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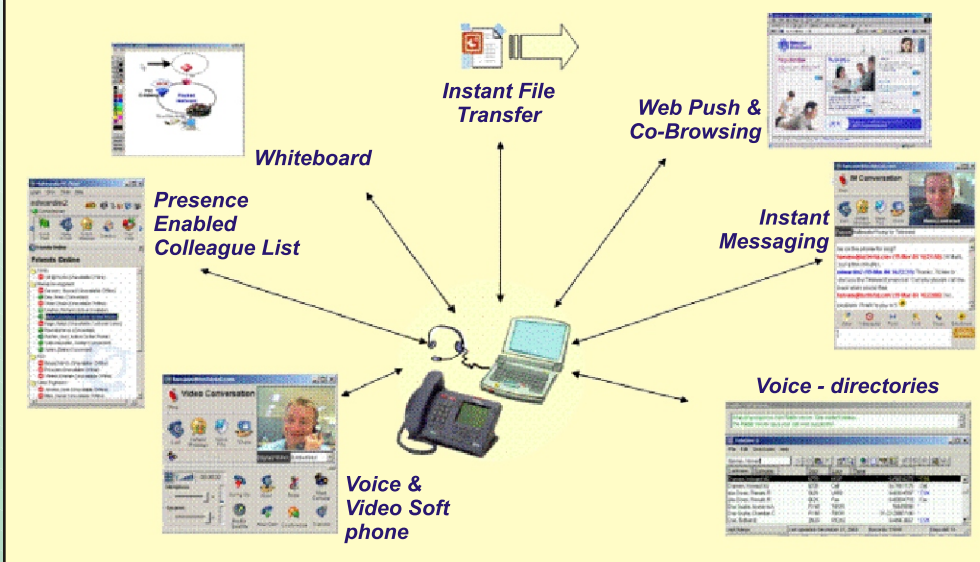
Next Generation Network (NGN) Services



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NGN SERVICES

Today's Telecommunication network is more complex than ever before due to competition among service providers. Service Providers are striving to differentiate themselves within expanding competitive landscape by considering Next Generation Network (NGN) services as a means to attract and retain the key customers and expand their addressable markets into new areas.

NGN is horizontally layered network instead of the present vertically separated networks for each service. The access, switching, transport, control and service functions are separated into individual network layers. It uses Internet Protocol (IP) based transport for all services including voice. The main characteristics of NGN is the decoupling of services and transport. NGN supports wide variety of services as depicted in Figure 1. NGN uses packet based transport and provides service providers with greater control, security and reliability thus reducing CAPEX and OPEX.

NGN services are briefly described as below:

1. Voice Telephone Services: NGN supports all existing PSTN/ISDN and IN services like Call Waiting, Call Forwarding, 3-Way Calling, Calling Number and Name Identification Presentation (CNIP), Pre Paid services etc.

2. Multimedia Services: These services allow customers to converse with each other while displaying visual information. It is possible for multiple parties to interact each other using voice, video and data. Multimedia services include video conferencing, collaborative computing, groupware, electronic white boarding

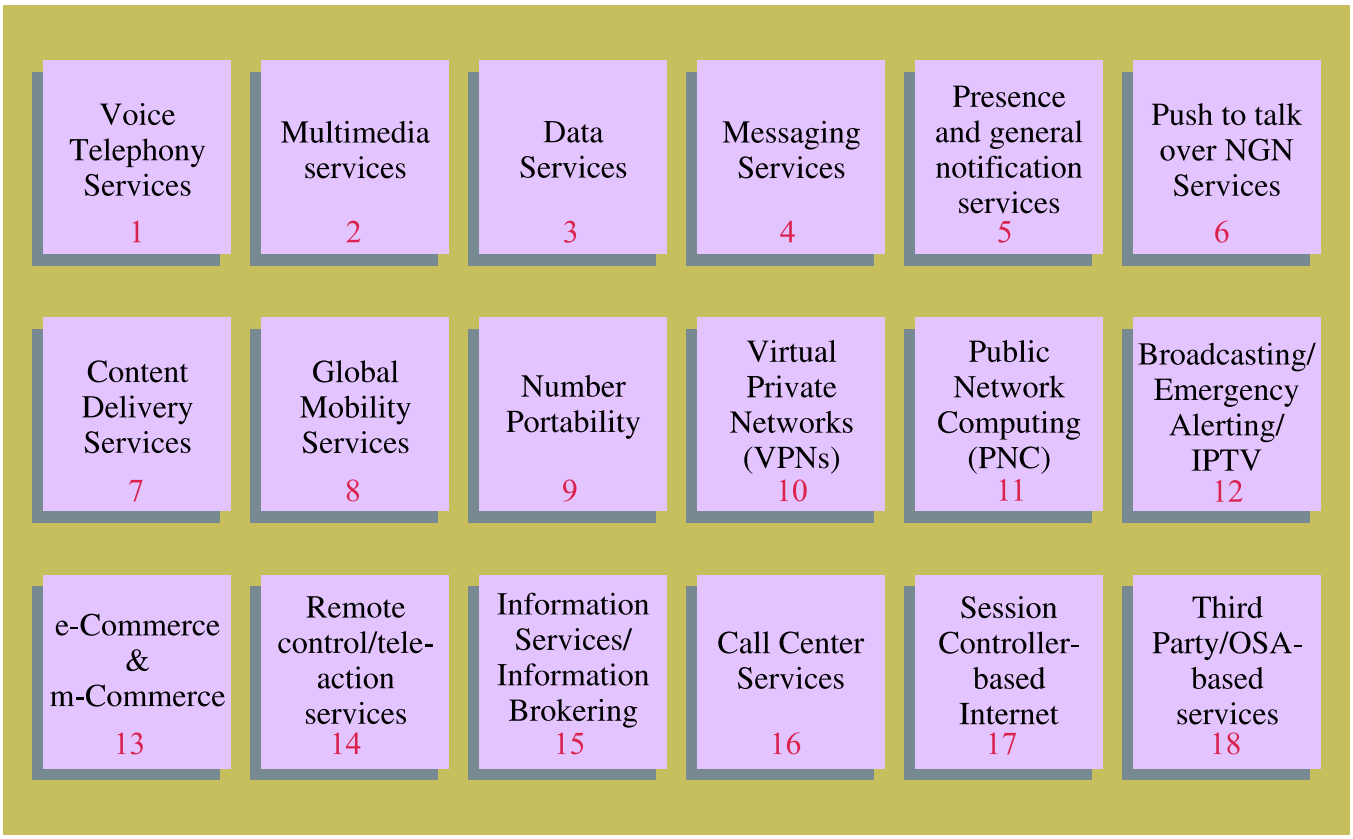

Figure 1: NGN SERVICES

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17th May, 2007: World Telecommunication and Information Society Day

Message from Mr. Ban Ki-moon, UN Secretary-General

Since the advent of the telegraph in the mid-19th century, the International Telecommunication Union has been among the key players in helping the world to communicate. Today, from traditional telecommunications to the latest advances in cyberspace, ITU continues to provide Governments, the private sector and civil society with expert guidance and assistance in addressing issues related to information and communication technologies. Following the successful conclusion of the two phases of the World Summit on the Information Society, the entire UN system is committed to the Plan of Action strongly linking ICT with development.

The theme of this year's observance is "connecting the young". Young people are among the most prolific and knowledgeable users of ICT. But the digital revolution is out of reach for many of them, especially young girls and women and people living in remote and underserved regions.

I therefore urge policy-makers and industry leaders to put their minds together, and to work cooperatively with children and youth to produce suitable technologies, applications and services to facilitate access to information and communications technologies. Young people with access to ICT often surge ahead in their quest for knowledge, and find it possible to "leapfrog" communication barriers with considerable ease. In many instances, young people are the driving force behind innovation in the development and use of new technologies. But the digital chasm leaves others out of this picture, and unable to capitalize fully on the benefits of globalization. Young people everywhere must have equal opportunities to rise out of poverty and illiteracy and to realize their full potential.

So let us promote visionary public policies, innovative business models and creative technological solutions that will empower young people and engage them in the global effort to achieve the Millennium Development Goals. Let us use to maximum effect the Global Alliance for ICT and Development, the Internet Governance Forum, the Digital Solidarity Fund, ITU's Doha Action Plan and other important mechanisms for carrying forward the results of WSIS. On this World Day, I encourage all stakeholders to do their part to connect young people and to create a truly open, inclusive and development-oriented information society.

Message from Dr. Hamadoun Touré, ITU Secretary-General

In an increasingly networked world, the young are not only the beneficiaries but often the driving force behind the latest innovations and practices, and for many, the dependence on information and communication technologies (ICT) has come to determine their choice of lifestyle. It is clearly our duty today to provide the opportunities of ICT to all children and youth, particularly to those who remain unconnected from the ongoing digital revolution.

The World Summit on the Information Society (WSIS) recognized young people as the future workforce and earliest adopters of ICT and called for their empowerment. In order to achieve this critical objective, national e-strategies must address the special requirements of children, especially the disadvantaged and marginalized, and ensure their full inclusion in the Information Society. ICT are powerful tools to empower children and other vulnerable groups with information and knowledge and act as a catalyst in ensuring their rights within the comity of nations.

Marking its inception on 17 May 1865, ITU is the oldest international organization in existence. Yet the Union is young at heart and remains at the cutting edge of global communications. As world leaders declared at WSIS, ITU is committed to developing ICT infrastructure and facilitating interoperability, interconnection and global connectivity of networks and services, strengthening the development of an enabling environment, and instilling confidence in the use of ICTs by promoting cyber security. The Union is also committed to extending the benefits of ICT to people any time, anywhere.

This year, we focus on integrating youth issues into ITU's development activities as a means of offering the young more opportunities and better choice of options for the future. On the one hand, ICT must be utilized to enhance capacity building among the young by improved e-learning and education. On the other hand, we are committed to promoting their capabilities in utilizing ICT towards the advancement of a better, more peaceful and productive world.

As we celebrate World Information Society Day, we invite all our stakeholders as well as international organizations, non-governmental organizations and public policy-makers to give children and young people around the world every possible assistance in accessing ICT. This is critical for the young as a means of learning, sharing information and knowledge, improving their health and nutrition, and communicating with other children and youth.

The key to achieving the development aspirations of the world's inhabitants lies in investing in the future generation, especially by improving access to communication among today's children and enhancing their capacities.

etc. An electronic whiteboard is an application where both parties can write and draw on the same picture for discussion during a multimedia call. This is useful for remote teaching, technical discussion etc.

3. Data Services: Data services establish real-time connectivity between endpoints along with various data related value-added features (e.g., bandwidth-on-demand, connection reliability/resilient Switched Virtual Connections (SVCs), and bandwidth management/call admission control).

4. Messaging Services: NGN supports both real time and non-real time messaging services for fixed and mobile networks. Some messaging services are designed as 'real time' and others are 'mailbox' (non-real time) service where the messages are stored ready for collection or delivery at a later time.

i). Unified Messaging: Unified Messaging facilitate the delivery of voice mail, email, fax mail etc. through common interfaces. Through these interfaces, users can access, as well as can be notified of, various message types (voice mail, email, fax mail, etc.), independent of the means of access (i.e., wireline or mobile phone, computer, or wireless data device).

ii). Instant messaging (IM): Instant messaging is supported across fixed and mobile networks. The key features of instant messaging are low latency, security, mobility, group management and message filtering.

iii). Chat: This facilitates real-time communication by means of text between two terminal users who have already logged on.

iv). MMS and SMS: This facilitates near real time communication by sending and receiving multimedia messages or text messages.

5. Presence and general notification services: This facilitates the display of peers that a user can contact, their current status and any service-related notifications. The presence service provides access to presence information and its availability to other users or services. Presence is a set of attributes characterising the current properties (e.g., status, location, etc.) of an entity. An entity in this respect is any device, service, application, etc., that is capable of providing presence information. Availability, on the other hand, denotes the ability and willingness of an entity to communicate based on various properties and policies associated with that entity, e.g. time of day, device capabilities, media preferences and capabilities etc. The terms presence and availability are almost always used together to provide a complete set of presence information.

6. Push to talk over NGN (PoN): 'Push' operation refers to service initiated data transmissions to members of a group. Push-to-Talk, also referred to as PoC (Push-to-Talk over Cellular) is built around VoIP (Voice over IP) technology. It is a wireless service that turns mobile phones into long-range walkie-talkies by connecting to other phones without dialling. Instead of dialling, one can simply push a button and talk to members of a group. The speech will be one-way-at-a-time instead of a two-way conversational mode. It can be used for short-duration and high-urgency voice communications and keeps an 'always-on' connection between groups of frequently called mobile subscribers like family, colleagues, business associates etc. All members of the group can hear the speech from others. The listeners do not have to press any button to hear the speech from others and it is always on.

7. Content delivery services: Content based services like music and video on demand, radio streaming, gaming, financial information distribution, professional and medical image distribution, electronic publishing etc. can be provided to customers.

8. Global Mobility Services: This provides global roaming and location based services for all types of wireless and wireline subscribers.

9. Number Portability: Number Portability provides the end users to retain existing directory numbers while moving from one physical location to another or from one service provider to another.

10. Virtual Private Networks (VPNs): Voice VPNs improve the multiple location networking capabilities of businesses by allowing large, geographically dispersed organizations to combine their existing private networks with subsets of PSTN, thus providing subscribers with uniform dialing capabilities. Data VPNs provide added security and networking features that allow customers to use a shared IP network as a VPN.

11. Public Network Computing (PNC): Public network-based computing services can be provided for businesses and consumers. For example, the service provider could provide generic processing and storage capabilities (to host a web page, store/maintain/backup data files, or run a computing application etc.). The service provider would charge users for the usage of raw processing and storage, but would have no knowledge of the specific content/application. Alternatively, the service provider could provide specific business applications (e.g., Enterprise Resource Planning (ERP), time reporting, vouchers, etc.) or consumer applications (e.g., TaxCut, kitchen remodeling program, etc.), with all or part of the processing/storage available in the network.

12. Broadcasting/Emergency Alerting/ IPTV: These Services involve transmission of data to many users simultaneously, allowing efficient use of bandwidth. For example IPTV (Internet Protocol Television) is used for delivering digital television services using the Internet Protocol (IP) using wireline as well as wireless broadband connections. The user terminals might be a PDA, Laptop, mobile handset, TV etc.

In addition to existing emergency communication services, disaster relief operations can also be broadcasted as required by regulation or law.

13. e-Commerce & m-Commerce: These services allow consumers to purchase goods and services electronically over the network. This include processing the transactions, verifying payment information, providing security and possibly trading (i.e., matching buyers and sellers who negotiate "trades" for goods or services). Home banking, home shopping, Business-to-business applications (e.g., supply-chain management and knowledge management applications) are also part of these services.

14. Remote control/tele-action services: These services are used for home applications control, telemetry, alarms etc. With the advent of in-home networking and intelligent appliances, these services could monitor and control home security systems, energy systems, home entertainment systems, and other home appliances. For example if some one is watching television and the doorbell rings, he can use the TV's remote to get a view of the entrance to see who's there. Another example is monitoring the house while away on a trip.

15. Information Services/ Information Brokering: These services include news, weather, cinema ticket, motorway traffic status, stock quotes, advertisement and providing information to consumers based on pre-specified criteria or on personal preferences.

16. Call Center Services: A subscriber can make a call to a call center agent by clicking on a Web page or CPE. The call is routed to an appropriate agent, who could be located

anywhere, even at home (i.e., virtual call centers). Voice calls and e-mail messages can be queued uniformly for the agents. Agents would have electronic access to customer, catalog, stock, and ordering information, which could be transmitted back and forth between the customer and the agent

17. Session Controller-based Internet services: It provides access to public Internet through existing mechanisms.

18. Third party/OSA-based services: Third party/OSA (Open Services Architecture) -based services are applications developed and provided by vendors outside the service provider's domain using IT technology and tools. Parlay is an open standard API (Application Programming Interface) designed to facilitate easier access to core network capabilities from outside of the network. Such API allows the existence of new business models.

Technical White Paper Released by TEC During February 2007 to April 2007

- NGN Architecture
- NGN Protocols
- SIP Call Flow
- NGOSS
- All IP CDMA Networks, Technology overview and deployment consideration for Service Providers
- Technical issues relating to Spectrum usage
- Disaster Management
- Electric Field and Public Health

TEC GRs/IRs Released During February 2007 to April 2007

New GRs/IRs

- Media Server
- Call Completion to Busy Subscriber (CCBS)
- Broadband Wireless Access System
- Wi-Fi Hotspot
- STM-64 PDH/SDH Analyser
- Gigabit Passive Optical Network Technology
- Optical Dispersion Analyser
- Radio Planning Tool
- Micro Duct for Optical Fibre Cable
- Radio Network Planning Tool for CDMA 2000 1x & 1x EV-DO
- IR on Clip Phone

Revised GRs/IRs

- Large Size Local Cum Tandem Exchanges
- MPLS Protocol Analyser
- MPLS Performance Analyser
- 16 KHz Metering pulse Analyser
- Optical Dispersion Analyser
- Fibre Distribution System
- 15 GHz STM1 SDH Microwave Equipment
- 18 GHz STM1 SDH Microwave Equipment
- Wireless Local Area Network (WLAN)
- Monitoring of VRLA Batteries
- 11m, 7m, 1.2m & 1.8m Earth Station Antenna Operating in C-band and Ku band
- Thin Client
- 11 GHz High Performance Antenna
- Spectrum Analyser
- IR on Coin Box telephone
- IR on Charge Indicator for PCO Operation

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