New generation network NGN: Technology and prospects

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Business environment is more competitive and complex than ever. Quality of service has become a key to success. In parallel with this trend, demand is also increasing for new communication services, able to meet service provision or increase competitiveness. The center of new services is the *Next Generation Network (NGN*).

The phrase " ***Next Generation Networks*** " (***NGN***) began to be mentioned since 1998. For many, NGN represents the redefinition of the world telecommunications and information technology industry; a revolution that leads to audio mergers, data, transmission (computing) and computing. In fact, this new technology could eventually cause many media companies not to be called 'media companies', but to transform into an unprecedented form of service provider.

What is the next generation network?

NGN is the next step in the field of world communication, traditionally supported by 3 networks: PSTN voice network, wireless network and data network (Internet). NGN converges all three networks into a unified structure to form a common, intelligent, efficient network that allows global access, integrating new technologies, new applications and paving the way for business opportunities. joint development.

Source: ***agilent*** It is possible to mention three types of services that promote NGN's introduction: *real-time services* and non -*real-time services* ; *content services* (*content services*) and trading activities (*transaction services*). In turn, NGN facilitates service providers to increase control, security, and reliability while minimizing operating costs.

Built on open criteria, standard protocols and user-friendly interface, NGN meets most of the needs of many users: business, office, communication between computer networks, etc. NGN unified the traditional wired network and the standard of wireless audio, image and data transmission.

NGN technology is the key to decoding future technology, fully meeting the above business requirements with the important feature of functional classification structure and dispersion of potentials on the network, making for softening and widely using multi-access and multi-protocol open interfaces to create services without relying heavily on equipment suppliers and network operators.

It's time to discuss the implementation of NGN

NGN "comes out first" because there have been many changes in the past years from three main perspectives: industry structure, technology and user expectations.

First, the explosion of information technology and telecommunications industry, a new class of service providers is gradually emerging: competitive service providers want to assert their position in the market. For example, many service providers choose to deploy the latest technologies to win the "upper hand" in service delivery.

Secondly, technology is growing at breakneck speed. For example, voice recognition technology, technology to convert words to sounds (TTS) etc. also makes traditional networks forced to give way to NGN in integrating more advanced applications, for the purpose of best serving users.

Third, the Internet has "given hope" to a large number of users that they can get information anywhere, whenever they want. Stemming from this need has arisen "convergence" trend of the terminal equipment to fully support features such as communication, information retrieval, entertainment, etc. while still ensuring be mobile. The Internet will certainly still serve as the main source of information. However, the intermediary transmission network will definitely be NGN.

Challenges in implementing NGN networks

Challenges in service quality

Integrating audio, data . in a network requires ensuring the sound quality is transmitted as well as the requirements for data transmission. This is really a difficult technology challenge for the single, data network is not designed exclusively for audio transmission.

The Internet router has no special effort to ensure that calls will ensure uniformity in terms of transmission quality. Routers only help stream packets as quickly as possible. Therefore, each packet must be subject to different latency, sometimes lost - directly affecting sound quality.

Management challenges

Currently, human society depends very much on the telephone network. We always have the peace of mind that at any time we can pick up and call emergency numbers like fire or police. However, very few people have

enough 'liver' to entrust their lives to the Internet. The problems will be nothing when happening in a narrow range but will become a 'problem' when implemented on a large scale.

Challenges in the transition process

The real challenge lies in the need to ensure 'smooth' communication from traditional networks to NGN. One of the typical obstacles is the compatibility between the newly launched network and the deployed network.

Security challenges

The security challenge comes partly from layering of applications, including voice, data . In PSTN, statements are transmitted in separate signal networks so it is easy to control. Meanwhile for NGN because most gateways have the ability to transmit sound and data. Besides, in principle, the content transmitted in the network is also shared globally. It is this mixing that makes security much more difficult.

Economic challenges

Deploying NGN networks arises an economic challenge for service providers whose roots are the continuous drop in bandwidth. Currently, most service providers are already on the network already existing, some time after the new network is deployed, high-speed communication - real-time become popular, users will set request for free use.

Most service providers see NGN trends and prospects. However, they are constrained by the very low real demand for NGN. In order to have investment, they must ensure that the two factors are investment capital and perseverance ("waiting for time"). Suppliers are also concerned about the "maturity" of technology that will assist them in the transition to NGN. In the process of waiting, suppliers must constantly upgrade technology and equipment to ensure competitiveness. Therefore, it is difficult to "ramp up the whole force" to switch to NGN.

Looking at the world

Gartner forecasts that starting in 2005, the market for NGN deployment will begin to "flourish." Within the next few years, voice over Internet protocol (VoIP) and NGN will be able to support. Maximize the most bandwidth-intensive transaction formats.

Gartner Dataquest has completed a comprehensive study, covering many aspects called "State of the Next-Generation Network". The study examines the changes that NGN has achieved, identifies major trends and introduces in detail about 141 NGN development organizations in the world.

Given the "responsibility" for the network industry in the 21st century, NGN is gaining more and more attention and has been considered a national policy in many countries. In this context, the next Global Network Summit (Global NGN Summuit) took place April 26-28, 2004 in Beijing (China).

This conference is entitled " *Joint Efforts to Build the Future Next Generation Network* " (roughly translated: with the effort to build the next generation network). It is known that this is the first summit to gather a large number of NGN experts from many countries around the world.

The conference participants discussed many potential issues of NGN, focusing on three main issues: trends in technology (*technology trends*), network revolution (*network evolution).*) and business models (*business modules*).

It is known that the previous host China has also tested the next generation Internet (*China Next Generation Internet-CNGI*) and considered it an important development step towards building NGN. The project involves the participation of five major telecom corporations to build six provinces with a backbone bandwidth of 10 Gbs / s.

NGN network in Vietnam

In December 2003, Vietnam Post and Telecommunications Corporation (VNPT) completed the first phase of the new generation network - New Generation Network (NGN) and went into operation successfully. This is the only network with information infrastructure based on packet-switching technology, selected by VNPT to replace circuit switching technology (circuit -switch). This is a network that uses packet switching technology with flexibility, applying the advancements of information technology and broadband optical transmission technology to integrate voice and data transmission services.

In parallel with the establishment of regional and transshipment class, VNPT has been urgently deploying access layer of NGN network with Gateway Media and xDSL technology broadband system to support ADSL and SHDSL connections. With this xDSL network infrastructure, VNPT has provided MegaVNN broadband Internet access service in many provinces and cities across the country. It is expected that by 2005, the country will have about 180,000 xDSL ports.

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