Fixed Mobile Convergence: A pragmatic approach to take NGN Benefits to Developing Nations

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1. Next Generation Network (NGN) being visualized and defined by ITU is expected to deliver additional benefits to the global end user.
2. The principles and requirements of Convergence of Fixed and Mobile Networks (FMC) being studied in ITU-T’s Special Study Group on “IMT-2000 and beyond Systems”.
3. Realistic implementation strategy of convergence of two different type of telecom networks being worked out currently.
4. The incorporation of the FMC principles in NGN project of ITU as a network of future is likely to deliver all the desired benefits of NGN to the Developing nations, especially to bridge the digital divide.
UN Initiative through ITU: ICT to All

UN General Assembly President in High Level UN Forum:

- “New advances of ICT are further enhancing the already immense potential for dramatically accelerating development through “leapfrogging” stages of technological development.”
- “However, we are faced by the sad reality that this immense potential of ICT is not currently being harnessed.”
- “The digital divide threatens to further marginalize the economies and the people of the developing countries as well as countries with economies in transition.”
- “Moreover, given the very dynamism of the ICT revolution, every day that passes without effective action further widens the divide, making the need for concerned effort by international community a matter of utmost urgency.”

NGN Service Objectives: Global Perspective

- Providing advanced services which are not available through different existing networks to the existing telecom user.
- Providing services with greater emphasis on user satisfaction in terms of Quality of Service, affordable Cost and the Convenience of usage.
- Help Providing Framework of the network & services, so that the people still deprived of telecom access today, can expect their share of telecom services leveraging as far as possible the existing network infrastructure (ITU slogan: ICT to all).
Possible Approaches of Infrastructure enhancements to meet NGN Global Perspective

1. Use of leading edge complex enabling telecom technology to provide advanced services to existing subscribers with high investments.
   This case is more relevant to the developed nations and some developed places in developing nations where the access to the basic telecom facility is no more a concern. mainly addresses the commercially viable operations of prominent urban areas.

2. Use of mature technology to provide basic telecommunication services and features to the masses on an affordable basis, to address the digital divide.
   to address primarily the network operations of sub-urban and rural areas where telecom operations are commercially unattractive and Governments are expected to ensure development in those areas by effective use of Information & Communication Technology.

Relevance of Fixed Mobile Convergence for NGN Global Perspective

- Fixed Mobile Convergence (FMC) as being studied by ITU-T's Special Study Group on "IMT-2000 & beyond System" addresses primarily the telecom infrastructure requirement to meet the developing nations needs.
- ITU-T's definition of NGN would integrate the FMC Concept within to ensure its deployment as smooth migration from the existing infrastructure to the higher capable future infrastructure.
- All the existing network infrastructure of Fixed Network (PSTN/ISDN) would continue to be used without change to deliver the advanced services like Mobility.
- By ensuring the delivery of the advanced services also through the existing infrastructure would help in arresting the further divide.
Relevance of Fixed Mobile Convergence for NGN Global Perspective (Cont.)

- The existing Fixed network infrastructure is being utilized as Fixed Access Network. Additional network capabilities, like mobility etc. are provided by provisioning extra infrastructure without any change in the existing fixed network.
- Gradual introduction of advanced/ expensive infrastructure would be on the choice of the operator, to be provided in those areas which are commercially viable.
- By leveraging the best capabilities of the mobile and the fixed networks and the associated technology, access of basic telecom infrastructure would improve. This will reduce the divide.

- Once every subscriber is identified by a unique personal identity, which is not associated to the fixed port of the switch or geographical location, will provide an unique opportunity to launch really meaningful e-governance like application.
- These useful applications which would be available to users only after necessary authentication of personal identity would drive the telecom service penetration to the masses.
- Change from fixed terminal equipment (FTE) to sharable Fixed Access Point (FAP) would lead to significant increase of utilization, leading to a huge saving on access network infrastructure cost.
- By using intelligent billing and customer care mechanism, new business model will emerge in which there will be local agencies/ small local entrepreneur, finally lead the tele-density penetration process.
- Cost effective Multi-utility devices for Personal Information, Communication & Entertainment would further drive the penetration in masses.
Access Methodology Leading to FMC architecture as Integral part of Global NGN

- End user terminal will be “mobile” irrespective of the network (mobile or fixed) it is connected to.
- If telecom facility is meaningfully available to all citizens (rich & poor) and is main instrument for economic growth and the e-governance, traffic generation would be huge. Majority of the traffic will be generated in Stationary or Near-Stationary mode than in mobile mode.
- Wide Area Radio Access Technology (access mechanism for mobile networks) can meet only a portion of total Access requirements effectively. However, it can be expected to meet all the needs of subscribers in mobile mode.
- Network should be developed such that whenever mobile user becomes stationary or near stationary, wide area Radio spectrum (access mechanism for mobile networks) is released for the use of other mobile users and the user is seamlessly transferred to the fixed network access.

Access Methodology Leading to FMC architecture as Integral part of Global NGN (Contd.)

- The seamless transfer mechanism could be by the same mobile terminal that switches over to Wireless Personal Area Network (W-PAN) based access networks spectrum band (Bluetooth or 802.11x based) connected (wirelessly) with a Fixed Access Point (FAP) to get the required service through Fixed network.
- It further provides an opportunity to have yet another type of globally standardized cost effective mobile terminals based on solely Bluetooth or like technology, to meet the developing nations needs.
- Fixed network would possibly be capable of handling higher traffic, better QoS and Advanced Features for a lower CAPEX & OPEX.
Existing Fixed networks are utilized as Fixed Access Network without any Change in it.

Let Next Generation Architecture Provide all Various Options for global appropriateness

A: Every User Terminal would be wireless.

B: Three tier hierarchical radio coverage supplementing, (instead of competing) to provide global coverage.

C: Coexistence of all prevailing Access Networks is visualized

D: Corresponding all types of W-PAN Fixed Access Points (FAP)

Depending on the FAP availability and Terminal Capability any user Terminal UT could avail service of any suitable Access Network AN directly or through suitable FAP.

Unified Converged Core Network, supporting all kind of the Access Network(AN), capable of supporting global roaming through standardized Registration/Authentication/Mobility Management mechanisms and standardized NNI.

Maximize the use of wireless technology driven by Industry Innovation, to provide last mile (first mile) connectivity between Fixed Access Points and the network elements (Access Network nodes) where cable options are not economical.
FMC: Pragmatic Approach to take NGN benefits to the user without a massive technology enhancement

- All technology components to meet the FMC objectives are available today. It is only the question of Global Standardization.
- FMC presents an implementation feasibility to achieve next generation service objectives.
- Regulatory aspects can always be addressed by national authorities for the benefit of all.
- It is recommended that ITU-T's definition of NGN would integrate the FMC Concept within to ensure its deployment along with migration from the existing infrastructure to the higher end future infrastructure.
- Global Standardization of FMC through ITU would be helpful to meet the developing nations objectives. Developed world is also to be benefited.
- This effort would not only bring incremental enhancements with respect to the existing network capabilities and the delivered services to the end user, but will have a significant "quantum jump" so that the future network could qualify to be called as global network of next generation.

thanks for the attention