for efficient alternatives. By using fiber-optic capacity leased from a power company, cable TV lines, and new transmission facilities built from scratch, competing networks emerged and broadband services took off.[80]

Sang-Seung Yi, an economist at Seoul National University, explains that the "Korean broadband market succeeded because of fierce facilities-based competition among Hanaro, Thrunet and KT. This took place not because of 'smart' government regulation such as unbundling, but because of the absence of regulation." The Korean government has also subsidized certain applications and invested public funds in broadband and wireless.

It is however crucial to note that Korea's deregulatory climate has protected investments in new infrastructure, inducing capital to flow freely into broadband. A report issued by the MIC likewise claims that the key to the broadband market is "facilities-based competition."

The Korean experience shows that regulation that promotes innovation and a new way of thinking can bring out the resourcefulness of the market.

However, in the case of the Philippines, there is an overcapacity in many areas as a result of the Service Area Scheme. The problem is that lines were installed in areas that either did not have the demand for them or could not afford them.

The reforms taking place in China, India and Korea are examples of what Prof. William Melody of *Lirne.net* observes as characteristics the 21st century economies:[81]

- Driven by the services sectors
- Founded on information/communication networks – next generation Internet
- Dependent on effective reforms in the telecom sector – information infrastructure
- Strengthening links among local, national, regional, international networks and markets

[80] Thomas W. Hazlett, "Broadband Miracle," The Wall Street Journal, August 24, 2004.

[81] Prof. William Melody, "From Telecom Policies to e-Economy," Seventh Conference on Technology Policy and Innovation: Connecting People, Ideas, and Resources across Communities, Monterrey, Mexico, 10 -13 June 2003.

Given how the telecommunications sector is structured in many countries, these characteristics can be achieved through a combination of government initiatives and market forces. For a proactive policy and regulation, the following need to be ensured:

- Create a favorable investment environment for physical & human capital
- Minimize barriers to participation
- Facilitate demand as well as supply
- Apply skills and strategic management to achieve the spirit of the policy objectives
- Can only be done if regulatory structure is transparent and credible

The Philippines is at a crossroads. To maximize the full potential of ICT, in this case VoIP, the government needs to start challenging the traditional and oftentimes archaic interpretation of the law. It has to defend its position on its interpretation and definition of VoIP despite opposition from major players that stand to benefit from lack of competition in the telecommunication sector.

In due time, the Telecommunications Act of 1995 needs to be amended, as laws are only effective if they reflect the nuances of the environment where they are implemented and are able to address the issues and demands of an ever-changing landscape. The law is not immutable, which means they may be changed to maintain their relevance. But in the presence of an outdated law, the NTC must fulfill its mandate to implement the broader policy objectives of RA 7925 to develop and maintain "a viable, efficient, reliable and universal telecommunications infrastructure using the best available and affordable technologies,"

In the end, it all boils down to cost and what will ultimately benefit the Filipino consumers. The Philippine Internet Commerce Society (PICS), an association of electronic commerce practitioners, could not have said it better. They called for the immediate reduction in the cost of telecommunications through the adoption of VOIP technology. "The interests of the general public must be the fundamental consideration. All businesses must serve first and foremost the interest of the Filipino consumer," PICS said in a letter to the NTC.

### Jumpstarting VoIP Deployment

With the rules in place, the government can introduce initiatives to fully maximize the use of VoIP. This can be done by using VoIP in calling centers that target overseas Filipino workers (OFW) and their families, and developing a national plan to promote broadband access.

### Linking the Global Filipino Community Project

VoIP can be used for government's major policy goal --- to increase access to communications of Overseas Filipino workers (OFWs) and their families. In 2004, OFW remittances reached an estimated $8.5 billion, the highest level recorded since 1970 according to the *Bangko Sentral ng Pilipinas*. Remittances, which rose 11.8 percent year-on-year, provide the cushion against an unstable and weak economy

brought about by a fiscal deficit and spiraling oil prices. The number of OFWs continues to grow every year. The latest government statistics shows that the overseas Filipino population has increased to 7.58 million,

VoIP can be deployed to provide access in unserved and underserved areas to complement efforts for universal access. This can be done by establishing community-calling centers with VoIP capabilities in Congressional districts. This will particularly benefit remote areas that are not considered lucrative by PTEs and therefore lack access to telecommunications services.

The target beneficiaries of these calling centers are the families of overseas Filipino workers (OFWs) who are left behind.

The general objective is to allow other players to provide services for universal access since PTEs failed to fulfill their obligations.

The specific objective is to link the global Filipino community and helping to minimize the social cost of labor migration by providing access to cheap voice calls so that families can keep in touch. (Refer to Appendix "Linking the Global Filipino: Congressional Initiative on VoIP")

**Promoting Broadband Deployment**

The benefits of VoIP can be fully exploited if there is access to broadband. As seen in global trends, countries that recognize technology as a critical part of their economic future and that designate broadband deployment a national priority make huge improvements.

The Philippines must prioritize developing a national broadband policy and implementation strategy by looking to the examples set by "networked" countries.

**Japan.** The Minister for Public Management, Home Affairs, Posts and Telecommunications announced in May 2004 the "**u-Japan**" concept, which involves the realization of the "Ubiquitous Network Society" by the year 2010. This will allow anyone to easily connect to networks at any time from anywhere and from any appliance using ICT. As of July 31, 2004, Japan had 12.3 million DSL service subscribers. Ubiquitous broadband plus competition is resulting to a vibrant VoIP market. There are about 200 ISPs reselling VoIP services in Japan, with 28 ISPs having been allocated with VoIP specific telephone numbers as of August 2004. Meanwhile, about 16 million VoIP specific telephone numbers have been allocated. As of December 2003, there were 3.93 million residential VoIP users.

**Malaysia**. The Government has recently taken steps to embark on the implementation of the National Broadband Plan as a strategic step to propel the country into a knowledge-base society. With its "Policy On Provision Of Broadband Services And Basic Access Through Opening Up The Last Mile," the government views the universal, ubiquitous, equitable and affordable access to broadband

access as one of the key challenges in the transformation of the country to a knowledge-based society.

The country is targeting specific sectors for enhanced broadband penetration, which include: government agencies, schools, universities and research institutions, hospitals and clinics, libraries and community centers.

Malaysia first embarked on an ambitious project called the Multimedia Super Corridor or MSC in 1996. In six years, a growing number of investors and ICT technopreneurs have located their business activities in the MSC, making full use of the MSC's broadband multimedia network.

**India**. Recognizing the potential of ubiquitous broadband (defined as minimum download speed of 256 kbps) service in growth of GDP and enhancement in quality of life through societal applications including tele-education, tele-medicine, e-governance, entertainment and employment generation by way of high-speed access to information and web-based communication, the Indian government though the Ministry of Communications and Information Technology, has developed a policy to accelerate the growth of broadband services.[82]

Dubbed the Broadband Policy 2004, the framework visualises the creation of infrastructure through various access technologies, which can contribute to growth and can mutually coexist. It gives high priority to optical fibre technologies, DSL, cable TV network (as is can reach more households than telephone lines), etc. The government reduced license fees of select providers and ensures high priority given to indigenous broadband equipment.

**Korea**. Support for making deployment a priority came from the top - from Korea's president - and the government built the national broadband backbone, judging that widespread use of broadband was in the national interest. Key factors in South Korea's take rate include early adoption by the government of a comprehensive broadband policy, deregulation of market entry and pricing, and fierce competition.

However, urbanization is also a major factor unique to Korea, with 80 percent of its population living in urban areas. High population density simplifies network development and lowers costs investment, thus making it easy to install broadband infrastructure. This is not relevant to regions like Africa and South Asia.

A barrier to broadband take-up in developing countries is its high cost compared to dial-up service. In Korea, multiple broadband service providers create a competitive environment necessary for lowering prices and speeding network deployment. Most broadband providers in Korea are facilities-based, although local loop unbundling is possible. The availability of alternative broadband technologies (xDSL, cable modem, wireless, fibre optic, LAN) promotes competitiveness and dynamism. Fierce competition gave the dominant player no choice but to improve its services and

[82] "Broadband Policy 2004," Government of India, Ministry of Communications and Information Technology, Department of Telecommunications, 2004. http://www.dot.gov.in/.

lower its price. Countries should therefore license other players, such as cable television and high-speed wireless access providers, to offer an alternative to incumbent telephone operator xDSL services. The problem in countries like the Philippines is that new players are pressured or bought off by the dominant players. Dominant players also own the "other" players, like in the case of cable TV where Sky Cable owns Home Cable and SunCable. Regulators are usually powerless to act on monopolistic practices. One way to solve this is for potential investors to be given incentives by issuing them licenses to provide telephony, entertainment and cable modem service.

Another key to Korea's high broadband penetration is careful government policies, planning and financial support for targeted areas. Aside from a high level of cooperation between the government and the private sector, it is interesting to note that license fees from the ICT industry remain in the ICT sector and are not transferred to other areas of the government budget. This has provided seed funding for the Ministry of Information and Communication to invest in areas such as low interest loans for network roll out, ICT training and providing access to disadvantaged groups.[83]

A shift in government policy in countries like Korea, Taiwan and Singapore jumpstarted broadband deployment due to lowered price, which resulted in a surge in broadband uptake. This is only possible given certain market conditions, which are definitely absent in an environment dominated by a monopoly player that dictates the price.

Looking at the broadband deployment policy of countries like Japan, Korea, Malaysia and India, it is apparent that competition significantly lowers the price of broadband access. The availability of other facilities such as cable and wireless also play a significant role in providing the necessary impetus for competition. The presence of willing investors for the deployment of these facilities was greatly a function of incentives and priority given by the government, which set the direction of national broadband deployment. Regulatory intervention is however very minimal once the market has responded. This is apparent in countries in countries like Japan and Korea, where high broadband penetration allowed them to exploit VoIP and other new internet-related applications.

## Conclusion

Information and communications technology, particularly the Internet, has the potential as an enabler of economic growth and a tool for achieving universal access. VoIP, an Internet application, promises to offer efficient communications services at more affordable rates.

The decision of the NTC to define VoIP as a value-added service, therefore allowing other players aside from PTEs to provide the service, sends a strong pro-competition signal to the market. It also encourages the promotion of new

[83] "Broadband Korea: Internet Case Study," International Telecommunication Union, March 2003.

application and innovation that can benefit not only business but also the common Filipino.

The NTC's pro-active policy approach on VoIP goes well with the spirit of competition that has already driven growth in many sectors. It also enables further growth in the IT and IT-enabled services. Call centers, business process outsourcing, export-oriented groups and small and medium-sized enterprises (SMEs) heavily dependent on telecommunications can save on costs, which increases the competitiveness of the country.

By creating an enabling environment for VoIP to flourish, the Philippine government joins the growing number of developed and developing countries the world over that have adopted non-restrictive policy approaches regarding VoIP having recognized its advantages in achieving universal access and attracting more investments. But major challenges remain. The government needs to stand firm on its position on the legality of VoIP and allow competition to prevail for the benefit of the Filipino consumers. The government should also look at reforms needed to make the policy environment more responsive to the demands of the time.

**Annex 1 VoIP KEY PLAYERS AND STAKEHOLDERS**

| **INDUSTRY** | |
|---|---|
| **TELECOMMUNICATIONS COMPANIES (TELCOS)** | **Against VoIP** (VoIP is a voice service)<br>• Argue that based on existing laws, VoIP is CLEARLY a telecommunications voice service and should be regarded as a telecommunications service that can be offered only by duly enfranchised public telecommunications entities (PTEs) |
| ***PLDT***<br>Philippine Long Distance Telephone Company<br>www.pldt.com.ph | • The nation's largest and incumbent telephone operator incorporated in 1928<br>• Foreign owners include Hong Kong's *First Pacific* (25%) and Japan's *NTT* (15%)<br>• Owner of *Smart* and majority owner of *PILTEL*<br>• Franchise until 2028 |
| ***Smart***<br>www.smart.com.ph | • Established in 1991 to provide mobile telephone service<br>• Has a 25-year franchise issued in 1992<br>• Purchased by PLDT in March 2000 |
| ***PILTEL***<br>Pilipino Telephone Corporation | • Established in 1968 to operate local telephone service in General Santos City<br>• Has a 25-year franchise, renewed in 1992<br>• Launched mobile services in 1991; now operates both AMPS and CDMA networks and leases GSM capacity from Smart<br>• PLDT bought 32% in 1975 then increased its holdings to 50% in July 1998 |
| ***Bayantel***<br>(Bayan Telecommunications Incorporated)<br>www.bayantel.com.ph | • Established in October 1993<br>• Has majority ownership in several local exchange carriers, in international gateway provider International Communications Corporation (ICC) and in mobile operator *Extelcom* |
| ***Extelcom***<br>Express Telecom | • Established in 1988 and launched the country's first mobile cellular service in May 1989<br>• Owner include *Bayantel*, Luxembourg-based international cellular operator *Millicom*, and the Philippine group *Mayon Holdings* |
| ***Digitel***<br>Digital Telecommunications Phils., Inc.<br>www.digitelone.com | • awarded a 30-year contract in February 1993 to manage and operate DOTC's telecommunications facilities in Luzon<br>• in 1992, it gained an IGF license and in February 1994 It was converted into a franchise under the SAS to provide nationwide fixed and international telephone service<br>• in August 200, it was granted Provisional Authority to provide mobile cellular services<br>• constructed a GSM 1800 network in 2002 ??? |
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|---|---|
| ***ETPI***<br>Eastern Telecommunications Philippines, Inc.<br>www.etpi.com | • provides international telephone services<br>• has ownership in a number of submarine fiber optic cable systems<br>• established in 1878, it became part of the UK's Imperial and International Communications that later became Cable and Wireless. In October 2000, the 40% shareholding of Cable and Wireless was sold to Australian Gigahertz Network |
| ***Globe Telecom***<br>www.globe.com.ph | **Against VoIP**<br><br>• emerged from Globe-Mackay Cable and Radio (GMCR), a company set up in 1930 to provide maritime and telegraph services.<br>• received franchises to provide fixed, mobile and international telephone services in the early 1990s<br>• in June 2001, it acquired mobile operator *Islacom.* As a result, Islacom's strategic investor – Germany's Deutsche Telekom – ended up owning part of Globe (4.65%)<br>• foreign shareholder includes Singapore Telecom (11.79%)<br>• the Ayala family owns 11%<br>• launched a GSM network in 1994 and also operates main telephone lines<br>• first company to get a provisional license from the NTC in 1998 for a Global Mobile Personal Communications by Satellite (GMPCS) license. Unfortunately, its satellite service supplier, the Iridium constellation of 66 satellites went bankrupt in 1999. |
| ***BellTel***<br>*Bell Telecommunication Philippines, Inc. www.belltel.ph* | **VoIP is a telecommunications service and only telcos must be allowed to offer it to the public**<br><br>• a full-service telecommunications company that began its commercial operations in January 2002<br>• authorized to provide the full range of services throughout the Philippines, giving it access to all the central business districts (CBD) where 70% of the country's commerce is transacted and special economic zones (SEZs). Only the Philippine Long Distance Telephone Company (PLDT) has a comparable license. |
| ***Philcom, PT&T*** *and* ***Capwire*** | • linked through holding company *Republic Telecommunications (Retelcom)*<br>• provide international telecommunication services in addition to local exchange services |
| ***PAPTELCO***<br>Philippine Association of Private Telephone Companies | • there are 77 operators providing fixed telephone line service at the end of 2000, mostly provincial operators (PAPTELCO members) |

| **INTERNET SERVICE PROVIDERS (ISPs)** | **For VoIP** (VoIP is a VAS)<br>• treat VoIP as data and argue that it is an internet or value-added service |
|---|---|
| ***SMART-NTT Multimedia, Inc. (SNMI)*** | • a JV between SMART Communications, Inc. and Nippon Telephone and Telegraph Co. (NTT) of Japan<br>• upgrading to a high-bandwidth T3 satellite link |
| Philippines Internet Exhange (PHIX)<br>www.phix.net.ph | First interconnection or network access point established in the country by PLDT in July 1997. It allows local Internet Service Providers, with a primary connection to the global Internet, to access and exchange local Internet transactions without accessing the Global Internet.<br><br>The ISPs currently connected to the PhIX are: Infocom (PLDT's ISP subsidiary), IPhil, Moscom, Pacific Internet, G-Net, Tridel, Virtualink, Evoserve and WorldTel. |
| ***Iphil Communications Network, Inc.*** | • upgrading its connection to the Internet backbone in the U.S. to a DS3 or T3 service, a high-capacity fiber optic service that provides low-cost data connectivity for voice, data or video applications. This link will enable IPhil to transmit data at 45 Mbps, the accepted minimum bandwidth to operate a backbone ISP in the U.S. |
| ***Moscom*** (Mosaic Communications) | • first commercial ISP in the country<br>• launched service in August 1994<br>• has linked up with Mabuhay Agila II satellite to connect all its Points of Presence (PoPs) to achieve a 45 Mbps data transfer rate |
| ***Pacific Internet*** | • has T3 link to the U.S., enabling it to provide a bandwidth of 45 Mbps<br><br>• Pacific Internet and Mosaic provide ISDN service to corporate clients in partnership with PLDT and Globe Telecom |
| | |
| **Common Routing Exchange (CORE)**<br>www.ph.net/CORE.html | Managed by Philippine Network Foundation (PHNET), a consortium of private and public institutions that achieved the country's first public permanent connection to the internet on March 29, 1994 via a 64 kbit/s link to Sprint in the US |
| | |
| **Manila Internet Exchange (MIX)**<br>www.etpi.com/manilaix.htm | Operated by Eastern Telecoms (ETPI). Interconnects with CORE exchange. |

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| ***Bitstop*** | |
| ***Destiny*** | |
| ***Digitel*** | |
| ***Edsamail*** | |
| ***ETPI*** | |
| ***Evoserve*** | |
| ***Interdotnet*** | |
| ***Meridian*** | |
| ***Moscom*** | |
| ***Pacific Internet*** | |
| ***Philweb*** | |
| ***Sky Internet*** | |
| ***Tridel*** | |

| **CABLE OPERATORS** | |
|---|---|
| ***Destiny Cable, Inc.*** | - also owns mydestiny, a broadband service company that envisions to build a seamless nationwide broadband network using both wired and wireless digital technology<br>- |
| ***Central CATV, Inv. (Sky Cable)*** | - Majority-owned by Lopez, Inc. a subsidiary of Benpres Holdings Corp.<br>- Sky Cable, Sun Cable and Home Cable control at least 71% of Mega Manila, which includes Metro Manila, Rizal, Laguna, Cavite, and Bulacan. It also controls other key areas such as Cebu City, Tarlac, Baguio, Davao, Naga, Duamguete, General Santos, Iloilo, and Ilocos Region. |
| ***Pilipino Cable Corp. (Sun Cable)*** | - Benpres Holdings Corp. has majority control |
| ***Philippine Home Cable Holdings, Inc. (HomeCable)*** | - controlled by PLDT through Mediaquest Holdings, Inc. |

| **INDUSTRY ASSOCIATIONS and OTHER PLAYERS** (based on position papers submitted to the NTC) | |
|---|---|
| ***Philippine Chamber of Telecommunication Operators, Inc.*** | **VoIP is clearly a voice service that is passed over a transmission medium using Internet Protocol (IP)**<br>• argues that regardless of whether the technological process involves processes not normally and traditionally utilized by PTEs, the end result is voice service which is clearly a basic telecommunication service under RA 7925<br>• members include Philippine Long Distance Co. (PLDT), Globe Telecom, Smart Communications Inc., Bayan Telecommunications Inc., and Digital Telecommunications Phils. Inc. |
| ***Philippine Cable Television Association (PCTA)*** | **There should be no classification for VoIP**<br>• believes that VoIP should be defined as a unique and distinct service, different from telecommunications or VAS so as not to cause confusion or stifle growth in the technology<br><br>**For competition** (VoIP as a unique service) |

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|---|---|
| | • supports competition and believes that everyone should be allowed to use VoIP |
| ***Philippine Internet Service Providers Organization (PISO)*** | **For VoIP** as a VAS<br>• VoIP under the Philippine law is a value-added service<br>• VoIP is a product of technology. Classifying it as a voice service would be a disservice to the Filipino people |
| ***PETEF*** | **No definite stand on whether VoIP is a telecommunications service or VAS**<br><br>**Advocates a 3-year Transition Provision** while observing the various stages of technical and regulatory development and at the same time preparing the incumbent PTE's to realign their rates and access charges in order to have a sustainable viable operation.<br><br>**Against regulation**<br>• Regulation should be technology neutral and should focus on the service being provided to the public except those services using radio spectrum where it is further covered by radio regulation. |
| ***PAPTELCO*** | **VoIP is a telecommunications service** and is subject to future universal service assessments and the current access charges |
| ***Philippine Internet Commerce Society (PICS)*** | PICS, an association of electronic commerce practitioners, called for the immediate reduction in the cost of telecommunications through the **adoption of VOIP technology**. They argue that, "the interests of the general public must be the fundamental consideration and that all businesses must serve first and foremost the interest of the Filipino consumer." |
| ***AT&T*** | **VoIP is a value added service** and subject to minimum regulations to satisfy consumer protection needs<br><br>• AT&T is a leading voice and data communications service provider, serving businesses, governments and consumers.<br>• Its services are available through its local service provider, *PLDT Business Solutions* |
| ***Global Reach*** | VoIP is an application of the evolving internet technologies therefore **VoIP must be classified as a VAS**<br><br>VAS providers must establish an interconnection agreement with the PTEs to link its VoIP network to the local PSTN subject to an appropriate and fair compensation to the PSTN |
| ***Philippine Exporters Confederation, Inc.*** | pushing for VoIP to remain unregulated, as a way to help businesses cut costs since it is cheaper than using |

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|---|---|
| ***(Philexport)*** | regular telephone services, particularly for calling overseas clients |
| ***Information Technology Association of the Philippines (ITAP)*** | Website cannot be found |
| ***American and European Chambers of Commerce*** | Leaning towards VoIP |
| ***Philippine Software Industry Alliance (PSIA)*** | |

| **GOVERNMENT AGENIES** | |
|---|---|
| **Leaning towards VoIP as unregulated** | |
| ***National Telecommunications Commission (NTC)*** | Tasked to issue a ruling on whether VoIP is a telecommunications service or a VAS.<br><br>Commissioner Ronaldo Solis announced that his office will be issuing rules and guidelines this year. |
| ***National Economic Development Authority (NEDA)*** | Director General Romulo Neri staunchly supports the full deregulation of VoIP "to further spur growth, investment and jobs"<br><br>NEDA estimates that current international calls could be reduced by 75 percent, from 40 cents to about 10 US cents per minute |
| ***Department of Science and Technology (DOST) Advanced Science and technology Institute (ASTI)*** | Plans to test and deploy VoIP through the Preginet in communities where commercial carriers are unable to bring services |
| ***Department of Transportation and Communication (DOTC)*** | |
| ***Commission for Information and Communications Technology (CICT)*** | |
| ***Telecommunications Office (TELOF)*** | |
| ***National Computer Center (NCC)*** | Supports the position of the NCC |

**Position and Official Statements on VoIP**

**GlobalReach ebusiness Networks** - VoIP is an application of the evolving internet technologies therefore **VoIP must be classified as a VAS**

Globalreach eBusiness Networks Inc., is a new business group that belongs to a conglomerate of highly successful IT and business services provider organizations under Globalink Holdings Corporation. Globalink Holdings Corporation is a holding company of profitable U.S. dollar-

earning IT companies whose mission is to be able to export Filipino expertise virtually, without having to separate Filipino workers from their families, and in the process, gain foreign currency revenue for the country.

Globalreach's business initiatives include reselling international bandwidth on a wholesale basis, Internet Access Services, VPN, Messaging, ASP, Web hosting, Web development services, and Internet networking technology consulting. In partnership with local exchange carriers, Globalreach's product offerings include end-to-end service provisioning up to the "last mile" facility employing wire line or wireless technologies.

**Philippine Exporters Confederation, Inc. (Philexport)** - pushing for voice over internet protocol (VoIP) to remain unregulated, as a way to help businesses cut costs, particularly in a struggling economy.

In a letter signed by its trustee for Information Technology (IT) Products and Services, Emma Teodoro, Philexport said that VoIP cuts the cost of conducting day-to-day business since it is cheaper than using regular telephone services, particularly for calling overseas clients.

The exporters questioned NTC's classification of VoIP as a basic telephone service (BTS) and has inadvertently taken the position of internet service providers (ISPs) that VoIP is a value-added communication service (VAS), hence, should be open to all other communication service providers besides telcos.

Emma Teodoro is the president of the Philippine Software Association, Inc.

**Eastern Telecom** - offered a compromise: that other service operators aside from telcos should be allowed to offer VoIP to the public for compensation, provided that they will only be agents or resellers of duly authorized telcos.

**Globe Telecom, Inc.** - in an earlier interview, Atty. Rodolfo Salalima, corporate and regulatory affairs head of Globe Telecom, said that the NTC circular implies that VoIP basically falls under "voice" communication, hence, the circular is only a reiteration of the present law.

Atty. Salalima argued that if the NTC would allow value-added service providers like ISPs to have a share in the VoIP franchise, "then you will have a case of enfranchised carriers competing with non-enfranchised carriers, leading to unfair competition."

He explained that enfranchised carriers have more requirements in law, like higher taxes, and other regulatory requirements compared to non-enfranchised carriers.

**PhilCom** - asking the NTC to define and clarify some gray areas in the draft IRR, like the extent of coverage, the amount of compensation, the definition of private network and public, and the process of registration.

**Liberty Broadcasting Network Inc.** - virtually agreed with the draft IRR, advising only sequencing changes in the provisions.

Both PhilCom and Liberty Broadcasting are telecommunications carriers.

**Philippine Chamber of Telecommunication Operators Inc. (PCTO)** – Philippine Long Distance Co. (PLDT), Globe Telecom, Smart Communications Inc., Bayan Telecommunications Inc., Digital Telecommunications Phils. Inc.

PCTO appealed to the National Telecommunications Commission (NTC) to implement existing regulations on voice over Internet protocol (VOIP) to ensure a balanced position between public telecommunication entities (PTEs) and VOIP providers.

In a five-page position paper, PCTO president Rodolfo Salalima, concurrent Globe senior vice president, asked the commission to issue a ruling to clarify the concerns of the carriers.

PCTO members **want VOIP regulated**. VOIP cannot be classified as a VAS simply because VOIP is marketed as a telephone service, a service which is already being offered by existing carriers who have complied with the law to put up at least four million fixed lines before they were allowed to operate.

**NTC Region VI** - VoIP is very similar to other Internet services and therefore must not be put under the control of telcos.

Deregulation of VoIP will not post unfair competition to telcos that made substantial investments on landlines. If ever VoIP is deregulated, Internet service providers will continue using the networks and facilities of telcos. The latter's dipping earnings from their fixed line businesses would then grow because of the increased VoIP traffic.

**NTC Region VII** - By its very nature, it should be classified as a VAS because it "piggy-backs". One cannot say on one hand that the Internet is a VAS and then turn around and say that the applications that come with the IP technology is not a VAS.

**NEDA – Supports deregulation of VoIP** as it can promote economic development, employment and investments in the Philippines. Sec. Romulo Neri stressed that deregulating VoIP is a key component of developing the country's digital infrastructure, part of the current administration's 10-point agenda.

**Other Industry Players**

| **BROADBAND PROVIDERS** | |
|---|---|
| Telcos | |
| ***PLDT*** | • Launched ADSL (Asymmetric Digital Subscriber Line) in November 2000<br>• In 2000, the PLDT group formed *Mediaquest Holdings*, Inc. to handle the acquisitions of companies that would help in the convergence and Internet initiatives. It has so far acquired *Nation Broadcasting Corp. (NBC)*, *Infocom Technologies, Inc*. (an ISP), *Home Cable, Inc.,* and *EYP.ph* (an electronic yellow pages provider). |
| ***Globe Telecom*** | • Globe, Digitel and Eastern provide DSL in certain parts of Metro Manila |
| ***Digitel*** | |
| ***Eastern Telecom*** | • Eastern Telecom offers an apparent compromise: that other service operators aside from telcos should be allowed to offer VoIP to the public for compensation, provided that they will only be agents or resellers of duly authorized telcos. |

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|---|---|
| **CABLE OPERATORS** | • Internet access via cable modem launched in 1999 |
| ***Sky Cable*** | |
| ***Destiny Cable*** | • MosCom has an agreement with Destiny Cable to provide cable Internet to their respective subscribers |
| | |
| Fixed wireless broadband access | • such as Microwave Multipoint Distribution System (MMDS) or Local Multipoint Distribution System (LMDS) |
| ***Broadband Philippines*** www.broadbandphilippines.com | • Provides LMDS (high-speed internet access) in partnership with Callahan Broadband Wireless of the U.S. The company was formerly known as Multimedia Telephony, Inc., which managed the Index 152 paging service<br><br>• Serves corporate clients mainly in multi-tenanted units (MTU) in the main business districts like in Makati or Manila |

| **BROADBAND FACILITIES OF TELCOS** | **Description** |
|---|---|
| **PLDT** | • Its domestic microwave network covers the area from Northern Luzon down to Southern Mindanao with bandwidth capacity of 280 Mbps (2X140 Mbps). It covers most of the towns and cities with telephone service. |
| | • has Domestic Fiber Optic Network (DFON) covering the entire Philippine archipelago, DFON uses repeaterless fiber optic systems configured in six (6) self-healing rings and two (2) extension links. The network consists of 2600 km. of mini-sub fiber optic submarine cable and 2700 km. of terrestrial fiber optic cable using synchronous digital hierarchy multiplexing technology with a capacity of 2.5 gigabits per second or equivalent to 30,240 voice circuits. |
| **PILTEL** | • a sister company of PLDT; also operates a terrestrial fiber optic system with capacity ranging from STM 1 to STM 16 in assigned service area in Mindanao interconnecting their local exchanges and cell sites to the nationwide backbone of PLDT |
| **TELECPHIL Nationwide Digital Transmission Network (NDTN)** | • a consortium of public telecommunications entities lead by Bayantel together with Globe, Digitel, Extelcom, Smart and Piltel. NDTN covers Northern Luzon down to Mindanao<br>• The network has 14 points of Interconnection, namely, San Fernando, La Union, Santiago, Isabela, Malolos, Quezon City, Makati, Batangas, Lucena, Naga, Tigbuan, Iloilo, Cebu, Cagayan de Oro, Iligan, and Davao |
| **GLOBE** | • domestic microwave network has a capacity of 155 |

| | |
|---|---|
| | Mbps from Baguio City in the North and Davao City in the South operating on synchronous digital hierarchy and with spur link of 34 Mbps on plesiochronous digital hierarchy . |
| **BAYANTEL** | • domestic microwave network operates on 155 Mbps from Northern Luzon down to Southern Mindanao. It passes through Central Luzon down to Bicol region and downward to Western Visayas with spur link to Central Visayas and finally to the Western Mindanao Region. |
| **PT&T** | • microwave network operates from Northern Luzon down to Southern Mindanao; from Northern Luzon down to Central Visayas and Central Mindanao. |
| **DIGITEL** | • has a microwave radio network covering the Luzon region from the northern part down to Bicol region interconnecting all their telephone exchanges, which has installed capacity of 611,000 lines. |
| **PHILCOM** | Asked the NTC to define and clarify gray areas like the extent of coverage, the amount of compensation, the definition of private network and public, and the process of registration<br><br>• has a regional microwave radio network in their assigned service area in Eastern Mindanao region covering the provinces of Agusan, Surigao, Bukidnon, Misamis Oriental, and Davao. It has a microwave radio station to Angeles, Pampanga, Sta Rosa, Laguna, Dasmariñas and Carmona, Cavite |
| **SMART** | • has a nationwide microwave radio network linking most of their cell sites and telephone exchanges. From Northern Luzon, it passes through Central and Southern Luzon with continuing link to Bicol region, Eastern Visayas and Central Visayas. Another link goes through the Western Visayas before going to Central Visayas. It goes down to Central and Western Mindanao. |
| **PILTEL** | • has a nationwide microwave radio connecting through cell sites from Northern Luzon down to Mindanao passing through Central Luzon, Southern Luzon, Bicol, Visayas |
| **ETPI** | • has a microwave radio servicing some of Export Processing Zones and uses also NDTN of Telecphil for their nationwide coverage |

| |
|---|
| **FIBER OPTIC NETWORK** (nationwide terrestrial backbone) |

| | |
|---|---|
| ***PLDT*** | • has a nationwide fiber optic network as well as a digital microwave network for backup<br>• largest national long distance operator, carrying 3.3 billion minutes in 2000 |
| ***Telecphil***<br>Telecommunication Communication Infrastructure of the Philippines | • a consortium of seven telecom operators, completed a nationwide fiber optic network in 1999 |
| ***Satellite networks*** | • with nationwide coverage utilizing Very Small Aperture Terminals (VSAT) antennae for the ground segment |

| **SATELLITE SERVICE PROVIDERS** | |
|---|---|
| ***Philcomsat***<br>*Philippine Communications Satellite Corp.*<br>***Domsat***<br>Domestic Satellite Corp. | • have been providing service to the traditional market radio and TV broadcasting for many decades<br>• classified as "carrier's carrier |
| ***MPSC***<br>*Mabuhay Philippines Satellite Corp.*<br>***ACeSPhil***<br>*ACeS Philippine Cellular Satellite Corp.* | • both classified as "space segment" providers<br>• both operate and maintain orbiting satellites and then lease or sell communications capacity to telcos, radio and TV broadcast stations, mobile phone service providers and Internet service providers (ISPs).<br>• In 2000, PLDT explored a partnership with the US-based EchoStar Communications Corp. through its subsidiary, *MPSC*. Aside from providing content, EchoStar will enable MPSC to generate additional revenues from pay-TV services<br>• A*cesPhil,* a PLST subsidiary, is a new entrant in the GMPCS market |
| ***PASI***<br>Philippine Agila Satellite, Inc. | • organized in 1994<br>• to date, PASI has not operated commercially. |
| ***Capwire***<br>Capitol Wireless, Inc. | • a carrier's carrier, which provides service to telcos through the use of VSATs. |
| ***Destiny Satellite, Inc.*** | • a VSAT provider for cable TV and Internet access |
| | |
| ***Palapa, Measat, AsiaStar, LM1 and PAS*** | • foreign operators that provide satellite services to Philippine radio and TV broadcasting stations<br>• the first two are satellite systems owned by Indonesia and Malaysia, respectively |

## Annex 2 VoIP Providers in the Philippines[1]

**Netopia Internet Cafe** offers the Netphone service, which allows users to call abroad from a branch for as low as 10 US cents/minute. It is owned by the PLDT.

**Bayantel** offers VoIP for its call center business.

**Globe Broadband** offers PC to PC calling using IP software

**Eastern Telecommunications** offers VoIP Solutions to businesses, government agencies, and consumers in the Philippines using IPN Communication IP telephony system. Through *i-call Max*, subscribers can avail of a more economical alternative to the traditional IDD-capable landline by making and receiving IDD calls via the Internet for as low as $0.08* per minute**.**
*I-Call Max* allows for calls to be made and received using an IP phone. The service can be used with DSL or dial-up connections.

- Offers $.08c/min to frequently called destinations such as the U.S., Canada, Singapore, Hong Kong and Europe
- Available in post paid kits (includes an IP phone and $5 initial load)
- Post paid accounts are available in $10, $20, $50 and $100 plans, which are consumable at $0.08 per minute for IDD calls and $0.02 per minute for alls within the I-Call Max network.

**Easycall**, a pager company, claims to provide high quality web-to-phone communication service through *Web-Talk* prepaid cards. The user simply needs to purchase the card and log on to the Internet (http://www.web-talk.us) to download and install the Web-Talk VMPhone application.

**BT&T Telecom Group Corporation** is a Delaware, USA company gearing up to be a key player in the telecommunications market in the Americas and Asia-Pacific countries by offering IP telephone technology.

- Offer calls for the following rates:
  - $90 per port (no monthly bills; pay per use)
  - Post-paid for $ 0.08c/min to popular destinations such as US, Japan, Europe
  - Pre-paid for $ 0.04c/min
- BT&T gateways (Cisco, Clarent and Quintum) are co-located in most of the major telecommunications companies in the Philippines.
- It claims to directly terminates throughout the Philippines both landlines and mobiles.

**Freedom Unlimited Plus Philippines** is a plan offered by *ProvideTechnology, LLC* that allows customers to make calls to or from the Philippines and other international locations. It is available for downloading at http://broadbandphoneservices.com/packet8.htm along with many other options. The plan is available for only $37.95 a month, which includes 150 minutes of calling to the Philippines along with unlimited calling to the U.S. and Canada.

Subscribers to this plan are given a local U.S. number from thousands of available localities. Anyone in the Philippines with a high-speed Internet connection can get the basic “Freedom Unlimited Plan” and call the US and Canada from the Philippines for only

[1] based on internet research and actual call inquiries.

$19.95 for unlimited calling. Because they have a U.S. inbound number, callers from the U.S. can dial a U.S. number to reach clients in the Philippines with no international long distance charges.

**Bonusfon** is a US-based Filipino broadband VoIP service provider that offers *"BuzzfonP2P"* alongside with Skype, who has listed 11 million downloads and 170,000 concurrent users. Users can download it for free at http://www.buzzfon.com.

Bonusfon claims that one of its biggest markets will be the Philippines, with special focus on the millions of overseas Filipino workers and their relatives. It has a marketing and customer call service department in Davao City.

**Voyzme** offers *VOIPDRIVE*, which allows users to make a VoIP call by plugging a gadget into the USB port of any computer. The product includes:

- USB Flash Disk (Pen Drive) Auto Phone
- AutoRun Dialer and Earphone kit
- 16 or 256MB user memory (32, 64,128 or 512MB by special order)
- each VOIPDRIVE includes: an auto dialer, an account and PIN, and earphones with microphone
- VoIP pre-paid phone cards are sold separately
- Voyzme IP Phones are also available for US$199 (including free US$ 50 Voyzme load).
- Call rates are as low as $0.03c/min to Singapore, $0.04c/min to the U.S., and $0.05c/min to Hong Kong.

**iFeedom Communications Distributor** offers unlimited calls anywhere in the world. Its packages include:

- $9.95 Global Connect Direct**.** Unlimited calling from iPhone to iPhone anywhere in the world.
- $14.95 Global Connect US Basic. Unlimited iPhone to iPhone calling, and includes 700 minutes to U.S. (not including Hawaii & Alaska) All calls over 700 minutes are billed at 2.5 cents per minute.
- $27.95 Global Connect US Plus. Unlimited calling from iPhone to anyone in the U.S.A, Canada, & the U.K.
- $59.95 Global Connect Zone 1. Unlimited calling from iPhone to anyone in the U.S.A., Canada, U.K., France, Italy, Germany, Switzerland, Netherlands, Singapore, Malaysia, Hong Kong, Taiwan, Mexico City and Guadalajara, Mexico.

**PinoyCalls** is a unique and affordable calling service which offers unlimited calling to and from the Philippines. PinoyCalls utilizes Voice Over Broadband technology to deliver toll quality conversations 24/7 at one low monthly rate.

PinoyCalls require broadband connection (cable or DSL) and any type of house phone. They provide the user with all the necessary equipment needed to communicate - a PinoyCalls Internet Phone Adaptor and a PinoyCalls mobile phone in the Philippines. **The person that you are calling in the Philippines does NOT need an internet connection.** PinoyCalls will provide your friend or family member with a designated mobile phone! This means unlimited calling to and from the Philippines from the designated phone we give to your recipient!

Family and friends of the user in the Philippines can call too. They just dial the user's local number from their PinoyCalls mobile phone. The user's phone can be contacted wherever it is connected to the internet worldwide.

PinoyCalls customers are located in the following areas: Arizona, California, Wisconsin, Tennessee, Mississippi, Florida, New York, Maryland, Texas, Pennsylvania, New Jersey, Oregon, Illinois, New Hampshire, Virginia, Maine, Massachusets, North Carolina, Missouri, Hawaii, Canada, and Japan.

**Bitstop, Inc.** is a commercial ISP Provider of Northern Luzon based in Dagupan City. Some of its services include: hosting of a number of government portals, pursuing research in IPv6, H.323, SIP, VoIP and Multimedia applications such as streaming. It has H.323 gateway, multicast enabled, and implementing VoIP and call conferencing sources. It provides connection to provinces like Laoag, Abra, La Union, Iba, Zambales, Cabanatuan, Pampanga, Bulacan, Bataan and CAR.

**Goodlife Technology, Inc.** is an international VoIP wholesale provider whose services include:

- E1 Bulk Wholeseller
- H.323 VoIP Gateway
- H.323 Wireless/ GSM VoIP Solutions
- Partnering for Origination and Termination

**iNTOUCH** is an international VoIP Wholesale Provider and Internet telephony service provider based in Cebu that offers the following services, among other things:

- Call Relay VoIP Solutions
- Call Routing VoIP Solutions
- PC to Phone
- Phone To PC
- Phone To Phone
- SIP Softswitch & CPE
- SIP VoIP Gateway
- Voice and Video Conferencing
- Web Call
- Web To Phone

Their main attractions include **iNTOUCH Gateway Phone, a** VoIP phone used just like a regular telephone and the **iNTOUCH VoIP Gateway**, a gadget plugged in regular or cordless phones to turn them into cost-saving internet phones.

**Logic Unity** also offers similar services and conducts VoIP termination ISP and consulting.

The Department of Science and Technology (DOST) through the **Advanced Science and technology Institute (ASTI)**, plans to test and deploy VoIP through the Preginet in communities where commercial carriers are unable to bring services

The **University of the Philippines** system is testing VoIP for use in all its campuses nationwide. Its Diliman campus is now using VoIP.

**Tricom Systems Phils.** has been in the country's communication business for more than 10 years. They are the Philippine distributor of PABX systems from IWATSU; VoIP/PABX systems from FUJITSU, AVAYA and 3COM.

**Appendix 1**

## Congressional Initiative
## Linking the Global Filipino Family

### Executive Summary

Despite the advancements in communications technology, the goal of increasing universal access for Filipinos, particularly overseas contract workers and their families, remains an elusive goal for the Philippines.

To address this, a Congressional Initiative on Linking the Global Filipino was developed.

This program highlights the importance of OFWs to the Philippine economy and reviews of key barriers for OFWs and their families to communicate—access and affordability. The paper compares the costs of making international calls in the Philippines to other countries. It notes that despite progress, costs and access remain high.

The paper outlines an initial business model for a Congressional Initiative Community e-Center and outlines the role and responsibility of participants. It provides financial projections for the establishment of a sustainable Congressional Initiative CeC.

### Overseas Filipino Workers (OFWs) and the Philippine Economy

OFWs are now a permanent feature of Philippine economic and social life. The OFW phenomenon began in the 1970s when, encouraged by policy, millions of Filipinos temporarily or permanently migrated to other countries in search of opportunities and livelihood. When the Philippines first launched its overseas employment program in 1974, it was meant to be a stopgap measure to ease the country's high unemployment and foreign exchange problems. But after three decades, it has remained an ongoing concern. The presence of large government institutions, such as the Philippine Overseas Employment Administration (POEA) and the Overseas Workers Welfare Administration (OWWA), and the constant increase in the volume of overseas contract workers over the years is indicative of the relative permanence of this government program.[1]

OFWs provide a substantial contribution to the survival of the Philippine economy. ***In 2004, OFW remittances reached an estimated $8.5 billion***, the highest level recorded since 1970 according to the Bangko Sentral ng Pilipinas (BSP).

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[1] Hector Morada, "Left-Behind Households of Filipino Overseas Workers," A paper presented at the Asian Population Network Workshop on Migration and the 'Asian Family' in a Globalising World, River View Hotel, Singapore, 16 - 18 April, 2001.

The OFWs' contribution is so significant not only in providing for their family but also in rescuing the economy. BSP Governor Rafael Buenaventura considers their remittances as a cushion against spiraling oil prices. From 1995 to 1999, the country ranked the second highest receiver of remittances, second only to India. The remittances were also boosted by commercial banks that have been moving aggressively into the remittance business, thus weaning OFWs away from informal channels.

In the 1990s, the deployment of Filipinos workers averaged 800,000 per year. The Scalabrini Migration Center recorded that some 10% of the country's population or 7.41 million people lived and worked abroad as of December 2001. Government statistics shows that as of 2002, the overseas Filipino population has increased to 7.58 million, distributed in 197 countries. Roughly 2.9 million are overseas Filipino contract-based workers, 2.8 million are permanent residents or immigrants and 1.6 million are classified as irregular.[2]

***Philippines has become the third-largest migrant-sending country in the world next to Mexico and India*** according to an Asian Development Bank (ADB) report entitled *"Enhancing the Efficiency of Overseas Workers Remittances."* Around 2,700 Filipinos leave daily for foreign countries as immigrants, temporary contract-based workers or simply as tourists, hoping to find work in developed countries.[3] The Department of Labor and Employment (DOLE) estimated that in 2004 around 871,700 OFWs were deployed worldwide --- a huge number of migrant laborers for a relatively small country.

But despite the benefits, there are social and psychological costs to this OFW phenomenon. In the 1970s and 1980s, the departure of fathers mainly to the Middle East had already caused apprehension but was assuaged since the mothers usually were left to take care of the children. However, ever since women started to take up jobs abroad in the 1980s, the trend has been irreversible. Given their role as the primary caregiver in the family, the increasing participation of women in labor migration has raised greater alarm about the negative effect of labor migration to the well being of the Filipino family.[4]

## OFWs and Philippine Telecommunications

The Philippines has made good progress towards increasing access to telecommunications. The number of cellular phones in the country has increased from less than 1 million to around 30 million in 2004. See Table below.

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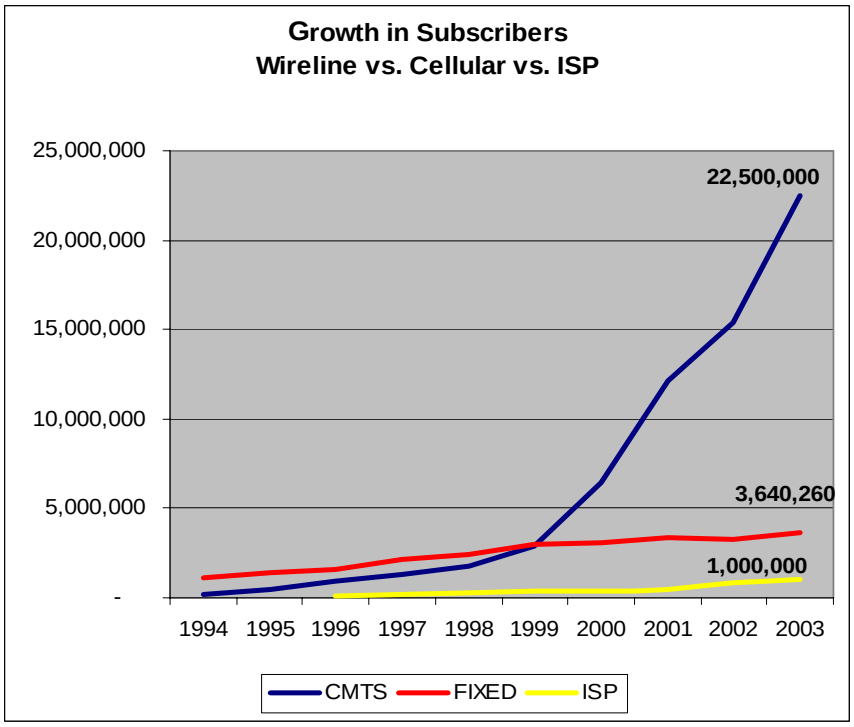
[2] Commission of Filipinos Overseas, 2002 cited in *"Enhancing the Efficiency of Overseas Workers Remittances,"* Asian Development Bank, July 2004.

[3] *"Enhancing the Efficiency of Overseas Workers Remittances,"* Asian Development Bank, July 2004.

[4] Hearts Apart: Migration in the Eyes of Children, Scalabrini Migration Center, 2003. http://www.smc.org.ph/




Source: ITU, NTC

***But liberalization has been only partially successful.*** There are specific areas for improvement:

- Affordability. Specifically, subscription rates and voice calls remain costly for majority.
- Access in unserved and underserved areas.

***Affordability***. This paper examines three sets of prices to benchmark the affordability of telecommunications services—the monthly subscription of a landline telephone, the price of calling the US from various Asian countries and the price offered by various service providers in the Philippines to make an international call.

In the 14th Survey of Investment-Related Cost Comparison in Major Cities and Regions in Asia released by the Japan External Trade Organization (JETRO) in 2004, Philippine charges by telecommunications companies are some of the highest telephone rates in Asia at $22.07 per month. Manila and Cebu placed second to the Japanese cities of Okinawa and Yokohama, which collectively charge US$23.81. Hong Kong came in third, with a basic telephone rate of US$16.60, then followed by Colombo, Sri Lanka that has a posting of US$13.

**Monthly Fixed Line Rates in Select Asian Countries (Ranked from highest to lowest)**

| **Asian Country** | **Monthly Fixed Line Rate** |
|---|---|
| Okinawa and Yokohama | US$23.81 |
| Manila and Cebu | $22.07 |
| Hong Kong | $16.60 |
| Colombo, Sri Lanka | $13 |
| Karachi, Pakistan | $4.01 |
| Dhaka, Bangladesh | $2.57 |
| Bangkok, Thailand | $2.51 |
| Hanoi and Ho Chi Minh, Vietnam | $1.73 |

Source: JETRO

**Price per minute of making calls from Asia to the US**

| **Country** | **Rate per minute to the United States** | |
|---|---|---|
| | Per Minute Rate in Local Currency | US$ |
| Brunei | B$0.17 | 0.10 |
| Thailand | 6 Baht | 0.12 |
| Malaysia | 0.90 RM | 0.23 |
| Singapore | S$0.39 | 0.23 |
| **Philippines** | **PhP 22** | **0.40** |
| China | 8 yuan | 0.96 |

As a result, the Philippines has one of the lowest subscribed teledensity. This also has enormous implications on the development of information and communications technology (ICT) in the country since its deployment relies on telephone lines.

**Benchmark Prices within the Philippines**. Telecommunications carriers are increasingly using Internet Protocol (IP) Technology for their networks to reap these benefits. A review of market prices for international calls reveals the wide range of prices for essentially the same service. It is clear then that the use of VoIP has reduced costs and prices for telecommunications carriers but those savings are not consistently passed on to consumers.

**Market Prices for IDD Calls from the Philippines**

| | |
|---|---|
| Dominant cellular companies | $.40c/min |
| Dominant landline company | $.40c/min |
| New entrant cellular company | $.30c/min |
| PLDT Budget Calling Card | $.18c/min |
| Netopia Internet café using VoIP | $.10c/min |
| Call center wholesale price using VoIP | $.04 to .08 c/min. |

**Access.** In 2002, close to half of the cities and municipalities are still without fixed line connections. Based on the latest statistics (2003), the NCR made up almost 26% of installed fixed lines and 15% of actual subscribed lines. Region IV, for example, has a population of over 12 million but subscribes to a measly 560,000 lines compared to the NCR with a population of 11 million and a subscription of 1.6 million. This mainly explains the low Internet usage in the provinces.

**Congressional Initiative: Linking the Global Filipino Family**

Several years ago, with leadership from the Commission on Information and Communications Technology (CICT), the concept of Community e-Centers was developed. These are shared access public service center offering ICT applications that are strategically located in areas easily reached by the people. A CeC is typically equipped with telecommunication facilities such as telephony, fax, email and Internet access. It has personnel who will oversee the day-to-day operation of the center.

The CeC project is envisioned to provide more access to and affordability of ICTs in support of government services.

> *"The digital divide within the country will be reduced by establishing more public access points such as CeCs for delivery of e-government*

*and other services to provide universal access to information and communications services in unserved areas, link communities, facilitate trade and commerce, and empower rural communities socially, economically and politically."*

*--- Medium-term Philippine Development Plan (MTPDP) 2004-2010*

**Congressional Support and Funding**

To implement this vision, the Philippine Congress allocated an initial amount in the 2005 National budget for the establishment of Community e-Centers in each Congressional District. Each district is allotted P1 million to establish and operate Community e-Centers.

There are a number of benefits to the members of the House to implement and pursue this program:

- They will provide a much needed service to their constituents.
- They will increase interaction with their constituents.
- They can provide a livelihood project (operate the Community e-Center) to members of their constituency.

The principal components for a successful program are in place.

- There is a major social need to help OFWs and their families communicate.
- There are new technologies which can help the government achieve those goals
- There is initial funding for each Congressional district to deploy these new solutions for the benefit of their constituents

The remaining challenge is to implement this vision.

**Participants in a Community e-Center**

There are three key participants, each with important roles to play for the success of this Congressional Initiative:

- Congressional district Representative
- Service Provider
- Reseller or Franchisee (CeC)

The Congressman's role is the principal proponent of their Community e-Center. Their role is

- submit the proposed program for approval to the Commission on ICT
- follow-up the request with the Department of Budget and Management
- negotiate with a service provider
- consider providing space for the Congressional Initiative CeC

The service provider's role is to principally provide technical and administrative service for the Congressional Initiative CeC.

The reseller is the actual operator of the Congressional Initiative CeC. They will:

- provide day-to-day management
- be responsible for sales and marketing
- negotiate and contract with the service provider

**Marketing Strategy**

The Community e-Center will be launched as a priority project of the government as a means to support the country's OFWs and their families. The Congressman of a particular district will establish the center with the help of his constituents through the barangay officials. The barangay office may serve as the site for the CeC as it is more accessible to a more number of people. The pre-paid cards can also be used to promote the development projects of the Congressman's office.

**Financial Projections**

(For detailed discussions please see attached sheets)

**Revenue**

The reseller or franchisee will earn profit from fees for international long distance (ILD) calls and broadband connection. The reseller's monthly revenue is at **PhP 69,120.00.**

- ILD - The Calling Center will have two (2) phones charging US$0.15 cents per minute call. The reseller receives 20 percent or US$0.03 cents out of the per-minute rate. Assuming that 48 callers use each phone everyday, with each call lasting approximately 5 minutes, the total revenue per month is PhP118,800. The reseller receives PhP23,760 in revenue.

- Broadband Internet - Two (2) computers with broadband connection will be made available in each Community e-Center. The total session per month is assumed to be 5,760 minutes based on a 16-hour day operation, at approximately 10 minutes per session for each computer. In a month, it is expected that only 70% of the assumed monthly session will be used up. At PhP3 per minute, each session will cost PhP30. In a month, Internet revenue will amount to PhP120,960, from which the reseller gets around 38 percent or PhP45,360.

**Operating Expenses**

The monthly operating expenses amount to **PhP 67,427.78**. This includes:

- Manpower - there will be four (4) staff for each Community e-Center receiving a monthly salary of PhP 7,200 each.
- Site rental - monthly rent of PhP 15,000 for a 40 sq. m. space at PhP375/sq. m.
- Utilities – monthly average of utility (electricity, water, etc.) costs at PhP 20,000

- Depreciation/Amortization – PhP3,627.78 in three years time for the cost fo equipment

**Capital Expenditure**
Total capital expenditure for each CeC is PhP130,600, which includes the cost for phones, computers, connection and maintenance. This includes:

- Phones –two (2) phones that cost PhP8,250 (US$150) each totals PhP16,500
- Computers – two (2) terminals at PhP20,000 with broadband connection at PhP17,050 ($310) for each unit
- Facilities – administrative and maintenance costs at PhP40,000

**Payback is achieved in 25 months or in over two (2) years.**

**-end-**

**Congressional Initiative: Linking the Global Filipinos**
**Calling Center Financials**

| | | |
|---|---|---|
| PAYBACK ANALYSIS | | |
| **IN PHP/MONTH** | | |
| FOREX | 55 | |
| | | |
| REVENUE | | |
| | | |
| **Intl Long Distance** | | |
| Calls/Day | 96 | 2 phones, with 48 5-min calls/day/phone |
| Minutes/Call | 5 | Average of 5 minutes per call |
| $/Min | 0.15 | US$ 0.15 cents per minute call |
| ILD Revenue (PhP) | 118,800.00 | US$ 0.15 cents x P55 (forex) x 5 minutes x 48 (average calls/phone/day) x 30 days |
| Reseller Share (PhP) | 23,760.00 | Reseller share of international revenue = 3 US cents out of 15 US cents |
| | | |
| **Broadband Internet** | | |
| Sessions/Month | 5,760 | Total minutes based on a 16 hours/day/computer operation, at 10 minutes/session x 2 computers for 30 days |
| Fill Rate | 70% | 70% of the assumed session used up per month |
| Minutes/Session | 10 | Average of 10 minutes per session |
| PhP/Session | 30.00 | P30 per session (10 minutes) or P3/minute |
| Internet Revenue (PhP) | 120,960.00 | Average session/month x 70% (fill rate) x P30 per session (10 minutes) |
| Reseller Share (PhP) | 45,360.00 | P300 share out of 800 (internet broadband connection per month) |
| | | |
| Total Revenue (PhP) | 69,120.00 | Reseller's share from both ILD and broadband internet segment |
| | --- | |
| | | |
| **OPEX (Operating Expenditure)** | | |
| Manpower | (28,800.00) | 4 staff at P7,200 monthly fee each |
| Site Rental | (15,000.00) | Monthly rent for a 40 sq.m. space at P375/sq.m. |
| Equipment Rental | - | |
| Utilities | (20,000.00) | Monthly average for utilities (i.e., electricity, water, etc.) |
| Depreciation/Amortization | (3,627.78) | Total capex/36 months |
| Total | (67,427.78) | Total operating expenditure |
| | --- | |
| | | |
| PRETAX OPERATING INCOME | 1,692 | Operating income without tax (per month) |
| | --- | |
| **CAPEX (Capital Expenditure)** | | |
| | | |
| Phones | 16,500 | Cost of 2 phone units in PhP at $150 per unit |
| Units | 2 | |
| Cost | 8,250 | |
| | | |
| Computers/Broadband Connect | 74,100 | Cost of 2 computers with internet connection capabilities (modem at $310 for each unit) |
| Units | 2 | |
| Cost | 37,050 | |
| | | |
| Facilities | 40,000 | Administrative and maintenance cost |
| Sqm | 40 | |
| Cost | 1,000 | |
| | | |
| TOTAL CAPEX | 130,600 | Total capex including cost for phones, computers, connection and maintenance |
| Payback | 25 | |
| | --- | |

COST ASSUMPTIONS

| | |
|---|---|
| Manpower | |
| Heads | 4 |
| Cost/Head | 7,200 |
| Total | 28,800 |
| | |
| Site Rental | |
| Sqm | 40 |
| Cost/Sqm | 375 |
| Total | 15,000 |
| | |
| Equipment Rental | |
| | |
| Phone Charges | |
| Units | |
| Cost/Phone | |
| Total | |
| | |
| Internet Charges | |
| Lines | |
| Cost/Line | |
| Total | |
| | |
| Utilities | 20,000 |
| | |
| Depreciation | 3,628 |
| Life | 36 |

**Congressional Initiative: Linking the Global Filipinos**
**Calling Center Financials**

**IN PHP/ANNUAL (Year 1)**

FOREX 55

| **REVENUE** | **Unit** | **Jan** | **Feb** | **March** | **April** | **May** | **June** | **July** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** | **TOTAL** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Intl Long Distance** | | | | | | | | | | | | | | |
| Calls/Day | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | |
| Minutes/Call | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| $/Min | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | |
| Days/month | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | |
| ILD Revenue (PhP) | | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | **1,425,600** |
| **Broadband Internet** | | | | | | | | | | | | | | |
| Sessions/Month | | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | |
| Fill Rate | | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | |
| Minutes/Session | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| PhP/Session | | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | |
| Internet Revenue (PhP) | | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | **1,451,520** |
| **TOTAL REVENUE** | | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **2,877,120** |
| **OPEX (Operating Expenditure)** | | | | | | | | | | | | | | |
| **Variable Costs** | | | | | | | | | | | | | | |
| ILD Service Provider | 0.12 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | 95,040 | **1,140,480** |
| Internet Service Provider | 500 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | **907,200** |
| **Fixed Costs** | | | | | | | | | | | | | | |
| Manpower | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | 28,800 | **345,600** |
| Site Rental | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | **180,000** |
| Utilities | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | **240,000** |
| **Capex** | | | | | | | | | | | | | | |
| Depreciation/Amortization | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | **3,628** |
| **TOTAL EXPENSES** | | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | 234,742 | **2,816,908** |
| **PRETAX OPERATING INCOME** | | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **5,018** | **60,212** |
| Margins | | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| **CAPEX (Capital Expenditure)** | | | | | | | | | | | | | | |
| Phones (2 units) | 16,500 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | **16,500** |
| Units | 2 | | | | | | | | | | | | | |
| Cost | 8,250 | | | | | | | | | | | | | |
| Computers/Bband Connect (2 units) | 74,100 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | **74,100** |
| Units | 2 | | | | | | | | | | | | | |
| Cost | 37,050 | | | | | | | | | | | | | |
| Facilities (fixtures) | 40,000 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | **40,000** |
| Sqm | 40 | | | | | | | | | | | | | |
| Cost | 1,000 | | | | | | | | | | | | | |
| **TOTAL CAPEX** | **130,600** | **10,883** | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | **130,600** |
| Payback | 28 | | | | | | | | | | | | | |

---

**COST ASSUMPTIONS**

| | |
|---|---|
| Manpower | |
| Heads | 4 |
| Cost/Head | 7,200 |
| Total | 28,800 |
| | |
| Site Rental | |
| Sqm | 40 |
| Cost/Sqm | 375 |
| Total | 15,000 |
| | |
| Eqpt Rental | |
| | |
| Phone Charges | |
| Units | |
| Cost/Phone | |
| Total | |
| | |
| Internet Charges | |
| Lines | |
| Cost/Line | |
| Total | |
| | |
| Utilities | 20,000 |
| | |
| Depn | 302 |
| Life | 36 |

**Congressional Initiative: Linking the Global Filipinos**
**Calling Center Financials**

**IN PHP/ANNUAL (Year 1)**

FOREX 55

| **REVENUE** | **Unit** | **Jan** | **Feb** | **March** | **April** | **May** | **June** | **July** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** | **TOTAL** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Intl Long Distance** | | | | | | | | | | | | | | |
| Calls/Day | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | |
| Minutes/Call | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| $/Min | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | |
| Days/month | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | |
| ILD Revenue (PhP) | | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | 118,800 | **1,425,600** |
| **Broadband Internet** | | | | | | | | | | | | | | |
| Sessions/Month | | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | 5,760 | |
| Fill Rate | | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | |
| Minutes/Session | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| PhP/Session | | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | |
| Internet Revenue (PhP) | | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | 120,960 | **1,451,520** |
| **TOTAL REVENUE** | | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **239,760** | **2,877,120** |
| **OPEX (Operating Expenditure)** | | | | | | | | | | | | | | |
| **Variable Costs** | | | | | | | | | | | | | | |
| ILD Service Provider | 0.1 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | 79,200 | **950,400** |
| Internet Service Provider | 500 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | 75,600 | **907,200** |
| **Fixed Costs** | | | | | | | | | | | | | | |
| Manpower | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | 21,000 | **252,000** |
| Site Rental | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | **120,000** |
| Utilities | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | **120,000** |
| **Capex** | | | | | | | | | | | | | | |
| Depreciation/Amortization | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | 302.31 | **3,628** |
| **TOTAL EXPENSES** | | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | 196,102 | **2,353,228** |
| **PRETAX OPERATING INCOME** | | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **43,658** | **523,892** |
| Margins | | 18% | 18% | 18% | 18% | 18% | 18% | 18% | 18% | 18% | 18% | 18% | 18% | 18% |
| **CAPEX (Capital Expenditure)** | | | | | | | | | | | | | | |
| Phones (2 units) | 16,500 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | 1,375 | **16,500** |
| Units | 2 | | | | | | | | | | | | | |
| Cost | 8,250 | | | | | | | | | | | | | |
| Computers/Bband Connect (2 units) | 74,100 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | 6,175 | **74,100** |
| Units | 2 | | | | | | | | | | | | | |
| Cost | 37,050 | | | | | | | | | | | | | |
| Facilities (fixtures) | 40,000 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | **40,000** |
| Sqm | 40 | | | | | | | | | | | | | |
| Cost | 1,000 | | | | | | | | | | | | | |
| **TOTAL CAPEX** | **130,600** | **10,883** | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | 10,883 | **130,600** |
| Payback | 3 | | | | | | | | | | | | | |

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**COST ASSUMPTIONS**

| | |
|---|---|
| Manpower | |
| Heads | 4 |
| Cost/Head | 7,200 |
| Total | 28,800 |
| | |
| Site Rental | |
| Sqm | 40 |
| Cost/Sqm | 375 |
| Total | 15,000 |
| | |
| Eqpt Rental | |
| | |
| Phone Charges | |
| Units | |
| Cost/Phone | |
| Total | |
| | |
| Internet Charges | |
| Lines | |
| Cost/Line | |
| Total | |
| | |
| Utilities | 20,000 |
| | |
| Depn | 302 |
| Life | 36 |

# **N O T I C E**

23 JULY 2004

**A DISCUSSION PAPER ON**
**VOICE OVER INTERNET PROTOCOL (VoIP)**

As part of the process of public consultation on legal, policy, technical and other issues relating to Voice over Internet Protocol mandated by DOTC Memorandum dated November 25, 2003, the National Telecommunications Commission (NTC) posts at its website A Discussion Paper on Voice over Internet Protocol (VoIP) for comments/inputs from industry players and other interested parties to any and all issues discussed in said paper.

Comments/inputs received will be taken into consideration by the Commission, together with other earlier comments/inputs from the public, and/or other internal papers/documents/studies at NTC's possession, in drafting, conducting public hearings on, and the issuance of Rules to Govern the Deployment and Use of VoIP by businesses and the general public.

Comments from industry stakeholders and other interested parties in relation to any and all issues raised in the Discussion Paper should be sent (in both hard copy and electronic formats) on or before **August 30, 2004** to: Director, CCAD, NTC copy furnished all Commissioners.

All Comments/inputs by the submitting party at the time of submission, will be made publicly available at the NTC and shall be posted on the NTC website (www.ntc.gov.ph).

**RONALD OLIVAR SOLIS**
Commissioner

# TABLE OF CONTENTS

# I. INTRODUCTION

## A. Rationale and Legal Basis

Consistent with the Constitutional recognition of the vital role of communications in nation-building,[1] the Public Telecommunications Policy Act of the Philippines (R.A. 7925) identified the development and maintenance of "a viable, efficient, reliable and universal telecommunication infrastructure **using the best available and affordable technologies**"[2] as its fundamental objective.

Congress also sought to provide universal access,[3] and explicitly prioritized "**improving and extending basic services to areas not yet served**," and promoting "a fair, efficient and responsive market… **with emphasis on the accessibility by persons to basic services in unserved and underserved areas at affordable rates**."[4]

It is within this Constitutional and policy framework that the Department of Transportation and Communications (DOTC) – noting the emergence of Voice Over Internet Protocol (VoIP) "as a viable, cost-effective technology that could serve as an alternative to the prevailing system of circuit switched phone services," as well as the "public clamor" for legal and regulatory clarity on VoIP – issued a Memorandum dated November 25, 2003 and ordered the National Telecommunications Commission (hereinafter "the Commission") to

1. Determine the regulatory implications of using VoIP as an available and affordable technology that may be used to improve and extend services to unserved and underserved areas, and help achieve universal access to information and communication services;

2. Conduct public hearings and consultations with concerned stakeholders including, but not limited to, public telecommunications entities, internet service providers, cable operators, ICT entrepreneurs and investors and other interested parties, for the purpose of obtaining wide feedback on procedures, rules and regulations for VoIP; and to

3. Promulgate the necessary implementing rules and regulations and guidelines – consistent with the foregoing, and particularly, the principles and objectives of fair and equitable competition, and increased consumer choice and welfare – that will govern the deployment and use of VoIP by businesses and the general public.

[1] 1987 Constitution, Art. II. Sec. 24.
[2] RA 7925, Sec. 4(a).
[3] **Universal Access** refers to the availability of reliable and affordable telecommunications service both urban and rural areas of the country. (NTC MEMORANDUM CIRCULAR No.: 8-9-95. Sec 001 [Definitions])
[4] RA 7925, Sec. 4(b)

This Discussion Paper on VoIP is, therefore, being discussed by the Commission, pursuant to the aforequoted DOTC Memorandum, as part of the process of public consultation on legal, policy, technical and other issues relating to VoIP.

In addition to helping to develop a full and complete record, Comments received will be taken into consideration by the Commission in drafting new rules and/or guidelines to govern the deployment and use of VoIP by businesses and the general public.

Draft rules and/or guidelines shall be the subject of public hearings to be scheduled by the Commission after receiving Comments, prior to the final issuance of VoIP rules for the Philippine market.

## B. NTC Objectives & Guiding Principles

The Paper recognizes the potential economic benefits that VoIP offers in the form of greater efficiencies, lower costs and higher reliability. It believes that the use and widespread accessibility of VoIP can (a) advance the State's goal of universal access, and (b) support the deployment of broadband networks and services which represents a big part of the future of communications in the Philippines.

In deciding on the best approach to VoIP, and consistent with the Constitution and prevailing law, the Paper seeks to strike a balance between the following goals:

- Bringing benefits to consumers through lower prices, and promoting universal access and service to information and communications technologies, including encouragement for the wide deployment of broadband networks;[5] and

- Fostering innovation, while ensuring free and fair competition in the telecommunications market that also allows players to earn a reasonable rate of return for investments.[6]

While these goals are not necessarily mutually exclusive, reconciling the interests of government, telecommunications players, new entrants and the general public will not be an easy regulatory task, particularly because:

(a) VoIP does not fit neatly within the model provided under Philippine law which has traditionally treated voice and data services differently; and

[5] See RA 7925 (Declaration of Principles): "a fair, efficient and responsive market to stimulate growth and development of the telecommunications facilities and services, with emphasis on the **accessibility by persons to basic services in unserved and underserved areas of affordable rates**."

[6] See RA 7925 (Declaration of Principles): "A healthy competitive environment shall be fostered, one in which telecommunications carriers are free to make business decisions and to interact with one another in providing telecommunications services, with the end in view of encouraging their **financial viability while maintaining affordable rates"**

(b) As the Internet becomes available over virtually all technologies and platforms, from traditional fixed copper lines to satellites to mobile phones and to cable, to name just the most obvious, market dynamics are changing faster than laws and rules.

In this context, therefore, the Paper is further guided by two principles:

- **Technological Neutrality**

  The Paper believes that future VoIP regulation, if at all, should neither impose nor discriminate in favor of the use of a particular type of VoIP technology, especially considering that various methods already exist, and indeed, that other methods could still be developed in the near future for accessing a VoIP network

- **Regulatory Forebearance**

  It recognizes that the Commission must be careful when deciding whether or not to regulate an emerging technology or service like VoIP. Given what is admittedly a slow pace of regulatory change, the Paper is mindful that telecommunications, or more appropriately, information technology markets can easily evolve as a result not of technological innovation and economic forces, but of regulation. This possibility is one which the Paper seeks to avoid as much as possible.

## II. A BRIEF INTRODUCTION TO VoIP

For purposes of, and as used in this document,[7] Voice over Internet Protocol (VoIP) is a generic term that refers to all types of voice communication using Internet protocol (IP) technology, instead of traditional circuit switched technology. This includes use of packet technologies by telecommunications companies to carry voice at the core of their networks in ways that are not controlled by or apparent to end users.

### A. How VoIP Works

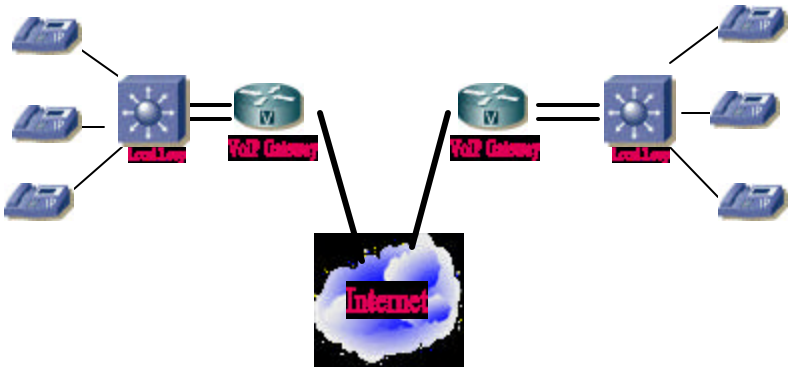
In a nutshell, VoIP enables users from different parts of the world to engage in voice conversations, even long distance ones, without having to pass through part or all of the telecommunications facilities. Using VoIP, a person could engage in international voice conversations without having to pass through – and pay for the use of - the international gateway facilities of telephone companies who charge much higher fees for the use of their networks.

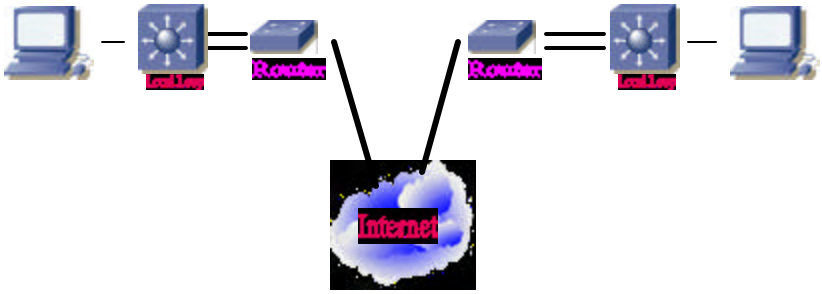
Internet telephony, on the other hand, is a specialized form of VoIP in which a regular voice telephone call is transmitted via the public Internet, thus bypassing all or part of the

[7] These definitions are consistent with those used by the European Commission in its communications. (Source: Waldron and Welch. "Voice-over-IP: The Future of Communications," Covington & Burling, Washington DC. April 29, 2002).

public switched telephone network (PSTN). Internet telephony can occur between computers, between a computer and a phone, and between phones.[8]

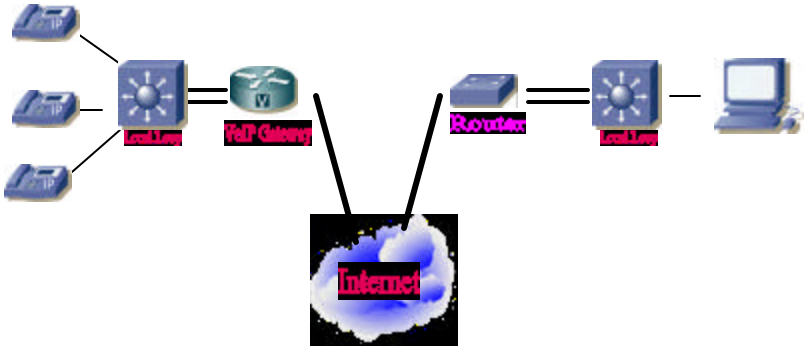
**Phone to Phone**




[8] This section presents only a simplified overview of what is still an evolving and complex technology and service. It is intended purely to provide background information, and is not a comprehensive treatise on the subject.

## Phone to PC / PC to Phone




Typically, a VoIP transmission is completed in the following manner:

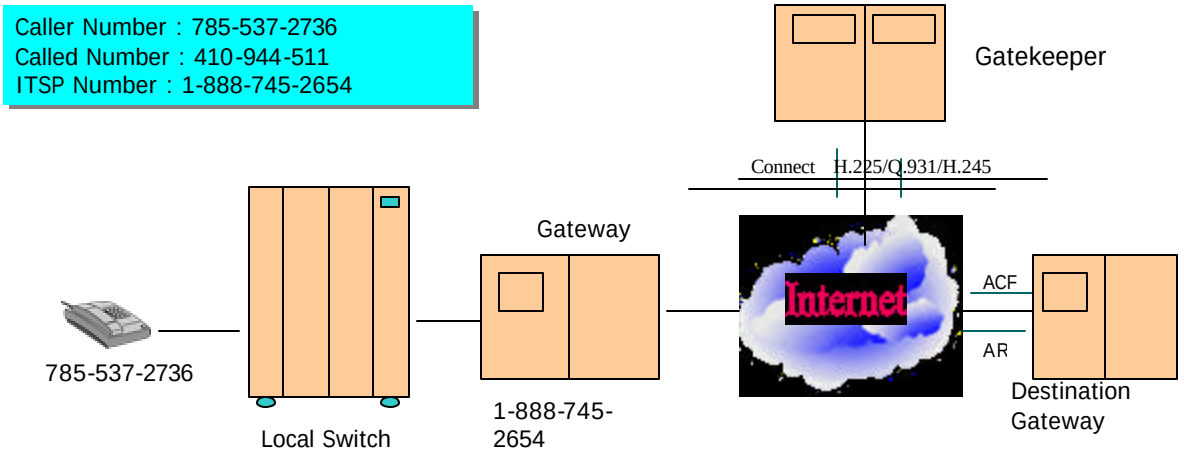
(a) Because all transmissions must be digital, the caller's voice is digitized. This can be done by the telephone company, by an ISP, or by a PC (or other personal machine such as a VoIP phone).

(b) Using complex algorithms, the digital voice is compressed and then separated into packets. Using IP, the packets are addressed and sent across the network to be reassembled in the proper order at the destination. Again, this reassembly can be done by a carrier, an ISP, or by one's PC.

(c) During the transmission on the Internet, packets may be lost or delayed, or errors may damage the packets. Conventional error correction techniques would request retransmission of unusable or lost packets, but if the transmission is a real-time voice communication, that technique obviously would not work. So, sophisticated error detection and correction systems are used to create sound to fill in the gaps. This process stores a portion of the incoming speaker's voice, and uses a complex algorithm to "guess" the contents of the missing packets and create new sound information to enhance the communication.

(d) After the packets are transmitted and arrive at the destination, the transmission is assembled and decompressed to restore the data to an approximation of the original form.

# A Simple VoIP Call Illustration




1. Caller dials ITSP toll free number : 1-888-745-2654 , 2. Caller gets connected to VoIP gateway of ITSP, 3. IP Address of destination gateway obtained, 4. Destination gateway makes a request to the gatekeeper to accept the call from the originator, 5. Destination gateway sends a connect confirm message.

IP technology, which works fine for sending ordinary data, may be less perfect for voice transmissions, and the quality of a voice transmission using packet technology is still considered as inferior to a circuit switched connection.

Specifically, IP technologies currently lack a guaranteed quality of service. The ordinary telephone network (if properly installed and maintained) is designed to offer end users a very high quality of service for real-time communications.

The Internet Protocol, in contrast, was not designed for voice; instead, it is based on a "best efforts" principle, which means that some packets are "lost" and have to be resent, introducing time delays and, at least in recent years, has been thought to be inconvenient for voice communications.

IP technology, however, is steadily improving and the quality gap between IP and circuit switched voice communications has now decreased to a point where any differences in quality might no longer be obvious to the ordinary listener.

***Advantages of VoIP over traditional circuit switched technology***

? **Higher Reliability:** In some respects, IP networks also offer the potential for higher reliability than the circuit-switched network because IP networks automatically re-route packets around problems such as malfunctioning routers or damaged lines.

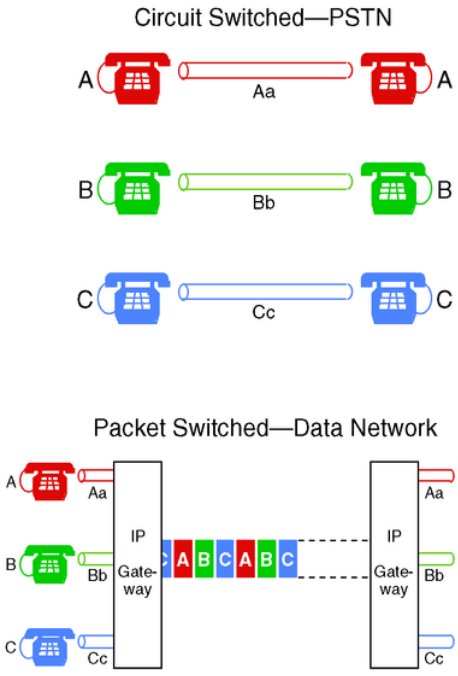
**Circuit Switched vs. Packet Switched Technologies**

**Circuit Switched Telephony**

Nearly all voice traffic is circuit switched and transmitted over a PSTN. A direct connection between two connection points provides a permanent link for the duration of the call. This link cannot be used for any other purpose during this time. PSTN allows a two-way, or full-duplex, conversation to take place. The main shortfalls of circuit switching are provided by the inflexibility and inefficiency inherited in the network by requiring a dedicated connection each time.

**Packet Switched Telephony**

In a packet switched network, data is broken down into packets, each with a destination address. At the destination, the packets are reassembled and resequenced. Depending on congestion levels in the network, packets may take different routes on their way to the destination. Packet switched provides a virtual circuit connection and is generally half duplex. The main difference from the circuit switched network is that there is no dedicated connection. This is a connectionless network, which allows network resources to be used very efficiently as bandwidth can be shared between applications.




Source: Gartner. *An Introduction to Internet Telephony (or Voice over IP)* by Kathleen Adams, Kamran Bawany (31 August 2001)

? **Greater Efficiency:** The conventional technology of the PSTN requires a circuit between the telephone company's switch and the customer's premise to be open and occupied for the entire duration of a call, regardless of the amount of information transmitted. In contrast, on IP networks, all content -- whether voice, text, video, computer programs, or numerous other forms of information -- travels through the

network in packets that are directed to their destination by diverse routes, allowing multiple users to share the same facilities simultaneously and efficiently.

? **Lower Cost:** IP systems will offer a more economical means for providing communication connections. Also -- and this is one of the sources of concern on the part of incumbent voice long distance carriers -- Internet technology makes available to anyone with a personal computer and modem the ability to bypass the telco's long distance networks.

? **Supporting Innovation:** IP is a nonproprietary standard agreed on by hardware and software developers, and is free to be used by anyone. This open architecture allows entrepreneurial firms to develop new hardware and software that can seamlessly fit into the network. In contrast, the circuit switched network operates as a closed system, thus making it more difficult for innovative developers to build and implement new applications.

## B. How VoIP Works as a Business[9]

Different types of VoIP have different business models.

The figures in the following pages illustrate the commercial relationships and payment flows that are required for five possible models:

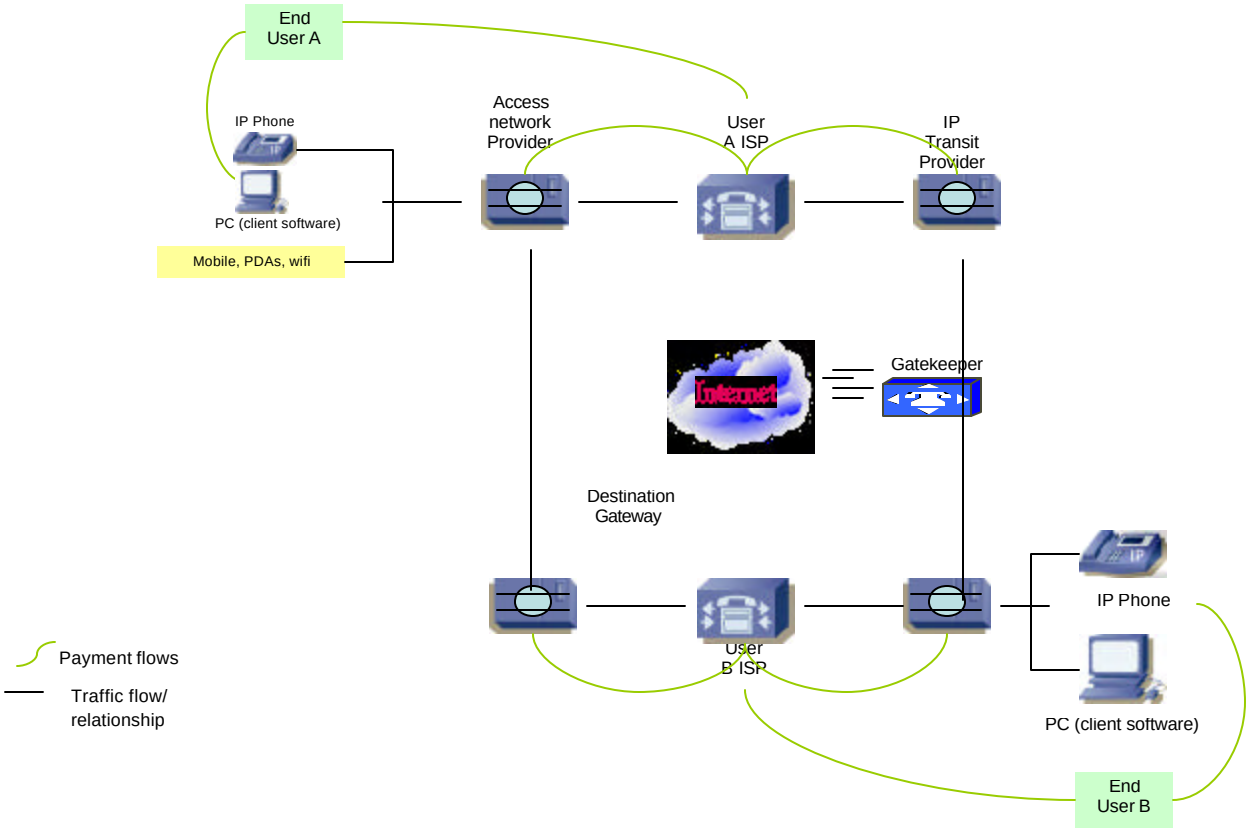
? self-provided consumer
? independent of internet access
? provided by broadband access service provider
? internal use on business LAN/WAN
? carrier internal use

In these examples, User A is calling User B.

These examples are merely illustrative --- they do not enumerate all possible flows, and are not exhaustive of all possible models.

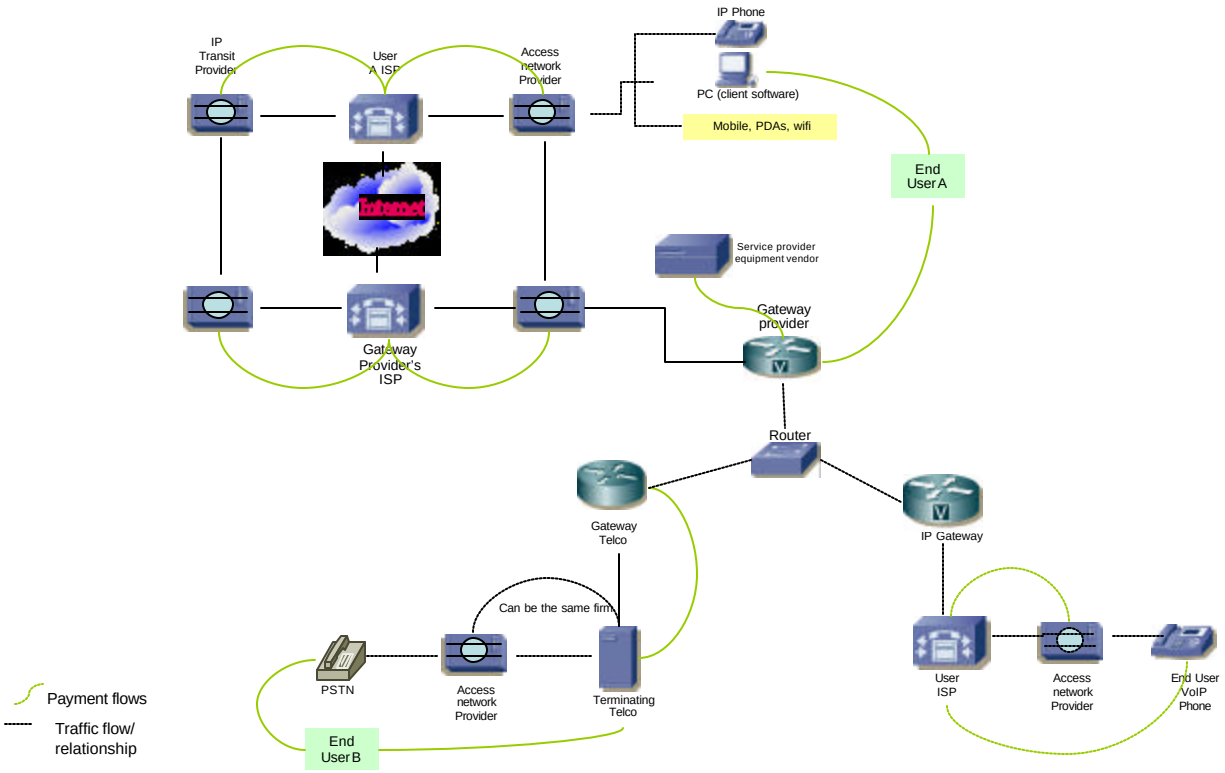
[9] Sourced and adapted primarily from the "Final Report for the European Commission: IP Voice and Associated Covergent Services." (Analysys Research: 28 January 2004)

## Self provided Consumer Model
## IP to IP calls



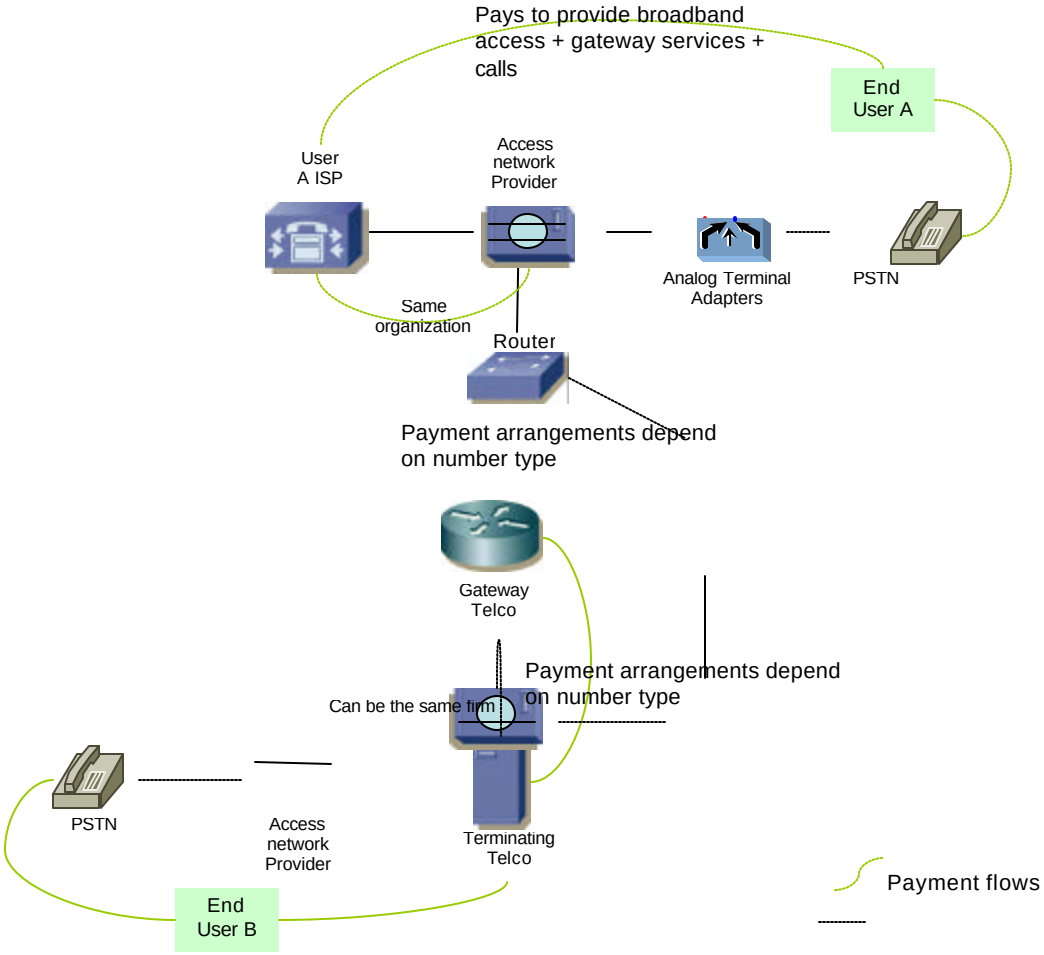

In this model, each user is a “peer” and carries his or her own costs. The users are connected via the Internet, and neither is using the PSTN to connect to the other.

## Independent of Internet Access Model
## IP to PSTN calls



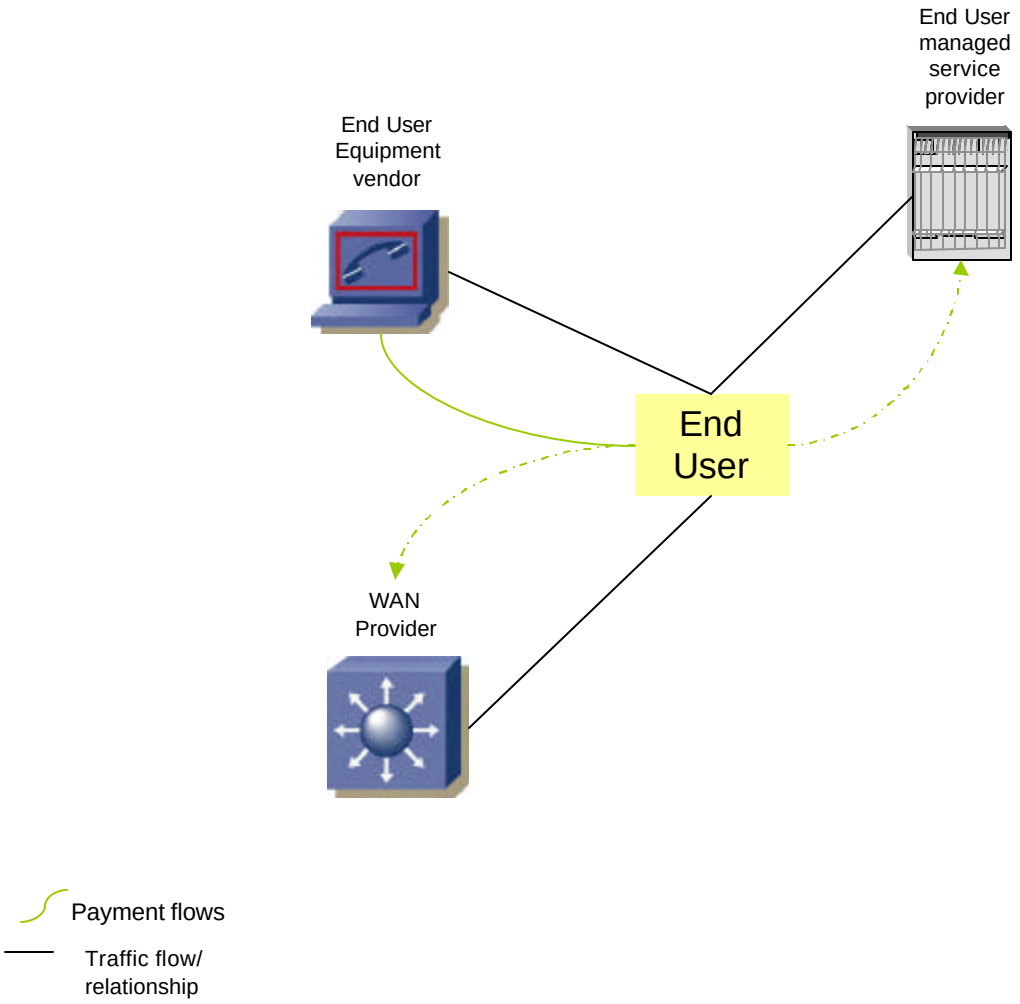

In this model, User A is calling User B who is on the PSTN. User A will have to pay a retail charge for calls to the PSTN, part of which wil be used to pay the termination charges of User B's telecoms network operator. User B pays for the line rental and might ultimately have to pay to receive the call (e.g. if roaming abroad on a mobile network).

**Broadband access/cable Model**
**IP to PSTN calls**



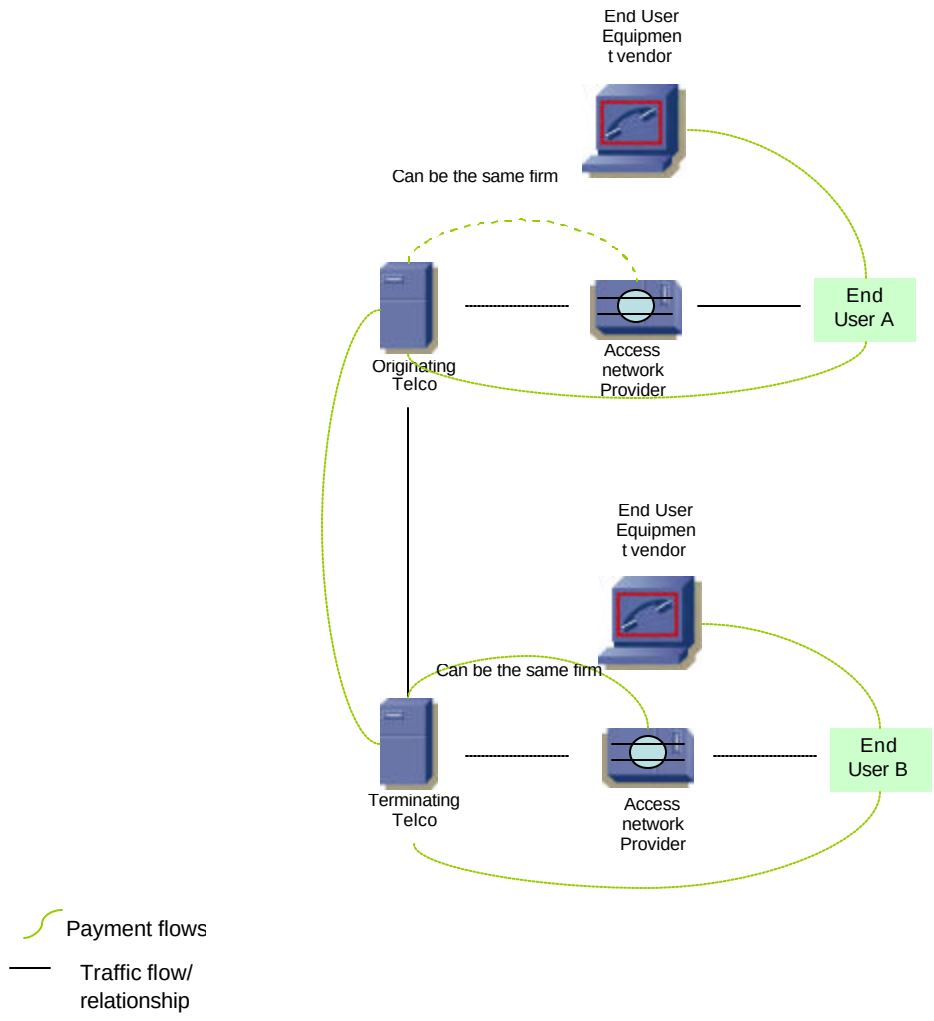

In this model, User A is calling User B who is on the PSTN. User A will have to pay a retail charge for calls to the PSTN, part of which wil be used to pay the termination charges of User B's telecoms network operator. User B pays for the line rental and might ultimately have to pay to receive the call (e.g. if roaming abroad on a mobile network).

### Internal use on business WAN/LAN Model




In this model, User A and User B both work for the same organization. User A is calling User B on the corporate telephone network. Much of the cost is carried by the end user organization directly purchasing LAN and other IP equipment. The WAN element is optional, as is any external management service for the VoIP on the LAN and WAN.

## Carrier Internal Use




In this model, User A and User B are on the PSTN, but the call uses IP technology. This model, in effect, is identical to the existing PSTN business model, at least until the point where the interconnect between the two telecoms network operators can be via an interconnect using VoIP. At this point, the commercial model for the interconnect payments could be renegotiated.

## C. Current VoIP Applications

Table 1 summarizes some of the many different VoIP applications that are currently being offered, and notes the providers and users of these services. These applications are not comprehensive – mobile VoIP application, for example, are not covered – but they provide clues to the opportunities, and challenges, that are relevant to Philippine telecommunications stakeholders, including the Commission and the general public.

***Table 1: Current VoIP applications***

| ***Application*** | ***Provider*** | ***Users*** | ***End-user terminals*** | ***Benefit*** | ***Impact on voice market*** |
|---|---|---|---|---|---|
| *Wholesale international toll bypass* | *Global operators with IP networks; Internet carriers* | *Mobile operators; corporate users* | *Phone to phone* | *Avoids high international prices charged by incumbents* | *Drives down international prices and forces liberalization* |
| *Core network migration to VoIP* | *Not applicable* | *Local exchange carriers* | *Phone to phone* | *Lower cost of core networks; less meshing; bandwidth efficiency* | *None* |
| *Corporate voice on VoIP VPNs* | *New carriers; global carriers (potentially also incumbents)* | *Multinational, multi-site organisations* | *Phone to phone (may be IP phones)* | *Low voice prices; efficient bandwidth utilisation* | *Drives down voice VPN prices* |
| *Low-cost voice for small businesses* | *Competing retail carriers* | *Initially multi-site SMEs* | *Phone to phone* | *Free inter-site calls; maximises benefit of broadband* | *Opens up SME market to competition; drives down prices* |
| *VoIP second lines for residential users* | *Competing carriers* | *High-end residential customers and teleworkers* | *Phone to phone* | *Savings on line rentals; low-cost calls* | *Drives down residential voice prices* |
| *Retail international toll bypass* | *Calling card companies; Internet phone companies* | *Expatriates, Overseas workers* | *Phone to phone* | *Low-cost (but often poor-quality) calls home* | *Drives down international prices* |
| *Free phone calls on the Internet* | *Various Web sites; hobbyists* | *Students; Internet enthusiasts* | *PC to PC* | *Free phone calls to family and friends* | *Negligible* |
| *Multimedia applications including VoIP* | *New carriers; global carriers incumbents systems integrators* | *Employees of corporates* | *PCs, phones or PDAs depending on application* | *Depends on application implemented* | *Negligible* |

***(Source: Analysys Research, 2002)***

## III. The Current Legal and Policy Framework for VoIP

### A. Policy Objectives

To emphasize, the Paper believes that technologies that use the Internet and Internet Protocol (IP) networks to deliver voice communications, particularly VoIP, have the potential to reduce consumer costs, support innovation, improve access to communications services, and increase economic productivity and growth in the Philippines.

It is therefore, asserted that any rules to be issued by the Commission for VoIP, therefore, shall be made in the context of an overall objective of broadening the availability, deployment and accessibility of VoIP as a viable, and cost-effective alternative to the prevailing system of circuit switched phone services.

This objective is consistent with the Constitution in its recognition of "the vital role of communication and information in nation-building,"[10] and with Congressional pronouncement, particularly through the Public Telecommunications Act of the Philippines (Republic Act No. 7925), that a "fundamental objective of government is to develop and maintain a viable, efficient, reliable and universal telecommunication infrastructure ***using the best available and affordable technologies***, as a vital tool to nation building and development." (Emphasis supplied.)

Encouraging the deployment and use of VoIP, it further recognizes, that this is also consistent with RA 7925's policy objectives of ***universal access and service***.

Pursuant to DOTC Memorandum dated November 25, 2003 (re: Voice over Internet Protocol (VoIP) Rules and Regulations), the task and challenge is to draft and issue new Rules and/or Guidelines that would encourage deployment of, and broaden access to VoIP, in a manner, that is consistent with existing law (particularly RA 7925) and public policy.

### B. VoIP – Telecommunications Service or Value-Added (or Enhanced) Service?

There is no question that duly enfranchised public telecommunications entities (PTEs) can and are allowed, under law, to offer VoIP to the public.

In the context of converging technologies and services, it is now also possible for other non-PTE entities – for example, cable companies and ISPs – to also offer VoIP services to subscribers and the general public.

The entry of more players in the VoIP market, particularly non-PTEs, is being hampered and discouraged, however, by the lack of clarity on how such non-PTE providers can legally be allowed to offer the service in the first place. This lack of regulatory guidance,

[10] Philippine Constitution, Art. II (Declaration of Principles and State Policies), Section 24.

the Paper states is hampering the development, deployment and use of VoIP products and services in the country, to the detriment of consumers and the general public, and the telecommunications industry as a whole.

RA 7925, defines "telecommunications" as

> any process which enables a telecommunications entity to relay and receive voice, data, electronic messages, written or printed matter, fixed or moving pictures, words, music or visible or audible signs or any control signals of any design and for any purpose by wire, radio, or other electronic, spectral, optical or technological means.[11]

Only "public telecommunications entities" (PTE), defined as

> any person, firm, partnership or corporation, government or private, engaged in the provision of telecommunications services to the public for compensation

may provide basic telecommunications services.[12]

RA 7925 also requires all persons or entities intending to commence or conduct the business of being a PTE to first obtain a legislative franchise,[13] and to apply for a Certificate of Public Convenience and Necessity (CPCN) from the NTC to engage in a particular telecommunications service. In the latter case, it must show that it has the legal, financial and technical fitness to operate the service.[14]

Under the current legal regime, Internet Service Providers are **not** considered as PTEs. They are categorized as Value Added Service (VAS) Providers, defined under RA 7925 as

> (entities) which, relying on the transmission, switching, and local distribution of facilities of the local exchange and inter-exchange operators, and overseas carriers, **offer enhanced services beyond those ordinarily provided by such carriers.** *(emphasis supplied)*

Unlike PTEs, VAS providers cannot put up their own networks, although they are not required to obtain their own franchise. They are merely required to register with the NTC.

In this context, the main legal question that the Commission must resolve pertains to the legal nature of VoIP – i.e., whether it should be considered as a "telecommunications

[11] RA 7925, Art. I, Sec. 3 (a)
[12] RA 7925, Art. I, Sec. 3 (b)
[13] RA 7925, Sec. 16
[14] Implementing Rules and Regulations for RA 7925, Rule 100(a).

service," or as a "value added service, i.e., an "enhanced services beyond those ordinarily provided by (local exchange and inter-exchange operators, and overseas carriers)."[15]

The question is crucial because if VoIP is classified a value-added or enhanced service, then there would virtually be no legal restrictions on ISPs and potential providers other than PTEs to offer VoIP as a separate and distinct service for compensation to the public.

If VoIP is deemed to be a telecommunications service, on the other hand, ISPs and potential providers other than duly enfranchised and authorized PTEs can be allowed to offer VoIP for compensation, but only by entering into separate agreements with duly enfranchised PTEs.

## C. Approaches of Other Jurisdictions

The legal classification of VoIP is a regulatory puzzle that is not unique to the Philippines.

? In the *United States*, Minnesota, New York and Wisconsin have all found VoIP to be subject to state telecommunications regulation to some degree. Minnesota in 2003 ruled that Vonage's VoIP offering is a "telecommunications service" and that accordingly, Vonage should comply with all state telecom regulations. New York found that a VoIP provider was subject to access charges. And Wisconsin requested VoIP providers to file an application for authority to provide telecom services within the state.

  In contrast, Florida passed legislation largely exempting VoIP services from regulation, but that legislation did not address the applicability of access charges to VoIP offerings.

? *Canada* makes a distinction between Internet data applications, which are free from regulation, and Internet applications that provide an alternative to public switched voice services, which are regulated. IP telephony between telephones, therefore, is subject to regulation. IP telephony service providers are treated like any other telephony service providers and must contribute to universal service funds, but only if the service they provide is between telephones.

? In *Hungary*, IP telephony is allowed provided that the delay is more than 250 milliseconds and packet loss is more than 1%. Hungarian policy imposes sound quality limits to prevent IP telephony from serving as a perfect substitute for PSTN voice services.

? In *India*, VoIP is allowed, but only for communications from computer to computer.

[15] RA 7925, Sec. 11.

? *Egypt* has granted Telecom Egypt monopoly powers for the provision of IP telephony services.

? In *Thailand*, the Communication Authority of Thailand (CAT) Corp which is both an operator and a regulator, has the monopoly of giving concessions to ISP providers. CAT has the sole authority to use VoIP. It now uses VoIP for its international long distance calls.

? *Vietnam* allows outbound Internet-based calls from computer to computer, and from computer to telephone, but prohibits inbound Internet phone calls.

? The *European Commission* has taken the position that Internet voice services do not constitute voice telephony unless:

1. They are offered commercially and separately to the public as voice services;
2. They are provided to and from PSTN termination points; and
3. They are offered in real time at the same level of speech quality and reliability as offered by the PSTN.

The EU presently holds that VoIP does not fit the definition of telecommunications because it does not involve direct speech transport in real time. However, recent improvements in the quality of service and the growth of the European VoIP market could eventually induce the EC to review its position.

? *Peru's* Ministry of Transport and Communications regards VoIP as a value-added service and is not regulated under the country's Telecommunications Act

? Telecommunication services in *Korea* are divided into facilities based services and value added services (VAS). PC to PC and IP phone to IP phone services are considered VAS. The government regulates VoIP very lightly based on functional equivalence compared to telco services.

? The government of *Indonesia* issued 5 licenses of Internet Telephony for Public Services in 2002 as part of pilot project in order to form regulatory framework to implement Internet telephony.

? VoIP is currently not subject to detailed regulation in *Switzerland*. The key criterion in determining whether a certain type of IP telephony constitutes public telephone service under the Swiss policy is whether the service is "transmitted through direct transport and switching of speech in real time." VoIP services are not currently considered as being transmitted in real time.

## IV. Issues for Comment

It is being asserted that the absence of formal rules to govern VoIP in the Philippines creates an environment of regulatory uncertainty that may be impeding the development and use of VoIP as a viable and affordable alternative to traditional telecommunications services. Beyond PTEs, for example, potential providers of VoIP services will not be able to make rational business decisions on investment and further expansion without clear rules.

Moreover, the Paper recognizes that stepped-up government efforts to promote universal access to information and communications technology will likely include plans for wider VoIP deployment, and would benefit greatly from a more definite regulatory regime.

This section, then, identifies the policy, legal, technical and other questions and issues for which the Commission must seek input and comments from all interested parties and stakeholders, in order for the Commission to move forward in its efforts to provide regulatory clarity on this increasingly important technology/service.

### A. Legal and Policy Issues

1. What, under Philippine law, is the proper regulatory classification for VoIP services (telecommunications or value-added)?

2. Who should be allowed to use, provide and/or benefit from VoIP in the Philippines? What are the tangible benefits of, or problems that may arise from expanding access to and use of VoIP in the Philippines?

3. At this time, should the NTC issue rules and/or guidelines for VoIP? Why or why not? What substantive and technical considerations should such rules and/or guidelines cover?

4. Do you agree with the following statements? Please comment:

   - Because technology is driven by investment, and regulation scares investment; regulation, therefore, impedes technology. Put another way, investors will not invest in VoIP or a company (other than telcos) seeking to offer VoIP, if there is even the slightest threat that such investments would be regulated in the future.

   - Legal definitions of "value-added service" and "telecommunications service" are irrelevant to today's technological reality. Maintaining these distinctions into the future will do serious harm to consumers and service providers.

   - The NTC should allow Internet-based services to develop in an environment of minimal regulation.

## B. Technical Issues

1. The Paper has identified three distinct categories of Internet telephony services:

   - PC to PC
   - PC to phone
   - Phone to phone IP Telephony

   Taking into consideration market and technological developments, are there other categories that should be considered?

2. From a regulatory standpoint, should the various categories mentioned be subject to similar or different treatment?

3. The Paper believes that the cost of the PSTN should be borne equitably by those who use it in similar ways. How should VoIP service providers who use any or all parts of the PSTN be charged? How should such charges, if any, be computed or assessed? Note that by seeking comment on whether access charges should apply to VoIP, the Paper is not addressing the issue of whether charges should apply or not apply under existing law and rules.

4. If VoIP is classified as a telecommunications service, should access charges for it be different from those paid by non-IP-enabled telecommunications service providers? If so, how should different charges be computed and assessed?

5. What should the NTC do to facilitate interconnection between IP-based and circuit-based networks, and ensure technical compatibility?

6. Do you agree with the following statements? Please comment:

   - Quality of services standards cannot be guaranteed by today's IP technology.

   - Bundled services that combine voice and data conveyed over high speed IP networks should be considered value-added services, even where the "voice" component of such services are the decisive driver for subscriptions.

## C. Other Issues

1. In the case of VoIP, is there such a thing as a "dominant player?" Or should all players, particularly fixed line providers, mobile operators and cable service providers, be regarded as competing not only among themselves, but with all the other players as well?

2. Do you agree with the following statements? Please comment:

- Internet telephony bypasses the PSTN and thus reduces the revenue of incumbents by upsetting long distance use, and the international settlement payment mechanism.

- Networks remain capital intensive, with long payback periods. Operators – either incumbents or new entrants such as mobile and cable operators – must achieve an acceptable return on capital, or they will not invest.

- Telephone companies, as the chief providers of broadband, are in the best position to profit from the public's switch to Internet telephony. The calls may be free, but the bandwidth is not. Thus, telecommunications companies can easily make Internet telephony seem attractive, and a prime source of profits.

- Telecommunications companies are obliged under RA 7925 to provide local exchange or fixed line services to unserved and underserved areas in urban and rural areas, an obligation that ISPs and other potential VoIP providers are not subjected to. Allowing the latter to provide VoIP will therefore subject public telecommunications entities to unfair competition.

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Republic of the Philippines
**NATIONAL TELECOMMUNICATIONS COMMISSION**
Commission on Information and Communications Technology
BIR Road, Diliman, Quezon City

# MEMORANDUM
FOR
# VOICE OVER INTERNET PROTOCOL (VOIP)
(with attached draft rules)

## I. Statement on the Commission's Mandate

The National Telecommunications Commission (hereinafter "Commission"), in issuing this memorandum and draft rules for public comment, seeks to bring clarity and certainty to the regulatory treatment of Voice over Internet Protocol (VoIP) technology.

This effort was undertaken by the Commission pursuant to DOTC Memorandum dated November 25, 2003 which directed the Commission to:

1. Determine the regulatory implications of using VoIP as an available and affordable technology that may be used to improve and extend services to unserved and underserved areas, and help achieve universal access to information and communication services;

2. Conduct public hearings and consultations with concerned stakeholders including, but not limited to, public telecommunications entities, internet service providers, cable operators, ICT entrepreneurs and investors and other interested parties, for the purpose of obtaining wide feedback on procedures, rules and regulations for VoIP; and to

3. Promulgate the necessary implementing rules and regulations and guidelines – consistent with the foregoing, and particularly, the principles and objectives of fair and equitable competition, and increased consumer choice and welfare – that will govern the deployment and use of VoIP by businesses and the general public.

The Commission is of the opinion that its mandate requires, as a first and primary step, an interpretation and clarification of the legal nature of VoIP – in a manner that encourages fair and equitable competition, increases consumer choice and welfare, and is consistent – always – with the letter and spirit of Philippine law, particularly Republic Act 7925, otherwise known as the Public Telecommunications Policy Act of the Philippines.

The Commission is also of the view that the question that begs clarification is NOT whether VoIP should be deployed, or whether public access to VoIP should be encouraged. It is the Commission's position – validated by the comments and position papers submitted as well as the public hearing conducted last November 19, 2004, that in this matter, public policy and private sector interests converge and that everyone will benefit if VoIP is widely available.

Telecommunications costs can be expected to fall, while wider broadband deployment will be encouraged as more people see the benefits and uses of emerging information and communications technologies, such as VoIP. The tangible economic benefits to particular sectors of our population – from the families of overseas Filipino workers to our exporters to call center operations and business process outsourcing industries, among others – will not be trivial.

In this light, a hands-off policy, such as that which the Commission has adopted in the past, no longer serves the public interest. It is the Commission's position that regulatory clarity is now a necessary precondition if meaningful investment and innovation in, and public access to and use of VoIP is to grow.

Simply put therefore, the question before the Commission, is not if, but rather how – under current Philippine law – rules that encourage the deployment and use of VoIP ought to be crafted.

## II. The Regulatory Nature of VoIP under Philippine Law

VoIP, under Republic Act 7925, clearly falls within the broad definition of "telecommunications" under R.A. 7925, to wit:

> *Telecommunications* - any process which enables a telecommunications entity to relay and receive voice, data, electronic messages, written or printed matter, fixed or moving pictures, words, music or visible or audible signals or any control signals of any design and for any purpose by wire, radio or other electromagnetic, spectral, optical or technological means. *(RA 7925, sec. 3a)*

It is crystal clear that "telecommunications" covers VoIP, and, all other Internet services which rely on processes which enable the relay and reception of data through technological means.

This seemingly all-encompassing definition of "telecommunications" is a primary argument raised by opponents of any move on the Commission's part to classify VoIP as a value-added service (VAS). They submit that under this

definition, only "telecommunications entities" are allowed to offer telecommunications services.

It is a common assumption that to determine who may offer VoIP, the Commission must first make a determination of whether VoIP is either a "telecommunications" or a "value-added" service. The problem with this assumption, however, is that it mistakenly presumes that both types of services are mutually exclusive services.

Under RA 7925, value-added services form a particular category of telecommunications services. Thus, Article IV of RA 7925 identifies the following categories of telecommunications entities:

> SEC. 8. *Local Exchange Operator*. -
> SEC. 9. *Inter-Exchange Carrier*. -
> SEC. 10. *International Carrier*. –
> **SEC. 11. *Value-added Service Provider*. -**
> SEC. 12. *Mobile Radio Services*.
> SEC. 13. *Radio Paging Services*. –

By making and identifying these categories, Congress, in its wisdom, construed value-added services as a subset of the broader set of telecommunications services.

In the context of VoIP, this clarification is particularly critical because it allows for the legal possibility of classifying VoIP as VAS, notwithstanding that the broad definition ascribed by lawmakers to "telecommunications" clearly covers it.

The issue as to who may or may not be allowed to offer VoIP to the public for compensation will therefore be settled by determining whether the term "value-added services" also applies to VoIP.

RA 7925, however, does not directly define "value-added services." It does, nonetheless, provide a definition for "value-added service provider":

> *Value-added service provider (VAS)* - an entity which relying on the transmission, switching and local distribution facilities of the local exchange and inter-exchange operators, and overseas carriers, offers enhanced services beyond those ordinarily provided for by such carriers. *(cite)*

From this definition, there is no doubt that Congress intended the definition for VAS, i.e., **a "value-added service" is an enhanced**

**(telecommunications) service beyond those ordinarily provided for by local exchange and inter-exchange operators, and overseas carriers.**

Does VoIP fall under this definition? **IT DOES, AND ON THE BASIS OF BOTH LAW AND SOUND PUBLIC POLICY, VOIP IS A VALUE-ADDED SERVICE.**

*VoIP as an Enhanced Telecommunications Service*

It is important to recognize VoIP as an undeniable enhancement of traditional voice service.

The Commission recognizes that VoIP technology has developed and continues to improve by leaps and bounds; and that the quality of VoIP transmission is nearly equal to the quality of traditional voice telephony. It is foreseen that voice transmitted through VoIP or through the PSTN will have no perceptible audible differences in the near future.

This functional equivalence is another argument offered by those opposed to the classification of VoIP as VAS. The principle of technology neutrality, they submit, requires that the Commission's interpretation be consistent regardless of what technology is used to transmit voice.

That may be so. However, VoIP does not merely involve converting and reassembling voice to and from data packets at the points of transmission and destination.

VoIP technology offers far more advanced and different service attributes than traditional voice services. VoIP is an advanced communications application that can converge voice communications seamlessly with other digital applications.

VoIP allows customer service representatives to provide better service by having instant access to customer records even as they are communicating via VoIP. Overseas family workers can "talk" to their loved ones at the same time that their respective images are being shown on their computer screens.

Other service attributes that already exist and are being offered in other jurisdictions include nomadic capabilities; voice mail that can be accessed, saved or forwarded by computer as an electronic file; and advanced call management features such as personalized call logs, phone books and click to dial functions.

Other applications using VoIP surely remain undiscovered or untapped. The innovative and entrepreneurial spirit, as well as the benefits to the consumer of freer competition in the ICT sector that Philippine public policy seeks to promote will not be encouraged – and indeed will be unduly hampered – by regulatory failure to recognize the non-trivial differences between VoIP and traditional voice.

*VoIP as a Service Beyond those Ordinarily Provided by Local Exchange and Interexchange Operators, and Overseas Carriers*

In determining what services are "ordinarily provided" by local exchange and inter-exchange operators and carriers, the Commission believes that the legislative intent must be construed strictly in terms of what was being ordinarily offered at the time RA 7925 was passed, i.e. in 1995.

To do otherwise would create a legal and regulatory dilemma for the Commission.

Note that as stated previously, Internet services – relying as they do on processes that allow the relay of data through technological means – would also fall under the definition of "telecommunications." Internet services have always been classified as VAS since the mid 1990s precisely because they were "not ordinarily offered" by carriers and operators at that time.

It would not be correct to say that internet service providers should no longer be allowed to offer their services because duly enfranchised PTEs ordinarily offer those very same Internet services today.This could not have been the legislative intent. And in any event, the offering of Internet services has been allowed by law to VAS providers, and cannot arbitrarily be taken without violating the due process protections afforded under the Constitution.

To do so would surely discourage innovation, and unduly promote unfair competition as carriers and operators could simply wait for VAS providers to innovate and then proceed to undercut their efforts by "ordinarily offering" those proven services in the future.

This include the offering of derivative technologies and/or applications, such as VoIP, that are the result of innovations on the use of Internet Protocol.

We believe, therefore, that the definition of "value added services," i.e., "enhanced services beyond those ordinarily offered by LECs, IECs and overseas carriers," must be construed strictly and interpreted to cover only

those services that were ordinarily offered by the said carriers and operators at the time that Republic Act 7925 was passed.

In this context, the Commission further notes that, at the time the law came into force, only voice services that were offered through the use of traditional circuit switched networks can be construed as having been "ordinarily offered by LECs, IECs and overseas carriers," and that, therefore, any other voice service that is offered to the public not using the traditional circuit switched network technology – as in the case of VoIP – must be classified as a Value Added Service.

In sum, the Commission strongly believes that because traditional voice and VoIP services are NOT the same, the traditional voice regulations and licensing requirements should not apply to VoIP.

Furthermore, VoIP by definition, is not offered via circuit switched networks, and therefore, cannot be considered to have ordinarily been offered by LECs, IECs and overseas carriers. It is, therefore, a Value Added Service

The Commission recognizes that a necessary consequence of settling the regulatory status of VoIP as a value added service is that it becomes timely for the Commission to likewise consider a few other related issues.

The Commission is resolved to tread lightly, and will not be rushed to take premature action that could stifle, rather than enhance, innovation, development and deployment of VoIP. It is nonetheless prepared to seek actively the proper balance between the sometimes competing policy interests of promoting free and equitable competition; encouraging investments and innovation in the ICT sector; ensuring consumer protection, wider choices, and promote public welfare.

With this in mind, it is the Commission's position that:

(a) To monitor quality and to protect the public from fly-by-night operators and providers, VoIP providers, while not required to obtain a license, shall be required to register themselves as such with the Commission prior to operation.

(b) Network providers must provide equal access and the same prices for substantially similar services to VAS providers. For this purpose, a copy of all contracts between network providers and VAS providers shall be submitted to the Commission for purposes of monitoring and possible regulation.

(c) Network providers and other entities providing Internet access to subscribers shall be proscribed from impeding or degrading access to the

Internet content of another applications or service provider, except where such access demonstrably threatens the integrity of the network.

(d) Network providers shall not be allowed to require subscribers to purchase/use or to refrain from purchasing/using any IP-enabled service as a precondition to obtaining their broadband service.

(e) The Commission shall issue additional rules as may be necessary.

The Commission believes that these are reasonable rules that will help create competitive market conditions conducive to the continued and accelerated deployment of, and innovation in VoIP services.

The final key consideration that needs to be addressed is the determination of a fair and equitable pricing system for the use by VoIP providers of PTE network, facilities and equipment. As a matter of fundamental fairness, the Commission acknowledges that network providers are and must be entitled to reasonable compensation for the use of their equipment and facilities by VoIP providers. For now, however, the terms and conditions for access to and use of networks, facilities and equipment by VoIP providers shall be left to the parties to negotiate, unless the Commission is petitioned to intervene, or otherwise is convinced as to why and how it must step in, if at all.

Finally, consistent with the Commission's current policy of light but proactive regulation, it shall hold additional hearings on the attached draft Memorandum Circular to allow interested parties to provide input and comment, if any, to include the above-discussed issues pertaining to access and interconnection charges, and/or security and privacy issues.

Quezon City, Philippines, March 29, 2005.

RONALD OLIVAR SOLIS
Commissioner

KATHLEEN G. HECETA
Deputy Commissioner

JORGE V. SARMIENTO
Deputy Commissioner

**REPUBLIC OF THE PHILIPPINES**
**DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS**
**OFFICE OF THE SECRETARY**

**DEPARTMENT ORDER NO. _____**

**Subject: VOICE OVER INTERNET PROTOCOL (VOIP)**

CONSISTENT WITH the 1987 Constitution which fully recognizes the vital role of communications in nation building and provides for the emergence of communications structures suitable to the needs and aspirations of the nation;

RECOGNIZING the emergence of Voice Over Internet Protocol (VOIP) as a viable, cost-effective technology that could serve as an alternative to the prevailing system of circuit switched phone services;

FINDING THAT VOIP can provide economic benefits over traditional telecommunications networks in the form of greater efficiencies, lower costs and higher reliability;

RECOGNIZING, further, that added competition in and deployment of VoIP can help achieve the broader policy objectives of Republic Act 7925, otherwise known as The Public Telecommunications Policy Act of the Philippines, to develop and maintain "a viable, efficient, reliable and universal telecommunications infrastructure using the best available and affordable technologies," and to improve and extend "services to areas not yet served";

FINDING THAT the widespread use and deployment of VOIP is hampered by the absence of formal rules or guidelines that will clarify the legal and regulatory nature of VOIP, and govern the provision and use of VOIP by the public;

DETERMINING, FINALLY, that the national objectives of promoting universal access to and investment in information and communications technologies will be met more easily if a clear and transparent regulatory regime for VOIP as an enabling technology, is in place;

NOW THEREFORE, based on the foregoing and pursuant to the powers and responsibilities vested upon the Department of Transportation and Communications by various laws and executive orders, and as the primary policy, programming, coordinating, implementing, regulating and administrative entity of the Executive Branch of the government in the promotion, development and regulation of dependable and coordinated networks of communications systems, the DOTC hereby directs the National Telecommunications Commission, within ninety (90) days from the effectivity date of this Order, to:

1. Conduct public hearings and consultations with concerned stakeholders including, but not limited to, public telecommunications entities, internet service providers, cable operators, ICT entrepreneurs and investors and other interested parties, for the purpose of obtaining wide feedback on procedures, rules and regulations for VOIP; and to

2. Promulgate implementing rules, regulations and guidelines – consistent with the foregoing, and particularly, the principles and objectives of fair and equitable

competition, and increased consumer choice and welfare – that will govern the deployment and use of VOIP by businesses and the general public.

All existing rules, regulations, guidelines, department orders, circulars, memorandum, and/or issuances inconsistent with the Order are hereby repealed or modified accordingly.

This Order shall take effect immediately.

Pasig, Metro Manila, Philippines. November 25, 2003.

HON. LEANDRO MENDOZA
Secretary
Department of Transportation and Communications

**Draft Rules on VoIP**

*The following draft rules for VoIP are hereby issued for public review, consideration and comment. All interested parties are hereby informed that a public hearing on these draft rules shall be held on May 3, 2005 starting from 2 o'clock in the afternoon at the NTC Multi–Purpose Hall, 4th Floor NTC Building, BIR Road, Diliman, Quezon City, Republic of the Philippines. All interested parties are further encouraged to submit their comments or inputs in writing to the Commission (preferably with soft copies thereof) on or before such hearing date.*

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National Telecommunications Commission
Memorandum Circular (DRAFT)
No. _____

Subject: VOICE OVER INTERNET PROTOCOL (VOIP)

WHEREAS, the 1987 Constitution fully recognizes the vital role of communications in nation building and provides for the emergence of communications structures suitable to the needs and aspirations of the nation;

WHEREAS, VOIP, provides users with an efficient, reliable and economical means of communication;

WHEREAS, VOIP, as an application that digitizes and transmits voice communications in packets via the Internet, making possible convergence with other applications which distinguishes this from traditional telephony that is conducted through circuit switched connections;

WHEREAS, added competition in and deployment of VOIP can help achieve the broader policy objectives of Republic Act 7925, otherwise known as The Public Telecommunications Policy Act of the Philippines, to develop and maintain "a viable, efficient, reliable and universal telecommunications infrastructure using the best available and affordable technologies," and to improve and extend "services to areas not yet served";

WHEREAS, VOIP can provide economic benefits over legacy networks in the form of greater efficiencies and lower costs;

WHEREAS, the widespread use and deployment of VOIP is hampered by the absence of formal rules or guidelines that will clarify the legal and regulatory rules for VOIP, and govern the provision and use of VOIP by the public;

WHEREAS, premature intervention in or regulation of VOIP as a nascent technology risks stifling innovation and competition in information and communications technologies (ICT);

WHEREAS, minimal regulation on VOIP will encourage the development of new applications and services that can enhance Philippine competitiveness in the global ICT market;

NOW, THEREFORE, pursuant to RA 7925, otherwise known as the Public Telecommunications Policy Act, EO 546 series of 1979, and DOTC Memorandum dated November 25, 2003, and in order to maintain and foster fair competition in the

telecommunications industry, and to bring the benefits of efficient VOIP technology to the general public, the National Telecommunications Commission hereby promulgates the following guidelines:

Sec. 1 Voice over Internet Protocol (VOIP) shall be classified as a Value Added Service within the contemplation of RA 7925, otherwise known as the Public Telecommunications Policy Act.

Sec. 2 Definitions –

(a) *Public telecommunications entity (PTE)* - any person, firm, partnership or corporation, government or private, engaged in the provision of telecommunications services to the public for compensation.

(b) *Value-added service (VAS)* - enhanced services beyond those ordinarily provided for by local exchange and inter-exchange operators, and overseas carriers, where "ordinarily provided" services shall mean voice services offered through circuit switched networks.

(c) *Voice Over Internet Protocol (VOIP) Service* - provision of voice communication using Internet Protocol (IP) technology, instead of traditional circuit switched technology.

(d) *Customer Premises Equipment (CPE)* - equipment located in the premises of a customer which is not part of but connected to the system or network of the PTE.

Sec. 3 Any person or entity seeking to provide VoIP for use by the public for compensation shall register themselves as such with the Commission prior to operation as a VoIP provider.

Sec. 4 No value-added service provider shall provide VoIP services to the public for compensation – where such services require access to and/or use of a network provider's network, facilities and/or equipment – unless it has entered into an agreement with such network provider as to the terms and conditions of fair and reasonable access and/or interconnection charges for such access and/or use.

In cases where the VAS provider and network provider refuse to negotiate for the interconnection of their networks, the Commission may, upon the complaint of any interested party or upon its own initiatives, intervene and assume jurisdiction over the matter and immediately direct physical interconnection of the networks of the parties under such terms and conditions it may deem proper under the circumstances.

Nothing in this paragraph shall, however, prevent the parties to negotiate and execute an interconnection agreement and submit the same to the Commission for approval. For this purpose, the parties shall be given a period of ninety (90) days from receipt of notice of the filing of the complaint within which to negotiate and execute an interconnection agreement, Provided, that until an interconnection agreement is executed the interconnection mandate adverted in the immediately preceding paragraph shall remain in full force and effect.

Sec. 5 Network providers shall ensure equal access in terms of quantity and quality, at the same prices for substantially similar services to VAS providers; and shall not discriminate between VAS providers. For this purpose, the parties shall submit a copy of their agreements on these matters for purposes of the monitoring and supervision by the Commission.

Sec. 6 No public telecommunications entity, network provider or other entity providing Internet access to subscribers and VAS providers, shall impede or degrade the access of such subscribers and VAS providers to the Internet content of another applications or service provider, except where such access demonstrably threatens the integrity of their network or facilities.

Sec. 7 Network and/or internet service providers shall not require subscribers to purchase/use or to refrain from purchasing/using any IP-enabled service as a precondition to obtaining their broadband service.

Sec. 8 The sale, lease, importation, distribution and/or provision of customer premises equipment (CPE) designed to enable or ease the use of VoIP shall be governed by the existing rules and regulations on CPE's.

CPE's and/or accessories designed to enable or ease the use of VOIP, connected to the networks of PTE's shall be type approved/accepted by the Commission. VOIP equipment and/or accessories not connected with the network of PTE's shall not require type approval/acceptance except when the VOIP equipment and/or accessories use radio spectrum.

Sec. 9 Repealing Clause – Any rule, regulation, circular, order or memorandum, or parts thereof, inconsistent with this memorandum circular are deemed amended or revoked.

Sec. 10 Effectivity – This memorandum circular shall take effect fifteen (15) days after publication in a newspaper of general circulation, and three (3) certified true copies furnished to the UP Law Center.

Quezon City, Philippines _____

RONALD OLIVAR SOLIS
Commissioner

KATHLEEN G. HECETA
Deputy Commissioner

JORGE V. SARMIENTO
Deputy Commissioner

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