General Explanation
of Special Issue

NEC & the Next Generation Network
~Our aim is to be the partner you depend for NGN deployment~

Carriers in both Japan and overseas have shifted their Next Generation Network (NGN) deployment programs into high gear. Through NGN deployment, carriers hope to provide new services that will appeal to users and realize more secure and reliable telecommunications networks. NEC is one of the very few suppliers capable of providing these carriers with solutions that respond to their business challenges from a "total and best-fit" perspective. Fully exploiting our company's comprehensive strength in the domain of network technologies, NEC aims to be the partner that carriers depend on for their NGN deployment and is creating attractive products and services that will meet and exceed the highest expectations.

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1 Expectations for NGN

In step with the rapid deployment of broadband and mobile networks, the entire structure of the industries related to telecommunications services is undergoing radical change. As a result of high-speed optical access technologies such as FTTH and the spreading introduction of third-generation (3G) mobile telecommunications, the telecommunications service business is shifting the battlefield from infrastructure provision and entering a new era of differentiation based on services.

Faced with the continuing trend of decreasing revenues from telephony service which have long been their main source of business, carriers are coming to grips with the huge business challenge of how to secure income through new services such as Fixed Mobile Convergence (FMC) services, video streaming/distribution and mobile commerce. In order to secure and expand income, there is a growing necessity to create services that deliver high value to their customers - services that enrich the lifestyle of the individual end-user and generate new income sources for enterprises through the dramatic reformation of their business model.

At the same time, issues such as securing the security and reliability of networks, maintaining a rein on infrastructure investment and the quest for ever better operational cost efficiencies are just as vital. As the transition from conventional time-division multiplexing (TDM) technologies to IP technology-based networks moves forward, the importance of IP-based networks as business infrastructure and as a lifeline multiplies. The potential risks to society as a whole that arise in the event of failure of networks or information security due to yet unforeseen circumstances are immeasurable. While “best effort” is the fundamental nature on which IP technologies are based, society is demanding dependable networks that deliver security and reliability that is at least on a par with conventional telephone networks and to do it at a reasonable cost.

Delivering the integration of diverse services and applications including fixed and mobile telephony over ultrahigh-speed high-reliability IP networks, NGN are expected to respond to these issues facing carriers and radically revolutionize both lifestyles and business.

2 Overall Image of the NGN Provided by NEC

At NEC, our image of NGN is rapidly taking concrete form. As shown in **Fig. 1**, the overall image of the network can be broadly divided into 3 parts. The first part is “NGN transport” which provides the environment for connection to high-speed, large bandwidth networks that boast “security, reliability and comfortable utility.” It is comprised of diverse access networks including optical, 3G mobile and wireless LAN, as well as Opti-

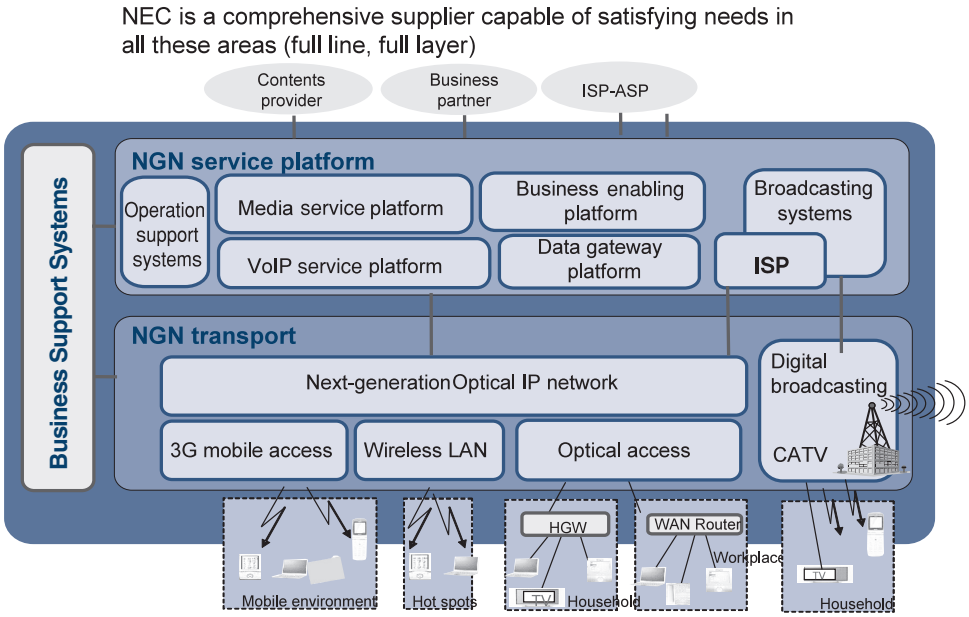

Fig. 1 Overall image of the NGN provided by NEC.

cal IP backbone networks and digtal broadcasthing systems. The second section consists of the NGN service platforms that are the base for providing a broad variety of customer value. Included in this aspect of the network are VoIP service platforms that will handle voice communications, data gateway platforms for i-mode and other data-related service provision, media service platforms for streaming/distribution and storage of video content, business enabling platforms that provide a foundation for e-commerce, and the operation support systems that facilitate constant monitoring and effective operation of the networks.

The third area consists of the business support systems that support carrier business operations such as the billing system which extends from tabulating user network utilization, calculating charges and issuing invoices. These systems, which traditionally work behind the scenes and have been virtually a black box from the end user's perspective, are increasingly important as a means to answer the heightened needs for consolidated billing arising from the growth in e-commerce and FMC as well as to realize services desired by users.

These three parts should not be viewed as separate and independent, but rather as integral parts linked in a systematic whole that enables the provision of a variety of next-generation services.

3 NEC's Approach

A very wide range of technologies, know-how and skills are necessary to materialize the entire NGN as described above. It will be indispensable to have a command of not only network technologies such as optical, mobile and wireless for NGN transport as well as Open Mission Critical System (OMCS) technologies and network service know-how which are essential for Service platforms, but also the capability to optimally integrate the entire system and ensure it works in perfect concert. Even a search on a global scale will reveal that the number of suppliers that possess this diverse range of technologies, know-how and skills and can provide solutions over the entire scope of NGN is very limited. As an "all round player" in the domain of NGN, NEC aims at becoming the partner that telecommunications carriers can depend on to deploy dependable networks. In detail, NEC is approaching the realization of NGN from the following four perspectives.

3.1 Providing Products, Systems and Services That Respond to the Business Needs of Each Customer

Customer needs are growing more sophisticated, and competition is becoming increasingly severe. Against this background, telecommunications carriers are redoubling efforts to secure new sources of revenue and reduce costs. Major business issues facing telecommunications carriers are:

- Migration from fixed-line telephony to next-generation

telephony services based on IP technology.
- Provision of FMC services such as "One Number, One Phone, One Bill."
- Offering "triple play service" which is the integration of telephony, Internet and video streaming/distribution services.
- Expansion of non-traffic business such as e-commerce and contents distribution.
- Seeking better cost efficiencies in infrastructure investment and operational costs (TCO reduction)

As shown in **Fig. 2**, NEC exploits its coverage of the entire NGN domain and offers a "Full Line, Full Layer" approach. From the diverse devices/systems such as terminal/customer-premise equipment, access network systems and backbone network systems to the various servers in the realm of service platforms, and business support systems, NEC is a total provider of products, systems and services that optimally address each of the business issues our customers. In addition, we continue to put a priority on the expansion and improvement of our product offering to offer a seamless lineup and on the creation of innovative solutions through our aggressive pursuit of R&D.

3.2 Staying a Step Ahead in the Shift to Software

The role of software in providing value-added services and enabling the functionality of network equipment even in current networks is by no definition small. For the voice communications that are made possible by software as well as e-commerce transactions and the various other applications that operate on networks, the role of software is increasing and expected to be even larger in the future with the deployment of NGN. The management of traffic congestion and diversion to alternate routes to ensure the reliability and flexibility of networks as well as the functions that provide security are all achieved by software on servers working in unison with network devices. It would not be an exaggeration to say that software is the key to the realization of NGN.

Amid this trend of shifting more and more responsibility to software, NEC has secured a leading position in the industry. In the area of service platforms, NEC has not only supplied domestic telecommunications carriers with almost all their needs for SIP servers used in voice communications, but also boasts a long list of supply achievements that include i-mode gateway systems, Push to Talk over Cellular (PoC) systems, and Ring Back Melody (RBM) systems both in Japan and overseas. In addition, we have pioneered the development of network equipment that combines general-purpose server platforms with software, for example, the world's first commercialization of packet nodes for mobile networks that employ Advanced Telecom Computing Architecture (aTCA) servers and carrier-grade Linux.

Our trailblazing position combined with thousands of software engineers who know networks inside and out gives NEC a tremendous advantage in the NGN era. Drawing on the strength of our IT-related software skills and resources that rank among the highest in Japan, NEC continues to forge ahead in the software development for every part of NGN from the service platform domain to software embedded in network equipment and

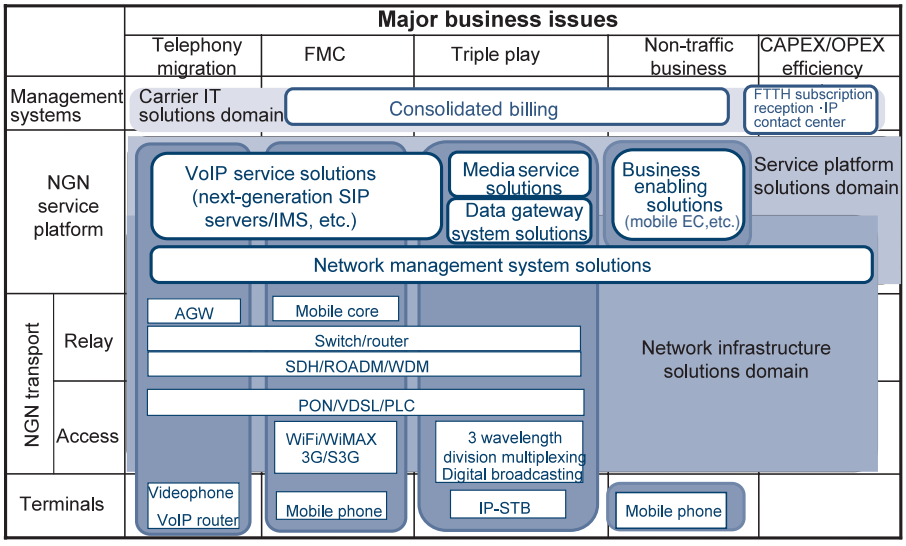

Fig. 2 Providing the optimum product, systems and services for the business challenges of our customers.

devices.

3.3 Development of New Business in the Field of Software and Services

The role of our company in NGN does not end with provision equipment and systems. In step with changing customer needs and business models, we are aggressively pursuing new business in the domain of software and service based on a long-term partnership with our customers.

One such business is the provision of professional services based on highly specialized skills. In order to secure area coverage and communications quality for 3G mobile networks over which many users share the same single frequency, a variety of specialized skills and know-how are necessary for the design and operation of the network. From network design to the installation of equipment and subsequent service quality monitoring and tuning of equipment, NEC offers customers the convenience of single-source provision of all their needs in this field.

Moreover, our company has been delivering outsourcing services for mobile network operation since the year before last in Hong Kong. Responding to customer demands for improved cost efficiencies in network construction and operation, NEC is expanding and strengthening its comprehensive menu of services that covers all needs from consulting that supports the customer through every stage to services to satisfy operation and outsourcing requirements (Please refer to **Fig. 3**).

3.4 Accelerating Business Activities on the Global Stage

NEC's network business made an early entrance on the global stage, and already has provided various switching equipment, optical telecommunications equipment and microwave telecommunications equipment to over 100 nations around the world through our global network of subsidiaries. Also through our recent collaboration with Siemens, our company enjoys a top-class position in the world in quantity of W-CDMA base stations.

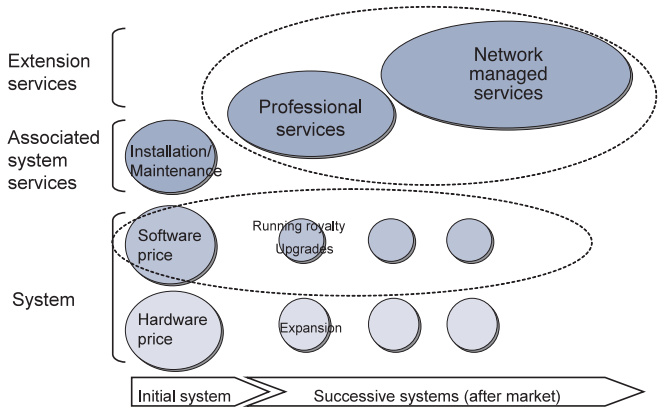

Fig. 3 Development of new business in the field of software and services.

With this record of success as our base, NEC is reinforcing its business activities in the global market where major business opportunities for NGN deployment are expanding. We will target not only the area of network transport which has been the heart of our overseas efforts to date, but also the domain of service platforms. In this field which is expected to grow significantly in the future, we can offer solutions that leverage innovations that have been pioneered in Japan and are ahead of the global curve. Though we have already secured over two thirds of the overseas market for i-mode gateway systems, we continue to actively pursue business in VoIP, IP Multimedia Subsystem and other products and services in this field which we have positioned as one of the key pillars that will support our overseas business in the future.

When overseas telecommunications carriers select their suppliers, they are not simply evaluating product function and price. More and more carriers are adopting a long-term stance and putting a priority on the comprehensive strengths of the supplier including service & support, a continuing commitment, financial strength and CSR. While taking maximum advantage of the strength of our know-how accumulated in the high-developed broadband and mobile communications market of Japan and by fully leveraging our coverage of the entire spectrum of NGN, we will further reinforce customer support capability with professional service and network operation service as described earlier, and contribute to the deployment of NGN for telecommunications carriers both in Japan and in global markets.

4 Conclusion

With a focus on the business of equipment, systems and services for telecommunications carriers, we have provided a broad introduction to NEC's vision for realizing the next generation networks in this feature article; however, the impact of NGN will not be restricted to a limited world of telecommunications carriers and suppliers. On the contrary, NGN will have a far-reaching and powerful influence on the lifestyles of individuals and corporate business models.

Serving as a true partner that telecommunications carriers can depend on to realize their NGN needs, NEC also aims to be the trusted partner of the individuals and enterprises who will be using NGN. Through our support of NGN deployment by telecommunications carriers and by providing enterprises and other customers with solutions that enable them to maximally exploit the advantages of NGN, NEC is tackling the realization of a Ubiquitous Society rich in vitality and promise.